



# **Flinders University**

## **Flinders Human Behaviour & Health Research Unit**

### **Responsible Gambling and Gambling Harm Minimisation Research Gap Analysis**

**Rapid Review of Literature Final Report**

**Commissioned by New South Wales Government  
Office of Responsible Gambling**

**Flinders is a leading international University in Australia with a record of excellence and innovation in teaching, research and community engagement.**

**The vision of Flinders Human Behaviour Health Research Unit (FHBHRU) is  
'Transforming health through connected communities'.**

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# CONTENTS

List of Tables .....	4
List of Figures .....	6
Glossary .....	7
Executive Summary .....	10
Method .....	10
Results .....	10
Areas for future research.....	14
Limitations .....	17
Introduction .....	18
Methods .....	19
The Search Strategy.....	20
Screening process .....	22
Evaluation of evidence.....	23
Results .....	26
Peer-reviewed Literature.....	26
Grey literature.....	26
Overview of the included literature .....	27
Gambling Prevalence .....	30
Attitudes and behaviours towards gambling in vulnerable or target groups.....	35
Emerging technologies and new trends .....	44
Efficacy and effectiveness of treatments .....	55
Prevention and harm minimisation .....	63
Understanding and measuring harm .....	70
Support for policy development and regulation.....	76
Discussion .....	81
Answering the Research Questions.....	82
Areas for future research.....	86
Limitations .....	89
General References.....	91
Peer-Reviewed Literature References .....	92
Gambling prevalence .....	92
Attitudes and behaviours in vulnerable/at-risk populations .....	94
Emerging technologies and new trends .....	103
Efficacy and effectiveness of treatments .....	109
Prevention and harm minimisation .....	113
Understanding and measuring harm .....	116
Support for policy development and regulatory effectiveness .....	119
Grey Literature References .....	122
Appendices .....	131
Appendix 1: Database Search Outputs.....	131
Appendix 2: Mixed Methods Appraisal Tool (MMAT) .....	138
Appendix 3: Summary Tables of the Peer-Reviewed Literature.....	140
Appendix 4: Grey Literature Summary Tables .....	203
Appendix 5: Quality Ratings .....	254

## LIST OF TABLES

Table 1. Summary of peer-reviewed literature .....	11
Table 2. Rapid Review Steps.....	19
Table 3. Inclusion and exclusion criteria .....	21
Table 4: NHMRC Levels of evidence.....	23
Table 5: Quality of evidence (Source: Laranjo et al, 2015) .....	23
Table 6. JBI Levels of Evidence – Meaningfulness .....	24
Table 7. Peer-reviewed literature article type .....	27
Table 8. Grey literature report type.....	27
Table 9. Country of focus of peer-reviewed literature.....	28
Table 10. Country of focus of grey literature .....	28
Table 11. Article type .....	30
Table 12. Country of focus of research articles .....	30
Table 13. Problem gambling measures used in the articles, where reported...	31
Table 14. Population participation rates in various gambling activities .....	31
Table 15. Past year participation and problem gambling rates in Australian studies compared to global reports, as % of adult population* .....	32
Table 16. Report type .....	33
Table 17. Country of focus of grey literature .....	33
Table 18: Problem Gambling measures used in the papers, where reported – Grey Literature .....	34
Table 19. Article type .....	35
Table 20. Population of focus in the research articles.....	35
Table 21. Country of focus of research articles .....	36
Table 22. Report type .....	41
Table 23. Population of focus in the grey literature .....	42
Table 24. Article type .....	44
Table 25. Country of focus of research articles .....	44
Table 26. Summary of Emerging Technologies and New Trends articles.....	45
Table 27. Areas of focus of Internet gambling articles .....	46
Table 28. Report type .....	51
Table 29. Country of focus of grey literature .....	51
Table 30. Summary of emerging technologies and new trends grey literature	52

<b>Table 31. Article types .....</b>	<b>55</b>
<b>Table 32. Country of focus of research articles .....</b>	<b>55</b>
<b>Table 33. Treatment type explored in the articles .....</b>	<b>56</b>
<b>Table 34. Assessment and Outcomes measures used in two or more studies</b>	<b>56</b>
<b>Table 35. Follow-up period in RCTs.....</b>	<b>58</b>
<b>Table 36. Treatment delivery method .....</b>	<b>59</b>
<b>Table 37. Sub-populations included in the articles .....</b>	<b>60</b>
<b>Table 38. Report type .....</b>	<b>60</b>
<b>Table 39. Country of focus of grey literature .....</b>	<b>60</b>
<b>Table 40. Summary of efficacy and effectiveness of treatment grey literature</b>	<b>61</b>
<b>Table 41. Article type .....</b>	<b>63</b>
<b>Table 42. Country of focus of research articles .....</b>	<b>63</b>
<b>Table 43. Approaches to gambling harm minimisation .....</b>	<b>64</b>
<b>Table 44. Approaches to prevention of problem gambling .....</b>	<b>64</b>
<b>Table 45. Quantitative measures used in harm minimisation/prevention research .....</b>	<b>67</b>
<b>Table 46. Report type .....</b>	<b>68</b>
<b>Table 47. Country of focus of grey literature .....</b>	<b>68</b>
<b>Table 48. Summary of prevention and harm minimisation grey literature .....</b>	<b>68</b>
<b>Table 49. Article type .....</b>	<b>70</b>
<b>Table 50. Country of focus of research articles .....</b>	<b>70</b>
<b>Table 51. Articles discussing harm measurement or measuring harm.....</b>	<b>71</b>
<b>Table 52. Articles reporting an association of gambling/problem gambling with specific forms of harm.....</b>	<b>71</b>
<b>Table 53. Report type .....</b>	<b>73</b>
<b>Table 54. Country of focus of grey literature .....</b>	<b>74</b>
<b>Table 55. Article type .....</b>	<b>76</b>
<b>Table 56. Country of focus of research articles .....</b>	<b>76</b>
<b>Table 57. Summary of discussion articles .....</b>	<b>77</b>
<b>Table 58. Area of focus of research articles .....</b>	<b>77</b>
<b>Table 59. Report type .....</b>	<b>79</b>
<b>Table 60. Country of focus of grey literature .....</b>	<b>79</b>

## **LIST OF FIGURES**

<b>Figure 1. PRISMA flowchart representing the number of peer-reviewed records retrieved at each stage of the review.....</b>	<b>29</b>
<b>Figure 2. Conceptual framework of gambling related harm (Langham et al., 2016, p. 6).....</b>	<b>72</b>

## GLOSSARY

At-risk populations	Those who are at increased risk of developing adverse consequences of gambling due to environmental, geographic, social, demographic, socio-economic, family / household, or cultural risk factors
CATI	Computer Assisted Telephone Interviewing. A structured system of collecting data using a script that is provided by a software application and customised based on the participants' answers.
CALD populations	Culturally and Linguistically Diverse populations. Refers to those born overseas, those who have a parent born overseas, or speak a variety of languages.
CPGI	Canadian Problem Gambling Index. A measure of problem gambling for use in general population surveys, which examines eighteen variables in four domains (gambling involvement, problem gambling behaviour, consequences of that behaviour for the individual or other, and problem gambling correlates).
DSM	Diagnostic and Statistical Manual of Mental Disorders. A standard classification of mental disorders used by mental health professionals
EGM	Electronic Gaming Machine. Also known as 'slots', 'pokies', 'poker machines', and 'fruit machines'. EGMs are comprised of a game of chance or a game that is partly a game of chance and partly a game requiring skill. EGMs usually have three or more computer-simulated reels that virtually spin when a button is pushed. When winning symbols line up a prize is awarded.
Gambling	According to the Productivity Commission (1999), the term 'gambling' refers to staking money on uncertain events driven by chance. The major forms of gambling are wagering (racing and sports) and gaming (casinos, gaming machines, keno, and lotteries).
Gambling related harm	Any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community or population (Langham et al., 2016, p.80).
Social gaming	An interactive playable form of digital entertainment that typically requires strategic and skilful play.
Low-risk gamblers	Those who have experienced low levels of problems with few or no identified negative consequences from gambling. Using the Problem Gambling Severity Index (PGSI), low-risk

	gamblers score a 1 or 2 and will have answered 'never' to most of the indicators of behavioural problems in the PGSI.
Moderate-risk gamblers	Those who have experienced moderate levels of problems leading to some negative consequences from gambling. Using the PGSI, moderate-risk gamblers will have responded 'never' to most of the indicators of behavioural problems in the PGSI but who are likely to score one or more on 'most of the time' or 'always' responses. Moderate risk gamblers have scores of 3 to 7 on the PGSI.
Non-problem gamblers	Those who have responded 'never' to all the indicators of behavioural problems. Members of this group may still be frequent gamblers with heavy involvement in gambling in terms of time and money, but they will not have experienced any adverse consequences. Non-problem gamblers have scores of 0 on the PGSI.
Online gambling	Gambling that occurs via Internet-enabled devices such as computers, mobile and smart phones, tablets, and digital television. Also referred to as 'interactive' or 'Internet' gambling.
ORG	Office of Responsible Gambling. The Office is part of the NSW Government and initiates and funds research, educates the community, funds support and treatment services, and informs policy makers and regulators.
PGSI	Problem Gambling Severity Index. A self-assessment tool used to detect the severity level of gambling problems is made up of nine items, five of which are associated with behavioural indicators and four with negative consequences.
Prevention Paradox	Describes the seemingly contradictory situation where most cases of a disease come from a population at low or moderate risk of that disease, and only a minority of cases come from the high-risk population (of the same disease).
Probability Accounting Reports (PAR)	The manufacturers' design documents containing the underlying math and computer algorithms for the design of many of the structural characteristics of Electronic Gaming Machines (EGMs)
Problem gamblers	Those who have experienced problem gambling with negative consequences and a possible loss of control. Using the PGSI, problem gamblers have scores of 8 or more.
RENO Model	The RENO Model, first published during 2004, described a science-based framework of responsible gambling principles for a range of industry operators, health service providers, community and consumer groups, and governments.
RGF	Responsible Gambling Fund. The RGF plays a key role in advising the NSW Government on the allocation of funds for



programs and initiatives that promote responsible gambling and help reduce harms associated with problem gambling.

Short term	[Regarding treatment outcomes] Generally between 0-6 months, although this varies across studies.
SOGS	South Oaks Gambling Screen. A screening instrument for assessing problem gambling risk.
SGHS	Short Gambling Harms Scale. A scale for measuring the population level impact of gambling harms.
VRGF	Victorian Responsible Gambling Foundation. A statutory authority created by the Victorian Parliament to address the challenge of gambling harm in the Victorian community.

## EXECUTIVE SUMMARY

This report details the results of a rapid review of the gambling literature to produce a gap analysis and prioritise key areas and emerging issues for research that require further investigation. The review was undertaken to inform the New South Wales (NSW) Office of Responsible Gambling (ORG)/Responsible Gambling Fund's (RGF) Research Agenda, which articulates research objectives and priority focus areas for the period 2019-2021.

The key objectives of this rapid review were:

- Review national and international evidence into gambling products and related harm across gambling risk segments
- Identify gaps in the existing evidence base
- Synthesise key findings of academic and 'grey' literature and prioritise key areas of focus
- Identify key emerging issues from the review which require further investigation
- Identify lessons learned from the public health approach and how this can be applied to the gambling field

## Method

The rapid review methodology was followed because it is well suited to the short timeframe required. The following research questions were developed in consultation with the ORG:

- What are the gaps in our understanding of gambling prevalence?
- What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?
- What are the gaps in our understanding of emerging technologies and new trends?
- What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?
- What are the gaps in our understanding of what works in prevention and harm minimisation?
- What are the gaps in our understanding of understanding and measuring harm?
- What are the gaps in our understanding of support for policy development and regulatory effectiveness?

Using the PRISMA guidelines, a systematic literature search was undertaken of articles published in English in peer-reviewed journals from 1<sup>st</sup> January 2015 to 16<sup>th</sup> October 2018. A grey literature search was also conducted. The literature was screened against inclusion and exclusion criteria relating to the research questions. Quality ratings were conducted for subsections of the peer-reviewed research. We summarised existing literature for each research question and explored any contradictory findings identified. Gaps in the literature, in which evidence and knowledge is minimal or lacking, was then identified to determine potential areas for future research.

## Results

A total of 541 documents were included in this review, comprising 455 peer-reviewed articles and 86 grey literature reports, and summarised in the research question domains reflecting the focus of the document. Table 1 presents an overview of the included literature included in each domain. Overall, the literature identified since 2015 and included in this review was predominantly descriptive with 39% (n=210) being cross-sectional research, with less of a focus on exploring efficacy or effectiveness. In the domains where quality ratings were conducted, the research generally met the criteria, although there was greater variation in quality in randomised controlled trials of treatment efficacy and in the area of prevention and harm minimisation. Australian research represented 27% (n=146) of the included literature, and 45% (n=136) of empirical research included in the review.

**Table 1. Summary of peer-reviewed and grey literature**

Domain	Definition/focus	Total (including discussion/commentary)		No. of systematic/literature reviews	No. of empirical studies	
		Peer-reviewed	Grey literature		Australia	International
<b>Gambling prevalence</b>	Prevalence of gambling and problem gambling in the Australian general population, in the context of international research	Peer-reviewed	33	2	7	23
		Grey literature	17	0	5	9
<b>Attitudes and behaviour towards gambling in vulnerable/target groups</b>	'Attitude': a way of thinking or feeling about gambling 'Behaviour': a way of acting/conducting oneself in relation to gambling (rates of gambling and problem gambling, type of gambling)	Peer-reviewed	128	10	20	98
		Grey literature	9	0	5	1
<b>Emerging technologies and new trends</b>	'Emerging technologies': technological innovations that have emerged in the gambling field in recent years 'New trends': what is new in the broader gambling arena?	Peer-reviewed	104	10	30	62
		Grey literature	15	2	8	1
<b>Long-term efficacy and effectiveness of treatments</b>	'Efficacy': performance of the treatment under controlled conditions 'Effectiveness': performance under real-world conditions	Peer-reviewed	54	12	8	32
		Grey literature	9	2	4	1
<b>Prevention and harm minimisation</b>	'Harm minimisation': strategies and interventions designed to reduce the harm associated with gambling across all risk categories 'Prevention': interventions that aim to prevent the development of problem gambling	Peer-reviewed	55	11	11	31
		Grey literature	12	2	5	2
<b>Understanding and measuring harm</b>	What is meant by gambling-related harm? How best to measure gambling-related harm?	Peer-reviewed	45	4	13	27
		Grey literature	15*	2	7	3
<b>Support for policy and regulatory effectiveness</b>	Both discussion and empirical research on the effectiveness of policy and regulation	Peer-reviewed	36	1	11	14
		Grey literature	9	4	2	0
		<b>Total</b>	<b>541</b>	<b>62</b>	<b>136</b>	<b>304</b>

\*Some reports incorporate both literature reviews and empirical research

### **What are the gaps in our understanding of gambling prevalence?**

There were N=33 peer-reviewed articles and 17 grey literature documents addressing gambling prevalence. In Australia, gambling participation rates are around 65% with problem gambling rates between 0.4-0.9%. Low-risk gambling rates range from 3.0-7.65%, with moderate risk gambling rates ranging from 1.8-3.70%. Studies generally report a reduction in participation but not in problem gambling, although a recent Australian study reported an increase in moderate- and high-risk gambling. Gaps relate to methodological limitations of telephone surveys that exclude key populations and the use of varying measures and cut-off rates for low-risk, moderate-risk, and problem gambling. In Australia, and internationally, different jurisdictions use different variations of the PGSI, meaning prevalence rates cannot be compared.

### **What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?**

There were N=128 peer-reviewed articles and 9 grey literature documents addressing attitudes and behaviours towards gambling in vulnerable or target groups. Quality ratings were conducted for Australian peer-reviewed research, which was generally well conducted and met the rating criteria. Limited recent Australian research exploring the attitudes and behaviours of at-risk groups was identified, particularly adolescents, young adults, older adults, minority (Aboriginal and Torres Strait Islander; Culturally and Linguistically Diverse (CALD)) populations, and those with mental health problems. No research on low-socio-economic status was identified in this review. The research tends to focus on gambling behaviour with less of a focus on attitudes towards gambling.

### **What are the gaps in our understanding of emerging technologies and new trends?**

There were N=104 peer-reviewed articles and 15 grey literature documents addressing emerging technologies and new trends. Quality ratings were conducted for all peer-reviewed research, which was generally well conducted and met the rating criteria. Internet (or online) gambling was the most commonly researched area. While greater rates of problem gambling were associated with this form of gambling, more recent research suggests gambling via the Internet is not inherently problematic but rather appears to affect different gamblers in different ways, with mode of access furthermore appearing to moderate the development of gambling problems. Research generally supports the concept of migration from engagement in simulated gambling / gambling-like content (e.g., social casino gambling, loot boxes, etc.) to monetary gambling, particularly in young people. The emergence of Cryptocurrency and Block Chain will likely present further challenges in this area, such as difficulties implementing responsible gambling strategies, challenges to collecting big-data to inform responsible gambling practices, and the risk that players might spend more than intended, resulting from anonymity features and perceptions of alternate forms currency as different to 'real money'. The link between video gaming in general and gambling (in terms of whether engagement / problems in one activity is associated with engagement / problems in the other) is still not clear.

The introduction of a range of new features into electronic gaming machines (EGMs) (e.g., automation of traditional gambling games, losses disguised as wins, near misses, virtual reality, etc.) is another emerging trend. Limited research was identified since 2015, and researchers tended to focus on individual features, providing an incomplete understanding of the effect of these features overall. Lack of access to industry research on game design is a further gap.

A significant emerging area of future research relates to sports betting, the effect of the current expansion of the sports betting market and its effect on gambling prevalence and problem gambling, and the effect of advertising and inducements on gambling attitudes, behaviours, and gambling-related harm.

### **What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?**

There were N=54 peer-reviewed articles and 9 grey literature documents addressing efficacy and effectiveness of treatments. Quality ratings were conducted for peer-reviewed randomised controlled trials, which showed variation in quality ratings mainly due to lack of information about whether randomisation was adequately performed. Efficacy has been demonstrated in systematic reviews for Cognitive–Behavioural Therapy (CBT) interventions, at least in the short term. Systematic reviews and meta-analyses of research into motivational interviewing and mindfulness-based approaches show some positive effects although the evidence is small and further research is needed. Treatment approaches tend to focus on high-risk and problem gamblers, with less focus on gamblers in the lower-risk groups. While face-to-face treatments are more effective than brief interventions (such as motivational enhancement therapy, phone calls along with CBT workbooks, minimal feedback or advice interventions) and those delivered via the Internet or telephone, these approaches might address barriers to treatment seeking in problem gamblers and provide support for low/moderate-risk gamblers. A key gap in the literature is an understanding of the long-term efficacy and effectiveness of current approaches to treatment.

### **What are the gaps in our understanding of what works in prevention and harm minimisation?**

There were N= 55 peer-reviewed articles and 12 grey literature documents addressing prevention and harm minimisation. Harm minimisation refers to strategies and interventions designed to reduce the harm associated with gambling across all risk categories. Prevention refers to interventions that aim to prevent the development of problem gambling, and generally involves educational interventions. Quality ratings were conducted for all peer-reviewed research, which showed variation in quality. There was an overwhelming focus on harm minimisation in the included literature, conceptualised in terms of responsible gambling, with a dearth of research on prevention. A number of harm minimisation strategies, particularly personalised feedback, self-exclusion, and dynamic pop-up messages on EGMs, show promise, at least in the short term and for low- and moderate-risk gamblers, rather than those exhibiting problem gambling behaviour. Understanding what works in the long term across the continuum of gambling risk categories is needed.

### **What are the gaps in our understanding of understanding and measuring harm?**

There were N=45 peer-reviewed articles and 15 grey literature documents addressing understanding and measuring harm. Quality ratings were conducted for all peer-reviewed research, and all studies were well conducted and met the rating criteria. There appears to be a limited understanding of the construct of harm specific to the continuum of gambling behaviour. From a public health perspective, Langham et al. (2016) propose a definition of harm as: any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community, or population. Further gaps relate to how best to capture the severity and frequency of harm. The 72-item harm checklist (and its validated short form - the Short Gambling Harms Scale; SGHS) is based on the work of Langham et al. (2016) and shows promise, although further work is needed. The issue of how gambling-related harm is understood and measured underpins all the other areas of focus in this review and is therefore a key gap in the literature. Early work on determining responsible gambling limits needs further validation.

### **What are the gaps in our understanding of support for policy development and regulatory effectiveness?**

There were N=36 peer-reviewed articles and 9 grey literature documents addressing support for policy development and regulatory effectiveness. The articles in this review demonstrate a focus on harm minimisation in terms of individual responsibility in policy both in Australia and internationally. This is likely exacerbated due to emerging technologies and new trends in gambling making it difficult to impose regulations on gambling products. There is

considerable criticism of this focus on individual responsibility, particularly in relation to its effect on felt and enacted stigma associated with problem gambling, and the associated effect on help-seeking. There is considerable discussion of the need for a broader Public Health approach to addressing gambling-related harm. However, there is a dearth of research exploring the effectiveness of policy and regulation using a Public Health approach or other perspectives. A key issue in this domain relates to understanding and measuring harm across the continuum of risk to inform both measuring effectiveness and future development of policy and regulation.

## Areas for future research

The review identified multiple gaps across the range of areas of focus. Overarching areas for future research relate to the following gaps:

- The need to shift the focus from the relatively small number of Australians who are problem gamblers to understanding and addressing the attitudes, behaviours, adverse consequences, and needs for:
  - Low- to moderate-risk gamblers.
  - At-risk groups, particularly young people, Aboriginal and Torres Strait Islander and CALD populations, and those with mental health problems.
  - Family, significant others, and the wider community.
- The need to further explore the following new technologies and emerging trends:
  - Online gambling (who is at risk; modes of access; the role of accessing multiple types of gambling activities).
  - EGM characteristics, broadening the focus from examining the effect of individual characteristics to how various characteristics interact.
  - The possible effects of industry inducements on gambling-related harm (including loyalty programs and the wider venue environment).
  - Simulated gambling, and exploring the migration pathway from simulated gambling to gambling for money.
  - Sports betting – rates of involvement and associated risk.
  - The role of advertising, particularly regarding sports betting and advertising on simulated gambling and online gambling platforms.
- The need for a comprehensive understanding of gambling-related harm and the ability to measure harm across low-moderate risk gamblers through to problem gamblers, and extending out from the individual gamblers to significant others and the broader community

In what follows, we draw on these gaps to discuss areas for future research in line with the RGF Research Agenda priorities and key approaches. This was done to inform:

- The development of evidence-based responsible gambling policy, initiatives and regulatory approaches.
- Innovations in prevention, harm minimisation, intervention, and support.
- Education and awareness programs to assist the people of NSW to make informed choices, build awareness of responsible gambling and gambling related harm, and de-stigmatise help-seeking behaviour.

### *The development of evidence-based responsible gambling policy, initiatives and regulatory approaches*

There are two main areas of concern in relation to responsible gambling approaches - the first is the current focus on harm minimisation in the form of 'responsible gambling behaviours by individuals' and the second is the lack of evidence base about policy effectiveness, particularly for harm minimisation policies that aim to focus on low/moderate risk gamblers and at-risk groups.

While a focus on responsible gambling behaviour by individuals is an important element of harm minimisation, it appears to be having an unintended consequence of stigmatising problem gambling. This could prevent problem gamblers, and those in the lower levels of risk and at-risk sub-populations, from identifying themselves as the target group of policy initiatives, and from recognising potential problems and seeking help. A recent Australian study concerning venue-based responsible gambling initiatives suggests there should be less emphasis placed on the identification of potential problem gamblers, with greater attention to raising awareness of gambling harms to all gamblers (Riley, Orlowski & Smith et al., 2018).

This review has furthermore noted a lack of research into common industry practices and their influence on gambling attitudes and behaviours. While industry-orientated research has focused on how to maximise gambling activity, such as using loyalty programs and the physical layout of gaming rooms, gambling researchers have largely overlooked this area. Though there is emerging research examining how specific characteristics of gaming machines both encourage and limit excessive gambling behaviour, we did not identify any empirical studies during the past five years that have explored the influence of the broader gambling environment. For example, how do gamblers (including at-risk minority sub-groups) experience inducements such as free food and drinks? Further, what is the relationship between such inducements and gambling-related harm? One recent article argues that the environments in which gambling occurs can play a significant role in managing gambling-related harms (Adams & Wiles, 2017). Robust research in this space may provide important opportunities to inform policy and practice. Overall, there is a clear need for a public health approach that recognises the “shared responsibility for population health” (Victorian Responsible Gambling Foundation, 2015, p. 6) and that understands and addresses gambling harm for specific population groups, rather than focusing predominantly on individual gamblers.

The lack of an evidence base for policy effectiveness should therefore be recognised and addressed. Future research should incorporate a commitment to evaluating effectiveness. Given the identified need to broaden the policy approach to incorporate a clearer underpinning evidence base for harm minimisation policies that are effective with low/moderate risk gamblers and at-risk groups, we propose the following areas for future research:

- Qualitative research into the attitudes and behaviours towards various forms of gambling, including emerging technologies and new trends (e.g., the convergence of gaming and gambling), and industry inducements, focusing on at-risk sub-populations and gamblers at the lower levels of risk.
- Building on this, quantitative research to explore the extent to which these attitudes and behaviours are representative of the broader populations.
- Using this research to develop a public health approach (informed by extensive work in the areas of tobacco and alcohol) that:
  - Incorporates an integrated, multi-pronged approach (population-wide and targeting at-risk groups) delivered across a range of settings, and
  - Considers the roles and responsibilities of individuals, community groups, business, corporations, and all levels of government, rather than focusing on a ‘deviant’ group of problem gamblers (Victorian Responsible Gambling Foundation, 2015).
- The development of a research program to evaluate policy effectiveness with well-defined outcome measures.

- Finally, given the recent introduction of the inter-jurisdictional National Consumer Protection Framework for online wagering, future research will be needed evaluating this policy initiative.

### *Innovations in prevention, harm minimisation, intervention and support*

In relation to prevention, harm minimisation, intervention and support, a critical focus needs to be on developing a clear definition of gambling-related harm and a measure of harm that reflects the effect of gambling at multiple levels of harm, considering the severity and temporality of harm. Our recommendation of areas for future research in this area include:

- Evaluating the reliability and validity of measures such as the 72-item harm measure across the range of risk populations and levels of harm (individual, community, etc.).
- Administering the validated measure through services, websites, and in early intervention activities and prevalence studies to determine how Australians experience gambling-related harm.
- Drawing on this work to develop an instrument to measure all aspects of gambling recovery, for use in intervention studies.

Furthermore, current approaches lack a longitudinal view of effectiveness of regulation, prevention, early intervention, harm minimisation, and treatment targeted across the range of risk-populations (from low-risk to problem gamblers) and across various gambling behaviours (e.g., Internet gambling). A comprehensive research program incorporating study designs that build on each other sequentially to explore effectiveness is needed. Using the taxonomy of treatment interventions developed by Rodda, Merkouris et al. (2018) in future research would furthermore allow systematic identification of intervention characteristics to better understand which treatment characteristics account for greater or lesser effectiveness.

Areas for future research include longitudinal studies, using effectiveness measures as discussed above (and making use of big data that is available and easily accessible), exploring:

- The effectiveness of existing harm minimisation measures (e.g., personalised feedback, pop-up warning messages) across the various risk populations and gambling contexts.
- The effectiveness of brief interventions and those delivered via the Internet/telephone across the various risk populations.

While not a focus of the current review, a greater understanding of informal pathways to recovery and what can be done to facilitate this process would also be helpful. For example, recent research suggests spontaneous, or natural, recovery is characterised by change strategies used by gamblers to reduce or limit gambling behaviours. Rodda et al. (2018) compiled an inventory of these strategies and conducted a survey with 489 gamblers to explore their helpfulness. Further understanding of such strategies could underpin the development of interventions to support self-management of gambling and problem gambling.

### *Education and awareness programs*

A significant gap in the literature is around prevention, such as the effect of education and awareness programs targeting at-risk populations and the broader population. A key aspect of this is to address the normalisation of gambling behaviour identified in this review, particularly in terms of the effects on gamblers across all risk categories (see e.g., Russell, Langham, Hing & Rawat, 2018 on social networks). Not only is normalisation of gambling a problem in terms of facilitating engagement in gambling, particularly in young people; a recent study by the Victorian Responsible Gambling Foundation (Vasiliadis & Thomas, 2016)



suggests individuals may delay recognition of a problem due to gambling being normalised by their social milieu. Approaches to prevention should build on a clear understanding of the attitudes, behaviours, and needs of various populations and risk groups, and an understanding of harm extending beyond the individual gambler, as discussed previously. It is also important to develop effective stigma-reduction interventions to address public stigmatisation and perceived and self-stigma experienced by people with gambling problems (Hing, Russell, Nuske & Gainsbury, 2015). Programs furthermore should be developed incorporating a research program to evaluate their effectiveness.

## **Limitations**

As a rapid review, some limitations were placed on the methodology used to search the literature. The rapid review timeframe and multiple areas of focus did not allow for a more comprehensive literature search and fine-grained analysis of the evidence. The broad range of areas of focus was another limitation. Further limitations relate to the omission of literature published prior to 2015 and the inability to search reference lists.

## INTRODUCTION

In Australia and internationally gambling-related harm has emerged as a significant social and health issue (Langham et al., 2016). Responsible gambling and harm minimisation measures aim to address the individual and social effects of problem gambling (Gainsbury et al., 2014; Ladouceur et al., 2017). There is extensive research exploring treatment interventions (Pickering et al., 2018) and prevention and harm minimisation initiatives (Ladouceur et al., 2017), including public health approaches that widen the focus from individual traits and behaviours to consider broader social, cultural, environmental, and policy/legislative influences (Browne et al., 2016; Productivity Commission, 2010; Victorian Responsible Gambling Foundation, 2015). Emerging technologies and new trends furthermore affect our understanding of gambling related attitudes, behaviour, prevalence, and harm (Gainsbury et al., 2014).

In New South Wales, the Office of Responsible Gambling (ORG) develops and implements programs and initiatives, as part of a strategic approach that supports responsible gambling and prevents and minimises the risk of gambling related harm in the community. The Office supports the Responsible Gambling Fund (RGF), which plays a key role in advising the NSW Government on the allocation of funds for initiatives and programs that support responsible gambling and help reduce gambling related harm. In order to inform its research agenda and the prioritisation of research projects for the three-year period 2019-2021, the Office/RGF commissioned a rapid review and research gap analysis to:

- Review national and international evidence into gambling products and related harm across gambling risk segments.
- Identify gaps in the existing evidence base.
- Synthesise key findings of academic and 'grey' literature and prioritise key areas of focus.
- Identify key emerging issues from the review which require further investigation.
- Identify lessons learned from the public health approach and how this can be applied to the gambling field.

In particular, the ORG were interested in the following key themes:

- Gambling prevalence
- Attitudes and behaviours towards gambling in vulnerable or target groups
- Emerging technologies and new trends
- Long-term efficacy and effectiveness of treatments
- What works in prevention and harm minimisation?
- Understanding and measuring harm
- Support for policy development and regulatory effectiveness

Given the short timeframe for the review, the decision was made to focus the review on providing an overview of existing literature relating to the key themes and identifying gaps, conflicting findings, and emerging issues for further investigation. The following seven research questions were agreed by ORG:

1. What are the gaps in our understanding of gambling prevalence?
2. What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?
3. What are the gaps in our understanding of emerging technologies and new trends?
4. What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?

5. What are the gaps in our understanding of what works in prevention and harm minimisation?
6. What are the gaps in our understanding of understanding and measuring harm?
7. What are the gaps in our understanding of support for policy development and regulatory effectiveness?

In order to answer these questions, this rapid review summarises the trends and gaps in the research (Bodily, Leary, & West, 2019; Trout et al., 2003) across the seven domains reflected in the research questions. The ORG furthermore requested that the gaps be used as the basis for recommending areas for future research in line with the RGF Research Agenda priorities and key approaches, in order to inform:

- The development of evidence-based responsible gambling policy, initiatives and regulatory approaches.
- Innovations in prevention, harm minimisation, intervention, and support.
- Education and awareness programs to assist the people of NSW to make informed choices, build awareness of responsible gambling and gambling related harm, and de-stigmatise help-seeking behaviour.

## METHODS

A rapid review methodology was used to collect and review relevant Australian and international peer-reviewed and grey literature, published in English since 2015. This is a variant of a systematic literature review, which includes a systematic search of the literature, but imposes limitations to its breadth (e.g., in terms of time, language, and a reference list search) and it does not involve a meta-analysis. This was a suitable methodology for the project and reporting timeframe required by the ORG.

While rapid reviews are undertaken more quickly than systematic reviews, they are reported to produce similar conclusions to systematic reviews of the literature (Watt et al., 2008). The rapid review methodology outlined by Khangura et al. (2012) was followed because it offered a sound and systematic methodology that is internationally recognised for its rigour, aligns with the knowledge to action intention of this task, and is well suited to the short timeframe available. It involves eight steps, as follows: (1) Needs assessment; (2) Question development and refinement; (3) Proposal development and approval; (4) Systematic literature search; (5) Screening and selection of studies; (6) Narrative synthesis of included studies; (7) Report production; (8) Ongoing follow-up and dialogue with knowledge users. The application of these to the current review are summarised in the following Table 2.

**Table 2. Rapid Review Steps**

Knowledge to Action step	Task	Progress
Step 1	Needs assessment	Undertaken by ORG
Step 2	Question development and refinement	Undertaken by ORG
Step 3	Proposal development and approval	Undertaken by FHBHRU in consultation with ORG
Step 4	Systematic literature search	Undertaken by FHBHRU
Step 5	Screening and selection of studies	Undertaken by FHBHRU

Knowledge to Action step	Task	Progress
Step 6	Narrative synthesis of included studies (including assignment of evidence level)	Undertaken by FHBHRU
Step 7	Report production	Undertaken by FHBHRU
Step 8	Ongoing follow-up and dialogue with knowledge users	To be undertaken by ORG in its advice to NSW Government in 2019 Dissemination through research outputs by FHBHRU

## The Search Strategy

Both peer-reviewed and grey literature were searched.

### *Peer-reviewed literature*

Determining the search terms was done in consultation with the Flinders University Medical Librarian (Ms Josephine Gill). Given the scope of the review, the short timeframe, and the number of areas to be covered, the search terms covered the broad areas outlined in the research questions. It was not possible to break down each question into the range of alternate terms for each main concept (for example, we searched for the terms 'attitudes' and 'behaviours' but were not able to break these down into the various ways in which attitudes and behaviour might be presented in the literature).

The following databases were searched:

- Medline.
- Emcare.
- PsycINFO.
- SCOPUS.
- Web of Science.
- Proquest (Health & Medicine, Social Sciences Collection).

The actual database search was conducted on the 16<sup>th</sup> October 2018 (**see Appendix 1 for search terms and search results**).

Inclusion and exclusion criteria were informed by the project brief and the processes outlined above. The inclusion and exclusion criteria were developed in consultation with the ORG to allow a focus on the key areas of interest, with a view to providing an overview of existing literature relating to the key themes and identifying gaps and emerging issues for further investigation (see Table 3).

**Table 3. Inclusion and exclusion criteria**

Inclusion criteria	Exclusion criteria
English language	Papers not in English
Peer-reviewed journal articles Grey literature: Reports (PDF; first 50 results)	Books, conference presentations, PhD theses/dissertations, PowerPoint presentations, and posters
The paper reports on an empirical study (unless it addresses important issues in the domains under investigation)	Protocols, single case studies
Published 2015-current	Published prior to 2015
The <i>focus</i> of the paper is on gambling AND the paper addresses one or more of the following: <ul style="list-style-type: none"> <li>• Rates or prevalence of problem gambling</li> <li>• Attitudes or behaviours towards gambling in vulnerable or target groups</li> <li>• Emerging technologies or new trends</li> <li>• Efficacy or effectiveness of treatment</li> <li>• Prevention or harm minimisation</li> <li>• Understanding or measuring harm (including scale validation studies)</li> <li>• Policy or Regulation</li> </ul>	The <i>focus</i> of the paper is not on gambling or the paper focuses on one or more of the following: <ul style="list-style-type: none"> <li>• The effect of gambling on the self or others (not related to <i>measuring harm</i>)</li> <li>• Causes or consequences of premature treatment termination</li> <li>• Scale validation studies related to problem severity</li> <li>• Problem gambling as an outcome of or co-occurring with other conditions, e.g., dementia</li> <li>• Predictive, causal or mediating factors</li> <li>• Psychological/neurological mechanisms</li> <li>• Risk factors</li> </ul>

**Grey literature**

The plan used to identify grey literature comprised two strategies:

- Google search engine (Google Advanced Search); and
- Targeted websites (as per Godin, Stapleton, Kirkpatrick, Hanning, & Leatherdale, 2015).

Keywords used for the Google Advanced Searches included:

- Gambling AND Prevalence.
- Gambling (Attitude OR Behaviour).
- Gambling (Technologies OR Trends).
- Gambling AND Treatment.
- Gambling (Prevention OR “Harm Minimisation”).
- Gambling and “measuring harm”.
- Gambling (Policy OR Regulation).

The searches were limited to English and file type PDF, and the first 50 results were screened.

To identify targeted websites, a Google search was conducted to locate websites of gambling research centres at both national and international levels. The following websites were identified<sup>1</sup>:

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<sup>1</sup> The Canadian clearinghouse of research summaries, Gambling Research Exchange Ontario (GREO), was not identified in the Google search

- Victorian Responsible Gambling Foundation, VRGF (<https://responsiblegambling.vic.gov.au>)
- Gambling Research Australia (<https://www.gamblingresearch.org.au>)
- Centre for Gambling Studies (CGS; New Zealand: <https://www.fmhs.auckland.ac.nz/en/faculty/cfar/our-research/the-centre-for-gambling-studies/about-centre-for-gambling-studies.html>)
- National Institute for Public Health and Mental Health research – Gambling and Addictions Research centre (New Zealand) (<https://niphmhr.aut.ac.nz/research-centres/gambling-and-addictions-research-centre>)
- [problemgambling.sa.gov.au](https://problemgambling.sa.gov.au) (<https://problemgambling.sa.gov.au/professionals/research>)
- The Australian Gambling Research Centre (AGRC) (<https://aifs.gov.au/agrc/>)
- European Association for the Study of Gambling (<https://www.easg.org>)
- Experimental Gambling Research Laboratory, Central Queensland University (<https://www.cqu.edu.au/about-us/structure/schools/mas/research/experimental-gambling-research-laboratory>)
- Canadian Consortium for Gambling Research (<http://www.ccgr.ca/en/index.aspx>)
- Responsible Gambling Council Ontario (<https://www.responsiblegambling.org/>)
- Alberta Gambling Research Institute (<https://abgamblinginstitute.ca/>)

Documents were included based on the inclusion/exclusion criteria outlined in Table 4 above. Some peer-reviewed journal papers did come up in the Google Advanced Search and these were checked against the studies identified by the peer-reviewed database search and included if not already present.

## Screening process

After removing duplicates, three reviewers conducted the initial screening for inclusion based on the information in the title and abstract. To ensure fidelity of the screening process, the reviewers independently reviewed title and abstract for a random sample of 50 of the citations, assigning each paper as either ‘yes’, ‘maybe’, or ‘no’. They then met to exchange their individual decisions and discussed their rationale for those decisions. From this process, 14 citations in contention were discussed. Consensus was determined as being where two or more of the three reviewers agreed on the citation’s inclusion or exclusion. That is, we erred on the side of inclusiveness where the majority of reviewers thought the citation should be included. This fidelity checking process was also an opportunity to revisit and clarify the inclusion/exclusion criteria in preparation for screening of the full paper.

To screen the full record, each of the three reviewers screened one third of the records, assigning each paper as either ‘yes’, ‘maybe’, or ‘no’. At least two reviewers cross-checked the outcomes of the initial screening. The three reviewers met to confirm final included and excluded studies. For papers assigned as ‘maybe’, the group met and discussed these papers, also checking the full text to aid in their decision about whether to include or exclude each ‘maybe’ citation.

Full text articles for each included citation were then collected and screened. Again, each of the three reviewers checked one third of the citations for final inclusion, with any further discrepancies discussed and resolved.

## Evaluation of evidence

The ORG requested that the presentation of papers include an evaluation of evidence and quality analysis. Due to the large number of articles included in the review and short timeframe, evaluation of evidence, including NHMRC / JBI Levels of Evidence and quality analysis (described below) (See Appendix 2), were conducted for the following domains and study types, as agreed with ORG:

- Attitudes and behaviours towards gambling in vulnerable/target populations – all peer-reviewed Australian studies.
- Emerging technologies and new trends – all peer-reviewed studies.
- Efficacy and effectiveness of treatments – all peer-reviewed randomised controlled trials.
- Prevention and harm minimisation – all peer-reviewed studies.
- Understanding and measuring harm – all peer-reviewed studies.

### Levels of Evidence

Studies were assigned a level of evidence based on the study design using the NHMRC Levels of Evidence (see Table 4). In addition, following Laranjo et al. (2015), the quality (very high, high, moderate, low) of the included studies was assessed in terms of their design (see Table 5). Levels of evidence for the particular domains and study types outlined above are presented in the Summary Tables in Appendix 3.

**Table 4: NHMRC Levels of evidence**

Level of Evidence	Study Design
I	A systematic review of Level II studies.
II	A randomised controlled trial.
III-1	A pseudo-randomised controlled trial (i.e., alternate allocation or some other method).
III-2	A comparative study with concurrent controls (i.e., non-randomised experimental trials, cohort studies, case-control studies, interrupted time series studies with a control group).
III-3	A comparative study without concurrent controls (i.e., historical control study, two or more single arm studies, interrupted time series studies without a parallel control group).
IV	Case series with either post-test or pre-test/post-test outcomes.

**Table 5: Quality of evidence (Source: Laranjo et al, 2015)**

Design	Grade
<b>Literature Reviews</b>	
Systematic review with meta-analysis	Very High
Systematic review without meta-analysis	High
Narrative/other forms of review	Moderate/Low
<b>Empirical studies</b>	
Randomised Controlled Trials	Moderate/High*
Pre-Post studies, quasi-experimental, or cross-sectional comparisons	Moderate
Exploratory/mixed methods	Low
Qualitative	Low

\*RCTs were rated 'high' when they examined actual changes in health outcome and behaviours (rather than attitudes/intentions) as primary outcomes; and/or were intention-to-treat analyses; and/or where the intervention was compared to usual care or waiting list control

In the gambling research area, due to the nature of the fields under investigation, there are a large number of important qualitative and mixed method studies. Therefore, the JBI Levels of Evidence related to meaningfulness (see Table 6) were chosen in place of the National Health and Medical Research Council Levels of Evidence for these studies, because they cover a broader range of qualitative study designs, and do not disadvantage qualitative research alongside quantitative research. No studies were excluded based on their assessed level of evidence.

**Table 6. JBI Levels of Evidence – Meaningfulness**

Level 1	Qualitative or mixed-methods systematic review
Level 2	Qualitative or mixed-methods synthesis
Level 3	Single qualitative study
Level 4	Systematic review of expert opinion
Level 5	Expert opinion

### *Quality of Evidence*

The quality of the studies was assessed using the Mixed Methods Appraisal Tool (MMAT) for qualitative, quantitative randomised controlled trials, quantitative non- randomised trials, quantitative descriptive studies, and mixed methods studies (Hong et al, 2018) (**see Appendix 2 for the full set of MMAT questions for each study type; results of quality appraisals are in Appendix 5**). These tools aim to provide a framework for examining the extent to which the study outcomes can be attributed to the intervention rather than confounding factors arising from flaws in the research. The process involves answering a series of questions relating to how the study was conducted and reported, and using the outcomes of this to make a judgment about the potential risk of bias in the study. The first stage is to determine whether the study poses a clear research question and whether the data collected answers that question. If not, then further assessment of evidence quality is not undertaken; if so, then an assessment of quality (Yes / No / Can't tell) is then made.

### *Synthesis of the Evidence*

In order to answer the research questions described earlier, the final included papers were assigned to one of the seven domains of interest. The process of dividing the papers into the domains involved one of the reviewers making an initial decision as to the appropriate domain, followed by a group discussion to finalise the most appropriate domain. Some papers clearly focused on a particular domain. Where articles covered issues relating to more than one domain, they were placed in the domain reflecting the main focus, and outcomes considered in relation to the other relevant domains.

A narrative synthesis of the peer-reviewed papers and results of the grey literature search was then undertaken. A narrative synthesis aims to “provide an overview of the evidence identified, organized in an intuitive way, with the goal of providing knowledge users with a sense of volume and direction of available evidence addressing the topic of interest” (Khangura et al., 2012, p.5). For each research question, we provide an overview of existing literature and explore any contradictory findings. Gaps in the current body of literature in which evidence and knowledge is minimal or lacking is then identified to determine potential areas for future research. The process for identifying gaps involved looking at the gaps



identified within the articles themselves, in addition to looking across the body of research as a whole to identify gaps and areas for future research.

Given the large volume of literature, each chapter includes an overview of the included literature by article type and area of focus, followed by a brief summary of the literature (focusing on systematic/literature reviews and Australian research, and situating this within the broader international literature). Peer-reviewed and grey literature are presented separately to ensure a distinction is clear to the reader between research that has been subject to rigorous independent peer-review (the peer-reviewed published literature) and research that may or may not have been subject to this level of scrutiny prior to its publication (the grey literature), with gaps synthesised across both types of literature.

## RESULTS

### Peer-reviewed Literature

The database search retrieved 13,734 records, reduced to 3356 after duplicates were removed (see Figure 1). The first stage review of the titles and abstracts resulted in exclusion of a further 2,876 articles (including 60 duplicates). For the remaining 480 articles, full-text papers were reviewed for eligibility against the inclusion and exclusion criteria, after which 435 articles were identified. Finally, after checking the results against the earlier search of key journals, an additional 18 articles were included. A further two articles were identified by the ORG for inclusion, leaving **a final total of 455 peer-reviewed articles included in the narrative synthesis.** (See Appendix 3 for Summary Tables of the Peer-Reviewed Literature)

As discussed previously, the papers were divided into one of the seven domains of interest, resulting in the following spread of articles:

- N=33 articles addressing gambling prevalence.
- N=128 articles addressing attitudes and behaviours towards gambling in vulnerable or target groups.
- N=104 articles addressing emerging technologies and new trends.
- N=54 articles addressing efficacy and effectiveness of treatments.
- N= 55 articles addressing prevention and harm minimisation.
- N=45 articles addressing understanding and measuring harm.
- N=36 articles addressing support for policy development and regulatory effectiveness.

### Grey literature

A Google Advanced Search was undertaken within the seven domains of interest. After initial screening of the 350 results, 89 links were identified and the report for each link was examined in detail. Links leading to peer-reviewed publications were not included in the grey literature. Instead, these were cross-checked with the peer-reviewed literature search and included if they were not duplicated there. Each of the **86 included reports** were opened and read, either in full or had key sections read (e.g. executive summary, key chapters related to a domain in focus, conclusions, and limitations). This method aligned with the rapid review methodology, given several reports were several hundred pages in length. Once read, it was apparent that a small number of reports were more relevant to an alternative domain of focus, and so were moved to that domain. This resulted in the following spread of reports.

- N=17 reports addressing gambling prevalence.
- N=9 reports addressing attitudes and behaviours towards gambling in vulnerable or target groups.
- N=15 articles addressing emerging technologies and new trends.
- N=9 articles addressing efficacy and effectiveness of treatments.
- N=12 reports addressing prevention and harm minimisation.
- N=15 articles addressing understanding and measuring harm.
- N=9 articles addressing support for policy development and regulatory effectiveness.

Each of these domains is discussed separately below. (See Appendix 4 for Summary Tables of the Grey Literature).

## Overview of the included literature

A total of 541 documents were included in this review (455 peer-reviewed articles and 86 grey literature reports). Table 7 presents an overview of the number of peer-reviewed article types, and Table 8 presents an overview of the number of grey literature report types, arranged from most to least frequent. Table 9 presents the country of origin of the peer-reviewed research, with the grey literature summarised in Table 10. As the tables show, the documents identified since 2015 and included in this review were predominantly cross-sectional in design (39%, n=210, comprising n=191 peer-reviewed; n= 19 grey literature), with Australian research representing 27% (n=147) of all the included literature (comprising n=100 peer-reviewed; n= 47 grey literature).

**Table 7. Peer-reviewed literature article type**

Article Type	No. of articles
Cross-sectional study	191
Qualitative study	47
RCT	36
Literature review	28
Comparative study without controls	23
Systematic review	22
Secondary analysis	21
Discussion paper/commentary	18
Exploratory study	18
Mixed-methods study	16
Comparative study with controls	15
Case series with pre-post test	12
Cross-sectional comparisons	8
<b>Total</b>	<b>455</b>

**Table 8. Grey literature report type**

Report Type	No. of articles
Mixed-methods study	21
Discussion paper/commentary	19
Cross-sectional study	19
Literature review	11
Exploratory study	6
Qualitative study	3
Comparative study without controls	3
Submission	2
RCT	1
Systematic review	1
<b>Total</b>	<b>86</b>

**Table 9. Country of focus of peer-reviewed literature**

<b>Country</b>	<b>No. of articles</b>
Australia	100
USA	57
Canada	50
UK	28
Finland	16
NZ	15
Italy	14
Sweden	10
Germany	10
China	10
Norway	9
France	9
Spain	7
Singapore	7
Croatia	5
Multiple	5
Denmark	4
Switzerland	3
Various other international	24
<b>Total</b>	<b>383*</b>

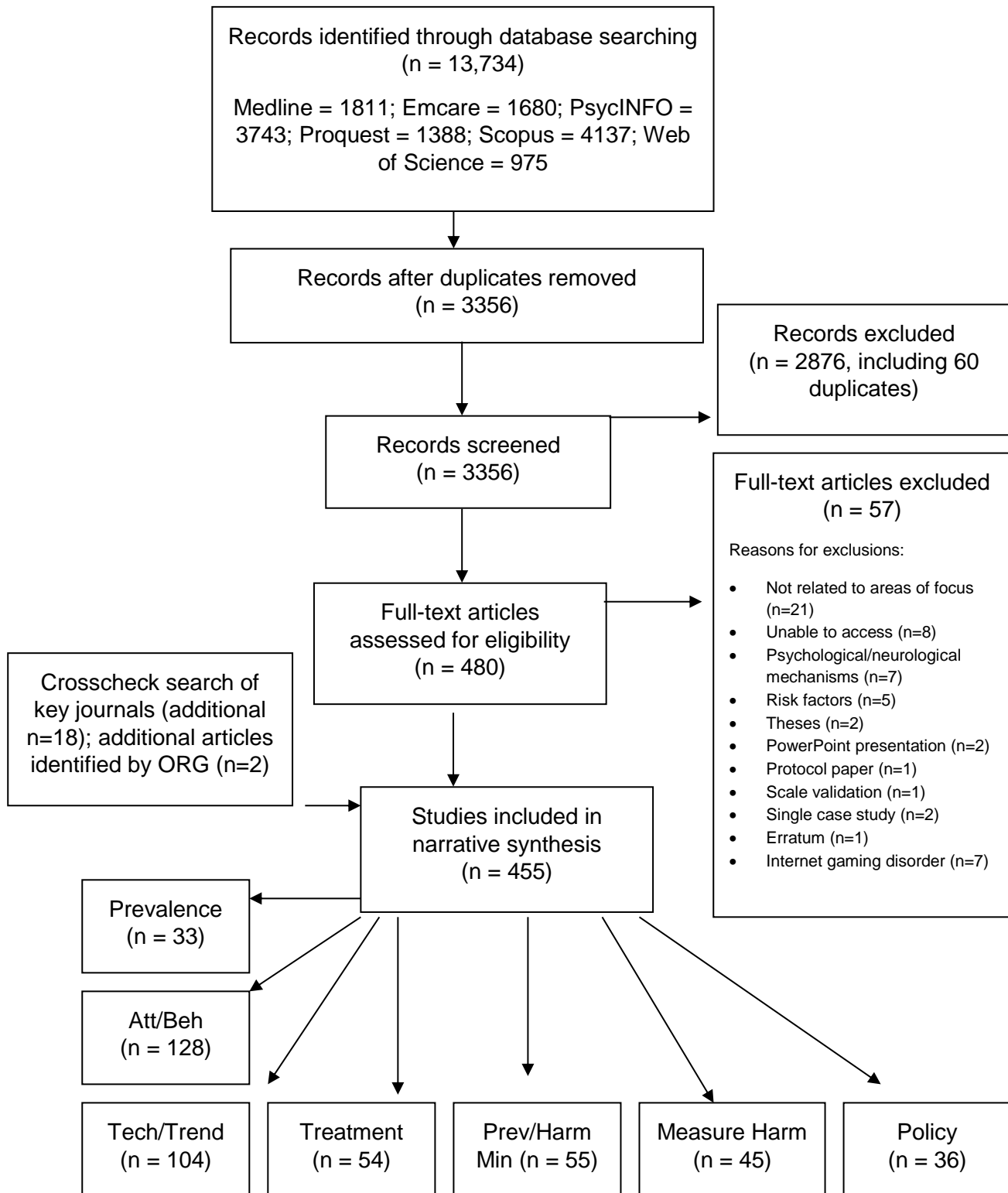
\*Total is less than the total number of peer reviewed articles because not all articles focused on one or more countries

**Table 10. Country of focus of grey literature**

<b>Country</b>	<b>No. of articles</b>
Australia	47
UK	11
NZ	5
Multiple	5
Canada	4
Various other international	7
<b>Total</b>	<b>79*</b>

\*Total is less than the total number of grey literature reports because not all reports focused on one or more countries

**Figure 1. PRISMA flowchart representing the number of peer-reviewed records retrieved at each stage of the review**



## Gambling Prevalence

In this section, we address the research question “What are the gaps in our understanding of gambling prevalence?”. The purpose here is to present:

- A brief summary of the research reporting on the prevalence of gambling, and in particular problem gambling, in the Australian general population, in the context of international research (prevalence is presented as a range of rates from lower to higher).
- A discussion of gaps in our understanding of gambling prevalence.

### *Peer-Reviewed Literature*

#### Overview

There is extensive research reporting the prevalence of gambling and problem gambling in general populations worldwide. Prevalence is reported in many of the articles included in other sections of this review, particularly the following section on Attitudes and Behaviours of Vulnerable or Target Populations. In this section, we report on N=33 articles that focus on the prevalence of gambling and problem gambling in general, adult populations. The article types are summarised in Table 11, showing the majority (n=30) were cross-sectional studies.

**Table 11. Article type**

Article Type	No. of articles
Cross-sectional study	30
Systematic review	1
Literature review	1
Discussion paper/commentary	1

The countries reported on is summarised in Table 12. The majority of the articles reported on populations in Australia (n=7), followed by Canada (n=5), and the United States (n=4).

**Table 12. Country of focus of research articles**

Country	No. of articles
Australia	7
Canada	5
United States	4
Finland	3
New Zealand	2
Sweden	1
Thailand	1
Cyprus	1
Denmark	1
Germany	1
UK	1
Singapore	1
Mexico	1
China	1

A variety of measures were used to assess problem gambling in the studies. These are summarised in Table 13. The Problem Gambling Severity Index (PGSI) was used most

frequently (in nine articles), followed by the South Oaks Gambling Screen, used in eight articles. Of the Australian prevalence studies, five of the seven used the PGSI, with one using multiple measures and the other using both the PGSI and SOGS

**Table 13. Problem gambling measures used in the articles, where reported**

Measure	No. or papers
Problem Gambling Severity Index (PGSI)	9
South Oaks Gambling Screen (SOGS)	8
Multiple (more than 2; includes reviews)	3
DSM-IV	4
PGSI + SOGS	1
DIS-IV	1
NORC DSM-IV Screen for Gambling Problems (NODS)	2
Canadian Problem Gambling Index (CPGI)	1
Focal Adult Gambling Screen	1

#### Gambling participation summary

There were no systematic or other literature reviews on gambling participation overall, although one literature review explored the literature on gambling in France. This study found gambling participation to be 47.8% (Valleur et al., 2015). Australian research reports gambling participation rates as being around 64%, with one Victorian survey reporting a 73% participation rate (Abbott et al., 2016). In the international literature included in this review, participation rates range from 47.8% (Valleur et al., 2015; Kairouz et al., 2016 – France) to 92% (Nelson et al., 2018 – USA, % gambled during their lifetime).

Australian participation rates have also been reported for various types of gambling. As Table 14 shows, lottery tickets were the highest type in all four studies reporting on this, generally followed by electronic gaming machines (EGMs). However, Armstrong et al.'s (2018) results were very different, particularly around participation rates for racing (higher), scratch tickets (higher), and sports betting (very much higher). In Christensen et al.'s (2015) Tasmanian study, participation in Keno was particularly high.

**Table 14. Population participation rates in various gambling activities**

Study	Lotto/ Powerball	Raffles/ Sweeps	EGMs	Racing	Scratch tickets	Keno	Sports betting
Abbott et al. 2016 (VIC)	48%	43%	21%	16%	15%	2%	4%
Armstrong et al. 2018 (Australia)	43.19%	-	19.43%	22.42%	31.49%	8.90%	13.28%
Christensen et al. 2015 (TAS)	46.5%	-	20.5%	14.7	24.3%	24.3%	4.2%
Dowling et al. 2016 (Australia)	49.2%	-	20.7	15.9	22.0	7.2	5.7

#### Problem gambling summary

A systematic review of worldwide problem gambling found wide variations in problem gambling rates across different countries ranging from 0.12-5.8% (Calado & Griffiths, 2016) (see Table 15). In Australian studies, problem gamblers as a percentage of the adult

population range from 0.4-0.9%. The 0.9% figure is from a meta-regression analysis of 41 Australian problem gambling prevalence estimates (Markham et al., 2017). Low-risk gambling rates range from 3.0-7.65%, with moderate risk gambling rates ranging from 1.8-3.70% (see Table 15). In the international literature included in this review, rates of problem gambling range from 0.2% (Nelson et al., 2018 – USA) to 12.7% (Cakici et al., 2016 – Cyprus).

Looking at Australian rates compared to those reported in Calado and Griffith's (2016) systematic review of problem gambling worldwide, Australia is at the lower end of problem gambling prevalence compared to North America (ranging from 2% to 5%), Asia (0.5% to 5.8%), and Europe (0.1% to 3.4%) (Calado & Griffiths, 2016) (see Table 15). However, as is evident in this review, and as Calado and Griffith (2016) themselves point out, it is difficult to meaningfully compare rates due to the variation in measures used and cut off rates for at-risk and problem gambling.

**Table 15. Past year participation and problem gambling rates in Australian studies compared to global reports, as % of adult population\***

Study (population)	Gambling participation	Low-risk	Moderate-risk	Problem gambler
Calado & Griffiths 2016 (worldwide)	-	-	-	0.1-5.8%
Abbott et al. 2016 (Victoria; 2008 survey)	73%	5.70%	2.36%	0.70%
Armstrong et al. 2018 (Australia; 2010-2011)	64.26%	7.65%	3.70%	0.61%
Billi et al. 2015 (Victoria; 2008-2012)**	65%	6%	2.2%	0.6%
Christensen et al. 2015 (Tasmania; 2011)	64.8%	5.3%	1.8%	0.7%
Dowling et al. 2016 (Australia; 2013)	63.9%	3.0%	1.9%	0.4%
Markham et al. 2017 (meta-regression of 41 Australian PG prevalence estimates)	-	-	1.8%	0.9%
Yeung & Wraith 2017 (Victoria; 2008; <i>only included past year gamblers</i> )	-	11% (low and moderate risk)		1%

\*Where comparisons are made between surveys, the most recent survey results are presented

\*\* This study compared those who participated in all four waves of the survey to those who did not; results are presented only for those who participated in all four waves

When comparing rates over time, Australian studies generally report a reduction in participation rates (Abbott et al. 2016; Christensen et al. 2015) but not in problem gambling (Abbott et al. 2016; Christensen et al. 2015). However, Armstrong et al. (2018), taking into



account population growth, found no change in participation rates, and an increase in moderate-risk gambling (PGSI score 3-7), a decrease in problem gambling (PGSI 8+), and an increase in the percentage of high-risk gambling (PGSI 3+) between 1997-98 and 2010-11.

Abbott et al. (2016) report a reduction from 2003 to 2008 in all forms of gambling in Victoria except Keno (consistent with Gainsbury et al., 2015, included in the section on Emerging Technologies and Trends). However, Armstrong et al. (2018) report an increase in casino table games, sports betting, and race wagering. According to Armstrong et al. (2018), this reflects a shift away from games emphasising chance to skill-based games that are marketed with an emphasis on knowledge and experience in predicting outcomes. Armstrong et al. (2018) also report contradictory findings (compared to a number of studies not included in this review due to being published prior to 2015) in relation to per capita expenditure figures, finding these to be growing rather than declining in those who gambled.

### *Grey literature*

#### Overview

There were N=17 reports identified in the grey literature. The report types are summarised in Table 16.

**Table 16. Report type**

<b>Report Type</b>	<b>No. of articles</b>
Cross-sectional study	12
Mixed-methods study	2
Discussion paper/commentary	3

The countries reported on is summarised in Table 17. The majority of the reports focused on populations in Australia (n=5) followed by the UK (n=4).

**Table 17. Country of focus of grey literature**

<b>Country</b>	<b>No. of articles</b>
Australia	5
UK	4
Canada	1
New Zealand	1
Denmark	1
China	1
The Netherlands	1
Multiple	1

As with the peer-reviewed literature, a variety of measures were used to assess problem gambling in the studies. These are summarised in Table 18. The PGSI was used most frequently (n=6 reports) followed by the DSM-V (n=2 reports) and the CPGI (n=2 reports). Some studies used more than one measure.

**Table 18: Problem Gambling measures used in the papers, where reported – Grey Literature**

Measure	No. of papers
PGSI	6
CPGI	2
DSM-V	2
Gambling Motivation and Expectancies Scale (GOES)	1
SOGS	1
NODS	1
Problem and Pathological Gambling Measure	1

### Summary

Rates of gambling participation (55%-63%) and problem gambling (around 1%) reported in the grey literature are similar to those reported in the peer-reviewed literature. Rates of low-moderate risk gambling were around 4%. In Australian studies, the Department of Justice and Attorney General, QLD (2017) reported rates of problem gambling as being stable over the period 2008 to 2016, but there was an increase in low- to moderate-risk gambling, with regional differences in prevalence and type of gambling also reported. Hare (2015) too found increased low- to moderate-risk gambling in their Australian study. Some international studies report a decline in gambling participation over time (e.g., Department of Applied Social Sciences, Hong Kong, 2016) while others report a steadying in the decline in rates of gambling participation (Allen+Clarke, 2015; Georgiou et al., 2015). Connolly et al. (2018), in their UK study, found that participation rates declined from 2012 to 2016 but were stable if participation in the National Lottery was excluded.

### **Gaps – Gambling Prevalence**

As this review demonstrates, there has been extensive research into gambling participation and problem gambling prevalence in Australia and internationally. As identified in previous review, this review furthermore highlights a number of issues with measuring prevalence of problem gambling, with varying measures and cut-off rates used to determine low-risk, moderate-risk, and problem gambling across studies. This limits the ability to analyse rates, particularly changes in rates, across studies and periods of time. Furthermore, population studies do not include populations in institutions or those without phones; however, these populations (e.g., forensic populations; those in hospital; military; residential institutions; the homeless; those with disconnected phones) have higher rates of problem gambling (see e.g., Billi et al. 2015), suggesting population rates are likely underestimated. Addressing these methodological issues is an important gap.

The contrast in results of Armstrong et al.'s (2018) study compared to other Australian studies, resulting from different approaches to the analyses, have significant implication for public health resourcing and policy, and “the way in which prevalence and expenditure statistics have been interpreted by researchers, government and industry in Australia and elsewhere” (p. 256). Armstrong et al.'s (2018) research furthermore suggests the need for research on sports betting rates, expenditure, and harm. An additional gap is the need to better understand gambling prevalence across the risk categories. As Markham (2016, p.436) points out, “Resources should be redirected towards research that might prevent the incidence of gambling-related harms, rather than their ongoing mismeasurement.”

## Attitudes and behaviours towards gambling in vulnerable or target groups

In this section, we address the research question “What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?”. We defined ‘vulnerable or target groups’ on the basis of previous research into vulnerable populations (e.g., Gambling Research Exchange Ontario, 2017), in addition to various sub-populations that were the target of research identified in the literature search. For the purpose of this review, ‘attitudes’ refers to a way of thinking or feeling about gambling, with ‘behaviour’ being a way of acting/conducting oneself in relation to gambling, including rates of gambling and problem gambling in addition to type of gambling engaged in.

The purpose here is to present:

- A brief summary of the research reporting on attitudes and behaviours towards gambling in the various vulnerable/target groups identified the review.
- A discussion of gaps in our understanding of attitudes and behaviours towards gambling in vulnerable/target groups.

### *Peer-reviewed literature*

#### Overview

There is extensive research reporting on the attitudes and behaviours of vulnerable/target groups, with N=128 articles identified in this review. The article types are summarised in Table 19, showing the majority of articles (n=94) were cross-sectional studies, with n=19 qualitative studies.

**Table 19. Article type**

Article Type	No. of articles
Cross-sectional study	94
Qualitative study	19
Systematic review	5
Literature review	5
Mixed-methods study	3
RCT	2

Fourteen sub-populations were identified in the research. Adolescents were the most commonly researched group, with n=41 articles, followed by cultural minority groups (n=20) and young people (n=19) (see Table 20). Australian research demonstrates a particular concern with young people (n=6) and children (n=6), with only three articles on adolescents, three on criminal justice populations, two on mental health, and two focusing on cultural minority groups. Gender was identified in many of the studies as a focus within the sub-populations and is therefore discussed across the larger body of literature.

**Table 20. Population of focus in the research articles**

Population	No. of articles
Adolescent	41
Cultural minority groups	20
Young people	19
Mental health	13
Older people	10
Veterans	5

Homeless	5
Children	4
Criminal justice	4
Rural	2
Professional athletes	2
Disability	1
Gambling industry employees	1
Primary care patients	1

The countries reported on is summarised in Table 21. The majority of the articles reported on populations in the United States (n=26), followed by Australia (n=20) and Canada (n=12). Australian research is summarised Appendix 3. Quality ratings indicate the studies were generally well conducted and met the rating criteria (see Appendix 5).

**Table 21. Country of focus of research articles**

<b>Country</b>	<b>No. of articles</b>
United States	26
Australia	20
Canada	12
Italy	11
UK	8
Finland	5
New Zealand	5
Croatia	4
Sweden	3
China	3
Denmark	2
European Union	2
Norway	2
Switzerland	2
India	2
Germany	2
Greece	1
Cyprus	1
Ghana	1
Ethiopia	1
Israel	1
Spain	1
Malaysia	1
South Africa	1
Singapore	1

### Summary

Vulnerable/target populations are generally reported to be at greater risk of problem gambling across the body of literature included in this review. Overall, men are reported to have a higher frequency of problem gambling across the various sub-populations (e.g., Elton-Marshall et al., 2016; Edgren et al., 2016; Subramaniam et al., 2015), although researchers have noted a growth in gambling participation and problem gambling in women, particularly older women (Van der Maas et al., 2017). In what follows the research is summarised by the population of focus, in order of number of articles per population group (highest to lowest).

*Adolescents (n=41)*: There were n=41 articles with adolescents as the target population identified since 2015, including one systematic review, two literature reviews, and three Australian studies. Of the international studies, the countries with the largest number of studies were Italy (n=5), Croatia (n=4), and the USA (n=4). The ages of participants across adolescent studies ranged between 12 and 19 years.

No Australian studies were identified reporting gambling participation rates of adolescents. In the international research, lifetime gambling involvement, that is, adolescents who had ever gambled for money, was high across most studies and ranged between 41.6% (Elton Marshall et al., 2016) and 76% (Abdi et al., 2015), with adolescents participating in a wide range of gambling activities. In Molinaro et al.'s (2018) study of the prevalence of adolescent gambling across Europe, a total of 22.6% of 16-year-old students in Europe gambled in the past year, with 16.2% gambling on the Internet and 18.5% participating in land-based gambling. There were large variances between Internet gambling involvement, which ranged between 0.6% (Gonzales et al., 2017) and 41.6% (Elton-Marshall et al., 2016). Popular types of gambling for adolescents, in addition to Internet gambling, include sports betting and Electronic Gaming Machines. Gambling participation and at-risk gambling was significantly higher among males (e.g., Elton-Marshall et al., 2016; Ricijas et al., 2016). Though female adolescents gambled at a lower frequency than males, those who gambled frequently were at substantially more risk than males at gambling at a risky level (Gavriel-Fried et al., 2015).

In terms of problem gambling rates, Calado et al.'s (2017) systematic review found 0.2–12.3% of adolescents meet the criteria for problem gambling (notwithstanding differences among assessment instruments, cut-offs, and timeframes). One Australian study reported rates of adolescent problem gambling in their sample as 0.7%. Rates in the international literature identified in this review ranged from 0.2% (Hanss et al., 2015) to 12.9% (Foster et al., 2015).

International research has also reported on the association between certain gambling behaviours (type of gambling) and problem gambling. A Canadian study found that adolescents who gambled online were reported to be five times more at risk of problem gambling than those who gambled on land-based modes only (Elton-Marshall et al., 2016). Similar rates were found in an Italian study (Canale, Griffiths, et al., 2016). On the other hand, a study conducted in Hong Kong reported that adolescent Internet gamblers were at no greater risk than adolescent land-based gamblers (Ho et al., 2017). Studies have also reported an association between adolescents gambling on Electronic Gaming Machines, Poker, casino gambling, track betting, and gaming in amusement arcades and problem gambling (Ho et al., 2017; Giralt et al., 2018; Gonzalez-Roz et al., 2017; Rossen, Clarke, et al., 2016). A study of sports-relevant gambling activity in the USA found regular involvement in sports betting, fantasy sports betting, and daily fantasy sports betting among adolescents was associated with a higher risk of gambling problems (Marchica et al., 2017).

In terms of attitudes towards gambling, a literature review by Derevensky and Gilbeau (2015) identified social acceptability and perceived ease of becoming wealthy in adolescents. In an Australian study, Dixon et al. (2016) explored the role of gambling attitudes (using the Gambling Attitudes Scale), coping strategies, and parenting styles in the participation in gambling activities, the development of gambling problems, and the severity of problem gambling symptoms among high school students. None of the predictors were related to the probability of having at least one gambling problem versus zero gambling problems. Another Australian study reported an implicit association between gambling and sport for both males and females (Li et al., 2018). Moreover, a stronger association was reported among sports that are generally associated with gambling (football, basketball rather than gymnastics or archery). Further, a stronger association was found among sports where the gambling logo was sports relevant (e.g. Bet365) than irrelevant (e.g. X-lotto). The

authors argue that this is a consequence of effective marketing. A further Australian study (King & Delfabbro, 2016) found the perception of parental influences was not a significant predictor of problem gambling behaviours in their adolescent sample. In the international literature, an association has been found between positive attitudes towards gambling, perceived parental approval, frequency of gambling, and at-risk/problem gambling (Canale, Vieno et al. 2016; Foster et al., 2015; Gori et al., 2015; Pallesen et al., 2016. Puharic et al., 2016; Weinberger et al., 2015).

*Cultural minority groups (n=20):* There were n=20 articles with cultural minorities as the target population identified since 2015, including one literature review and two Australian studies. Of the international studies, the countries with the largest number of studies were the USA (n=9), New Zealand (n=3), and Canada (n=2). The groups explored in this research included Indigenous populations (n=9), immigrants (n=4), Hispanic/Latino (n=3), African American (n=2) (the term 'Blacks' is used in the studies), and Asian American populations (n=2), with two studies comparing people in Brazil and USA (NOTE: some studies included multiple groups). There were no systematic reviews covering attitudes and behaviours of cultural minority groups, with one literature review on cultural competence in the treatment of addiction (including gambling) highlighting the importance of training and recruiting therapists from cultural minority groups and noting the need for further research in this area (Gainsbury, 2017).

There were no Australian studies reporting on gambling participation or problem gambling in cultural minority groups. In the international research, participation rates ranged from 80% (Campos et al., 2016; Patterson et al., 2015) to 89.8% (Belanger et al., 2017; Williams et al., 2016). Rates of problem gambling ranged from 1.8% (Kastirke et al., 2013) to 27.2% (Williams et al., 2016).

Studies in the USA compared Native Americans, 'Blacks', Whites, Asian Americans, and Hispanics. Native Americans and Blacks were reported to be at higher risk than Whites (Barnes et al., 2017; Kong et al., 2016; Patterson-Silver Wolf et al., 2015). According to two studies, Asian college students could be a high-risk sub-group of gamblers (Chan et al., 2015; Rinker et al., 2016). Hispanics, too, were at higher risk of gambling problems (Caler et al., 2017). Similarly, Canadian research showed urban Aboriginals had a much higher level of gambling participation (89.8%) and problem gambling (27.2%) than general populations (Williams et al., 2016). In studies of immigrant populations, higher rates of problem gambling were found in participants with a migration background than those without (Canale et al., 2017; Kastirke et al., 2015), although a UK study found third-generation generation immigrants had higher rates of gambling and problem gambling than first-generation immigrants, who had lower rates than native-born participants (Wilson et al., 2015).

Attitudes towards gambling were explored in two Australian studies. In a qualitative study of bingo playing in an Aboriginal community (Maltzahn et al., 2018), reasons for gambling were identified as reinforcing social connectedness, fun/excitement, and a strategy for finding respite from personal pain and structural injustice. The following harms were identified: exhausting the family budget, family conflict, and transitioning to other forms of gambling. Radermacher et al. (2016) conducted a qualitative study of the role of saving face in perpetuating gambling stigma and hindering help in Tamil and Chinese communities in Australia. They found that thresholds for stigmatised behaviour appear to differ between the communities studied, as well as from what is known about the Anglo-Celtic majority.

International studies that examined cultural influences on gambling attitudes and behaviour reported contrasting results. For instance, Urale et al. (2015) found that although gambling participation was lower among Pacific Islander people in New Zealand, those who gambled were at a significantly greater risk of experiencing problem gambling and this was influenced

by cultural beliefs. In contrast, Kolandai-Matchett et al. (2017) found that while harms experienced by Pacific people in New Zealand were similar to those identified amongst the general population, the cultural contexts in which some harms manifested were complex. Belanger et al. (2017) reported motivations for gambling and attitudes towards gambling did not appear to be culturally unique among Indigenous Canadians. Radermacher et al. (2016) reported that cultural beliefs did appear to influence stigma and attitudes to problem gambling help-seeking among Tamil and Chinese Australians. The contrast in findings across these studies is unsurprising and demonstrates the uniqueness of different cultures and their influence on gambling attitudes and behaviour.

*Young people (n=19):* Young people were reported in the articles as a separate sub-population to adolescents, covering the age range from late teens to mid-30s. There were n=19 articles with young people as the target population, including one systematic review and six Australian studies. Of the international studies, the countries with the largest number of studies were Italy (n=2), Canada (n=2), and Denmark (n=2).

One Australian study reported on gambling participation in young people. The study focused on women and found 63.7% of participants had gambled in the previous 12 months. The international research included here reports gambling participation ranging from 60% (Ginley et al., 2015) to 78.5% (Tomei et al., 2015).

In terms of problem gambling, Nowak 2018 et al.'s (2018) meta-synthesis found the estimated proportion of probable pathological gamblers among college students was 6.13%, while the rate of problem gambling was computed at 10.23%. An Australian longitudinal study explored the developmental course of problem gambling in a sample of 2261 young adults from Victoria, comparing rates at T1 (age 21) and T2 (age 23) (Scholes-Balog et al. 2016). The aggregate prevalence of problem gambling was 4.70% at T1 and 5.68% at T2. They identified three patterns of problem gambling, with 91.69% of participants being Resistors, 2.07% being Persistors, 2.63% Desistors, and 3.62% classified as New Incidence. Each problem gambling pattern was associated with different predictors and outcomes. The international literature included in this review reports problem gambling ranging from 1.4% (Tomei et al., 2015) to 5.3% (Kam et al., 2017) in young people.

Australian research on attitudes towards gambling in young people highlights the importance of the normalisation of gambling in Australian culture and gambling for fun and entertainment (Deans, Thomas, Daube & Derevensky, 2017; Deans, Thomas, Derevensky & Daube, 2017; McCarthy et al., 2018; Nekich & Ohtsuka, 2016). This research furthermore suggest that attitudes are influenced by gambling advertisements both on traditional and social media (Deans, Thomas, Derevensky & Daube, 2017; O'Loughlin & Blaszczynski 2018). This is reflected in the international literature identified for this review.

*People with Mental Health Problems (n=13):* There were n=13 articles with people with mental health/substance use problems as the target population identified since 2015. There were no systematic or literature reviews and two Australian studies were identified. Of the international studies, the countries with the largest number of studies were the USA (n=4) and Italy (n=3).

There were two Australian studies of adults attending mental health services. Haydock et al. (2015) show 4.1% of the total sample was classified as low-risk gamblers, 6.4% were moderate-risk gamblers, and 5.8% were problem gamblers. A study by Manning et al. (2017) found a 41.6% gambling participation rate with 19.7% classified as non-problem gamblers, 7.2% as low-risk, 8.4% as moderate-risk, and 6.3% as problem gamblers. The authors concluded that while patients attending community mental health services in their sample

were less likely to gamble relative to Victoria's general adult population, they were eight times as likely to be classified as problem gamblers.

There were varying rates of problem gambling reported in the other studies. For example, research in Finland found problem gambling rates of 12.5% (Castrene et al., 2015), a USA study found 4.3% pathological and 7.2% problem gambling (Cowlshaw et al., 2015), and a Canadian study reported 18.4% being at-risk, 7.8% being problem gamblers, and 10.6% being moderate-risk (Dufour et al., 2016). A study in India reported 10.7% had some problem with gambling and 3.7% were probable pathological gamblers (Raghaven 2017).

There was only one study addressing attitudes towards gambling in this sub-population. In a qualitative study of people with Parkinson's Disease (PD) in Canada, Nadeau et al. (2018) found participants mostly gambled for pleasure, although some reported wanting to win money to finance a cure for their PD.

*Older Adults (n=10)*: Another age group targeted in the research is older adults, generally reported as those aged  $\geq 60$  years, with ten articles reporting on this population identified since 2015. There were two systematic reviews and no Australian studies were identified. Of the international studies, the countries with the largest number of studies were Canada (n=3) and the UK (n=3).

In a recent systematic review, McGraw (2018) reported prevalence of lifetime gambling disorder ranged from 0.01% to 10.6%, with past-year gambling disorder ranging from 0% to 11% in older adults. Rates were higher in men and in those aged 60-69. In another systematic review, the prevalence of lifetime gambling disorder ranged from 0.01% to 10.6%. Higher rates were again found for men and those in the younger age group of older adults (Subramaniam et al., 2015).

There were no Australian problem gambling prevalence studies for this age group. In the international research, substantially higher rates of problem gambling were found among older adults, up to 38 times higher than the general population in one Canadian study (van der Maas et al., 2017). However, a study conducted in Singapore reported 48.9% of older adults reported lifetime gambling; gamblers aged 60 years and older had significantly lower odds of having pathological gambling than those in the younger age group (Subramaniam et al., 2015). Loneliness (Elton-Marshall et al. 2018; Pattinson et al. 2016; Pattinson et al., 2017), boredom (Pattinson et al. 2016; Pattinson et al., 2017; van der Maas et al., 2017), and bereavement (Pattinson et al., 2017) were most frequently reported as motivators to gamble among older adults.

*Veterans (n=5)*: There were n=5 articles with veterans as the target population identified since 2015. There was one systematic review and no Australian studies were identified. Of the international studies, three were conducted in the USA and one in the UK. Levy and Tracy (2018) found in their systematic review that rates of problem gambling in veterans ranged for 0.2% to 29%, which higher rates in veterans with PTSD. In the USA, Davis et al. (2017) reported 35% of veterans had gambled in the past 30 days; Stefanovics et al. (2017) found 35.1% of their sample gambled recreationally and 2.2% screened positive for at-risk/problem gambling; Whiting et al. (2016) found 4.2% of their sample had at-risk/probable pathological gambling post-deployment. In the UK study, 1.4% of veterans had problem gambling compared to 0.2% of non-veterans (Dighton et al., 2018). There were no studies of attitudes towards gambling in this population identified since 2015.

*Homeless Populations (n=5)*: There were n=5 articles focusing on homeless populations, including one literature review and no Australian studies identified since 2015. The other studies were from the UK (n=2), Canada (n=1), and the USA (n=1). The literature review reported problem gambling rates ranged from 20% to 29.8%, and pathological gambling



from 25% to 37.3%, with one Australian study reported in the review finding 28.8% of the sample reported gambling problems (Bramley et al., 2018). Rates of problem gambling in the other studies were 12.0% (Nower et al., 2015), 11.6% (Sharman et al., 2015), and 23.6% (Sharman et al., 2016). The one study of attitudes towards gambling in homeless men with problem gambling found gambling provided a way to gain acceptance, escape from emotional pain, and/or earn money (Hamilton-Wright et al., 2016).

*Children (n=4)*: The four studies focusing on children as the target population were all Australian studies. Two studies focused on the influence of marketing (Pitt et al., 2016; Pitt et al., 2017a) and two on children’s attitudes towards gambling (Bestman et al., 2017; Pitt et al., 2017b). Overall, the studies suggest that gambling advertising influences the normalisation of gambling among children. Children were largely aware of gambling advertising and what it related to. Further, children’s attitudes towards gambling were influenced by both family attitudes and behaviour, as well as gambling advertising. Children engaged in AFL and NRL sports were more likely to be aware of sports betting advertisements than children involved in other sporting codes such as soccer.

*Criminal Justice (n=4)*: In terms of criminal justice populations, there were no systematic reviews, three Australian studies, and one conducted in the USA. Two of the Australian studies were by Riley and others (2015; 2017). They found 52% lifetime prevalence problem gambling in the 2015 study of male prisoners, and 64% in the 2017 study of female prisoners. These rates are higher than those found in the April and Weinstock’s (2018) USA study, with past year problem gambling reported to be 8%, and lifetime problem gambling 18%. The one study (Australian) of attitudes towards gambling (using the Gambling Attitudes and Beliefs Survey) found that attitudes towards and beliefs about gambling did not directly influence the severity of the participants’ gambling problem (Fan, 2017).

*Other (n=7)*: Other populations with just one or two articles included people receiving disability benefits, patients in primary care, elite athletes, urban/rural populations, and gambling industry employees. There were no Australian studies of these populations published since 2015. The studies in rural populations suggest problem gambling is not higher in these populations (Skaal et al., 2016; Tolchard 2015), while studies of professional athletes indicate higher rates in these compared to general populations (Grall-Bronnec et al., 2016; Hakansson et al., 2018). A Canadian study of people with a disability reported 15.8% had disordered gambling (Cortina et al., 2015). The USA study of gambling industry employees reported a range of gambling-related opinions (Gray et al., 2015).

## Grey literature

### Overview

There were few grey literature studies that focused on attitudes and behaviours towards gambling in vulnerable or target populations (N=9 reports). The report types are summarised in Table 22.

**Table 22. Report type**

Report Type	No. of articles
Cross-sectional study	5
Qualitative study	1
Discussion paper/commentary	3

Most (n=8) reports were from Australia, with one from New Zealand. The populations of focus in the Australian reports included young male sports bettors (Palmer, 2015), family

members affected by problem gambling (Rodd, Lubman & Dowling, 2017), people with mental illness (Royal Australian and New Zealand College of Psychiatrists, RANZCP, 2017), young people in rural areas of Australia (Siegloff, 2017), university students (Centre for Rural Health, UTAS, 2018), adolescents (Thomas, Pitt & Bestman, 2017), and culturally diverse communities (Dickins & Thomas, 2016; The Ethnic Communities Council of Victoria, 2018). A New Zealand study (Thimasam-Anwar et al., 2017) explored New Zealanders, including Maoris, aged 15 and over (see Table 23).

**Table 23. Population of focus in the grey literature**

Population	No. of articles
Adolescent	2
Cultural minority groups	2
Young people	3
Mental health	1
Older people	10
Rural	1

### Summary

The grey literature demonstrates a similar concern to the peer-reviewed literature regarding gambling attitudes and behaviours in young people. Young male sports bettors were the focus of a literature review commissioned by the Tasmanian Department of Health and Human Services (Palmer, 2015). A key finding was that motivations for initial involvement included the perceived level of knowledge and experience of the sport involved. This report and the reports by Siegloff (2017) and Thomas et al. (2017) all point to the normalisation of gambling for young people. Siegloff (2017) furthermore highlights the social acceptability of gambling within particular networks of young people and the influence of family, particularly for Aboriginal and Torres Strait Islanders.

In relation to culturally diverse communities, a Victorian survey of 117 members of the Ethnic Communities Council of Victoria and the Victorian Multicultural Commission (The Ethnic Communities Council of Victoria, 2018) found 55% of respondents thought that gambling is a significant problem that causes a range of social harms, with Pokies of most concern to participants. The most common reason identified for why people gamble was to win/make money. Survey participants also identified the role of shame/embarrassment, stigma, and personal addiction on reasons for not discussing gambling harm. Thimasam-Anwar et al. (2017) found people living in more deprived areas and Māori, and from Pacific ethnicities, were at greater risk of problem gambling than those of other ethnicities. They also found that beliefs that playing pokies at a pub or club is more harmful than other forms of gambling had dropped. The reports on family members and people with mental illness demonstrate a dearth in our understanding of the attitudes and behaviours of these vulnerable groups.

### **Gaps – Attitudes and Behaviours towards Gambling in Vulnerable or Target Groups**

As with the discussion of measuring prevalence in the general population, prevalence in sub-populations are difficult to compare due to the multitude of methods used for measuring gambling and problem gambling. Overall, there is limited recent Australian research into the rates of gambling and problem gambling among vulnerable/target populations, particularly adolescents, young adults, older people, Aboriginal and Torres Strait Islanders, and immigrant populations, in addition to veterans and homeless populations. No research on low-socio-economic status was identified in this review. The grey literature furthermore highlights the narrowing of the differences in rates of gambling and problem gambling

between men and women, with Hare (2015) noting in particular the increasing participation of women in wagering. Further research is needed to explore the reasons for these changes. There are limited systematic reviews of gambling participation and problem gambling in vulnerable/target populations.

Overall, there was a focus on examining gambling behaviour across the various sub-populations, with relatively less focus on attitudes towards gambling. Further research investigating attitudes towards gambling involvement in vulnerable/target populations is needed. With the diversity of sub-populations explored in this section, further gaps are discussed below for each group.

### ***Adolescents***

Adolescents were the most researched sub-population in the international literature identified since 2015, but limited Australian research was identified. Given the substantial increase in gambling advertising, more Australian based research is needed. The majority of studies used a cross sectional design. Longitudinal research would be useful to better understand changing attitudes and involvement in gambling.

### ***Cultural minority groups***

Again, there was limited Australian research identified since 2015. There was one study of Tamil and Chinese communities in Australia (Radermacher et al., 2016) and one study focusing on Aboriginal and Torres Strait Islanders. Given the higher rates of problem gambling among Aboriginal and Torres Strait Islanders, more research is needed to understand attitudes towards gambling and gambling behaviour, and the influence of culture among this population.

### ***Young adults***

Given the substantial increase of gambling advertising over the past few years in Australia, particularly around sports-betting and targeting young men, coupled with the increased risk profile of young males concerning problem gambling, more research is needed to help us understand the influence of gambling marketing.

### ***Mental health***

Numerous studies have investigated comorbid mental health problems among individuals with gambling problems. Surprisingly however, there has been a notable lack of attention to attitudes and behaviours of individuals with mental health problems in the Australian context, with only two studies identified since 2015. Further research in this area would be useful.

### ***Older people***

Given the substantially higher rates of problem gambling reported, there has been relatively little attention over the past five years concerning attitudes and behaviours among older adults. Further, none of the identified studies involved older Australians.

### ***Children***

This is an emerging area of research. It is encouraging that Australia is leading the research in this area, and there is opportunity to build on the existing research base. Though it would be useful to know more about the influence of gambling marketing on children, presently there is no research that investigates how to mitigate or reduce the harm from any negative influence of gambling marketing among children.

### ***Other***

This group of studies contains a wide spread of targeted groups and lacks the depth of research to fully understand the attitudes and behaviours towards gambling and problem gambling of each population. Research that focuses on a particular targeted group and builds on this knowledge in a systematic manner would be useful.

## Emerging technologies and new trends

In this section, we address the research question “What are the gaps in our understanding of emerging technologies and new trends?”. ‘Emerging technologies’ refers to technological innovations that have emerged in the gambling field in recent years (e.g., Internet gambling; changes in Electronic Gaming Machine functioning), while ‘new trends’ refers to what is new in the broader gambling arena, such as advertising, inducements, and loyalty programs.

The purpose here is to present:

- A brief summary of the research reporting on emerging technologies and new trends in gambling.
- A discussion of gaps in our understanding of emerging technologies and new trends.

As with the previous two sections, we focus on systematic/literature reviews and Australian research, situating this within the broader international context.

### *Peer-reviewed literature*

#### Overview

A total of N=104 peer-reviewed articles were identified in the Emerging Technologies and New Trends domain. The article types are summarised in Table 24, showing the majority of the articles (n=45) were cross-sectional studies, with n=11 qualitative studies.

**Table 24. Article type**

Article Type	Number of Articles
<b>Study Type</b>	
Cross-sectional study	45
Qualitative study	11
Comparative study without controls	9
Literature review	9
Secondary analysis	6
Mixed methods study	5
RCT	4
Comparative study with controls	4
Case series with pre-post test	4
Exploratory study	4
Discussion paper/commentary	2
Systematic review	1

The countries reported on is summarised in Table 25. The majority of the articles reported on populations in Australia (n=30), followed by the USA (n=13) and Canada (n=12). Research articles (n=92) are summarised in Appendix 3. Quality ratings indicate the studies were generally well conducted and met the rating criteria (see Appendix 5).

**Table 25. Country of focus of research articles**

Country	No. of articles
Australia	30
USA	13
Canada	12
UK	6

France	4
Multiple	4
Germany	4
Norway	3
China	3
New Zealand	2
Italy	2
Spain	2
Portugal	1
Greece	1
Iceland	1
Switzerland	1
Taiwan	1
Finland	1
Singapore	1

As Table 26 shows, the majority of articles (n=63) addressed Internet gambling, followed by those exploring various characteristics of Electronic Gambling Machines (EGMs) (n=14). Each technology/trend is discussed separately below.

**Table 26. Summary of Emerging Technologies and New Trends articles**

<b>New technology/trend</b>	<b>No. of articles</b>
Internet gambling	46
Relationship between gaming & gambling	21
Electronic gaming machines	14
Sports wagering advertising	7
Sports betting	5
Casino loyalty programs	4
Social media advertising	3
Sports wagering inducements	2
Multi-country lotteries	1
Instant lotteries	1

#### Internet gambling summary

The past decade or so has seen the emergence of Internet gambling as a new gambling trend worldwide. The most recent Australian population data (from 2010-2011) shows 8.10% of Australians gambled online, compared to 56.16% gambling offline (Armstrong, Thomas & Abbott, 2018).

A total of n=46 articles addressed various aspects of Internet gambling, with a particular focus on the characteristics/behaviour of Internet gamblers (n=19) and comparing Internet to land-based gambling (n=15) (see Table 27). There were no systematic reviews addressing Internet gambling. There were seven literature reviews and n=12 Australian studies. Of the international studies, the countries with the largest number of studies were the USA (n=8), Canada (n=5), and France (n=4).

**Table 27. Areas of focus of Internet gambling articles**

Area of focus	No. of articles
Internet gambling - general	19
Comparing Internet and land-based	15
Fantasy sports	5
Internet gambling and Internet addiction	3
Mobile/smart phone	3
Virtual reality	1

*Internet gambling - general (n=19)*: These articles focused predominantly on the characteristics of Internet gamblers and their gambling behaviour in the online environment, with one literature review exploring the use of behavioural tracking and big data studies of Internet gambling (Chagas & Gomes, 2017). The studies have various foci and findings, but overall demonstrate that Internet gamblers are not a homogeneous group (Khazaal et al. 2017). This is reflected in Australian studies.

There were six Australian studies focusing on this aspect of Internet gambling. A study of betting patterns for online wagering on sports and races involving analysis of 2,522,299 online bets indicated that online betting is primarily an entertainment activity for Australians (Gainsbury & Russell, 2015). However, research has also identified problem gambling in Australian Internet gamblers. For example, in a recent study surveying 3199 online gamblers about their engagement with and perceptions of offshore online gambling sites, most preferred domestic sites, with offshore gamblers being more involved gamblers with greater problem gambling severity (Gainsbury et al., 2018). A survey of 3178 Internet gamblers demonstrated an association between having multiple accounts and gambling on more activities and more frequently, being more involved, and having higher rates of gambling problems, suggesting two types of Internet gamblers (volatile vs. stable gamblers) (Gainsbury, Russell, Blaszczynski, and Hing, 2015). Another survey of 2799 Internet gamblers compared problem with non-problem and at-risk Internet gamblers, identifying differences in demographics, gambling behaviour, and gambling beliefs. A key finding was that Internet problem gamblers also had problems relating to land-based gambling (Gainsbury, Russell, Wood, Hing, & Blaszczynski, 2015).

A qualitative study by Hing et al. (2015) explored psychosocial factors and processes related to maintaining and losing control during Internet gambling. Participants in this study highlighted the need for comprehensive responsible gambling measures for Internet gambling operators. Taking a different approach, Hing et al. (2017) explored the responses of Internet sports bettors to gambling promotions during sports broadcasts. Survey results suggest a link between problem gambling in young male Internet sports bettors and positive attitudes to gambling sponsors. Again, this research points to Internet gamblers being a non-homogenous group.

*Comparing Internet and land-based gambling (n=15)*: The rise of Internet gambling has seen increasing concern that Internet gambling is more harmful than land-based gambling. This was supported in three international studies (Baggio et al., 2016; Effertz et al., 2018; Papineau et al., 2018). However, other studies, including Australian research, suggest that Internet gambling is not inherently more harmful than land-based gambling; issues relate more to the diversity of gambling formats (Baggio et al., 2017; Blaszczynski et al., 2016), sub-groups of gamblers (Estevez et al., 2017; Gainsbury et al., 2015), and modes of access (Gainsbury et al., 2016).

For example, in Blaszczynski et al.'s (2016) Australian survey of 4594 respondents, mixed gamblers (those that gambled online and on land) had higher problem gambling scores, while land-based gamblers experienced higher psychological distress. They concluded: "exclusive online gamblers represent a different subpopulation at lower risk of harm compared to gamblers engaging in multiple forms" (Blaszczynski et al., 2016, p. 261). The association of problem gambling with sub-groups of gamblers was further supported by Gainsbury, Russell, Blaszczynski, and Hing (2015) who found higher proportions of problem gambling in land-based gamblers in Australia when compared with Internet-only and mixed-mode gamblers. Finally, Gainsbury, Liu, Russell, and Teichert (2016) found an association between mode of access and gambling problems, with lower rates of problems in Australian Internet gamblers who prefer to gamble using computers than those using mobile and supplementary devices.

The literature furthermore suggests a number of differences between those who gamble online to land-based gamblers. These include behavioural differences such as greater frequency of gambling in Internet gamblers (Barrault & Varescon, 2016; Gainsbury et al. 2017; Petry & Gonzalez-Ibanez 2015), playing more hands and committing more errors (Montes & Wetherly, 2017), and greater debt (Zang et al. 2018). Wijesingha et al. (2017) found adolescents with low to moderate or high problem gambling severity were significantly more likely to gamble online.

Demographic differences have also been identified. For example, in an Australian study comparing esports versus sports bettors, Gainsbury, Abarbanel, and Blaszczynski (2017) found more females and those from Asian ethnic backgrounds involved in esports compared to white males in sports betting. Studies have also found differences in risk factors across Internet and land-based gamblers (Redondo, 2015), such as easy access and intangibility of money for Internet gambling versus peer group and alcohol availability for land-based gambling (Deans et al., 2016; Goldstein et al., 2016).

*Fantasy sports (n=5)*: A further emerging trend, particularly in Canada and the United States, is participation in Fantasy Sports leagues (there were no Australian studies focusing on this aspect of Internet gambling). Fantasy sports are "an online ancillary to traditional sports media, which allow fans to assume the role of team manager/owner by assembling a virtual lineup of real-world athletes from professional and non-professional sports competitions" (Nower et al., 2018, p. 728). Studies into Fantasy Sports have a range of foci, including characteristics of participants (Dwyer & Weiner, 2018), prevalence (Marchica & Derevensky, 2016), gambling behaviour (Martin et al. 2016; Nower et al., 2018), and problem gambling (Dwyer et al., 2018; Martin et al. 2016). Gambling participation and problem gambling studies report increased participation in gambling and problem gambling for male fantasy sports players.

*Internet gambling and Internet addiction/problematic Internet use (n=3)*: Three international studies explored whether there is a link between gambling and Internet addiction, generally viewing these as separate disorders. However, Baggio et al. (2016) found an increase in the relationship between the two among Internet compared to land-based gamblers, and Giotakos et al. (2017) found Internet gambling to be associated with Internet addiction. Similarly, Sigerson et al. (2017) report a common factor underlying various information technology addictions, including Internet gambling and Internet addiction.

*Mobile/Smart phone (n=3)*: The final area explored in relation to Internet gambling is the use of mobile or smart phones. In an Australian study, Gainsbury, Russell, Hing, Wood, Lubman, and Blaszczynski (2015) investigated gambling prevalence and the relationship between various gambling activities and interactive modes of access, finding 9.4% of Internet gamblers preferred using a mobile/smart phone but the majority (87.1 %) preferred using a

computer or laptop. The other two international studies report the potential for greater problems when gambling via mobile/smart phones (James et al., 2017; Remond & Romo, 2018), reflecting the results of Gainsbury et al. (2016), discussed above.

#### The relationship between gaming and gambling summary

A further issue relates to whether or not there is a relationship between gaming and gambling due to the similarities between the two activities (particularly video gaming and electronic gambling) “due to their similar automated function, immersive experience, and prominent audiovisual elements” (Sanders & Williams, 2018, p. 1). This has led to concern about whether video games are associated with an increased likelihood of gambling and problem gambling.

There were four international studies exploring this relationship. Results were varied. For example, Molde et al. (2018) identified video gaming as a potential gateway behaviour to problem gambling (Molde et al., 2018). The McBride et al. (2016) study in the Attitudes and Behaviours domain found adolescents who played video games were significantly more likely to have gambled online for money (McBride et al., 2016). Forrest et al. (2016) found that the link between video gaming and gambling frequency was related to age, with those who did gamble being slightly older on average than those who did not. Based on a survey of 3942 people who regularly gambled or played videos, Sanders et al. (2018) found similar risk factors and manifestations of problem gaming and problem gambling but did not find that involvement in one activity predicted the other. Macey and Hamari (2018) explored the relationship between video gaming, spectating esports, and gambling. The study did not support the notion that video games are in themselves associated with increased potential for problem gambling

A further issue relates to the convergence of gaming and gambling in terms of the ways in which games are played (particularly player-versus-player in networked sessions), the introduction of gambling-like mechanics through social network games, and the expansion of virtual economies and goods (Macey & Hamari, 2018). In a commentary article, Drummond and Sauer (2018) explored whether video game loot boxes (purchasable randomised rewards) constitute a form of gambling. They sourced a list of games that contain loot boxes that were released over the past two years and determined the characteristics of the loot boxes, testing the extent to which they align with the following five characteristics common to most gambling activities:

1. The exchange of money/valuable goods.
2. The exchange is determined by an unknown future event.
3. Outcome is determined (at least in part) by chance.
4. Non-participation can avoid incurring losses.
5. Winning at the sole expense of losers (p. 531).

They found ten of the 22 games met all five criteria. The authors conclude: “in the way they encourage and sustain user engagement, loot-box systems share important structural and psychological similarities with gambling” (p. 532). This raises concerns about the potential for people to migrate from simulated gambling to gambling for money.

There were 12 studies (four of them Australian), five literature reviews and one commentary exploring the issue of migration from simulated gambling to monetary gambling. Research generally supports the concept of migration to monetary gambling, particularly in young people (Australian research: Frahn et al., 2015; Gainsbury, Hing, Delfabbro, Dewar, & King, 2015; and Kim et al., 2016; International research: Kim et al., 2015; Teichert, Gainsbury, & Muhlbach, 2017; and reviews by Armstrong et al., 2018; Derevensky & Gainsbury, 2016, Floros, 2018; and Wohl et al., 2017). Micro-transactions within simulated gambling have



been identified as a potential predictor of migration (Wolh et al., 2017). The two studies addressing this issue had contradictory findings. One Australian study identified micro-transactions as a unique predictor of migration (Kim et al., 2015), while Hayer et al. (2018) did not find micro-transactions to be a significant predictor.

Some studies explored demographic and behavioural factors associated with participation in simulated gambling (Abarbanel & Rahman, 2015). Other research notes variation in migration depending on a number of factors. For example, Holingshead et al. (2016) explored variation based on motivation. Dussault et al. (2017) found migration only holds for poker playing. Hayer et al. (2018) found migration for those participating in simulated gambling on social networks (from home) and furthermore noted the role of exposure to advertising for simulated/real games of chance in the decision to gamble for money. Australian research by Abarbanel et al. (2017) also highlighted the potential role of advertising on these platforms.

Armstrong et al. (2018), in their literature review, state that current research on the relationship between simulated gambling and gambling for money has tended to be correlational, with further research needed on causal pathways. King and Delfabbro (2016) have proposed a two-pathway model conceptualising potential risks and benefits of early exposure to digital simulated activities such as social casino games, although further research is needed.

Wohl et al. (2017), in their literature review, build on the concept of potential benefits in their review by exploring both the negative aspects of social casino gaming, such as migration to gambling and increased rates of problem gambling, while noting the potential use of social casino gaming as a harm reduction strategy.

#### Electronic Gaming Machines summary

In addition to Internet gambling, electronic gaming machines (EGMs) have raised particular concerns due to their wide availability worldwide and their association with problem gambling (Barton et al., 2017). A total of n=14 articles addressed various aspects of EGMs, including jackpots (n=3), automation of traditional gambling games (n=3), general characteristics (n=1), losses disguised as wins and near misses (n=1), bet size and multi-line play (n=1), speed of play (n=1), annexes (n=1), anthropomorphisation (n=1), and virtual reality (n=1). These included one systematic review, two literature reviews, and five Australian studies. Of the international studies, the countries with the largest number of studies were Canada (n=2) and New Zealand (n=2).

Research into electronic/mechanical automation of traditional gambling games included two Australian studies and one critical review. Armstrong et al. (2016) conducted an environmental scan to explore features that might encourage reckless betting or entice new players. They conclude that technological enhancements have the potential to “increase immersion and potentially encourage elevated play by automatic betting functions, reducing the time between games and reinforcing betting behaviours with intricate graphics, animations and sound” (p. 120). Goodwin et al. (2017) conducted a qualitative study of player preferences in relation to traditional and innovated gambling products. Traditional products were seen as less harmful, more social, and more enjoyable than innovated products. Finally, in a critical review, Armstrong et al. (2017) state that more research is needed in this area, particularly in terms of the effect on player behaviour and potential risks.

Looking at particular characteristics of EGMs, the research on jackpots identified that various characteristics increase gambling behaviour and affect gambling motivation. Three of these were Australian studies. Browne et al. (2015) found that jackpots influenced gambling motivations, with this being particularly the case for gamblers at-risk of problem gambling.

They also found an association of jackpots with greater spend. Similarly, Li et al. (2016) found intensifying effects on gambling behaviour with high value jackpot configurations. Finally, Donaldson et al. 2015 note a marginal positive contribution of hidden jackpots to risky playing behaviour.

Considering the potential effects across a range of characteristics, Landon et al. (2018) conducted a focus group study in New Zealand exploring which characteristics participants found attractive. Free spin features were the most attractive. Greater intensity and duration of gambling were found to be associated with smaller win related characteristics and low-denomination machines with multiple playable lines. The effect of multi-line play on attention was also found in a study by Much & Clark (2018).

Barton et al. (2017) conducted a systematic review of losses disguised as wins and near misses in EGMs. They found near misses motivated continued play but had varied effects on betting behaviour and players' emotional states, while losses disguised as wins were related to an overestimation of how much a player is winning. The study on speed of play looked at the potential value of using a measure of individual rates-of-play in EGM research (Worhunsy & Rogers, 2018).

The article on gambling machine annexes was a study of the characteristics of annexes and discussed how they might promote heavy and problematic gambling (Adams & Wiles 2017). Similarly, the article on anthropomorphisation explored its possible negative impact (Riva et al. 2015), and a discussion article on virtual reality (Gainsbury & Blaszczynski 2017) noted that there is little research on this form of gambling and explored public policy implications.

#### Sports betting summary

Sports betting is another emerging area of concern identified in the research. There were no systematic or literature reviews focusing on this emerging trend, with three Australian studies identified. There were two types of studies in this area, namely studies exploring demographic and behavioural characteristics (n=5) and those exploring sports betting advertising (n=7). There was one Australian study on demographic, behavioural, and normative risk factors for gambling problems among sports bettors (Hing, Russell, Vitartas, & Lamont, 2016), which found being young, male, single, educated, and in full-time employment/study to be risk factors for problem gambling. Additional risk factors were greater frequency and expenditure, greater diversity of gambling involvement, and greater impulsivity of responses. The influence of significant others and media advertising were also identified.

There is growing concern in the literature regarding the effect of sports betting advertising, with seven studies focused on this aspect. Two studies were in Australia (Deans, Thomas, Daube, Derevensky, & Gordon, 2016; Hing, Myles, Russell, Lamont, & Vitartas, 2017), two in the UK (Lopez-Gonzalez, Estevez, & Griffiths, 2018; Newall 2017), two covering the UK and Spain (Lopez-Gonzales, Estevez, Jiminez-Murcia, & Griffith 2018; Lopez-Gonzales, Guerrero-Sole, & Griffiths), and one in Norway (Hanss et al., 2015). In the Australian studies, Deans et al. (2016) analysed the content of advertising and identify similarities between sports betting advertising and advertising for other unhealthy commodities. As described earlier, Hing et al. (2017) found a link between problem gambling and young males with positive attitudes towards gambling promotions during sports broadcasts.

#### Wagering inducements, loyalty programs, and social media advertising summary

Related areas are wagering inducements, loyalty programs, and social media advertising. The two studies on wagering inducements were conducted in Australia. One study documented the features of inducements and analysed their alignment with responsible gambling goals (Hing, Sproston, Brook, & Brading, 2017). The other study involved a survey

with 1813 sports bettors to explore whether the uptake of wagering inducements predicted impulse betting, finding this was the case among problem gamblers and frequent sports viewers (Hing, Russell, Li, & Vitartas, 2018).

There were a further three Australian studies on social media advertising by gambling operators. Gainsbury, King, Hing, and Delfabbro (2015) interviewed 19 individuals working in the gambling industry to explore their use of social media marketing. Social media marketing aimed to attract new customers, strengthen relationships with existing customers, and increase customer engagement. Social media marketing included a balance of gambling and non-gambling content with few operators providing specific responsible gambling messages. Gainsbury, Delfabbro, King, and Hing (2016) explored the latent messages in social media advertising, finding positive framing and a tendency to encourage gambling. Gainsbury, King, Russell, Delfabbro et al. (2016) studied the recall and reported impact on gamblers of social media advertising, with data collected through a survey of 964 gamblers who use social media. Results suggest greater impact of social media promotions on problem and moderate-risk gamblers. Research on loyalty programs in casinos (n=4) were all international marketing-based studies looking at the effect on customer loyalty.

### *Grey literature*

#### Overview

A diverse range of studies (N=15) relating to new technology and trends were identified in the grey literature. The report types are summarised in Table 28.

**Table 28. Report type**

<b>Report Type</b>	<b>No. of articles</b>
Mixed-methods study	4
Discussion paper/commentary	3
Literature review	2
Exploratory study	2
Cross-sectional study	1
Qualitative study	1
Comparative study without controls	1
Submission	1

The countries reported on is summarised in Table 29. The majority of the reports were Australian (n=12).

**Table 29. Country of focus of grey literature**

<b>Country</b>	<b>No. of articles</b>
Australia	12
Ireland	1
Netherlands	1
Belgium	1

The areas of focus of the grey literature are summarised in Table 30, with the majority focusing on the relationship between gaming and gambling in terms of simulated gambling games (n=7).

**Table 30. Summary of emerging technologies and new trends grey literature**

<b>New technology/trend</b>	<b>No. of reports</b>
Relationship between gaming & gambling	7
Electronic gaming machines	3
Internet gambling	2
Sports betting	2
Sports wagering advertising	1

### Summary

The increasing presence of simulated gambling was a focus of the grey literature, with a range of concerns highlighted. Dickins & Thomas (2016) note that the most popular forms of simulated gambling are poker, “pokies”, lotteries, and casino-style games such as blackjack. However, they furthermore note there are other games that, while they do not appear to have a gambling theme, can include elements commonly associated with gambling.

A recent review of the literature by King (2018) focused in particular on the convergence of gaming and gambling and the effect on children and adolescents of exposure to simulated gambling. The review identified a variety of gambling-like experience in online games, with the ‘loot box’ being a noteworthy innovation, along with exposure to gambling-like content on social media and online video games. The review identifies that “there is academic commentary on, and some preliminary research support for, the notion that simulated gambling in adolescence increases the risk of monetary gambling in adulthood” (p. 10). In Australia, Gainsbury et al. (2015) discussed the use of social media in gambling. They report that for some problem gamblers, playing social casino and practice games may exacerbate problems; whereas, for some, it lessened the urge to gamble and helped to resolve their gambling problems. Gainsbury, King, Abarbanel et al. (2015) and Rockloff et al. (2018), too, highlight concerns about the convergence of gaming and gambling. Fulton (2016) similarly point to emerging trends and developments in gambling in Ireland since 2013, in particular the blurring of lines between online gambling and social media games which simulate gambling.

A further emerging trend explored in the grey literature relates to advertising and sports betting. Hing et al. (2018) conducted an Australian study exploring wagering push messaging sent to 98 regular sports betters. They found marketing to be intense and influencing betting behaviour. In another Australian study, Li et al. (2018) assessed the influence of sport-related gambling advertising on adolescents and young adults. They identified a connection between gambling and sports in participants’ minds, with sport-related gambling sponsorship and advertising identified as potentially shaping the unconscious minds of Australia’s youth. This reflects the articles discussed in the previous section on the normalisation of gambling through advertising.

In relation to Internet gambling, Martin (2017) examined the issue of big data in detail, proposing a range of concerns for online gambling. There are several potential impacts of these trends, specifically related to increased harm for particular population groups, but also for changing player/gambler behaviour, generally, as the authors expect and suggest. Studies also focused on exploring the implications of globalisation of gambling opportunities through online gambling, particularly the potential difficulty in monitoring harms from sport-betting via online wagering systems, particularly for young male gamblers (Australian Wagering Council, 2016; Jenkinson, de Lacey-Vawdon & Carroll, 2018).

The Australian Wagering Council (2016) document on sports betting was included to provide an example of conflicting views (though, in general, submissions were excluded from the review). Many comments refute current evidence, particularly related to online wagering. In particular, the Council note a shift from traditional wagering in retail outlets to wagering online and refute claims that online wagering is uncontrolled.

Livingstone (2017) explored the design and operation of EGMs (Livingstone, 2017). Key messages from the report are that EGMs use sophisticated psychological techniques designed to maximise users' bet sizes and machine usage and increase the addictive potential of EGMs. Users of EGMs, and policy makers, are mostly not well informed about the way the machines work, and Australia has been slow to develop adequate policy responses to reduce harms.

Rockloff et al. (2015) conducted a qualitative study in Victoria, Australia, of environmental features of EGMS that influence gambling decisions. Across three levels of contextual focus (platform, provider, and machine), platform type was rated as the most important. Finally, Rockloff et al. (2016) investigated the newer automated presentations of traditional gambling products. They found that most gamblers prefer traditional games over the innovated counterparts. People do not spend more on automated table games than traditional games; only some aspects (illusion of control and social customisation/ communication of winnings) indicate features of such games that could pose added risk. Regulatory approval of such games should consider these features.

## **Gaps – Emerging Technologies and New Trends**

### ***Online gambling***

The research generally supports the notion that Internet gamblers are not a homogenous group. More research is needed comparing online versus land-based gamblers according to different characteristics (e.g., level of problem gambling/risk; type of gambling; populations; attitudes/behaviours). Further research is also needed on which features of Internet gambling contribute to gambling disorders and gambling-related harm. Early work suggests gambling via mobile/smart phone might be particularly problematic, and further research is needed in this area.

### ***Video gaming and gambling***

In relation to simulated gambling and gambling-like features in video games, longitudinal studies are needed on the migration to gambling for money. Hayer et al. (2018, p. 943) note, "future studies must consider the complex notion of the gateway effect including (simulated/real) gambling type, mode of access and a more precise definition of migration". The link between engagement in/problems with video gaming and engagement in/problems with gambling is still not clear, suggesting the need for further research.

### ***Electronic gaming machines***

The research included here identifies potential harms associated with automation of traditional games, EGM jackpots, multi-line play, speed of play, annexes, and anthropomorphising games. However, the research covers a range of characteristics and gamblers and more research is needed to fully understand which features contribute to gambling disorders and harm.

### ***Advertising and Inducements***

Research highlights potential risks associated with the normalisation of gambling through advertising and the potential impact of advertising and inducements on gambling behaviour, particularly for problem/at-risk gamblers. However, more research is needed to explore the effect of advertising and inducements on gambling behaviour, problem gambling, and harm;

for example, there is no research examining the effect that advertising control has on harms secondary to gambling.

***Expansion of the sports betting market***

The current focus of this research is on profiling those who engage in this form of gambling. More research is needed on understanding and mitigating harms associated with sports betting.

## Efficacy and effectiveness of treatments

In this section, we address the research question “What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?” ‘Efficacy’ refers to performance of the treatment under controlled conditions, such as through randomised controlled trials, while ‘effectiveness’ refers performance under real-world conditions. In this section the focus is on summarising the recent research with a view to identifying gaps in the literature, and as such we present:

- A brief summary of the research reporting on efficacy and effectiveness of treatments, focusing in particular on systematic reviews and randomised controlled trials.
- A discussion of gaps in our understanding of efficacy and effectiveness of treatments.

### *Peer-reviewed literature*

#### Overview

There were N=54 articles identified since 2015 addressing efficacy and effectiveness of treatments for gambling problems. The article types are summarised in Table 31, showing the majority of articles (n=23) were randomised controlled trials (RCTs). There were also seven systematic reviews and five literature reviews.

**Table 31. Article types**

Article Type / Study Type	Number of Articles
RCT	23
Case series with pre-post test	7
Systematic review	7
Literature review	5
Mixed methods study	3
Discussion paper/commentary	2
Comparative study without controls	2
Cross-sectional study	2
Qualitative study	1
Comparative study with controls	1
Exploratory study	1

The countries reported on is summarised in Table 32. The majority of the articles reported on populations in Canada (n=10) followed by Australia (n=8) and the USA (n=4).

**Table 32. Country of focus of research articles**

Country	No. of articles
Canada	10
Australia	8
USA	4
France	3
Korea	2
Brazil	2
Spain	2
Sweden	2
China	2
UK	1

Finland	1
Russia	1
Germany	1
New Zealand	1

The vast majority (n=30) explored cognitive behavioural therapy approaches (CBT). Emerging areas include motivational interviewing (n=5) and mindfulness (n=2) approaches. Three articles also explored medications (see Table 33). The most common assessment/outcome measure in the studies was the DSM-IV (or V), used in n=12 studies (see Table 34).

**Table 33. Treatment type explored in the articles**

Treatment Type	No. of articles
Cognitive Behavioural Therapy	30
Motivational Interviewing	5
Medication	3
Mindfulness	2
Transcranial magnetic stimulation	2
Desensitization of Triggers and Urge Reprocessing (DeTUR)	1
Cognitive remediation/restructuring	1
Acceptance & Commitment Therapy (ACT)	1
Exercise	1
Gamblers Anonymous	1
Congruence Couple Therapy	1
Community Reinforcement & Family Training	1
Personalised Feedback	1
Psychoeducation	1
Self-management support (SMS)	1

**Table 34. Assessment and Outcomes measures used in two or more studies**

Assessment & Outcome Measures	No. of articles
DSM-IV (or V)	12
Canadian Problem Gambling Index (CPGI)	9
South Oaks Gambling Screen (SOGS)	9
Gambling Symptom Assessment Scale (GSAS)	7
Gambling Related Cognitions Scale	6
Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling (PG-YBOCS)	5
Gambling Urge Scale (GUS)	5
National Opinion Research Center DSM Screen for Gambling Problems (NODS)	5
Victorian Gambling Screen (VGS)	3
Gambling Activities Screen (GAS)	3
Gambling Craving Scale (GACS)	2
Timeline Followback	2
Gambling Refusal Self-Efficacy Questionnaire	2



### Summary of the research

The summary of the literature on efficacy/effectiveness of treatments is organised as follows. We begin with a discussion of systematic/literature reviews, followed by randomised controlled trials. We then explore the literature on the methods by which the treatments are delivered, and finally discuss treatments in various sub-populations.

#### *Systematic/literature reviews*

There were a large number (n=12) of systematic/literature reviews of efficacy/ effectiveness of various treatments. The reviews generally focused on psychological therapies for problem gambling, either in general (Choi et al., 2017; Petry et al. 2017), or focused on CBT (Challet-Mouju et al., 2017; Tolchard, 2017), mindfulness-based approaches (Maynard et al., 2018), motivational interviewing (Yakovenko et al., 2018), Gamblers Anonymous (Schuler et al., 2016), or comorbid gambling and psychiatric disorders (Echeburura et al., 2017; Dowling et al., 2016). Overall, the studies demonstrate the benefit of CBT, motivational interviewing, and mindfulness-based approaches, at least in the short term, reflecting the results of a Cochrane review of psychological therapies for pathological and problem gambling published in 2012 (Cowlshaw et al., 2012). The scoping review of Gamblers Anonymous found inconsistent results (Schuler et al., 2016). Pharmacotherapy, in the form of opioid receptor antagonists, selective serotonin reuptake inhibitors, and mood stabilisers, was included in one narrative review (Choi et al., 2017), reporting positive effects in terms of reduction of urge, treatment of comorbidities, and relapse prevention. No systematic reviews or meta-analyses of pharmacotherapy were identified.

Petry et al. (2017) conducted a systematic review of the literature of treatments for problem gambling. Studies were included in the systematic review if they administered a psychological intervention for gambling problems, included random assignment to two or more conditions, had at least 25 participants per condition, and were published in English. A total of 22 trials met the inclusion criteria, with the studies exploring cognitive therapies, cognitive-behavioural (CB) therapies, motivational interventions with or without CB treatment, self-directed cognitive-behavioural interventions, and brief feedback interventions. They found CB interventions to have the greatest evidence of efficacy. Motivational interviewing alongside CB may improve outcomes, as might the provision of brief personalised feedback or advice. The authors note limited evidence of efficacy of interventions over the long term, and the use of varied measures to assess gambling outcomes. Overall, the authors recommend “a six- to eight-session or chapter CB treatment that integrates MI if the CB treatment is entirely self-directed for individuals seeking gambling treatment” (Petry et al., 2017, p. 959). In terms of those with less severe problems, the authors recommend minimal interventions involving personalised feedback. This approach might also be useful for those not wanting traditional in-person multisession interventions.

While CBT has been the most commonly researched form of treatment, there is emerging interest in motivational interviewing and mindfulness-based approaches. Yakovenko et al. (2015) conducted a systematic review and meta-analysis of the efficacy of motivational interviewing (MI) for disordered gambling. Studies were included in the review if: the study population was adult disordered/pathological/problem or concerned gamblers; comparisons were made against no treatment or non-MI treatment; the outcome included gambling frequency and expenditure; and the study was a randomised controlled trial. Eight studies were included in the qualitative synthesis and five in the meta-analysis. The meta-analysis “provided some evidence of a positive effect following treatment for both outcomes” (p. 76). There was a modest reduction in gambling and mixed evidence for effects over time.

A recent systematic review and meta-analysis of mindfulness-based approaches found 13 studies meeting the inclusion criteria (adults with problem/pathological gambling; comparison with non-mindfulness based interventions; outcome measures included gambling

behaviour/symptoms, gambling urges, and/or gambling-related financial outcomes) (Maynard et al., 2018). Studies were included in the review if they used randomised, quasi-experimental, single-group pre–posttest, or single-subject experimental design, and included in the meta-analysis if they used a randomised or quasi-experimental design. Seven studies were included in the meta-analysis. The authors conclude there is promising preliminary evidence for mindfulness-based approaches. However, the evidence is small with methodological limitations, requiring further research.

#### *Randomised Controlled Trials*

There were n=23 Randomised Controlled Trials (RCTs). These are summarised in Appendix 3. The RCTs predominantly explored Cognitive Behaviour Therapy (either alone or with other modes of therapy such as Motivational Interviewing) delivered by telephone /Internet (n=5), as self-help (n=2), as brief interventions (n=2), and in relation to length of treatment (n=1).

Quality ratings show great variation across the studies (see Appendix 5). The main areas of issue related to the question of whether randomisation was appropriately performed, with an overall lack of transparency around reporting of each stage (sequence generation, allocation, and concealment). This makes it difficult to assess whether the groups were comparable at baseline. The third item relating to having complete outcome data is likely unrealistic for RCTs of behavioural interventions, as there will always be missing data. The RCTs focus on a range of treatments and populations, with varying outcomes being measured.

Given the research question asks about the long-term efficacy/effectiveness of treatments, we looked at the follow-up periods for the RCTs. The follow-up periods ranged from 1 week to 24-months, with the most commonly reported periods being 6-months (n=5) and 12-months (n=5) (see Table 35).

**Table 35. Follow-up period in RCTs**

<b>Follow-up period</b>	<b>No. of articles</b>
12-months	5
6-months	5
Unclear	4
12-weeks	3
8-weeks	2
6-7 weeks	1
20-weeks	1
1-week	1
24-months	1

The RCTs generally reflect the results of the systematic/literature reviews discussed above in terms of the efficacy/effectiveness of treatments, at least in the short term. There were four Australian RCTs. Three of these explored Cognitive Behaviour Therapy with varying results. Casey et al. (2017) compared Internet-based delivery of cognitive behaviour therapy compared to monitoring, feedback and support for problem gambling. Both treatment groups showed significant positive outcomes, with Internet delivered CBT showing more promising results overall. Oei and Lai (2018) conducted an RCT comparing a self-help cognitive behavioural treatment program or to a waitlist condition, with participants from the treatment group showing significant improvement compared to the waitlist group. Smith et al. (2018) compared cognitive versus exposure therapy for problem gambling. Both groups experienced comparable improvements at both 12 weeks and at the 6-month follow up. One

Australian RCT compared contacting participants via SMS to treatment as usual for people accessing an e-mental health service (i.e., chat, email, forums, and brief self-help (Rodda, Dowling et al., 2018)). There were no significant differences between SMS and treatment as usual (i.e. SMS did not increase the effect of e-mental health). The broader research on the effectiveness of various delivery methods is discussed next.

#### *Delivery method*

Building on the body of research demonstrating efficacy/effectiveness of particular treatment approaches, studies have explored these treatments delivered via various delivery methods, with the highest number of articles exploring interventions delivered by telephone/Internet (n=8) and self-help interventions (n=7), generally showing positive results (see Table 36). In order to understand which delivery method is better, Goslar et al. (2017) conducted a meta-analysis exploring the efficacy of face-to-face versus self-guided gambling treatments. Studies were included that used any kind of psychological treatment, a randomised/quasi randomised controlled design, measured at least one of the three outcome measures, reported sufficient data for effect size calculations, and treated adult participants with a diagnosis of gambling disorder. Outcome measures were reductions in the severity of gambling pathology, gambling frequency, and financial loss. Twenty-seven (n=27) studies were included in the meta-analysis. The results support face-to-face treatments over self-guided treatments, particularly when conducted over an extended period of time.

**Table 36. Treatment delivery method**

<b>Delivery method</b>	<b>No. of articles</b>
Telephone/Internet interventions	8
Self-help	7
Family involvement	5
Brief interventions	4
Virtual reality	2
Group therapy	5

While face-to-face psychological treatments appear to be more effective, researchers suggest that brief interventions (e.g., minimal feedback or advice interventions, phone calls in conjunction with CBT workbooks, motivational enhancement therapy) delivered via alternate formats, such as the Internet, might be better suited to those with lower problem gambling severity, and as a means of increasing help-seeking and treatment engagement (Abbott et al., 2018; Broughton et al., 2016; Casey et al., 2017; Choi et al., 2017; Nehlin, Nyberg & Jess, 2016). For example, in a review of several specific self-directed materials and brief motivational interventions delivered via a range of platforms, Swan and Hodgins (2015) suggest that these interventions might be effective in reaching the majority of disordered gamblers who do not seek treatment. Casey et al. (2017) note that Internet-based delivery of CBT could form part of stepped-care approaches to treatment. There is also some research looking at involving significant others in treatment (Jiminez-Murcia et al., 2017; Kourgiantakis et al., 2018), such as congruence couple therapy (Lee & Awosoga, 2015), community reinforcement, and family training for significant others (Nayoski & Hodgins, 2016). The use of virtual reality in treatment is also starting to be explored, with early indications of positive results (Bouchard et al., 2017; Park et al., 2015), although further research is needed.

#### *Sub-populations*

The majority of the articles reported on general populations (n=37), however studies have also focused on treatment effectiveness in sub-populations (see Table 37). For example, there were two reviews of treatment approaches for those with gambling disorder and psychiatric co-morbidities. Echeburura et al. (2017) note the importance of tailoring

interventions to the needs of these individuals, and Dowling et al. (2016) report the use of psychological therapies combined with medication as being effective. Two studies of culturally attuned CBT for Chinese problem gamblers in Hong Kong reported positive benefits (Wong et al., 2015; Zuang et al., 2018). Petry et al. (2016) reported on the benefits of combining motivational enhancement therapy and CBT for problem gambling in substance abuse treatment patients. With high prevalence rates of problem gambling in the adult correctional population, Turner et al. (2017) conducted a literature review and interviews with key informants to explore programming for this population of problem gamblers. They identified a range of approaches to treatment but note that there is little published literature in this area.

**Table 37. Sub-populations included in the articles**

Sub-Population	No. of articles
General	37
Specific gambling type	3
Culture (Chinese = 2; French Canadian = 1)	3
At-risk gamblers	3
Comorbidity (PG & mental health)	2
College age	2
Women	2
Rural	1
Criminal justice system	1

### *Grey literature*

#### Overview

A small number of studies (N=9) focused on treatment for gambling were identified in the grey literature. The report types are summarised in Table 38.

**Table 38. Report type**

Report Type	No. of articles
Mixed-methods study	2
Discussion paper/commentary	2
Literature review	2
Comparative study without controls	1
RCT	1
Exploratory	1

The countries reported on is summarised in Table 39. The majority of the reports were Australian (n=4).

**Table 39. Country of focus of grey literature**

Country	No. of articles
Australia	4
NZ	2
UK	1

The areas of focus of the grey literature are summarised in Table 40, with the majority exploring multiple treatments (n=8).

**Table 40. Summary of efficacy and effectiveness of treatment grey literature**

Treatment	No. of reports
Multiple treatments	8
E-support	1
Self-help	1

### Summary

The literature reviews reflect the reported effectiveness of Cognitive Behaviour Therapy (CBT) (Bowden-Jones et al., 2016; Littman-Sharp, 2017). There were two Australian randomised trials. Thomas et al. (2015) compared CBT vs. Behaviour Therapy (BT) vs. Motivational Interviewing (MI) vs. Client Centred Therapy. Outcomes were measured immediately post-treatment and at 6- and 12-months. Positive outcomes were found for all treatment types with no differences between types. More recently Dowling et al. (2018) developed and evaluated an Internet-delivered self-directed cognitive-behavioural program delivered under no professional guidance (PSD) compared with minimal support from a health care professional (GSD). They found no significant differences between the PSD and GSD conditions 2- and 3-months post-intervention, with the exception of gambling frequency where the GSD group fared better.

### **Gaps – Efficacy and Effectiveness of Treatments**

Overall, there is considerable, high quality evidence demonstrating the efficacy/effectiveness of various treatment methods. Cognitive–Behavioural Therapy interventions are the most widely researched and demonstrate efficacy. Motivational interviewing and mindfulness-based approaches look promising, but more research is needed. Combining approaches (e.g., pharmacotherapy and CBT; CBT + MI + Mindfulness; unified CBT approach; online plus face-to-face) is an emerging area. There is little research evidence on the effectiveness of Gamblers Anonymous (GA), despite its use since the 1950s. Across all treatment methods, a significant gap in knowledge is the longer-term outcomes of the various approaches.

While CBT is reported as the best approach based on current knowledge, the majority of problem gamblers do not seek treatment and drop-out rates are high, suggesting current approaches do not address the needs of the broad range of gamblers, and that tailoring interventions might be needed. While there is an indication of improved outcomes for therapist contact over self-directed interventions in the peer-reviewed literature, Dowling et al.'s (2018) study suggests additional guidance from health professionals does not necessarily improve outcomes in Internet delivered treatment. Self-management and phone/Internet programs are emerging as ways to address lower-risk gamblers and those who do not seek treatment. Further research is needed in ensuring improved accessibility to effective treatment approaches.

A further issue is the need to understand and treat problem gambling in the presence of client complexity and comorbidity, in addition to understanding the treatment needs of various sub-groups of gamblers (e.g., women, cultural minorities, etc.). This is an important area for future research given that gamblers are not a heterogenous group.

From a methodological standpoint, in addition to the lack of evidence of the longer-term benefits of currently accepted forms of treatment, there is a lack of well-designed primary instruments measuring therapeutic effectiveness. Based on a systematic review of how treatment outcomes are measured, Pickering et al. (2018) note the need for broader outcome domains and a single comprehensive scale to measure all aspects of gambling recovery.

Further gaps identified by Littman-Sharp (2017) in the grey literature are as follows:

- While brief treatments, such as motivational interviewing, have clear advantages for research, it is less clear which clients can and cannot benefit from these interventions.
- However effective and wise early intervention may be, it must be accessed by clients in order to be useful. More research on gambler recognition of the need to seek help early, barriers to help-seeking, early intervention, and engagement in treatment is needed.
- Mindfulness is a promising area but is understudied.
- The importance of family treatment has been largely overlooked in both clinical and research settings; further work in this area is urgently needed.
- Given the heterogeneous nature of disordered gamblers, it is crucial for any medication trials to take concurrent disorders into consideration.

## Prevention and harm minimisation

In this section, we address the research question “What are the gaps in our understanding of what works in prevention and harm minimisation?”. Harm minimisation refers to strategies and interventions designed to reduce the harm associated with gambling across all risk categories. Prevention refers to interventions that aim to prevent the development of problem gambling, and generally involves educational interventions.

The purpose here is to present:

- A brief summary of the research reporting on prevention and harm minimisation.
- A discussion of gaps in our understanding of prevention and harm minimisation.

### *Peer-reviewed literature*

#### Overview

A total of N=55 peer-reviewed articles were identified in the prevention and harm minimisation domain. The article types are summarised in Table 41, showing the majority of articles were cross-sectional (n=10) and comparative studies with controls (n=9) followed by RCTs (n=7). All of the articles (including discussion papers and literature reviews) are summarised in Appendix 3. Quality ratings were undertaken for n=35 research articles, showing varying quality (see Appendix 5).

**Table 41. Article type**

Article Type	No. of articles
Comparative study without controls	10
Comparative study with controls	9
RCT	7
Systematic review	6
Qualitative study	6
Literature review	5
Cross-sectional study	3
Discussion paper/commentary	2
Mixed methods study	3
Exploratory study	2
Cross sectional comparison study	2

The countries reported on is summarised in Table 42. The majority of the articles reported on populations in Australia (n=11), followed by the UK (n=6) and Canada (n=6).

**Table 42. Country of focus of research articles**

Country	No. of articles
Australia	11
UK	6
Canada	6
USA	3
Singapore	3
France	2
Norway	2
Sweden	2
NZ	2
Austria	1

Germany	1
Italy	1
Croatia	1

A number of approaches to gambling harm minimisation were identified, with the most common being self-exclusion (n=11, including some looking at forced-exclusion), personalised feedback (n=10 studies), and pop-up messages (n=8) (see Table 43). In terms of prevention of problem gambling, the main approach was school/college-based education (n=6) (see Table 44).

**Table 43. Approaches to gambling harm minimisation**

Harm minimisation	No. of articles
Self-exclusion (and forced-exclusion)	11
Personalised feedback	10
Pop-up warning messages	8
Multiple strategies (including review articles)	7
Limit setting	3
Use of RG strategies	3
Connecting to Treatment	2
Breaks in play	1
Casino employee RG training	1
RG Codes of Conduct	1

**Table 44. Approaches to prevention of problem gambling**

Prevention	No. of articles
School/College Based Education research	6
Other education research	2

#### Harm minimisation summary

There is some (albeit weak) evidence for many harm minimisation strategies, as demonstrated in literature reviews (Harris & Griffiths, 2017; Ladouceur et al., 2017; Tanner et al., 2017; Dawson et al., 2017). For example, Harris and Griffith (2017) reviewed the literature on harm minimisation tools available for electronic gambling. Tools included enforced breaks in play, messaging, limit setting, behavioural tracking tools, and prohibition and modification of note acceptors. The authors highlight the need for testing the various tools across a range of game types. Ladouceur et al. (2017) focused their review of responsible gambling strategies on studies conducted within real gambling environments and with 'real' gamblers. Five responsible gambling strategies were identified: self-exclusion programs, responsible gambling behavioural characteristics, setting gambling limits, responsible gambling specific game features (structural features of games such as warning messages), and training of venue employees intervening with problem gamblers. Overall, they note that while there is some support for these strategies, the evidence is limited due to the scarcity of well-designed studies. Edgerton, Biegun, and Roberts (2016) discussed limit-setting, pop-up messages, and player behavioural tracking and personalised feedback. They note that responsible gambling tools incorporating behavioural tracking and personalised feedback look promising, both in terms of harm minimisation and incorporating such technology into treatments.



Tanner et al. (2017) conducted a systematic review of industry-implemented or environmental level harm reduction strategies. They identified the following strategies: pop-up and on-screen messages; mandatory limit setting, mandatory cash-out, jackpot expiry, and regulations on winnings; imposed maximum bet limits and reducing maximum lines to play of electronic gaming machines (EGMs); removing large note acceptors on EGMs and ATM removal from venues; mandatory shut-down of EGMs or reduced operating hours; on-screen clock and displaying cash rather than credits on EGMs; caps on number of EGMs; and, smoking bans. They found the most effective strategies for reducing gambling time or expenditure were: self-appraisal pop-up messages, \$1 maximum bets, removal of large note acceptors and ATMs, reduced operating hours, and smoking bans. However, the studies were generally not of a high quality and many did not include control groups or pre- and post-measurement, relying predominantly on retrospective self-report. Similarly, in their review of the use of protective behavioural strategies (e.g., self-exclusion, time limit setting, monetary limit setting, and cashless, card-based gambling programs), Dawson et al. (2017) point to low quality evidence in this area. The main strategies are discussed further below.

*Personalised feedback interventions (n=10):* Personalised feedback interventions (PFI) are often used in the context of problem gambling, and thus could be considered a treatment intervention; however, it is also used as a harm minimisation strategy for low- and moderate-risk gambling and is therefore included in this domain. Research identified since 2015 suggests PFI looks promising, with positive results from studies in real world settings and focusing on gambling behaviour (e.g., Auer & Griffiths, 2015; Auer & Griffiths, 2016; Wood & Wohl, 2015). There were ten articles exploring personalised feedback, although no Australian studies were identified. Marchica and Derevensky (2016) conducted a systematic review, including studies with both a PFI and comparison group and focusing on gambling prevention and/or reduction. Six studies were included in the review. The authors report that the research, while still in its infancy, is promising, and problematic gamblers appear to benefit from PFI.

*Self-exclusion (n=11):* Self-exclusion studies show mixed results with issues including low utilisation rates, breaching agreement, and transferral to other forms of gambling. However, in a recent systematic review of land-based self-exclusion programs, Kotter et al. (2018) found significant changes in pathological gambling (from 61-95% before exclusion to 13-26% after exclusion). They furthermore report a wide range in rates of abstinence (13–81%) and gambling reduction (29–92%), in addition to rates of exclusion breaches (8–59%). In an Australian study comparing gamblers who have self-excluded, received counselling, or both (Hing, Russell, Tolchard, & Nuske, 2015), self-exclusion was seen as an effective short-term harm reduction strategy. All groups improved with no differences in outcomes for self-excluders plus counselling, with more self-excluders than non-excluders abstaining from their most problematic gambling form. Fewer self-excluders experienced harmful consequences. In another recent Australian study, Pickering, Blaszczyński, and Gainsbury (2018) conducted a retrospective process evaluation of multi-venue self-exclusion in 44 individuals. Participants reported reduced gambling and a greater sense of control of urges and gambling behaviours.

*Pop-up warning messages (n=8):* Research on the effect of pop-up messages on gambling behaviour has produced some effects, and there is a general trend towards the importance of including normative and self-appraisal feedback, and messages appearing in the middle of the EGM screen during play. Ginley et al. (2017) conducted a systematic review on the mandating of gambling-related warning messages. They found that warning messages could produce modest changes in behaviour, and noted the importance of considering the placement, presentation, and context of messages (in terms of whether the gambler is winning or losing). In a discussion article, Harris et al. (2018) discussed the role of emotion

in decision-making and suggested messages should be personally relevant and emotionally stimulating.

Gainsbury and colleagues explored the use of dynamic warning messages appearing in the middle of an EGM screen during play in a live trial in Australia, reported in two articles. The first article explores the optimal placement for pop-up messages by assessing recall and perceived impact in a survey of 667 regular gamblers. They found that dynamic messages that appear in the middle of the screen during play were better recalled and had a greater impact (Gainsbury, Aro, Ball, Tobar, & Russell, 2015a). In the second article the authors explored the optimal content for warning messages, again using results of the survey of 667 gamblers. Self-appraisal messages were recalled to a greater extent than informative messages, while both types of messages appeared to affect behavioural change. Content focusing on money spent appeared to have the greatest impact. There were no unintended consequences of the messages (Gainsbury, Aro, Ball, Tobar, & Russell, 2015b).

*Unintended consequences: Limit setting (n=3) and Breaks in Play (n=1):* Research has also pointed to potential unintended consequences of harm minimisation measures. For example, in Ladouceur et al.'s (2017) review, limit setting was reported as effective for some gamblers, but can in fact increase gambling problems for others. In an Australian study of breaks in play, Blaszczynski et al. (2016) explored whether imposed breaks in play in the absence of accompanying warning messages could reduce cravings. They found an increase in craving, concluding that: "breaks in play in isolation might produce counterproductive, unintended, and even perverse effects" (p. 789).

*Casino employee training (n=1):* Only one study was identified on staff responses to gambling, a qualitative Canadian study exploring employee attitudes and experiences. Results highlight the need for staff training in how to respond to signs of problem gambling (Quilty et al., 2015). In Ladouceur et al.'s (2017) review discussed above, this was one of the least studied areas (along with limit setting), with current research indicating partial effectiveness.

*Use of Responsible Gambling strategies (n=3):* In addition to the literature on the effectiveness of various harm minimisation/responsible gambling (RG) strategies, studies have furthermore explored the use of these strategies. Hing et al. (2017), in an Australian study, surveyed 860 regular gamblers on high-risk products about their use of RG strategies. They found lower-risk groups were more likely to use RG strategies. Wood and Griffiths (2015) compared playing experiences and RG practices of 'positive players' (those that show no sign of at-risk or problem gambling behaviour) and problem players (identified using the Lie/Bet screen). Positive players' reasons for gambling were focused on leisure, as opposed to problem gamblers who gambled to modify mood states. Positive players also used the most RG strategies. In a Singaporean qualitative study of RG among older adults, Subramaniam et al. (2017) identified the importance of families in imposing RG.

A number of critiques have been identified in the harm minimisation articles. The main issues are methodological, identifying the need for more rigorous research designs (Drawson et al., 2017; Ladouceur et al., 2017). Research has also been critiqued for failing to include measures of gambling behaviours, particularly in real world setting (Harris & Griffith, 2017). However, as Table 45 shows, gambling behaviour was measured in 23 articles in this review (albeit using varying methods, e.g., self-report vs. objective data collected from online gambling sites). Only one study (Hing et al. 2015) specifically measured harm (using various scales and questions, including the Gambling Consequences Scale) rather than problem gambling or gambling behaviour.

A further issue relates to who benefits from harm minimisation strategies. Dawson et al. (2017, p. 1314) note that while these strategies “do reduce harm for some, perhaps not those at risk for the greatest level of harm”. Similarly, Harris and Griffiths (2017, p. 217) state that results “appear to support the notion that harm-minimisation tools should be viewed as a responsible gambling prevention measure for those who already gamble safely, or are at risk of developing a problem, rather than an intervention for those already exhibiting problem gambling behavior.”

**Table 45. Quantitative measures used in harm minimisation/prevention research**

<b>Measure</b>	<b>No of articles</b>
Gambling behaviour	23
PGSI	7
Use of harm minimisation/prevention measures	6
Attitudes towards/ Awareness of RG and/or harm minimisation measures	5
Attitudes/awareness of gambling and / or gambling harm	5
Psychological factors	4
SOGS	2
Gambling Craving/Urge	2
CPGI	1
Use of professional help	1
General health	1
Gambling Consequences Scale	1
Measures of specific types of harm, e.g., debt	1
Canadian Adolescent Gambling Inventory	1
DSM-IV/V	1

### Prevention summary

There were only eight studies identified exploring strategies specifically focused on preventing gambling problems or harm, all of which discussed education programs. No Australian studies were identified. Systematic reviews of educational-based gambling prevention programs, both focusing on adolescents (Keen et al., 2017; Oh et al., 2017), report effectiveness in terms of knowledge of and attitudes towards gambling. However, they note limited research on the effect of interventions on gambling behaviour.

### *Grey literature*

#### Overview

The grey literature provided several useful studies and rich discussion of ideas for prevention and minimising of harms from gambling (N=12). The report types are summarised in Table 46.

**Table 46. Report type**

<b>Report Type</b>	<b>No. of articles</b>
Mixed-methods study	6
Discussion paper/commentary	2
Literature review	2
Submission	1
Comparative study without controls	1

The countries reported on is summarised in Table 47. The majority of the reports were Australian (n=7).

**Table 47. Country of focus of grey literature**

<b>Country</b>	<b>No. of articles</b>
Australia	7
Canada	2
Multiple	2
UK	1

The areas of focus of the grey literature are summarised in Table 48. Four reports discussed multiple forms of harm minimisation, with three discussing pre-commitment/limit setting, one exploring self-exclusion, one exploring targeted responsible gambling messages, one exploring licensing, one examining separating ATMs, and one exploring 3<sup>rd</sup> party exclusion.

**Table 48. Summary of prevention and harm minimisation grey literature**

<b>Prevention/harm minimisation strategy</b>	<b>No. of reports</b>
Multiple	4
Pre-commitment/limit setting	3
Self-exclusion	1
Targeted RG messages	1
Licensing	1
Separating ATMs	1
3 <sup>rd</sup> party exclusions	1

### Summary

Findings from the grey literature largely reflect those of the peer-reviewed literature. Monash Council (2017) note that the \$200 per EFTPOS transaction limit is the strategy most strongly backed by evidence, with self-exclusion systems needing to be simple and easy to use. Rintoul and Thomas (2017) discuss the low uptake of limit setting in partial pre-commitment systems, noting: “Incorporating pre-commitment into an electronic loyalty program may provide users with conflicting messages about spending” (p.2). Thomas et al. (2016) in their rapid evidence assessment of limit setting conclude: “A basic system including essential limit-setting options in an easy-to-use and clear system that includes regular opportunities to reset limits is optimal” (p.ix).

Two comprehensive studies were undertaken by Schottler Consulting (2017a; 2017b), the first taking a fine-grained look at the separation of ATMs and gaming machines in NSW, and the second exploring the harm minimisation impact of third party exclusion schemes. The first study found a potential benefit in placing ATMs a minimum distance of 30m from the gaming entrance. Key findings from their second study were that:

1. Families support the need for third party exclusion legislation, as many impacts of problem gambling are not currently addressed through problem gambling services.
2. Exclusion of problem gamblers from hotels and clubs is unlikely to be an effective means of reducing gambling harm experienced by families (and other affected third parties).
3. There is limited use of existing third-party schemes in Australia.
4. Domestic and family violence (DFV) may be a potential risk of a third-party scheme.
5. Families and counsellors support the idea of venues performing venue-initiated exclusions as part of the Responsible Conduct of Gambling (RGC).
6. Families, gamblers and counsellors reported that financial support, mandatory counselling, and support for partners and families might have greater potential to minimise harm than exclusion. Several characteristics were additionally identified as important in a future third party scheme (including for CALD/non-English speaking third parties).

### **Gaps – Prevention and Harm Minimisation**

Methods that are more robust are needed in research on harm minimisation strategies. There is furthermore a lack of clarity regarding who benefits from the various approaches (no-risk, low-risk, moderate-risk, or problem gamblers), with further research needed to explore this issue. Future research would benefit by a greater focus on measuring effectiveness in relation to harm reduction, linked to a clear approach for understanding and measuring harm. Given the dearth of research on prevention, further research is needed in this area.

There were two reports in the grey literature which highlighted some further important gaps. Miller (2016) examined a range of social determinants of gambling within a public health framework and identified a number of research gaps informed by those social determinants, including:

- More research is required to understand the multiple dimensions of accessibility, such as temporal and social.
- A lack of alternative leisure options and other services in the local area may be a risk factor for problem gambling.
- Concepts such as social cohesion, social norms, social trust, social exclusion, social (dis)organisation, and discrimination have not been studied in relation to problem gambling.
- There is limited evidence about the effect of community attitudes to gambling (normalisation) on gambling problems.
- It is unclear whether membership of a CALD community or recent migration to Australia is a risk or protective factor. There is preliminary international evidence that religious adherence may be a protective factor.

The Ethnic Communities Council of Victoria (2018) report, discussed earlier, identified several research and practice gaps relevant to CALD communities, particularly related to health literacy:

- Clearer health literate in-language information be provided to culturally diverse communities on the addictive design of electronic gambling machines.
- More gambling and product harm information in languages other than English to community members who attend gambling venues.
- More in-language gamblers' help services are needed.
- Accreditation of in-language financial counselling services, including ethnic specific workers primarily employed in ethnic specific organisations.
- More allocation of gambling industry resources toward high loss/low SEIFA LGAs with significant culturally diverse communities.

## Understanding and measuring harm

In this section, we address the research question “What are the gaps in our understanding of what works in understanding and measuring harm?” The issue of how gambling-related harm is understood and measured is an emerging area in the gambling literature. Clarity in understanding what it is meant by gambling-related harm and the best form of measuring such harm is key to the development and assessment of treatment and harm reduction approaches.

The purpose here is to present:

- A brief summary of the research reporting on understanding and measuring harm.
- A discussion of gaps in our understanding of understanding and measuring harm.

### *Peer-reviewed literature*

#### Overview

A total of N=45 peer-reviewed articles were identified. The article types are summarised in Table 49. The studies were mainly secondary analyses (n=15) followed by cross-sectional designs (n=11). Research articles are summarised in Appendix 3. Quality ratings were undertaken for n=15 articles. All studies were well conducted and met the rating criteria. Many of descriptive studies are based on population level surveys and therefore tend to be reasonably robust even in presence of nonresponse because authors tend to weight data (see Appendix 5).

**Table 49. Article type**

Article Type	No. of articles
Secondary analysis	15
Cross-sectional study	11
Cross sectional comparison study	6
Qualitative study	2
Comparative study without controls	2
Mixed methods study	2
Systematic review	2
Literature review	2
Comparative study with controls	1
Case series with pre-post test	1
Discussion paper/commentary	1

The countries reported on is summarised in Table 50. The majority of the articles reported on populations in Australia (n=13), followed by the UK (n=6) and the USA (n=6).

**Table 50. Country of focus of research articles**

Country	No. of articles
Australia	13
UK	6
USA	6
Finland	5
Canada	3
Sweden	1
Germany	1
NZ	1

Denmark	1
Singapore	1
Czech Republic	1

The peer-reviewed articles included in this section capture those articles that specifically discuss understanding and measuring harm, in addition to those articles not captured in other areas that measure harm in various ways, in order to demonstrate how harm is currently understood and measured in the recent body of research (see Table 51). In addition, included in this section are articles looking at the association of gambling/problem gambling with specific forms of harm (see Table 52).

**Table 51. Articles discussing harm measurement or measuring harm**

Harm measurement	No. or articles
Review/discussion articles	3
Development and use of the 72-item Harm Checklist	6
Use of problem gambling screening (e.g., PGSI, SOGS, CPGI, DSM-IV) as a measure of harm	6
Disability Weights Estimates	3
Other (various)	6

**Table 52. Articles reporting an association of gambling/problem gambling with specific forms of harm**

Association of Gambling/PG with Specific forms of harm	No. or articles
Mental health	8
Intimate Partner/Family violence	4
Crime/violence	3
Financial impact	1
Quality of life	1
Family/interpersonal adjustment	2
General health	2

### Summary

The articles capture the array of ways in which gambling-related harm is currently understood and measured in the gambling literature. For example, a number of studies (n=21) explored the association of gambling/problem gambling with specific types of harms, predominantly mental health (n=8) and intimate partner/family violence (n=4, including 2 review articles). For example, studies found an association between problem gambling and attempted suicide and comorbid mental health problems (see e.g., Sharman et al., 2019). In relation to intimate partner violence (IPV), a systematic review and meta-analysis by Dowling, Soumi, Jackson, Lavis, et al. (2016) found 38.1% of problem gamblers report being victims of physical IPV with 36.5% being perpetrators. The prevalence of problem gambling in IPV perpetrators was 11.3%. In terms of crime and violence, a Danish survey by Laursen et al. (2016) found an association between problem gambling and violent and criminal behaviour. These and other studies demonstrate an array of individual and community harms associated with gambling.

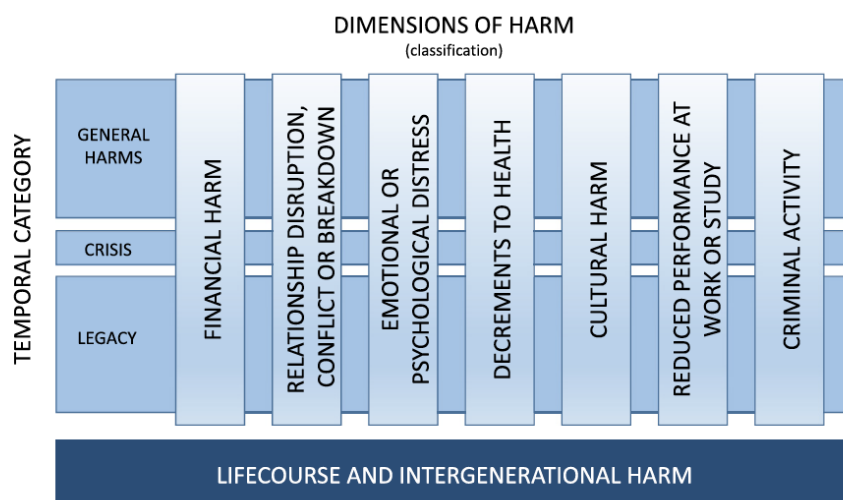
In terms of broader measures of harm, a common approach is to use the questions relating to harm from various problem gambling screening measures, rather than a dedicated harm measure. This was evident in six of the articles included in this section of the review, and in the broader body of literature discussed in the other areas. For example, Currie et al. (2017) examined the association between game types and gambling harms, using the PGSI and SOGS to measure the number of gambling-related harms.

Researchers and commentators have critiqued the use of measures of problem gambling in the way suggested above (Browne et al. 2017; Delfabro & King, 2017; Langham et al. 2016; Salonen et al. 2018). They note that these are proxy measures of harm that can lead to conflation of gambling behaviour with gambling harm, rather than harms being understood as a consequence of the behaviour (Browne, Rawat, et al. 2017; Delfabro & King, 2017). Further issues have been identified with the scoring of measures of problem gambling in terms of levels of risk, which do not translate into levels of harm (Browne, Rawat, et al. 2017; Delfabro & King, 2017).

Another approach is to use individual questions regarding a range of potential harms derived for the purposes of individual studies. There are varying levels of complexity of harm measurement in these studies. For example, in Kim et al.'s (2016) study of the impact of gambling on various domains of life, the researchers asked the question: 'To what extent has gambling affected your [social life, work, family life/home, physical health] in the last 1 month?' By contrast, Ebby et al. (2016) used the structured interview for pathological gambling as a basis for categorising gambling-related problems in non-work and work life domains.

The varying approaches to measuring harm indicate the need for a dedicated harm measurement scale. In Australia, Langham et al. (2016) applied a public health approach to understanding a measuring harm, based on a review of the literature and analysis of qualitative data. The authors propose a definition of harm as: any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community, or population. They also present a conceptual framework (see Figure 2) and the organisation of a catalogue of harms into three separate taxonomies (for the person who gambles, affected others, and community level harms).

**Figure 2. Conceptual framework of gambling related harm (Langham et al., 2016, p. 6)**





On the basis of Langham et al.'s (2016) work, Li et al. (2016) developed a 72-item harm checklist and conducted a survey comparing gambling harms among gamblers and affected others, finding large commonalities of harms across these groups. The 72-item checklist has since been used in a Finnish study by Salonen et al. (2018), to explore gambling participation, habits, and harm; and by Goodwin et al. (2017) to estimate the number of affected-others for the typical problem gambler in Australia. Brown & Rockloff (2018) used the checklist to examine whether the Prevention Paradox applies in gambling, finding the majority of harms (including serious harms) were more commonly associated with lower risk gamblers.

In addition, Brown, Greer et al. (2017a) identified the need to incorporate both prevalence and severity of harm across the spectrum of gambling disorder, and used vignettes derived from responses to the 72-item checklist in Li et al.'s (2016) study as the basis for deriving Disability Weights. Using prevalence figures from the 2014 Study of Gambling and Health in Victoria, they found problem gamblers suffer more individually (disability weight = .44) compared to those in moderate- (.29) and low- (.13) risk categories (see also Brown, Rawat et al., 2017). Rawat et al. (2018) compared disability weight estimates in NZ to the Australian studies, reporting higher disability weight estimates in the New Zealand sample.

Browne, Rawat, et al. (2017) and Brown, Greer et al. (2017) furthermore identified the need for a dedicated short-form screen for assessing gambling harms. Brown, Goodwin & Rockloff (2018) therefore developed a short gambling harms scale (SGHS) based on the 72-item checklist and conducted a validation study. They found that weighted scores on the SGHS "can be aggregated at the population level to yield a sensitive and valid measure of gambling harm" (p. 499).

The body of work based on the 72-item harm checklist is promising. However, Delfabro & King (2017) have critiqued the use of the checklist on the basis that a range of severity of harms is included, raising the question of whether these are genuine forms of harm. Furthermore, in an Australian study by Shannon, Anjoul, & Blaszczynski (2017), the authors note that the approaches of Browne et al. (2017) and Langham et al. (2016) to measuring harm "fail to consider the temporal dimensions of specific harms or differential impacts of transient minor harms from serious chronic harms on gamblers and their families" (pp. 368-9). A new measure of harm was therefore developed for the purposes of their study, where 48 indicators of harm were developed based on a scoping literature review, information from clinical case notes, and a cohort of specialist clinicians. Items related to financial losses, health issues, disengagement from leisure pursuits, critical events, interpersonal functioning, employment and education, and psychological harm. These were measured in two steps; an indication of the presence of harm during the past 6 months, followed by a question regarding the extent of the harm.

## *Grey literature*

### Overview

The concept of harm and how it was measured was discussed in N=15 reports found in the grey literature. The report types are summarised in Table 53.

**Table 53. Report type**

Report Type	No. of articles
Mixed-methods study	6
Discussion paper/commentary	3
Literature review	2

Exploratory study	2
Cross-sectional study	1
Qualitative	1

The countries reported on is summarised in Table 54. The majority of the reports were from Australia (n=7) and the UK (n=5).

**Table 54. Country of focus of grey literature**

Country	No. of articles
Australia	7
UK	5
NZ	1
Ireland	1
Multiple	1

### Summary

As with the peer-reviewed literature, there are many tools and strategies for measuring harm; however, there is limited recent research on whether these strategies capture the many aspects of harm from gambling for the gambler and for their significant others and the broader community. The grey literature furthermore highlights the importance of incorporating an understanding of harm across all three categories of risk (low-risk, moderate-risk, and problem gambling). This was reflected in Brown et al.'s (2017) assessment of the costs associated with gambling in Victoria. They found that all three categories of gambling risk contribute to the overall cost of gambling.

In another report of Australian research, Hing et al. (2016) developed a preliminary set of behavioural indicators of responsible gambling consumption. In a similar vein, Dowling et al. (2018) developed a set of empirically based responsible gambling limits in their recent research. The purpose of these limits is to "inform the development of responsible gambling guidelines for promotion to the Australian public" (p. 31). They propose responsible gambling limits for the population incorporating limits for frequency, expenditure (per year and as a percentage of gross personal income), and number of activities, as well as limits for a range of types of gambling.

Browne et al. (2016, 2017), in their Australian research (later replicated in New Zealand), undertook four sequentially linked studies centred on the issue of measuring harm adopting a public health perspective. They identified several gaps in the gambling research area related to measuring harm:

- A public health approach encompasses population health, which seeks to understand why different groups within the population experience different health outcomes.
- An expert panel has developed a Conceptual Framework of Harmful Gambling (Abbott et al., 2013). However, the reliance in the framework on pairing frequency with 'severity' of gambling problems, rather than intensity of consumption, may create some conceptual problems in delineating these constructs.
- Abbott et al. (2013) identify the important gap in our current understanding is the linking of those determinants to harms; emphasising that we need to use harm as the organising principle, moving beyond the symptoms or behaviours of an individual and including the impact to the family, social networks, and community.
- Harm is measured by a range of methods: diagnostic criteria; behavioural symptoms; and experience of negative consequences. A number of limitations have been identified in the current practices for measuring gambling harm, based on the narrow

conceptualisation of the idea of harm being linked to clinical diagnosis, levels of severity or narrow measures of impact, and their failure to capture the harm beyond the individual or address the social construction of harm. Recognising that addressing the harmful behaviour can improve quality of life, it would be appropriate to include a measurement of the decrements caused to quality of life caused by gambling harm.

- Harms relating to people working in gambling-related fields.
- Links between harm and other public health issues of prominence.

### **Gaps – Understanding and Measuring Harm**

There appear to be significant issues regarding how gambling-related harm has been understood and measured, particularly in terms of what constitutes harm, and capturing the severity and frequency of harm beyond the individual gambler. Understanding the harms associated with low-risk gambling in particular needs further research.

Work addressing the critiques of the various ways in which gambling-related harm is measured is still in its infancy, but significant progress has been made in developing and testing the 72-item harm checklist (Li et al., 2016) based on Langham et al.'s (2016) conceptual framework. Recent research using the 72-item checklist shows promise, suggesting the need for research testing this checklist across various populations and risk categories. Shannon et al.'s (2017) 48 indicators of harm would also benefit from testing across populations and risk categories. Recent work on the development of responsible gambling limits by Dowling et al. (2018), and the preliminary set of behavioural indicators of responsible gambling consumption developed by Hing et al. (2016), are further key areas for future research.

## Support for policy development and regulation

In this section, we address the research question “What are the gaps in our understanding of support for policy development and regulatory effectiveness?”. The purpose here is to present:

- A brief summary of the articles reporting on support for policy development and regulatory effectiveness.
- A discussion of gaps in our understanding of support for policy development and regulatory effectiveness.

### *Peer-reviewed literature*

#### Overview

There were N=36 articles included in relation to support for policy development and regulation. The article types are summarised in Table 55. The studies were mainly exploratory studies (n=11) and discussion papers/commentaries (n=11).

**Table 55. Article type**

Article Type	No. or articles
Exploratory (document analysis)	11
Discussion paper/commentary	10
Qualitative study	8
Cross-sectional study	6
Literature reviews	1

The countries reported on is summarised in Table 56. The majority of the articles reported on policy/regulation in Australia (n=11).

**Table 56. Country of focus of research articles**

Country	No. or articles
Australia	11
Spain	2
NZ	2
Canada	2
Norway	2
Sweden	1
USA	1
China	1
Multiple	1
Finland	1
Hungary	1

In what follows we begin with a summary of the n=14 discussion/policy review articles, followed by the n=18 research articles, and finally the n=4 articles looking at the role of industry.

#### Summary: Discussion/policy review articles

The discussion articles (see Table 57) centre on international policy (n=7; policy overviews, proposals, insights), highlighting variation in policy approaches. However, in an editorial by Hodgins and Petry (2016), the authors note that harm reduction (in terms of the promotion of responsible gambling) is a common policy focus in many countries, despite the fact that it is

not known whether these approaches in fact lead to significant reductions in harm. They furthermore point to the lack of longer-term evaluations of changes in gambling policy.

**Table 57. Summary of discussion articles**

<b>Discussion/Policy Review Articles</b>	<b>No. or articles</b>
International policy	7
The Reno Model	5
Australian policy	2

There were also five articles discussing the Reno Model of Responsible Gambling (RG), which aims to “establish a global consensus on RG standards, definitions, and measuring instruments, leading to a cooperative research agenda that could ultimately help lower problem gambling incidence and prevalence rates” (Hancock & Smith, 2017, p. 1155). The Reno Model “outlined a set of science based strategic principles and guidelines for developing, implementing, and maintaining responsible gambling activities” (Ladouceur, Blaszczynski, Shaffer, & Font, 2016, p. 580). Two articles discuss extensions of the Model (Ladouceur, Blaszczynski, Shaffer, & Font, 2016; Shaffer et al., 2015). Other articles include a critique of the Reno Model by Hancock and Smith (2017a), a response to the critique (Shaffer et al., 2017), and a further response from the authors of the original article (Hancock & Smith, 2017b). While there is no scope here to capture the detail of the various viewpoints, all of them highlight the need to monitor and empirically evaluate responsible gambling programs.

There were two Australian discussion articles. One looked at regulation of sports betting advertising (with a focusing on the application of analysis developed from public health research on the tobacco industry; Hancock et al., 2018). The other proposed a cross-sector approach to service delivery to address the needs of problem gamblers with co-morbid mental health issues (Martyres & Townsend, 2016).

Summary: Research articles

Of the 18 research articles included in this section, half (n=9) were from Australia. The articles demonstrate the emphasis in Australia and internationally on harm reduction in the form of ‘responsible gambling’, as noted by Hodgins and Petry (2016). The main areas of focus are consumer responses to/views of programs and campaigns (n=5), the effect of policy on gambling/problem gambling (n=4), and discourses of “responsible gambling” (n=3). There were also two studies relating to policy implications of sports betting advertising (see Table 58). The articles included both quantitative (n=8) and qualitative (n=6) designs, with four being review articles.

**Table 58. Area of focus of research articles**

<b>Research: Area of focus</b>	<b>No. or articles</b>
Responses to/views of programs/campaigns	5
Effect of policy on gambling/problem gambling	4
Discourses of Responsible Gambling	3
Sports betting advertising	2
Responsible gambling codes and cultural diversity	1
Health promotion approaches and Australian Indigenous communities	1

Analysis of Licensing decisions	1
Effect of policy on community awareness	1

Australian research included articles exploring codes of practice and health promotion in relation to culturally diverse/Indigenous populations (Fogarty, 2017; Fogarty et al., 2018). These highlighted the importance incorporating cultural competency frameworks and the need for the design and evaluation of programmes applicable to these communities.

Qualitative articles noted the potentially unintended consequences of a responsible gambling approach being stigmatisation of problem gamblers, and hence a reluctance in this population to seek help. For example, Thomas et al. (2015) interviewed 100 gamblers with a range of gambling behaviours (from non-problem to problem gambling) about their attitudes towards and interactions with social marketing campaigns. Participants saw campaigns as targeting gamblers with severe problems, with a focus on encouraging individuals to take personal responsibility for their gambling. They also believed campaigns were overwhelmed by positive messages from the gambling industry. Finally, some participants felt the focus on personal responsibility reinforced the stigmatisation of problem gambling and undermined help-seeking. Miller et al. (2016) examined government and gambling industry websites, television campaigns, and responsible gambling materials. They report similar concerns that the expectation that gamblers should behave responsibly has led to stigmatisation by constructing problem gamblers as a deviant group. In a recent study involving interviews with 26 people with experience of gambling problems involved in peer support and advocacy activities, Miller and Thomas (2018) further noted the contribution of problem gambling discourses to the felt and enacted stigma associated with problem gambling. Concerns about the ways in which responsible gambling policy shifts the blame from industry onto the problem gambler have also been explored in qualitative research internationally (Alexius 2017; Selin 2016).

Australian research also included a content analysis of media reporting of sports betting (David et al., 2017) and a content analysis of factors relevant to license decision made by Victoria’s gambling regulator between 2007 and 2014 (Francis et al., 2017). Both articles highlighted that gambling-related harms are not well conceived or understood. According to Francis et al. (2017, p. 65), lack of clarity in understanding and measuring harm in relation to licensing may lead to “unnecessarily high levels of community harm, contradicting the purposes of the relevant legislation”.

Two Australian studies explored consumer perspectives of policy approaches. A survey by Jackson et al. (2016) looked at consumer perspectives on EGM harm minimisation policies, which found a differential effect of the various policies (e.g., visible clock, reduction in maximum lines, etc.) on non-problem and moderate/problem gamblers. A survey of community perceptions of gambling-related harms and policy support (Thomas et al., 2017) found strong agreement with the need to ban gambling advertising (e.g., during sports events and during children’s viewing hours), reducing and restricting EGMs, and providing more education about the negative consequences from gambling.

There were no Australian studies examining the effect of policy on gambling published since 2015. International studies on this issue explored the effect of restrictions on gambling availability on gambling expenditure and problem gambling (Rossow & Hansenn 2016, Norway), the effect of legalising online gambling on rates of pathological gambling (Choliz et al., 2016, Spain), and the effect of increasing the minimum legal age on prevalence of gambling (Raisamo et al., 2015, Finland). There was also a study of the effect of policy change in Hungary in the context of criminal justice (Tessenyi & Kovacs, 2016).

### Summary: The effect of industry on gambling research and policy

The final area explored by articles in this section is the effect of industry on gambling research and policy (n=4). Concern about the role of industry was noted by Hodgins and Petry (2016) in their editorial discussion mentioned previously, and also in a further two discussion articles (Livingstone & Adams, 2016; Young & Markham, 2015). Young and Markham (2015) note the importance of full and transparent disclosure of funding of research. Livingstone and Adams (2016) proposed a number of principles to restore integrity in gambling studies focused on how gambling research is funded, research prioritization and level of industry influence, and disclosure of funding sources.

In terms of research articles, there were two Australian studies. St Clair Buchanan & Elliott (2017) conducted interviews with key stakeholders and a media analysis and noted the importance of industry being proactively socially responsible. Ladouceur et al. (2018) examined whether there are differences in design/methodologies between responsible gambling studies funded by industry compared to other sources, with no significant differences found. However, they did not report on study outcomes, and highlighted the importance of open and transparent disclosures.

### *Grey literature*

As expected, the grey literature was a rich source of discussion and debate about policy and regulation associated with gambling (N=9 reports). The report types are summarised in Table 59.

**Table 59. Report type**

<b>Report Type</b>	<b>No. of articles</b>
Literature review	3
Discussion paper/commentary	3
Systematic review	1
Mixed-methods study	1
Exploratory study	1

The countries reported on is summarised in Table 60. The majority of the reports were Australian (n=4).

**Table 60. Country of focus of grey literature**

<b>Country</b>	<b>No. of articles</b>
Australia	4
Multiple	2
Scotland	1
Canada	1

### Summary

The call for a broader Public Health Approach was pervasive throughout the grey literature, with five reports focusing on this. In Australia, the Victorian Responsible Gambling Foundation (2015), for example, argues that the complex interplay between the determinants of health and behaviours means a combination of strategies are needed. Prevention of harm requires a multi-level response; risk occurs along a continuum with tailored prevention strategies required at each point on the continuum; primary, secondary and tertiary prevention strategies are needed within a Public Health model. In Canada, The Gambling

Research Exchange Ontario (2017) conducted a literature review on the relationship between problem gambling and comorbid mental health and substance abuse disorders, in addition to exploring the literature on the prevalence of problem gambling among vulnerable populations, with a view to exploring the capacity for a public health approach to addressing problem gambling.

Elton-Marshall et al. (2018) provide a comprehensive analysis of how gambling policy might follow the direction taken with tobacco policy and regulation internationally. They ask 'Would a public health approach similar to that applied to tobacco (i.e., the Framework Convention on Tobacco Control (FCTC)) be transferable to the gambling area?' They articulate and apply several of the Articles within the FCTC specifically to gambling; suggesting how these predominantly public health approaches might apply.

A further issue explored in a report by the Victorian Responsible Gambling Foundation (2017) relates to the concept of 'responsible gambling'. The authors note in particular a focus on the dichotomy between problem and responsible gambling, which ignores other gamblers who may be harmed. The authors therefore propose "responsible gambling needs to be redefined in a way that will better influence gamblers in the low and moderate-risk categories" (p.3).

Anderson (2016), in their review of the current administrative arrangements for the regulation of commercial gambling in South Australia, reported several general issues identified by submissions to the review. These related to opportunities to consolidate the roles of multiple government agencies, and enhance their working relationships with each other, to provide a less cumbersome and confusing and more efficient and predictive regulatory framework.

### **Gaps – Support for Policy Development and Regulation**

Recent literature on policy and regulatory effectiveness identified in this review highlight the dearth of research in this area. Literature identified in the previous section on harm minimisation and prevention strategies suggest important avenues for future policy development and evaluation (e.g., pre-commitment, maximum bet limits, educational programs, behavioural indicators of problem gambling, etc.) In addition, the literature discussed in the section on emerging technologies and new trends suggests the need for policy and regulation in areas such as gaming, Internet gambling, and advertising.

Public health is about shared responsibility for population health. However, current approaches appear to emphasise individual responsibility for behaviour. Unintended consequences might be stigmatising those with gambling problems, leading to reluctance to seek help. This is of significant concern.

Furthermore, clarity is needed in conceptualising gambling-related harm, and longitudinal research is needed on the effectiveness of policy/regulation in the Australian context. There is also a need for the design and evaluation of programmes applicable to culturally diverse/Aboriginal and Torres Strait Islander communities. The literature furthermore supports the need for a public health approach to gambling policy across primary, secondary, and tertiary prevention strategies.



## DISCUSSION

The purpose of this rapid review was to:

- Review national and international evidence into gambling products and related harm across gambling risk segments.
- Identify gaps in the existing evidence base.
- Synthesise key findings of academic and 'grey' literature and prioritise key areas of focus.
- Identify key emerging issues from the review which require further investigation.
- Identify lessons learned from the public health approach and how this can be applied to the gambling field.

In particular, the ORG were interested in the following research questions to address key themes of interest:

1. What are the gaps in our understanding of gambling prevalence?
2. What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?
3. What are the gaps in our understanding of emerging technologies and new trends?
4. What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?
5. What are the gaps in our understanding of what works in prevention and harm minimisation?
6. What are the gaps in our understanding of understanding and measuring harm?
7. What are the gaps in our understanding of support for policy development and regulatory effectiveness?

A total of 541 documents, comprising 455 peer-reviewed articles and 86 grey literature reports were identified since 2015. The majority of this literature was research using a cross-sectional design (39%, n=210, comprising n=191 peer-reviewed; n= 19 grey literature). Australian research comprised a large proportion of the literature, with 27% of the literature being Australian (n=147, comprising n=100 peer-reviewed; n= 47 grey literature). Quality analyses indicate the research was of fairly high quality. Areas of greater variation in quality related to RCTs in the treatment (with issues relating to lack of transparency around reporting of each stage) and prevention and harm minimisation domains.

Looking at the body of literature as a whole, the majority of the literature addressed attitudes and behaviours of vulnerable/target groups (n=137 documents; 25% of all literature included) and emerging technologies and new trends (n=119; 22%). Areas of particular focus in these domains included adolescent populations and Internet gambling, explored both separately and together. Areas where less literature was identified include policy and regulatory effectiveness (n=45; 8%; with much of this literature being review and commentary) and gambling and problem gambling prevalence in general populations (n=50; 9%). Australian research identified over the review period has also tended to coalesce in the areas attitudes and behaviours of vulnerable/target groups (n=38; 26% of all Australian literature included) and emerging technologies and new trends (n=32; 22%).

Overall, this rapid review of the literature demonstrates the breadth of focus in the gambling literature identified since 2015, reflected in the proliferation of cross-sectional research. This suggests that sufficient descriptive work has been done across the various domains with nowhere near enough evidence of effectiveness or efficacy outside of the treatment context. What is needed now is a research agenda focused on depth, building sequentially on

previous research. We need a clearer understanding of gambling-related harms across all categories of risk, and how these are experienced across the range of new technologies and emerging trends, and in relation to both the general population and vulnerable/target groups, in order to best support prevention, harm minimisation, and treatment efforts. Developing a solid research foundation to understand these issues would inform the development and implementation of a public health policy approach in Australia.

In what follows, we begin with a summary of the gaps for each domain in order to answer the research questions. This is followed by a presentation of areas for future research in line with the RGF Research Agenda priorities and key approaches.

## **Answering the Research Questions**

### **What are the gaps in our understanding of gambling prevalence?**

There has been extensive research into gambling participation and problem gambling prevalence in Australia and internationally. A key issue in the current literature on prevalence relates to sampling frames and methods, which exclude populations in institutions or those without phones, particularly as growing segments of the population move to using mobile phones rather than landlines. A significant gap in our understanding of gambling prevalence relates to screening for or diagnosing Problem Gambling. To date there is no internationally recognised agreed instrument for screening/diagnosis, with multiple methods and cut-off points used across the existing literature. A greater focus on prevalence across all levels of risk is also needed. Longitudinal studies are needed in the Australian context to identify transitions in and out of gambling.

### **What are the gaps in our understanding of attitudes and behaviours towards gambling in vulnerable or target groups?**

Understanding the attitudes and behaviours of vulnerable and at-risk populations is important in developing targeted prevention and harm minimisation strategies, in addition to problem gambling treatment, for these populations. Research has tended to focus on gambling behaviour (particularly prevalence of gambling and problem gambling), with very limited recent research exploring attitudes towards/reasons for gambling in vulnerable/target groups.

International research reports greater gambling participation and/or prevalence of problem gambling in a number of populations, including adolescents, young adults, older adults, minority groups, Indigenous groups, people with mental health problems, people with alcohol/substance use problems, veterans, homeless populations, and people in the criminal justice system. However, there is limited recent Australian research into the prevalence of problem gambling among at-risk populations (particularly adolescents, university students, Aboriginal and Torres Strait Islander populations, veterans, homeless populations); this includes the absence of a clear picture of the trajectory of risk and harm leading to problem gambling for these populations. This has significant implications for prevention and early intervention efforts with these populations.

Adolescents were the most widely researched group internationally, with limited Australian research into this group; however, longitudinal research is needed to explore potential changing attitudes, particularly regarding Internet gambling, simulated gambling, and motivators for gambling. There is, furthermore, a need for more research on the influence of gambling marketing and timing of advertising, particularly related to sports betting, on children, adolescents, and young people. Some interesting and more nuanced research is emerging from the grey literature, in particular; notably Sieglhoff's (2017) study of rural youth, and Jenkinson et al.'s (2018) mixed methods study of young men, sports and betting. The impact of marketing via social media on young people requires further examination.

International research into older people reports loneliness, boredom, and bereavement as motivators to gambling; however, limited international research was identified in this area and no Australian studies were identified in this review. Further research is also needed on the attitudes and behaviours towards gambling of people with mental health problems; particularly, there is a need for research that takes account of complex comorbidity, psychosocial complexity, and the social determinants of mental health.

While there were 12 studies of cultural minorities in the peer-reviewed literature, only two were Australian, one of which was a discussion piece. There were four reports in the grey literature: two were reviews/discussion papers. More research is therefore needed exploring the attitudes and behaviours of cultural minorities in Australia. Given higher rates of problem gambling among Aboriginal and Torres Strait Islanders, more research is needed to understand attitudes towards gambling and gambling behaviour, as well as a clearer understanding of barriers to early recognition of harm and enablers to early help-seeking, and the influence of culture among this population.

Overall, there is limited current research to inform effective strategies for prevention and early intervention with at-risk groups. Public health approaches that acknowledge the social determinants of health and seek to understand the particular unique features of gambling for various sub-groups are needed. Mixed methods studies that measure prevalence and gambling patterns alongside strong qualitative studies appear to provide the best opportunity to understand why prevalence is higher in various sub-populations.

#### **What are the gaps in our understanding of emerging technologies and new trends?**

Internet (or online) gambling was the most commonly researched emerging technology/trend. While greater rates of problem gambling were associated with this form of gambling, more recent research suggests gambling via the Internet is not inherently problematic but rather appears to affect different gamblers in different ways. In addition, recent research suggests the potential for greater problems associated with gambling via mobile/smartphone. The 'hidden' nature of risk and harm, and challenges for monitoring online gambling were particularly noted. These are areas for future research. With greater online gambling opportunities, more is needed to be known about the impact of impulsive opportunistic gambling.

In terms of simulated gambling, research generally supports the concept of migration to monetary gambling, particularly in young people. Longitudinal studies are needed to further explore the migration to gambling for money. The emergence of Cryptocurrency and Block Chain will likely also warrant research. The link between video gaming in general and gambling (in terms of whether engagement / problems in one activity is associated with engagement / problems in the other) is still not clear, suggesting the need for further research.

Changes to the structure and operation of electronic gambling machines (EGMs) is another emerging technology /trend identified in the literature; in particular, in relation to various features of EGMs that may increase or decrease harm to gamblers. Limited research was identified overall since 2015, and researchers tended to focus on individual features. One study in the grey literature examined the venue environment in detail, in relation to automatic teller machines (ATMs) and their proximity to EGMs (Schottler, 2017a). A more systematic approach covering the effect of various features, both individually and in combination, is needed to fully understand which features contribute to gambling disorders and harm.

Evidence of the effect of EGM features from within industry and fields of science outside of health is not generally available. There is also a potential gap in the medico-legal health literature that examines liability of EGM designers in concealing information about the use of

potentially harmfully addictive devices (similar to the tobacco industry concealment of the dangers of smoking).

A significant emerging area of future research relates to sports betting and the effect of the current expansion of the sports betting market and its effect on gambling prevalence and problem gambling (particularly given Armstrong et. al.'s (2018) findings showing an increase in participation in this area), and the effect of advertising on gambling attitudes, behaviours, and gambling-related harm. There is evidence from the grey literature that examination of these trends is moving into a more mature space. For example, an Industry-driven discussion paper by Martin (2017) explores the implications of 'big data' and data analytics in detail, and their potential for use in understanding how people bet.

Finally, there is growing interest in the role of loyalty programs in terms of both their potential for harm and possibilities for harm minimisation. This was explored in a recent review published after our search period. Whol (2018) notes that there is limited research on the role of loyalty programs, identifying the need for empirical research on antecedents and consequences of these programs, in addition to exploration of their potential in terms of harm minimisation.

### **What are the gaps in our understanding of the long-term efficacy and effectiveness of treatments?**

The most widely researched form of treatment was Cognitive–Behavioural Therapy (CBT) interventions, with efficacy/effectiveness demonstrated in a number of recent studies and systematic reviews. However, research has tended to focus on outcomes in the short term, with limited knowledge about long-term efficacy and effectiveness. Motivational interviewing and mindfulness-based approaches also look promising in terms of short-term outcomes, but more research is needed. Longitudinal studies are therefore needed to explore long-term efficacy across all treatment types. With its focus on treatment efficacy/effectiveness, this review did not explore the area of natural recovery from gambling problems, and so it is not known the extent to which this aspect has been researched.

Combining approaches is an emerging area, with further research needed. Treatment approaches tend to focus on high-risk and problem gamblers, with less focus on gamblers in the lower-risk groups. In addition, more evidence is needed to draw conclusions about the benefits of any medications.

Given that the majority of problem gamblers do not seek treatment, and there are high dropout rates in psychological approaches delivered face-to-face, providing alternate methods of access to treatment such as via the Internet or telephone, and brief interventions, could address help-seeking barriers. This review did not explore the literature on effective early interventions for gamblers with emerging problems, and it would be worthwhile exploring this. Research suggests that, while face-to-face treatments are more effective, alternate modes could provide an access point to more in-depth, counsellor-focused treatment forms. Furthermore, these alternate approaches are emerging ways to address the needs of low-risk gamblers as a way of preventing their migration to high-risk or problem gambling. Rodda, Lubman, and Dowling (2016) stress that e-health interventions show clear promise across the spectrum of emerging and problem gamblers; however, further research is needed. Littman-Sharp (2017) stressed that inclusion of families of gamblers in treatment has been largely overlooked.

### **What are the gaps in our understanding of what works in prevention and harm minimisation?**

The research into prevention and harm minimisation demonstrates an overwhelming focus on harm minimisation, conceptualised in terms of responsible gambling, with a dearth of research on prevention. A number of strategies, particularly personalised feedback, self-

exclusion, and dynamic pop-up messages on EGMs, show promise, at least in the short term and for some gamblers. However, further research is needed, particularly longitudinal research and studies addressing the issue of who benefits from the various harm minimisation approaches (no-, low-, moderate-risk, problem gamblers). In the grey literature, Brown's (2017) UK briefing paper highlights the challenges in providing and monitoring multi-operator self-exclusion schemes within the increasingly online gambling environment. Schottler's (2017b) research examining the potential for a third-party (e.g., family, friend, or venues) exclusion scheme offers important insights and cautions for harm minimisation. Given the limited research into prevention, further research is needed in this area. Finally, future research would benefit by a greater focus on measuring effectiveness in relation to harm reduction, linked to a clear approach for understanding and measuring harm.

### **What are the gaps in our understanding of Understanding and Measuring Harm?**

There appears to be a limited understanding of the construct of 'harm' specific to the continuum of gambling risk, in particular in relation to harms associated with low-risk gambling in addition to understanding harm as it extends beyond the individual gambler into the broader community. A better understanding of the continuum of harm is important in obtaining a clear picture of the prevalence of gambling and gambling-related harm in Australia, and in relation to various forms of gambling (e.g., Internet gambling) and gambling types (e.g., speed of play). Such an understanding would furthermore inform the development of low-risk gambling limits and harm minimisation strategies.

Further gaps relate to how best to capture the severity and frequency of harm. The 72-item harm checklist shows promise, particularly as it supports the capacity to measure harm beyond the realm of the individual gambler; although it has yet to be applied in this way, with its validated short form (the Short Gambling Harms Scale; SGHS) able to be used only for exploring harm in gamblers themselves.

Browne et al. (2016, p.146-7) argue strongly that, "most of the attention given to gambling reform and public health efforts focuses on preventing people from becoming problem gambling or assisting problem gamblers; however, the largest source of harm is occurring outside this group". The issue of how gambling-related harm is understood and measured across the various risk groups (low-risk, moderate-risk, problem gambling) underpins the other areas of focus in this review and is therefore a key gap in the literature.

### **What are the gaps in our understanding of support for policy development and regulatory effectiveness?**

In terms of support for policy development and regulatory effectiveness, the articles in this review demonstrate a focus on harm minimisation in terms of individual responsibility in policy, both in Australia and internationally. This issue is likely exacerbated due to emerging technologies and new trends in gambling, making it difficult to impose regulations on gambling products. There is considerable criticism of this focus on individual responsibility, particularly in relation to its effect on felt and enacted stigma associated with problem gambling, and the associated negative effect on help-seeking. In the grey literature, there is an increasing dialogue stressing the potential of taking a public health approach, in particular by considering similar policy and regulatory approach to those taken in other areas and the lessons learnt from those areas. The field of tobacco control (Elton-Marshall et al, 2017) is a notable example that focuses on price and taxation, product content and environmental concerns, health warning labelling, strengthening public awareness, addressing advertising, looking at demand reduction measures (particularly for at-risk populations), and improved research coordination.

In terms of regulatory effectiveness, there is a dearth of research exploring the effectiveness of policy and regulation, with limited international research. There were no Australian studies

identified examining the impact, benefits, or otherwise of policies or regulation published during the timeframe of this review. A key issue in this domain relates to understanding and measuring harm across the continuum of risk to inform both measuring effectiveness and future development of policy and regulation.

## Areas for future research

The review identifies multiple gaps across the range of areas of focus. In this section, we aim to synthesise the gaps to propose more focused areas of future research.

Overarching areas for future research relate to the following gaps:

- The need to shift the focus from the relatively small number of Australians who are problem gamblers to understanding and addressing the attitudes, behaviours, adverse consequences, and needs for:
  - Low to moderate risk gamblers.
  - At-risk groups, particularly young people, CALD populations, and those with mental health problems.
  - Family, significant others, and the wider community.
- The need to further explore the following new technologies and emerging trends:
  - Online gambling (who is at risk; modes of access; the role of accessing multiple types of gambling activities).
  - EGM characteristics, broadening the focus from examining the effect of individual characteristics to how various characteristics interact.
  - The possible effects of industry inducements on gambling related harm (includes loyalty programs and the wider venue environment).
  - Simulated gambling, and exploring the migration pathway from simulated gambling to gambling for money.
  - Sports betting – rates of involvement and associated risk.
  - The role of advertising, regarding sports betting and advertising on simulated gambling and online gambling platforms.
- The need for a comprehensive understanding of gambling-related harm and the ability to measure harm across low-moderate risk gamblers through to problem gamblers, and extending out from the individual gamblers to significant others and the broader community.

In what follows we draw on these gaps to discuss areas for future research in line with the RGF Research Agenda priorities and key approaches. This was done to inform:

- The development of evidence-based responsible gambling policy, initiatives and regulatory approaches.
- Innovations in prevention, harm minimisation, intervention, and support.
- Education and awareness programs to assist the people of NSW to make informed choices, build awareness of responsible gambling and gambling related harm, and de-stigmatise help-seeking behaviour.

### *The development of evidence-based responsible gambling policy, initiatives and regulatory approaches*

There are two main areas of concern at the policy level in relation to responsible gambling approaches. The first concern is the current focus on harm minimisation in the form of 'responsible gambling' behaviours by individuals. While it is an important element of harm minimisation, it appears to be having an unintended consequence of stigmatising problem gambling. This could prevent problem gamblers, and those in the lower levels of risk and at-risk sub-populations, from identifying themselves as the target group of policy initiatives, and from recognising potential problems and seeking help. A recent Australian study concerning

venue based responsible gambling initiatives (published after this review cut-off time-point), suggests less emphasis be placed on the identification of potential problem gamblers, with greater attention to raising awareness of gambling harms to all gamblers (Riley, Orłowski & Smith et al., 2018).

This review has furthermore noted a lack of research into common industry practices and their influence on gambling attitudes and behaviour. While industry-orientated research has focused on how to maximise gambling activity such as using loyalty programs and the physical layout of gaming rooms, gambling researchers have largely overlooked this area. Though there is emerging research examining how specific characteristics of gaming machines both encourage and limit excessive gambling behaviour, we did not identify any empirical studies during the past five years that have explored the influence of the broader gambling environment. For example, how do gamblers (including at-risk minority sub-groups) experience inducements offered in the gambling environment (both land and internet-based)? Further, what is the relationship between such inducements and gambling-related harm? One recent article identified in this review argues that the environments in which gambling occur can play a significant role in managing gambling-related harms (Adams & Wiles, 2017). Robust research in this space may provide important opportunities to inform policy and practice. Overall, there is a clear need for a public health approach that recognises the “shared responsibility for population health” (Victorian Responsible Gambling Foundation, 2015, p. 6) and that understands and addresses gambling harm for specific population groups, rather than focusing predominantly on individual gamblers.

The second issue is the lack of an evidence base for policy effectiveness, particularly for harm minimisation policies that aim to focus on low/moderate risk gamblers and at-risk groups. The adoption of a public health approach should therefore be underpinned by research the effectiveness of such an approach, and incorporate a commitment to evaluating effectiveness and adjusting approaches considering such evaluation. Given the identified need to broaden the policy approach to incorporate a clearer underpinning evidence base for harm minimisation policies that are effective with low/moderate risk gamblers and at-risk groups, we propose the following areas for future research:

- Qualitative research into the attitudes and behaviours towards various forms of gambling, including emerging technologies and new trends (e.g., the convergence of gaming and gambling), and industry inducements, focusing on at-risk sub-populations and gamblers at the lower levels of risk.
- Building on this, quantitative research to explore the extent to which these attitudes and behaviours are representative of the broader populations.
- Using this research to develop a public health approach (informed by extensive work in the areas of tobacco and alcohol) that:
  - Incorporates an integrated, multi-pronged approach (population-wide and targeting high risk groups) delivered across a range of settings, and
  - Considers the roles and responsibilities of individuals, community groups, business, corporations, and all levels of government, rather than focusing on a ‘deviant’ group of problem gamblers (see Victorian Responsible Gambling Foundation, 2015).
- The development of a research program to evaluate policy effectiveness, with well-defined outcomes measures.
- Finally, given the recent introduction of the inter-jurisdictional National Consumer Protection Framework for online wagering, future research will be needed evaluating this policy initiative.

### *Innovations in prevention, harm minimisation, intervention and support*

In relation to prevention, harm minimisation, intervention, and support, a critical focus needs to be on developing a clear definition of gambling related harm and a measure of harm that reflects the effect of gambling at multiple levels of harm, considering the severity and temporality of harm. Our recommendation of areas for future research in this area include:

- Evaluating the reliability and validity of measures such as the 72-item harm measure across the range of risk populations and levels of harm (individual, community, etc.).
- Administering the validated measure through services, websites, and in early intervention activities and prevalence studies to determine how Australians experience gambling-related harm.
- Drawing on this work to develop an instrument to measure all aspects of gambling recovery, for use in intervention studies.

Furthermore, current approaches lack a longitudinal view of effectiveness of regulation, prevention, early intervention, harm minimisation, and treatment targeted across the range of risk-populations (from low-risk to problem gamblers) and across various gambling behaviours (e.g., Internet gambling). A comprehensive research program incorporating study designs that build on each other sequentially to explore effectiveness is needed. Using the taxonomy of treatment interventions developed by Rodda, Merkouris et al. (2018) in future research would furthermore allow systematic identification of intervention characteristics to better understand which treatment characteristics account for greater or lesser effectiveness.

Areas for future research include longitudinal studies, using effectiveness measures as discussed above (and making use of big data that is available and easily accessible), exploring:

- The effectiveness of existing harm minimisation measures (e.g., personalised feedback, pop-up warning messages) across the various risk populations and gambling contexts.
- The effectiveness of brief interventions and those delivered via the internet/telephone across the various risk populations.

While not a focus of the current review, a greater understanding of informal pathways to recovery and what can be done to facilitate this process would also be helpful. For example, recent research suggests spontaneous, or natural, recovery is characterised by change strategies used by gamblers to reduce or limit gambling behaviours. Rodda et al. (2018) compiled an inventory of these strategies and conducted a survey with 489 gamblers to explore their helpfulness. Further understanding of such strategies could underpin the development of interventions to support self-management of gambling and problem gambling.

### *Education and awareness programs*

A significant gap in the literature is around prevention, such as the effect of education and awareness programs targeting at-risk populations and the broader population. A key aspect of this is to address the normalisation of gambling behaviour identified in this review, particularly in terms of the effects on gamblers across all risk categories (see e.g., Russell, Langham, Hing & Rawat, 2018 on social networks). Not only is normalisation of gambling a problem in terms of facilitating engagement in gambling, particularly in young people; a recent study by the Victorian Responsible Gambling Foundation (Vasiliadis & Thomas, 2016) suggests individuals may delay recognition of a problem due to gambling being normalised by their social milieu. Approaches to prevention should build on a clear understanding of the attitudes, behaviours, and needs of various populations and risk groups, and an understanding of harm extending beyond the individual gambler, as discussed previously. It



is also important to develop effective stigma-reduction interventions to address public stigmatisation and perceived and self-stigma experienced by people with gambling problems (Hing, Russell, Nuske & Gainsbury, 2015). Programs furthermore should be developed incorporating a research program to evaluate their effectiveness.

## Limitations

As a rapid review, some limitations were placed on the methodology used to search the literature and, in particular, the need to use general search terms across the domains of focus without the capacity to incorporate a wide range of terms for each domain. A further issue related to the limited search terms used in this review relates to family/significant others. While some issues for families were identified in this review, the lack of specific search terms limits our ability to identify gaps in our knowledge and understanding of the needs of this vulnerable group. The seven questions that formed the basis of this review are themselves a limitation in that they differ in focus (e.g., treatment literature focusing on efficacy/effectiveness versus other areas addressing broader issues such as “what works” in prevention and harm minimisation).

Further limitations relate to the omission of literature published prior to 2015 and the inability to search reference lists. The rapid review timeframe also did not allow for a more comprehensive and fine-grained analysis of the evidence, particularly given the wide range of areas of focus, and quality ratings were only conducted for some of the included peer-reviewed literature.

Full reading of the grey literature was also not possible, and its quality was not rated for this review. Some grey literature reports had parallel peer-reviewed publications also reporting on the study outcomes; however, many evidence sources only appeared in the grey literature. Fortunately, many grey literature sources (particularly large literature reviews) were produced by reputable research groups that were also recognised as prominent experts in the gambling research field, more broadly.

A more general limitation likely arises from considering gaps from the perspective of what already exists. This may have introduced an inherent bias by relying on the gaps and recommendations for further research that particular experts and research teams promoted as important. This may account, in some measure, for example, on the limited research with certain subpopulations known to be at greater risk of gambling harm, such as Indigenous populations and CALD/refugee populations.

A further, related limitation is that the Australia gambling research field is quite small and there could be benefits in drawing from broader perspectives when considering what else could be studied. In particular, there was strong rhetoric for adopting a public health approach but limited deep analysis looking at similar areas (such as alcohol and tobacco consumption, policy and regulation) where this approach has shown to be effective at reducing harm.

## **The Project Team**

Professor Lawn was the research team leader for this project, was one of the three primary reviewers, leading the grey literature search and the overall design of the project.

Dr Candice Oster was the senior project officer and led the primary review process for the peer-reviewed literature, and synthesis of the data.

Mr Ben Riley was the second project officer and was one of the three primary reviewers, and contributed subject matter expertise.

Professor Michael Baigent acted as a subject matter expert and contributed to the synthesis and refinement of the outcomes of the review.

Dr David Smith acted as a subject matter expert and contributed to the synthesis and refinement of the outcomes of the review.

Ms Josephine Gill was the Flinders University expert medical librarian who guided the database search strategy in collaboration with the research team.

Ms Sara Zabeen was the research assistant who assisted in population of the literature review summary tables.

Mrs Sue Pfitzner and Mrs Adriana Turner provided some administrative support to formatting the report.

## GENERAL REFERENCES

Bodily R, Leary H, West RE. (2019) Research trends in instructional design and technology journals. *British Journal of Educational Technology* **50**, 64-79.

Browne M, Langham E, Rawat V, et al. (2016) Assessing gambling-related harm in Victoria: a public health perspective. Victorian Responsible Gambling Foundation, Melbourne.

CASP UK (2017) Critical Appraisal Skills Programme (CASP): Making sense of evidence. Oxford: CASP UK. Available at: <http://www.casp-uk.net/casp-tools-checklists>.

Cowlshaw S, Merkouris S, Dowling N, Anderson C, Jackson A, Thomas S. (2012) Psychological therapies for pathological and problem gambling. *Cochrane Database of Systematic Reviews*, Issue 11. Art. No.:CD008937

Joanna Briggs Institute (2014) The JBI levels of Evidence. Available at: <http://joannabriggs.org/jbi-approach.html#tabbed-nav=Levels-of-Evidence>.

Joanna Briggs Institute (2017) Critical Appraisal Tools. Available at: <http://joannabriggs.org/research/critical-appraisal-tools.html>.

Khangura S, Konnyu K, Cushman R, Grimshaw J, Moher D. (2012) Evidence summaries: the evolution of a rapid review approach. *Systematic Reviews* 1(1),10. Available from: <http://dx.doi.org/10.1186/2046-4053-1-10>.

Gainsbury S, Russell A, Hing N, et al. (2014) The prevalence and determinants of problem gambling in Australia: assessing the impact of interactive gambling and new technologies. *Psychology of Addictive behaviors* **28**, 769-779.

Hing N, Russell A, Nuske E, Gainsbury S. (2015) The stigma of problem gambling: Causes, characteristics and consequences. Victoria, Australia: Victorian Responsible Gambling Foundation.

Hong QN, Pluye P, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O’Cathain A, Rousseau M-C, Vedel I. (2018) Mixed Methods Appraisal Tool (MMAT), version 2018. Registration of Copyright (#1148552), Canadian Intellectual Property Office, Industry Canada.

Ladouceur R, Shaffer P, Blaszczynski A, Shaffer J. (2017) Responsible gambling: a synthesis of the empirical evidence. *Addiction Research & Theory* **25**, 225-235.

Langham E, Thorne H, Browne M, et al. (2016) Understanding gambling related harm: a proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health* **16**, 80.

Laranjo L, Lau A, Oldenburg B, Gabarron E, O’Neill A, Chan S, et al. mHealth technologies for chronic disease prevention and management: an Evidence Check review brokered by the Sax Institute ([www.saxinstitute.org.au](http://www.saxinstitute.org.au)) for Healthdirect Australia. 2015

Pearson A, Field J, Jordan Z. (2009) Appendix 2: Critical Appraisal Tools. In *Evidence-Based Clinical Practice in Nursing and Health Care*. Blackwell Publishing Ltd, pp.177-182.

Pickering D, Keen B, Entwistle G, Blaszczynski A. (2018) Measuring treatment outcomes in gambling disorders: a systematic review. *Addiction* **113**, 411-426.

Productivity Commission (2010) Gambling. Report no. 50: Canberra: Productivity Commission.

Riley BJ, Orłowski S, Smith D, Baigent M, Battersby M, Lawn S. (2018) Understanding the business versus care paradox in gambling venues: a qualitative study of the perspectives from gamblers, venue staff and counsellors. *Harm reduction journal*, **15**, 49-62.

Rodda SN, Bagot KL, Cheetham A, Hodgins DC, Hing N, Lubman DI. (2018) Types of change strategies for limiting or reducing gambling behaviors and their perceived helpfulness: a factor analysis. *Psychology of Addictive Behaviors* **32**, 679-688.

Rodda S, Merkouris SS, Abraham C, Hodgins, DC, Cowlshaw S, Dowling NA. (2018) Therapist-delivered and self-help interventions for gambling problems: a review of contents. *Journal of Behavioral Addictions* **7**, 211-226.

Russell A, Langham E, Hing N, Rawat V. (2018) Social influences on gamblers by risk group: An egocentric social network analysis, Victorian Responsible Gambling Foundation, Melbourne.

Trout AL, Nordness PD, Pierce CD, Epstein MH. (2003) Research on the academic status of children with emotional and behavioural disorders: a review of the literature from 1961 to 2000. *Journal of Emotional and Behavioral Disorders* **11**, 198-210.

Victorian Responsible Gambling Foundation (2015) Using a public health approach in the prevention of gambling-related harm. Victoria: Victorian Responsible Gambling Foundation.

Watt A, Cameron A, Sturm L, et al. (2008) Rapid versus full systematic reviews: validity in clinical practice? *ANZ Journal of Surgery* **78**, 1037-1040.

Wohl MJA (2018) Loyalty programmes in the gambling industry: potentials for harm and possibilities for harm-minimization. *International Gambling Studies* **18**, 495-511

## PEER-REVIEWED LITERATURE REFERENCES

### Gambling prevalence

Abbott M, Stone CA, Billi R, Yeung K. (2016) Gambling and Problem Gambling in Victoria, Australia: Changes over 5 years. *Journal of gambling studies* 32(1): 47-78, doi <https://dx.doi.org/10.1007/s10899-015-9542-1>.

Abbott M. (2017) Gambling and gambling harm in New Zealand: A 28-year case study. *International Journal of Mental Health and Addiction* 15(6): 1221-1241.

Abbott M, Romild U, Volberg R. (2018) The prevalence, incidence, and gender and age-specific incidence of problem gambling: results of the Swedish longitudinal gambling study (Swelogs). *Addiction*, 113(4), 589-784, <https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14083>

Armstrong AR, Thomas A, Abbott M. (2018) Gambling participation, expenditure and risk of harm in Australia, 1997-98 and 2010-11. *Journal of Gambling Studies*, 0, 1-20, DOI 10.1007/s10899-017-9708-0

Assanangkornchai S, McNeil EB, Tantirangsee N, Kittirattanpaiboon P. et al. (2016) Gambling disorders, gambling type preferences, and psychiatric comorbidity among the Thai general population: Results of the 2013 National Mental Health Survey. *Journal of Behavioral Addictions*, 5(3): 410–418. doi: 10.1556/2006.5.2016.066

Barnes GM, Welte JW, Tidwell M-CO, Hoffman JH. (2015) Gambling and substance use: Co-occurrence among adults in a recent general population study in the United States. *International Gambling Studies* 15(1): 55-71.

Billi R, Stone CA, Abbott M, Yeung K. (2015) The Victorian Gambling Study (VGS) - a longitudinal study of gambling and health in Victoria 2008-2012: Design and methods. *International Journal of Mental Health and Addiction* 13(2): 274-296.

Cakici M, Cakici E, Karaaziz M. (2016) Lifetime of Prevalence and Risk Factors of Problem and Pathologic Gambling in North Cyprus. *Journal of Gambling Studies* 32(1): 11-23, doi

<https://dx.doi.org/10.1007/s10899-015-9530-5>.

Calado F, Griffiths MD. (2016) Problem Gambling Worldwide: An update and systematic review of empirical research (2000-2015). *Journal of Behavioral Addictions*. doi: 10.1556/2006.5.2016.073

Carbonneau R, Vitaro F, Brendgen M, Tremblay RE. (2015) Variety of gambling activities from adolescence to age 30 and association with gambling problems: a 15-year longitudinal study of a general population sample. *Addiction* 110(12): 1985-1993, doi <https://dx.doi.org/10.1111/add.13083>.

Castren S, Heiskanen M, Salonen AH. (2018) Trends in gambling participation and gambling severity among Finnish men and women: Cross-sectional population surveys in 2007, 2010 and 2015. *BMJ Open* 8(8): e022129, doi <http://dx.doi.org/10.1136/bmjopen-2018-022129>.

Christensen DR, Dowling NA, Jackson AC, Thomas SA. (2015) Gambling Participation and Problem Gambling Severity in a Stratified Random Survey: Findings from the Second Social and Economic Impact Study of Gambling in Tasmania. *Journal of gambling studies* 31(4): 1317-1335, doi <https://dx.doi.org/10.1007/s10899-014-9495-9>.

Dowling NA, Youssef GJ, Jackson AC, Pennay DW, Francis KL, Pennay A, Lubman DI. (2016) National estimates of Australian gambling prevalence: findings from a dual-frame omnibus survey. *Addiction (Abingdon, England)* 111(3): 420-435, doi <https://dx.doi.org/10.1111/add.13176>.

Dufour M, Nguyen N, Bertrand K, Perreault M, Jutras-Aswad D, Morvannou A, Bruneau J, Berbiche D, Roy E. (2016) Gambling Problems Among Community Cocaine Users. *Journal of gambling studies* 32(3): 1039-1053, doi <https://dx.doi.org/10.1007/s10899-016-9594-x>.

Harrison GW, Jessen LJ, Lau MI, Ross D. (2018) Disordered Gambling Prevalence: Methodological Innovations in a General Danish Population Survey. *Journal of gambling studies* 34(1): 225-253, doi <https://dx.doi.org/10.1007/s10899-017-9707-1>.

Kairouz SP, Paradis CP, Nadeau LP, Hamel DM, Robillard CP. (2015) Patterns and trends in gambling participation in the Quebec population between 2009 and 2012. *Canadian Journal of Public Health* 106(3): E115-E120.

Kairouz S, Paradis C, Nadeau L, Tovar M-L, Pousset M. (2016) A cross-cultural comparison of population gambling patterns and regulatory frameworks: France and Québec. *Journal of Public Health Policy* 37(4): 467-482, doi <http://dx.doi.org/10.1057/jphp.2016.20>.

Kruse K, White J, Walton DK, Tu D. (2016) Changes in risky gambling prevalence among a New Zealand population cohort. *International Gambling Studies*, DOI: 10.1080/14459795.2016.1183033

Markham F and Young M (2016) Commentary on Dowling et al. (2016): Is it time to stop conducting problem gambling prevalence studies? *Addiction (Abingdon, England)* 111(3): 436-437, doi <https://dx.doi.org/10.1111/add.13216>.

Markham F, Young M, Doran B, Sugden M. (2017) A meta-regression analysis of 41 Australian problem gambling prevalence estimates and their relationship to total spending on electronic gaming machines. *BMC public health* 17(1): 495, doi <https://dx.doi.org/10.1186/s12889-017-4413-6>.

Massatti RR, Frohnapfel-Hasson S, Martt N. (2016) A Baseline Study of Past-Year Problem Gambling Prevalence among Ohioans. *Journal of Gambling Issues* 34: 32-54. <http://dx.doi.org/10.4309/jgi.2016.34.3>

Meyer C, Bischof A, Westram A, Jeske C, de Brito S, Glorius S, Schon D, Porz S, Gurtler D, Kastirke N, Hayer T, Jacobi F, Lucht M, Premper V, Gilberg R, Hess D, Bischof G, John U, Rumpf H-J. (2015) The "Pathological Gambling and Epidemiology" (PAGE) study program: design and fieldwork. *International journal of methods in psychiatric research* 24(1): 11-31, doi <https://dx.doi.org/10.1002/mpr.1458>.

Nelson SE, LaPlante DA, Gray HM, Tom MA, Kleschinsky JH, Shaffer HJ. (2018) Already at the Table: Patterns of Play and Gambling Involvement Prior to Gambling Expansion. *Journal of gambling*

*studies* 34(1): 275-295, doi <https://dx.doi.org/10.1007/s10899-017-9711-5>.

Roberts A, Coid J, King R, Murphy R, Turner J, Bowden-Jones H, Du Preez KP, Landon J. (2016) Gambling and violence in a nationally representative sample of UK men. *Addiction* 111(12): 2196-2207, doi <http://dx.doi.org/10.1111/add.13522>.

Salonen AH, Alho H, Castren S. (2015) Gambling frequency, gambling problems and concerned significant others of problem gamblers in Finland: cross-sectional population studies in 2007 and 2011. *Scandinavian journal of public health* 43(3): 229-235, doi <https://dx.doi.org/10.1177/1403494815569866>.

Salonen AH, Alho H, Castren S. (2017) Attitudes towards gambling, gambling participation, and gambling-related harm: Cross-sectional Finnish population studies in 2011 and 2015. *BMC public health* 17(1): 122, doi <http://dx.doi.org/10.1186/s12889-017-4056-7>.

Sevigny S, Leclerc M, Goulet A, Cote K, Jacques C, Ladouceur R, Giroux I. (2016) Electronic gambling machine gamblers' characteristics vary according to the type of gambling venue: A Canadian study. *International Gambling Studies* 16(1): 116-139.

Subramaniam M, Abdin E, Vaingankar JA, Shahwan S, Picco L, Chong SA. (2016) Strategic Versus Nonstrategic Gambling: Results from a Community Survey. *Journal of addiction medicine* 10(3): 174-181, doi <https://dx.doi.org/10.1097/ADM.0000000000000211>.

Valleur M. (2015) Gambling and gambling-related problems in France. *Addiction (Abingdon, England)* 110(12): 1872-1876, doi <https://dx.doi.org/10.1111/add.12967>.

Velazquez JAV, Escobar ER, Gamino MNB, Mujica Salazar AR, Icaza MEMM, Martinez VC, Hernandez ISS, Bautista CF, Martinez MR. (2018) Magnitude and extent of gambling disorder in the Mexican population. *Salud Mental* 41(4): 157-167, doi <http://dx.doi.org/10.17711/SM.0185-3325.2018.024>.

Volberg RA, McNamara LM, Carris KL. (2018) Risk Factors for Problem Gambling in California: Demographics, Comorbidities and Gambling Participation. *Journal of gambling studies* 34(2): 361-377, doi <https://dx.doi.org/10.1007/s10899-017-9703-5>.

Wu AMS, Lai MHC, Tong K-K. (2015) Internet Gambling Among Community Adults and University Students in Macao. *Journal of gambling studies* 31(3): 643-657, doi <https://dx.doi.org/10.1007/s10899-014-9451-8>.

Yeung K, Wraith D. (2017) Considering gambling involvement in the understanding of problem gambling: A large cross-sectional study of an Australian population. *International Journal of Mental Health and Addiction* 15(1): 166-181.

## **Attitudes and behaviours in vulnerable/at-risk populations**

Abdi TA, Ruitter RAC, Adal TA. (2015) Personal, social and environmental risk factors of problematic gambling among high school adolescents in Addis Ababa, Ethiopia. *Journal of gambling studies* 31(1): 59-72.

Anagnostopoulos DC, Lazaratou H, Paleologou MP, Peppou LE, Economou M, Malliori M, Papadimitriou GN, Papageorgiou C. (2017) Adolescent gambling in greater Athens area: a cross-sectional study. *Social Psychiatry and Psychiatric Epidemiology* 52(11): 1345-1351, doi <http://dx.doi.org/10.1007/s00127-017-1431-8>.

April LM, Weinstock J. (2018) The Relationship Between Gambling Severity and Risk of Criminal Recidivism. *Journal of forensic sciences* 63(4): 1201-1206, doi <https://dx.doi.org/10.1111/1556-4029.13662>.

Barnes GM, Welte JW, Tidwell M-CO. (2017) Gambling involvement among Native Americans,

Blacks, and Whites in the United States. *The American Journal on Addictions* 26(7): 713-721, doi <https://dx.doi.org/10.1111/ajad.12601>.

Belanger Y, Williams R, Prusak S. (2017) Tracking the westernization of urban Aboriginal gambling in Canada's Prairie Provinces. *International Gambling Studies* 17(1): 1-19.

Bergamini A, Turrina C, Bettini F, Toccagni A, Valsecchi P, Sacchetti E, Vita A. (2018) At-risk gambling in patients with severe mental illness: Prevalence and associated features. *Journal of Behavioral Addictions* 7(2): 348-354, doi <https://dx.doi.org/10.1556/2006.7.2018.47>.

Bestman A, Thomas S, Randle M, Pitt H. (2017) Children's attitudes towards Electronic Gambling Machines: An exploratory qualitative study of children who attend community clubs. *Harm Reduction Journal* 14(1): 20, doi <http://dx.doi.org/10.1186/s12954-017-0148-z>.

Black DW, Coryell W, McCormick B, Shaw M, Allen J. (2017) A prospective follow-up study of younger and older subjects with pathological gambling. *Psychiatry Research* 256: 162-168.

Bramley S, Norrie C, Manthorpe J. (2018) Gambling-related harms and homelessness: findings from a scoping review. *Housing, Care and Support* 21(1): 26-39, doi <http://dx.doi.org/10.1108/HCS-02-2018-0003>.

Buja A, Lion C, Scioni M, Vian P, Genetti B, Vittadello F, Sperotto M, Simeoni E, Baldo V. (2017) SOGS-RA gambling scores and substance use in adolescents. *Journal of Behavioral Addictions* 6(3): 425-433, doi <https://dx.doi.org/10.1556/2006.6.2017.043>.

Calado F, Alexandre J, Griffiths MD. (2017) Prevalence of Adolescent Problem Gambling: A Systematic Review of Recent Research. *Journal of gambling studies* 33(2): 397-424, doi <https://dx.doi.org/10.1007/s10899-016-9627-5>.

Caler KR, Vargas Garcia JR, Nower L. (2017) Problem gambling among ethnic minorities: results from an epidemiological study. *Asian Journal of Gambling Issues and Public Health* 7(1): 1-13, doi <http://dx.doi.org/10.1186/s40405-017-0027-2>.

Campos MD, Camacho A, Pereda K, Santana K, Calix I, Fong TW. (2016) Attitudes Towards Gambling, Gambling Problems, and Treatment Among Hispanics in Imperial County, CA. *Journal of gambling studies* 32(3): 985-999, doi <https://dx.doi.org/10.1007/s10899-015-9585-3>.

Canale N, Griffiths MD, Vieno A, Siciliano V, Molinaro S. (2016) Impact of Internet gambling on problem gambling among adolescents in Italy: Findings from a large-scale nationally representative survey. *Computers in Human Behavior* 57: 99-106, doi <http://dx.doi.org/10.1016/j.chb.2015.12.020>.

Canale N, Vieno A, Ter Bogt T, Pastore M, Siciliano V, Molinaro S. (2016) Adolescent Gambling-Oriented Attitudes Mediate the Relationship Between Perceived Parental Knowledge and Adolescent Gambling: Implications for Prevention. *Prevention Science* 17(8): 970-980, doi <http://dx.doi.org/10.1007/s11121-016-0683-y>.

Canale N, Vieno A, Griffiths MD, Borraccino A, Lazzeri G, Charrier L, Lemma P, Dalmasso P, Santinello M. (2017) A large-scale national study of gambling severity among immigrant and non-immigrant adolescents: The role of the family. *Addictive Behaviors* 66: 125-131, doi <https://dx.doi.org/10.1016/j.addbeh.2016.11.020>.

Castren S, Grainger M, Lahti T, Alho H, Salonen AH. (2015) At-risk and problem gambling among adolescents: a convenience sample of first-year junior high school students in Finland. *Substance abuse treatment, prevention, and policy* 10: 9, doi <https://dx.doi.org/10.1186/s13011-015-0003-8>.

Castren S, Salonen AH, Alho H, Lahti T, Simojoki K. (2015) Past-year gambling behaviour among patients receiving opioid substitution treatment. *Substance abuse treatment, prevention, and policy* 10: 4, doi <https://dx.doi.org/10.1186/1747-597X-10-4>.

Chan AKK, Zane N, Wong GM, Song AV. (2015) Personal gambling expectancies among Asian American and White American college students. *Journal of gambling studies* 31(1): 33-57, doi

<https://dx.doi.org/10.1007/s10899-013-9397-2>.

Cheung NWT. (2016) Social Strain, Self-Control, and Juvenile Gambling Pathology: Evidence from Chinese Adolescents. *Youth and Society* 48(1): 77-100, doi <http://dx.doi.org/10.1177/0044118X13477869>.

Cortina SC, Williams JVA, Lavorato DH, Link SB, El-Guebaly NA. (2015) Disordered gambling and health functioning in individuals receiving disability benefits. *Addictive Disorders and their Treatment* 14(4): 188-197, doi <http://dx.doi.org/10.1097/ADT.0000000000000050>.

Cowlshaw S, Hakes JK. (2015) Pathological and problem gambling in substance use treatment: Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *The American journal on addictions* 24(5): 467-474, doi <https://dx.doi.org/10.1111/ajad.12242>.

Cowlshaw S, Hakes JK, Dowling NA. (2016) Gambling problems in treatment for affective disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Journal of Affective Disorders* 202: 110-114, doi <http://dx.doi.org/10.1016/j.jad.2016.05.023>.

Cowlshaw S, Gale L, Gregory A, McCambridge J, Kessler D. (2017) Gambling problems among patients in primary care: a cross-sectional study of general practices. *The British journal of general practice: the journal of the Royal College of General Practitioners* 67(657): e274-e279, doi <https://dx.doi.org/10.3399/bjgp17X689905>.

Davis AK, Bonar EE, Goldstick JE, Walton MA, Winters J, Chermack ST. (2017) Binge-drinking and non-partner aggression are associated with gambling among Veterans with recent substance use in VA outpatient treatment. *Addictive Behaviors* 74: 27-32, doi <http://dx.doi.org/10.1016/j.addbeh.2017.05.022>.

Deans EG, Thomas SL, Daube M, Derevensky J. (2017) The role of peer influences on the normalisation of sports wagering: A qualitative study of Australian men. *Addiction Research & Theory* 25(2): 103-113.

Deans EG, Thomas SL, Derevensky J, Daube M. (2017) The influence of marketing on the sports betting attitudes and consumption behaviours of young men: Implications for harm reduction and prevention strategies. *Harm Reduction Journal* 14(1): 5, doi <http://dx.doi.org/10.1186/s12954-017-0131-8>.

De Luigi N, Gibertoni D, Randon E, Scorcu AE. (2018) Patterns of gambling activities and gambling problems among Italian high school students: results of a latent class analysis. *Journal of Gambling Studies* 34: 339-359

De Pasquale C, Dinaro C, Sciacca F. (2018) Relationship of Internet gaming disorder with dissociative experience in Italian university students. *Annals of General Psychiatry* 17:28

Derevensky J. (2015) Youth Gambling: Some Current Misconceptions. *Austin J Psychiatry Behav Science*, 2(2): 1039.

Derevensky JL, Gilbeau L. (2015) Adolescent gambling: Twenty-five years of research. *Canadian Journal of Addiction* 6(2): 4-12.

Dighton G, Roberts E, Hoon AE, Dymond S. (2018) Gambling problems and the impact of family in UK armed forces veterans. *Journal of Behavioral Addictions* 7(2): 355-365, doi <https://dx.doi.org/10.1556/2006.7.2018.25>.

Dixon RW, Youssef GJ, Hasking P, Yucel M, Jackson AC, Dowling NA. (2016) The relationship between gambling attitudes, involvement, and problems in adolescence: Examining the moderating role of coping strategies and parenting styles. *Addictive Behaviors* 58: 42-46, doi <https://dx.doi.org/10.1016/j.addbeh.2016.02.011>.

Edgren R, Castren S, Jokela M, Salonen AH. (2016) At-risk and problem gambling among Finnish youth: The examination of risky alcohol consumption, tobacco smoking, mental health and loneliness



- as gender-specific correlates. *NAD Nordic Studies on Alcohol and Drugs* 33(1): 61-79, doi <http://dx.doi.org/10.1515/nsad-2016-0005>.
- Elton-Marshall T, Leatherdale ST, Turner NE. (2016) An examination of internet and land-based gambling among adolescents in three Canadian provinces: results from the youth gambling survey (YGS). *BMC public health* 16: 277, doi <https://dx.doi.org/10.1186/s12889-016-2933-0>.
- Elton-Marshall T, Wijesingha R, Sendzik T, Mock SE, van der Maas M, McCreedy J, Mann RE, Turner NE. (2018) Marital Status and Problem Gambling among Older Adults: An Examination of Social Context and Social Motivations. *Canadian Journal on Aging* 37(3): 318-332, doi <http://dx.doi.org/10.1017/S071498081800017X>.
- Fan BW. (2017) A retrospective study of attitudes and triggers towards gambling of prisoners before their incarceration in Australia. *International Gambling Studies* 17(3): 412-425.
- Floros G, Paradisioti A, Hadjimarcou M, Mappouras DG, Karkanioti O, Siomos K. (2015) Adolescent online gambling in Cyprus: associated school performance and psychopathology. *Journal of gambling studies* 31(2): 367-384, doi <https://dx.doi.org/10.1007/s10899-013-9424-3>.
- Foster DW, Hoff RA, Pilver CE, Yau YHC, Steinberg MA, Wampler J, Krishnan-Sarin S, Potenza MN. (2015) Correlates of gambling on high-school grounds. *Addictive Behaviors* 51: 57-64, doi <https://dx.doi.org/10.1016/j.addbeh.2015.07.006>.
- Froberg F, Rosendahl IK, Abbott M, Romild U, Tengstrom A, Hallqvist J. (2015) The Incidence of Problem Gambling in a Representative Cohort of Swedish Female and Male 16-24 Year-Olds by Socio-demographic Characteristics, in Comparison with 25-44 Year-Olds. *Journal of gambling studies* 31(3): 621-641, doi <https://dx.doi.org/10.1007/s10899-014-9450-9>.
- Gainsbury SM. (2017) Cultural Competence in the Treatment of Addictions: Theory, Practice and Evidence. *Clinical psychology & psychotherapy* 24(4): 987-1001, doi <https://dx.doi.org/10.1002/cpp.2062>.
- Gavriel-Fried B, Bronstein I, Sherpsky I. (2015) The link between competitive sports and gambling behaviors among youths. *The American journal on addictions* 24(3): 200-202, doi <https://dx.doi.org/10.1111/ajad.12189>.
- Ginley MK, Whelan JP, Relyea GE, Simmons JL, Meyers AW, Pearlson GD. (2015) College student beliefs about wagering: an evaluation of the adolescent gambling expectancies survey. *Journal of gambling studies* 31(1): 161-171, doi <https://dx.doi.org/10.1007/s10899-013-9403-8>.
- Giralt S, Muller KW, Beutel ME, Dreier M, Duvén E, Wolfling K. (2018) Prevalence, risk factors, and psychosocial adjustment of problematic gambling in adolescents: Results from two representative German samples. *Journal of Behavioral Addictions* 7(2): 339-347, doi <https://dx.doi.org/10.1556/2006.7.2018.37>.
- Gonzalez-Roz A, Fernandez-Hermida JR, Weidberg S, Martinez-Loredo V, Secades-Villa R. (2017) Prevalence of Problem Gambling Among Adolescents: A Comparison Across Modes of Access, Gambling Activities, and Levels of Severity. *Journal of gambling studies* 33(2): 371-382, doi <https://dx.doi.org/10.1007/s10899-016-9652-4>.
- Gori M, Potente R, Pitino A, Scalese M, Bastiani L, Molinaro S. (2015) Relationship Between Gambling Severity and Attitudes in Adolescents: Findings from a Population-Based Study. *Journal of gambling studies* 31(3): 717-740, doi <https://dx.doi.org/10.1007/s10899-014-9481-2>.
- Grall-Bronnec M, Caillon J, Humeau E, Perrot B, Remaud M, Guilleux A, Rocher B, Sauvaget A, Bouju G. (2016) Gambling among European professional athletes. Prevalence and associated factors. *Journal of addictive diseases* 35(4): 278-290.
- Gray HM, Tom MA, LaPlante DA, Shaffer HJ. (2015) Using Opinions and Knowledge to Identify Natural Groups of Gambling Employees. *Journal of gambling studies* 31(4): 1753-1766, doi

<https://dx.doi.org/10.1007/s10899-014-9490-1>.

Hakansson A, Kentta G, Akesdotter C. (2018) Problem gambling and gaming in elite athletes. *Addictive Behaviors Reports* 8: 79-84, doi <http://dx.doi.org/10.1016/j.abrep.2018.08.003>.

Hamilton-Wright S, Woodhall-Melnik J, Guilcher SJT, Schuler A, Wendaferew A, Hwang SW, Matheson FI. (2016) Gambling in the Landscape of Adversity in Youth: Reflections from Men Who Live with Poverty and Homelessness. *International Journal of Environmental Research and Public Health* 13(9): 1-17, doi <http://dx.doi.org/10.3390/ijerph13090854>.

Hanss D, Mentzoni RA, Blaszczynski A, Molde H, Torsheim T, Pallesen S. (2015) Prevalence and Correlates of Problem Gambling in a Representative Sample of Norwegian 17-Year-Olds. *Journal of gambling studies* 31(3): 659-678, doi <https://dx.doi.org/10.1007/s10899-014-9455-4>.

Haydock M, Cowlishaw S, Harvey C, Castle D. (2015) Prevalence and correlates of problem gambling in people with psychotic disorders. *Comprehensive psychiatry* 58: 122-129, doi <https://dx.doi.org/10.1016/j.comppsy.2015.01.003>.

Himelhoch SS, Miles-McLean H, Medoff D, Kreyenbuhl J, Rugle L, Brownley J, Bailey-Kloch M, Potts W, Welsh C. (2016) Twelve-Month Prevalence of DSM-5 Gambling Disorder and Associated Gambling Behaviors Among Those Receiving Methadone Maintenance. *Journal of gambling studies* 32(1): 1-10, doi <https://dx.doi.org/10.1007/s10899-015-9524-3>.

Ho K-W. (2017) Risk Factors of Adolescent Pathological Gambling: Permissive Gambling Culture and Individual Factors. *Deviant Behavior* 38(5): 533-548, doi <http://dx.doi.org/10.1080/01639625.2016.1197031>.

Huic A, Hundric DD, Kranzelic V, Ricijas N. (2017) Problem gambling among adolescent girls in Croatia-The role of different psychosocial predictors. *Frontiers in Psychology Vol 8 2017, ArtID 792 8*.

Jaisooriya TS, Beena KV, Beena M, Ellangovan K, Thennarassu K, Bowden-Jones H, Benegal V, George S. (2017) Do High School Students in India Gamble? A Study of Problem Gambling and Its Correlates. *Journal of gambling studies* 33(2): 449-460, doi <https://dx.doi.org/10.1007/s10899-016-9651-5>.

Jones L, Metcalf A, Gordon-Smith K, Forty L, Perry A, Lloyd J, Geddes JR, Goodwin GM, Jones I, Craddock N, Rogers RD. (2015) Gambling problems in bipolar disorder in the UK: Prevalence and distribution. *The British Journal of Psychiatry* 207(4): 328-333.

Kam SM, Wong IL, Kuen, So EM, Tong, Un DK, Cheong, Chan CHW. (2017) Gambling Behavior among Macau College and University Students. *Asian Journal of Gambling Issues and Public Health* 7(1): 1-12, doi <http://dx.doi.org/10.1186/s40405-017-0022-7>.

Kastirke N, Rumpf H-J, John U, Bischof A, Meyer C. (2015) Demographic Risk Factors and Gambling Preference May Not Explain the High Prevalence of Gambling Problems among the Population with Migration Background: Results from a German Nationwide Survey. *Journal of gambling studies* 31(3): 741-757, doi <https://dx.doi.org/10.1007/s10899-014-9459-0>.

Kim HS, Wohl MJ, Gupta R, Derevensky JL. (2017) Why do young adults gamble online? A qualitative study of motivations to transition from social casino games to online gambling. *Asian Journal of Gambling Issues and Public Health* 7(1): 1-11, doi <http://dx.doi.org/10.1186/s40405-017-0025-4>.

King DL, Delfabbro PH. (2016) Adolescents' perceptions of parental influences on commercial and simulated gambling activities. *International Gambling Studies* 16(3): 424-441.

Kolandai-Matchett K, Langham E, Bellringer M, Siitia PA-H. (2017) How gambling harms experienced by Pacific people in New Zealand amplify when they are culture-related. *Asian Journal of Gambling Issues and Public Health* 7(1): 1-20, doi <http://dx.doi.org/10.1186/s40405-017-0026-3>.

Kong G, Smith PH, Pilver C, Hoff R, Potenza MN. (2016) Problem-gambling severity and psychiatric

disorders among American-Indian/Alaska native adults. *Journal of psychiatric research* 74: 55-62, doi <https://dx.doi.org/10.1016/j.jpsychires.2015.12.004>.

Kristiansen S, Trabjerg CM. (2017) Legal gambling availability and youth gambling behaviour: A qualitative longitudinal study. *International Journal of Social Welfare* 26(3): 218-229, doi <http://dx.doi.org/10.1111/ijsw.12231>.

Kristiansen S, Trabjerg MC, Lauth NR, Malling A. (2018) Playing for fun or gambling for money: a qualitative longitudinal study of digitally simulated gambling among young Danes. *Young Consumers* 19(3): 251-266, doi <http://dx.doi.org/10.1108/YC-11-2017-00750>.

Lehmann S, Akre C, Berchtold A, Flatz A, Suris JC. (2017) The winner takes it all? Characteristics of adolescent at-risk/problem gamblers in Switzerland. *International Journal of Adolescent Medicine and Health* 29(5): 20150100, doi <http://dx.doi.org/10.1515/ijamh-2015-0100>.

Levy L, Tracy JK. (2018) Gambling Disorder in Veterans: A Review of the Literature and Implications for Future Research. *Journal of Gambling Studies (Online)*: 1-35, doi <http://dx.doi.org/10.1007/s10899-018-9749-z>.

Li E, Langham E, Browne M, Rockloff M, Thorne H. (2018) Gambling and Sport: Implicit Association and Explicit Intention Among Underage Youth. *Journal of gambling studies* 34(3): 739-756, doi <https://dx.doi.org/10.1007/s10899-018-9756-0>.

Maltzahn K, Vaughan R, Griffin T, Thomas D, Stephens R, Whiteside M, Maclean S. (2018) Pleasures and Risks Associated with Bingo Playing in an Australian Aboriginal Community: Lessons for Policy and Intervention. *Journal of gambling studies*, doi 10.1007/s10899-018-9779-6.

Manning V, Dowling N, Lee S, Rodda S, Bernard Garfield JB, Volberg R, Kulkarni J, Lubman DI. (2017) Problem gambling and substance use in patients attending community mental health services. *Journal of Behavioral Addictions* 6(4): 678-688.

Marchica L, Zhao Y, Derevensky J, Ivoska W. (2017) Understanding the Relationship Between Sports-Relevant Gambling and Being At-Risk for a Gambling Problem Among American Adolescents. *Journal of gambling studies* 33(2): 437-448, doi <https://dx.doi.org/10.1007/s10899-016-9653-3>.

McBride J. (2016) Gambling and video game playing among youth. *Journal of Gambling Issues* 34: 156-178.

McCarthy S, Thomas SL, Randle M, Bestman A, Pitt H, Cowlshaw S, Daube M. (2018) Women's gambling behaviour, product preferences, and perceptions of product harm: Differences by age and gambling risk status. *Harm Reduction Journal* 15(1): 22, doi <http://dx.doi.org/10.1186/s12954-018-0227-9>.

McGraw C. (2016) Prevalence and determinants of gambling disorder among older adults. *Primary Health Care* 26(7): 15, doi <http://dx.doi.org/10.7748/phc.26.7.15.s17>.

Medeiros GC, Leppink EW, Yaemi A, Mariani M, Tavares H, Grant JE. (2015) Electronic gaming machines and gambling disorder: A cross-cultural comparison between treatment-seeking subjects from Brazil and the United States. *Psychiatry Research* 230(2): 430-435, doi <https://dx.doi.org/10.1016/j.psychres.2015.09.032>.

Medeiros GC, Leppink EW, Redden SA, Yaemi A, Mariani M, Tavares H, Grant JE. (2016) A cross-cultural study of gambling disorder: a comparison between women from Brazil and the United States. *Revista brasileira de psiquiatria (Sao Paulo, Brazil: 1999)* 38(1): 53-57, doi <https://dx.doi.org/10.1590/1516-4446-2015-1718>.

Molinaro S, Benedetti E, Scalese M, Bastiani L, Fortunato L, Cerrai S, Canale N, Chomynova P, Elekes Z, Feijão F, Fotiou A, Kokkevi A, Kraus L, Rupšienė L, Monshouwer K, Nociar A, Strizek J, Lazar TU. (2018) Prevalence of youth gambling and potential influence of substance use and other risk factors throughout 33 European countries: first results from the 2015 ESPAD study. *Addiction*

113(10): 1862-1873, doi <http://dx.doi.org/10.1111/add.14275>.

Morrison L, Wilson D. (2015) A family affair: Indigenous women's gambling journey. *International Journal of Mental Health and Addiction* 13(4): 435-446.

Nadeau D, Giroux I, Simard M, Jacques C, Dupre N. (2017) Gambling habits of people with Parkinson's disease: An exploratory study. *Journal of Gambling Issues* 37: 149-171.

Nekich MA, Ohtsuka K. (2016) Bread, milk and a Tattsлото ticket: the interpretive repertoires of young adult gambling in Australia. *Asian Journal of Gambling Issues and Public Health* 6(1): 1-17, doi <http://dx.doi.org/10.1186/s40405-016-0013-0>.

Nordmyr J, Osterman K. (2016) Raising the legal gambling age in Finland: Problem gambling prevalence rates in different age groups among past-year gamblers pre- and post-implementation. *International Gambling Studies* 16(3): 347-356.

Nowak DE. (2018) A Meta-analytical Synthesis and Examination of Pathological and Problem Gambling Rates and Associated Moderators Among College Students, 1987-2016. *Journal of gambling studies* 34(2): 465-498, doi <https://dx.doi.org/10.1007/s10899-017-9726-y>.

Nower L, Eyrich-Garg KM, Pollio DE, North CS. (2015) Problem gambling and homelessness: results from an epidemiologic study. *Journal of gambling studies* 31(2): 533-545, doi <https://dx.doi.org/10.1007/s10899-013-9435-0>.

O'Loughlin I, Blaszczynski A. (2018) Comparative Effects of Differing Media Presented Advertisements on Male Youth Gambling Attitudes and Intentions. *International Journal of Mental Health and Addiction* 16(2): 313-327, doi <http://dx.doi.org/10.1007/s11469-017-9753-z>.

Pallesen S, Hanss D, Molde H, Griffiths MD, Mentzoni RA. (2016) A longitudinal study of factors explaining attitude change towards gambling among adolescents. *Journal of Behavioral Addictions* 5(1): 59-67, doi <https://dx.doi.org/10.1556/2006.5.2016.017>.

Parke A, Griffiths M, Pattinson J, Keatley D. (2018) Age-related physical and psychological vulnerability as pathways to problem gambling in older adults. *Journal of Behavioral Addictions* 7(1): 137-145, doi <https://dx.doi.org/10.1556/2006.7.2018.18>.

Patterson-Silver Wolf (Adelv Unegv Waya) DA, Welte JW, Barnes GM, Tidwell M-CO, Spicer P. (2015) Sociocultural Influences on Gambling and Alcohol Use Among Native Americans in the United States. *Journal of gambling studies* 31(4): 1387-1404, doi <https://dx.doi.org/10.1007/s10899-014-9512-z>.

Pattinson J, Parke A. (2016) Gambling behaviour and motivation in British older adult populations: A grounded theoretical framework. *Journal of Gambling Issues* 34: 55-76.

Pattinson J, Parke A. (2017) The experience of high-frequency gambling behavior of older adult females in the United Kingdom: An interpretative phenomenological analysis. *Journal of Women & Aging* 29(3): 243-253, doi <https://dx.doi.org/10.1080/08952841.2015.1138047>.

Pavarin RM, Zenesini C, Fioritti A. (2017) Estimate of the prevalence of subjects with gambling-related problems requiring treatment: a study in Northern Italy. *Annali dell'Istituto superiore di sanita* 53(4): 322-329, doi [https://dx.doi.org/10.4415/ANN\\_17\\_04\\_08](https://dx.doi.org/10.4415/ANN_17_04_08).

Piscitelli A, Harrison J, Doherty S, Carmichael BA. (2017) Older Adults' Casino Gambling Behavior and Their Attitudes Toward New Casino Development. *International Journal of Aging and Human Development* 84(4): 415-430, doi <http://dx.doi.org/10.1177/0091415016677973>.

Pitt H, Thomas SL, Bestman A, Stoneham M, Daube M. (2016) "It's just everywhere!" Children and parents discuss the marketing of sports wagering in Australia. *Australian and New Zealand journal of public health* 40(5): 480-486, doi <https://dx.doi.org/10.1111/1753-6405.12564>.

Pitt H, Thomas SL, Bestman A, Daube M, Derevensky J. (2017) Factors that influence children's

gambling attitudes and consumption intentions: lessons for gambling harm prevention research, policies and advocacy strategies, *Harm reduction journal*, vol. 14, no. 11, pp. 1-12. DOI: 10.1186/s12954-017-0136-3

Pitt H, Thomas SL, Bestman A, Daube M, Derevensky J. (2017) What do children observe and learn from televised sports betting advertisements? A qualitative study among Australian children. *Australian and New Zealand journal of public health* 41(6): 604-610, doi <https://dx.doi.org/10.1111/1753-6405.12728>.

Puharic Z, Slijepcevic MK, Badrov T, Petricevic N. (2016) Gambling among teenagers in Bjelovar-Bilogora county (Croatia). *Alcoholism and Psychiatry Research* 52(1): 5-16.

Radermacher H, Dickins M, Anderson C, Feldman S, (2016) Perceptions of gambling in Tamil and Chinese communities in Australia: The role of saving face in perpetuating gambling stigma and hindering help. *Journal of Gambling Issues* 34: 77-99.

Raghavan V. (2017) Prevalence of pathological gambling in patients with alcohol dependence syndrome attending a tertiary care center in South India. *Asian Journal of Psychiatry* 26: 92-93, doi <http://dx.doi.org/10.1016/j.ajp.2017.01.007>.

Rasanen T, Lintonen T, Konu A. (2015) Gambling and problem behavior among 14- to 16-year-old boys and girls in Finland. *Journal of Gambling Issues* 31: 1-22.

Rash CL, McGrath DS. (2017) Self-Generated Motives for Not Gambling Among Young Adult Non-gamblers. *Journal of gambling studies* 33(3): 825-839, doi <https://dx.doi.org/10.1007/s10899-016-9656-0>.

Ricijas N, Dodig Hundric D, Huic A. (2016) Predictors of adverse gambling related consequences among adolescent boys. *Children and Youth Services Review* 67: 168-176, doi <http://dx.doi.org/10.1016/j.childyouth.2016.06.008>.

Ricijas N, Hundric DD, Huic A, Kranzelic V. (2016) Youth gambling in Croatia-Frequency of gambling and the occurrence of problem gambling. *Kriminologija & Socijalna Integracija* 24(2): 48-72.

Riley B, Oakes J. (2015) Problem gambling among a group of male prisoners: Lifetime prevalence and association with incarceration. *Australian and New Zealand Journal of Criminology* 48(1): 73-81.

Riley BJ, Larsen A, Battersby M, Harvey P. (2017) Problem gambling among female prisoners: Lifetime prevalence, help-seeking behaviour and association with incarceration. *International Gambling Studies* 17(3): 401-411.

Rinker DV, Rodriguez LM, Krieger H, Tackett JL, Neighbors C. (2016) Racial and Ethnic Differences in Problem Gambling among College Students. *Journal of gambling studies* 32(2): 581-590, doi <https://dx.doi.org/10.1007/s10899-015-9563-9>.

Rossen FV, Clark T, Denny SJ, Fleming TM, Peiris-John R, Robinson E, Lucassen MF. (2016) Unhealthy gambling amongst New Zealand secondary school students: An exploration of risk and protective factors. *International Journal of Mental Health and Addiction* 14(1): 95-110.

Rossen FV, Lucassen MF, Fleming TM, Sheridan J, Denny SJ. (2016) Adolescent gambling behaviour, a single latent construct and indicators of risk: findings from a national survey of New Zealand high school students. *Asian Journal of Gambling Issues and Public Health* 6(1): 1-12, doi <http://dx.doi.org/10.1186/s40405-016-0017-9>.

Sarti S, Triventi M. (2017) The role of social and cognitive factors in individual gambling: An empirical study on college students. *Social Science Research* 62: 219-237.

Scholes-Balog KE, Hemphill SA, Toumbourou JW, Dowling NA. (2016) Problem gambling patterns among Australian young adults: Associations with prospective risk and protective factors and adult adjustment outcomes. *Addictive Behaviors* 55: 38-45, doi <http://dx.doi.org/10.1016/j.addbeh.2015.12.016>.

- Sharman S, Dreyer J, Aitken M, Clark L, Bowden-Jones H. (2015) Rates of problematic gambling in a British homeless sample: a preliminary study. *Journal of gambling studies* 31(2): 525-532, doi <https://dx.doi.org/10.1007/s10899-014-9444-7>.
- Sharman S, Dreyer J, Clark L, Bowden-Jones H. (2016) Down and Out in London: Addictive Behaviors in Homelessness. *Journal of Behavioral Addictions* 5(2): 318-324, doi <https://dx.doi.org/10.1556/2006.5.2016.037>.
- Sheela PS, Choo W-Y, Goh LY, Tan CPL. (2016) Gambling Risk amongst Adolescents: Evidence from a School-Based Survey in the Malaysian Setting. *Journal of gambling studies* 32(2): 643-659, doi <https://dx.doi.org/10.1007/s10899-015-9577-3>.
- Skaal L, Sinclair H, Stein DJ, Myers B. (2016) Problem Gambling Among Urban and Rural Gamblers in Limpopo Province, South Africa: Associations with Hazardous and Harmful Alcohol Use and Psychological Distress. *Journal of gambling studies* 32(1): 217-230, doi <https://dx.doi.org/10.1007/s10899-015-9522-5>.
- Stefanovics EA, Potenza MN, Pietrzak RH. (2017) Gambling in a National U.S. Veteran Population: Prevalence, Socio-demographics, and Psychiatric Comorbidities. *Journal of gambling studies* 33(4): 1099-1120, doi <https://dx.doi.org/10.1007/s10899-017-9678-2>.
- Subramaniam M, Abidin E, Shahwan S, Vaingankar JA, Picco L, Browning CJ, Thomas SA, Chong SA. (2015) Culture and age influences upon gambling and problem gambling. *Addictive Behaviors Reports* 1: 57-63, doi <http://dx.doi.org/10.1016/j.abrep.2015.04.004>.
- Subramaniam M, Wang P, Soh P, Vaingankar JA, Chong SA, Browning CJ, Thomas SA. (2015) Prevalence and determinants of gambling disorder among older adults: a systematic review. *Addictive Behaviors* 41: 199-209, doi <https://dx.doi.org/10.1016/j.addbeh.2014.10.007>.
- Tagoe VNK, Yendork JS, Asante KO. (2018) Gambling among Youth in Contemporary Ghana: Understanding, Initiation, and Perceived Benefits. *Africa Today* 64(3): 52-69, doi <http://dx.doi.org/10.2979/africatoday.64.3.03>.
- Tolchard B. (2015) The impact of gambling on rural communities worldwide: A narrative literature review. *Journal of Rural Mental Health* 39(2): 90-107.
- Tomei A, Tichelli E, Ewering N, Nunweiler-Hardegger S, Simon O. (2015) A Descriptive Study of Gambling Among Emerging Adult Males in French-Speaking Switzerland. *Journal of gambling studies* 31(3): 607-620, doi <https://dx.doi.org/10.1007/s10899-014-9447-4>.
- Urale PW, Bellringer M, Landon J, Abbott M. (2015) God, family and money: Pacific people and gambling in New Zealand. *International Gambling Studies* 15(1): 72-87.
- Vadlin S, Aslund C, Nilsson KW. (2018) A longitudinal study of the individual- and group-level problematic gaming and associations with problem gambling among Swedish adolescents. *Brain and Behavior* 8(4): e00949, doi <http://dx.doi.org/10.1002/brb3.949>.
- Van Der Maas M, Mann RE, McCreedy J, Matheson FI, Turner NE, Hamilton HA, Schrans T, Ialomiteanu A. (2017) Problem Gambling in a Sample of Older Adult Casino Gamblers: Associations with Gambling Participation and Motivations. *Journal of Geriatric Psychiatry and Neurology* 30(1): 3-10, doi <http://dx.doi.org/10.1177/0891988716673468>.
- Weinberger AH, Franco CA, Hoff RA, Pilver CE, Steinberg MA, Rugle L, Wampler J, Cavallo DA, Krishnan-Sarin S, Potenza MN. (2015) Gambling behaviors and attitudes in adolescent high-school students: Relationships with problem-gambling severity and smoking status. *Journal of psychiatric research* 65: 131-138, doi <https://dx.doi.org/10.1016/j.jpsychires.2015.04.006>.
- Whiting SW, Potenza MN, Park CL, McKee SA, Mazure CM, Hoff RA. (2016) Investigating Veterans' Pre-, Peri-, and Post-Deployment Experiences as Potential Risk Factors for Problem Gambling. *Journal of Behavioral Addictions* 5(2): 213-220, doi <https://dx.doi.org/10.1556/2006.5.2016.027>.

Williams RJ, Belanger YD, Prusak S. (2016) Gambling and problem gambling among Canadian urban Aboriginals. *The Canadian Journal of Psychiatry / La Revue canadienne de psychiatrie* 61(11): 724-731.

Wilson AN, Salas-Wright CP, Vaughn MG, Maynard BR. (2015) Gambling prevalence rates among immigrants: a multigenerational examination. *Addictive Behaviors* 42: 79-85, doi <https://dx.doi.org/10.1016/j.addbeh.2014.11.003>.

Yakovenko I, Fortgang R, Prentice J, Hoff RA, Potenza MN. (2018) Correlates of frequent gambling and gambling-related chasing behaviors in individuals with schizophrenia-spectrum disorders. *Journal of Behavioral Addictions* 7(2): 375-383, doi <https://dx.doi.org/10.1556/2006.7.2018.31>.

Yip SW, Mei S, Pilver CE, Steinberg MA, Rugle LJ, Krishnan-Sarin S, Hoff RA, Potenza MN. (2015) At-Risk/Problematic Shopping and Gambling in Adolescence. *Journal of gambling studies* 31(4): 1431-1447, doi <https://dx.doi.org/10.1007/s10899-014-9494-x>.

## Emerging technologies and new trends

Abarbanel B, Rahman A. (2015) eCommerce market convergence in action: Social casinos and real money gambling. *UNLV Gaming Research & Review Journal* 19(1): 51-62.

Abarbanel B, Gainsbury SM, King D, Hing N, Delfabbro PH. (2017) Gambling Games on Social Platforms: How Do Advertisements for Social Casino Games Target Young Adults? *Policy & Internet* 9(2): 184-209, doi [doi:10.1002/poi3.135](https://doi.org/10.1002/poi3.135).

Adams PJ, Wiles J. (2017) Gambling machine annexes as enabling spaces for addictive engagement. *Health & place* 43: 1-7, doi <https://dx.doi.org/10.1016/j.healthplace.2016.11.001>.

Armstrong T, Rockloff M, Donaldson P. (2016) Crimping the Croupier: Electronic and mechanical automation of table, community and novelty games in Australia. *Journal of Gambling Issues* 33: 103-123.

Armstrong T, Rockloff M, Greer N, Donaldson P. (2017) Rise of the Machines: A Critical Review on the Behavioural Effects of Automating Traditional Gambling Games. *Journal of gambling studies* 33(3): 735-767, doi <https://dx.doi.org/10.1007/s10899-016-9644-4>.

Armstrong T, Rockloff M, Browne M, Li E. (2018) An Exploration of How Simulated Gambling Games May Promote Gambling with Money. *Journal of Gambling Studies (Online)*: 1-20, doi <http://dx.doi.org/10.1007/s10899-018-9742-6>.

Baggio S, Gainsbury SM, Berchtold A, Iglesias K. (2016) Co-morbidity of gambling and Internet use among Internet and land-based gamblers: Classic and network approaches. *International Gambling Studies* 16(3): 500-517.

Baggio S, Dupuis M, Berchtold A, Spilka S, Simon O, Studer J. (2017) Is gambling involvement a confounding variable for the relationship between Internet gambling and gambling problem severity? *Computers in Human Behavior* 71: 148-152, doi <http://dx.doi.org/10.1016/j.chb.2017.02.004>.

Baker R, Forrest D, Perez L. (2016) The compatriot win effect on national sales of a multicountry lottery. *Journal of the Royal Statistical Society. Series C, Applied Statistics* 65(4): 603-618, doi <http://dx.doi.org/10.1111/rssc.12143>.

Baloglu S, Zhong YY, Tanford S. (2017) Casino loyalty: The influence of loyalty program, switching costs, and trust. *Journal of Hospitality & Tourism Research* 41(7): 846-868.

Barrault S, Varescon I. (2016) Online and live regular poker players: Do they differ in impulsive sensation seeking and gambling practice? *Journal of Behavioral Addictions* 5(1): 41-50, doi <https://dx.doi.org/10.1556/2006.5.2016.015>.

Barton KR, Yazdani Y, Ayer N, Kalvapalle S, Brown S, Stapleton J, Brown DG, Harrigan KA. (2017)

The effect of losses Disguised as win and near misses in Electronic Gaming machines; A systematic review. *Journal of Gambling Studies*, 33: 1241-1260.

Biolcati R, Passini S, Griffiths MD. (2015) All-in and bad beat: Professional poker players and pathological gambling. *International Journal of Mental Health and Addiction* 13(1): 19-32.

Blaszczynski A, Russell A, Gainsbury SM, Hing N. (2016) 'Mental health and online, land-based and mixed gamblers', *Journal of Gambling Studies*, vol. 32, no. 1, pp. 261-275.  
<http://dx.doi.org/10.1007/s10899-015-9528-z>

Brochado A, Santos M, Oliveira F, Esperanca J. (2018) Gambling behavior: Instant versus traditional lotteries. *Journal of Business Research* 88: 560-567.

Browne M, Langham E, Rockloff MJ, Li E, Donaldson P, Goodwin B. (2015) EGM jackpots and player behaviour: An in-venue shadowing study. *Journal of gambling studies* 31(4): 1695-1714.

Chagas BT, Gomes JF. (2017) Internet gambling: A critical review of behavioural tracking research. *Journal of Gambling Issues* 36: 1-27.

Costes J-M, Kairouz S, Eroukmanoff V, Monson E. (2016) Gambling Patterns and Problems of Gamblers on Licensed and Unlicensed Sites in France. *Journal of gambling studies* 32(1): 79-91, doi <https://dx.doi.org/10.1007/s10899-015-9541-2>.

d'Astous A, Di Gaspero M. (2015) Heuristic and analytic processing in online sports betting. *Journal of gambling studies* 31(2): 455-470, doi <https://dx.doi.org/10.1007/s10899-013-9438-x>.

Deans EG, Thomas SL, Daube M, Derevensky J. (2016) "I can sit on the beach and punt through my mobile phone": The influence of physical and online environments on the gambling risk behaviours of young men. *Social science & medicine (1982)* 166: 110-119, doi <https://dx.doi.org/10.1016/j.socscimed.2016.08.017>.

Deans EG, Thomas SL, Daube M, Derevensky J, Gordon R. (2016) Creating symbolic cultures of consumption: an analysis of the content of sports wagering advertisements in Australia. *BMC public health* 16: 208, doi <https://dx.doi.org/10.1186/s12889-016-2849-8>.

Derevensky JL, Gainsbury SM. (2016) Social casino gaming and adolescents: Should we be concerned and is regulation in sight? *International Journal of Law and Psychiatry* 44: 1-6, doi <https://dx.doi.org/10.1016/j.ijlp.2015.08.025>.

Donaldson P, Langham E, Rockloff MJ, Browne M. (2016) Veiled EGM jackpots: The effects of hidden and mystery jackpots on gambling intensity. *Journal of gambling studies* 32(2): 487-498.

Drummond A, Sauer J. (2018) Video game loot boxes are psychologically akin to gambling. *Nature Human Behaviour* 2: 530-532.

Dussault F, Brunelle N, Kairouz S, Rousseau M, Leclerc D, Tremblay J, Cousineau M-M, Dufour M. (2017) Transition from playing with simulated gambling games to gambling with real money: A longitudinal study in adolescence. *International Gambling Studies* 17(3): 386-400.

Dwyer B, Shapiro SL, Drayer J. (2018) Daily Fantasy Football and Self-Reported Problem Behavior in the United States. *Journal of gambling studies* 34(3): 689-707, doi <https://dx.doi.org/10.1007/s10899-017-9720-4>.

Dwyer B, Weiner J. (2018) Daily Grind: A Comparison of Causality Orientations, Emotions, and Fantasy Sport Participation. *Journal of gambling studies* 34(1): 1-20, doi <https://dx.doi.org/10.1007/s10899-017-9684-4>.

Effertz T, Bischof A, Rumpf H-J, Meyer C, John U. (2018) The effect of online gambling on gambling problems and resulting economic health costs in Germany. *The European journal of health economics: HEPAC: health economics in prevention and care* 19(7): 967-978, doi <https://dx.doi.org/10.1007/s10198-017-0945-z>.



Estevez A, Rodriguez R, Diaz N, Granero R, Mestre-Bach G, Steward T, Fernandez-Aranda F, Aymami N, Gomez-Pena M, del Pino-Gutierrez A, Bano M, Moragas L, Mallorqui-Bague N, Lopez-Gonzalez H, Jauregui P, Onaindia J, Martin-Romera V, Menchon JM, Jimenez-Murcia S. (2017) How do online sports gambling disorder patients compare with land-based patients? *Journal of Behavioral Addictions* 6(4): 639-647.

Floros GD. (2018) Gambling disorder in adolescents: Prevalence, new developments, and treatment challenges. *Adolescent Health, Medicine and Therapeutics* 9: 43-51, doi <http://dx.doi.org/10.2147/AHMT.S135423>.

Forrest CJ, King DL, Delfabbro PH. (2016) The Gambling Preferences and Behaviors of a Community Sample of Australian Regular Video Game Players. *Journal of gambling studies* 32(2): 409-420, doi <https://dx.doi.org/10.1007/s10899-015-9535-0>.

Frahn T, Delfabbro P, King DL. (2015) Exposure to Free-Play Modes in Simulated Online Gaming Increases Risk-Taking in Monetary Gambling. *Journal of gambling studies* 31(4): 1531-1543, doi <https://dx.doi.org/10.1007/s10899-014-9479-9>.

Gainsbury SM, Russell A. (2015) Betting patterns for sports and races: a longitudinal analysis of online wagering in Australia. *Journal of gambling studies* 31(1): 17-32, doi <https://dx.doi.org/10.1007/s10899-013-9415-4>.

Gainsbury SM, King DL, Hing N, Delfabbro P. (2015) Social media marketing and gambling: an interview study of gambling operators in Australia', *International Gambling Studies*, vol. 15, no. 3, pp. 377-393.

Gainsbury SM, Russell A, Blaszczyński A, Hing N. (2015) Greater involvement and diversity of Internet gambling as a risk factor for problem gambling. *European Journal of Public Health* 25(4): 723-728, doi <https://dx.doi.org/10.1093/eurpub/ckv006>.

Gainsbury SM, Hing N, Delfabbro P, Dewar G, King DL. (2015) An exploratory study of interrelationships between social casino gaming, gambling, and problem gambling. *International Journal of Mental Health and Addiction* 13(1): 136-153.

Gainsbury SM, Russell A, Wood R, Hing N, Blaszczyński A. (2015) How risky is Internet gambling? A comparison of subgroups of Internet gamblers based on problem gambling status. *New Media & Society* 17(6): 861-879.

Gainsbury SM, Russell A, Hing N, Wood R, Lubman D, Blaszczyński A. (2015) How the Internet is changing gambling: findings from an Australian Prevalence Survey. *Journal of gambling studies* 31(1): 1-15, doi <https://dx.doi.org/10.1007/s10899-013-9404-7>.

Gainsbury SM, Russell A, Blaszczyński A, Hing N. (2015) The interaction between gambling activities and modes of access: a comparison of Internet-only, land-based only, and mixed-mode gamblers. *Addictive Behaviors* 41: 34-40, doi <https://dx.doi.org/10.1016/j.addbeh.2014.09.023>.

Gainsbury SM, King DL, Russell AMT, Delfabbro P, Derevensky J, Hing N. (2016) Exposure to and engagement with gambling marketing in social media: Reported impacts on moderate-risk and problem gamblers. *Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors* 30(2): 270-276, doi <https://dx.doi.org/10.1037/adb0000156>.

Gainsbury SM, Delfabbro P, King DL, Hing N. (2016) An Exploratory Study of Gambling Operators' Use of Social Media and the Latent Messages Conveyed. *Journal of gambling studies* 32(1): 125-141, doi <https://dx.doi.org/10.1007/s10899-015-9525-2>.

Gainsbury SM, Liu Y, Russell AMT, Teichert T. (2016) Is all Internet gambling equally problematic? Considering the relationship between mode of access and gambling problems. *Computers in Human Behavior* 55: 717-728, doi <http://dx.doi.org/10.1016/j.chb.2015.10.006>.

Gainsbury SM, Abarbanel B, Blaszczyński A. (2017) Game on: comparison of demographic profiles,

consumption behaviors, and gambling site selection criteria of esports and sports bettors. *Gaming Law Review* 21(8): 575-587.

Gainsbury SM, Blaszczynski A. (2017) Virtual reality gambling: public policy implications for regulation and challenges for consumer protection. *Gaming Law Review* 21(4): 314-322.

Gainsbury SM, Russell AM, Hing N, Blaszczynski A. (2018) Consumer engagement with and perceptions of offshore online gambling sites. *New Media & Society* 20(8): 2990-3010.

Gassmann F, Emrich E, Pierdzioch C. (2017) Who bets on sports? Some further empirical evidence using German data. *International Review for the Sociology of Sport* 52(4): 391-410, doi <http://dx.doi.org/10.1177/1012690215597650>.

Giotakos O, Tsouvelas G, Spourdalaki E, Janikian M, Tsitsika A, Vakirtzis A. (2017) Internet gambling in relation to Internet addiction, substance use, online sexual engagement and suicidality in a Greek sample. *International Gambling Studies* 17(1): 20-29.

Goldstein AL, Vilhena-Churchill N, Stewart SH, Hoaken PNS, Flett GL. (2016) Mood, motives, and money: An examination of factors that differentiate online and non-online young adult gamblers. *Journal of Behavioral Addictions* 5(1): 68-76, doi <https://dx.doi.org/10.1556/2006.5.2016.003>.

Goodwin B, Thorne H, Langham E, Moskovsky N. (2017) Traditional and innovated gambling products: An exploration of player preferences. *International Gambling Studies* 17(2): 219-235.

Gray HM, Jonsson GK, LaPlante DA, Shaffer HJ. (2015) Expanding the study of internet gambling behavior: trends within the Icelandic lottery and sportsbetting platform. *Journal of gambling studies* 31(2): 483-499, doi <https://dx.doi.org/10.1007/s10899-013-9427-0>.

Haefeli J, Lischer S, Haeusler J. (2015) Communications-based early detection of gambling-related problems in online gambling. *International Gambling Studies* 15(1): 23-38.

Hanss D, Mentzoni RA, Griffiths MD, Pallesen S. (2015) The impact of gambling advertising: Problem gamblers report stronger impacts on involvement, knowledge, and awareness than recreational gamblers. *Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors* 29(2): 483-491, doi <https://dx.doi.org/10.1037/adb0000062>.

Hayer T, Kalke J, Meyer G, Brosowski T. (2018) Do Simulated Gambling Activities Predict Gambling with Real Money During Adolescence? Empirical Findings from a Longitudinal Study. *Journal of gambling studies*: 1-19.

Hing N, Cherney L, Gainsbury SM, Lubman DI, Wood RT, Blaszczynski A. (2015) Maintaining and losing control during internet gambling: A qualitative study of gamblers' experiences. *New Media & Society* 17(7): 1075-1095.

Hing N, Russell AMT, Vitartas P, Lamont M. (2016) Demographic, Behavioural and Normative Risk Factors for Gambling Problems Amongst Sports Bettors. *Journal of gambling studies* 32(2): 625-641, doi <https://dx.doi.org/10.1007/s10899-015-9571-9>.

Hing N, Russell AM, Browne M. (2017) Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology Vol 8 2017, ArtID 779 8*.

Hing N, Russell AMT, Lamont M, Vitartas P. (2017) Bet Anywhere, Anytime: An Analysis of Internet Sports Bettors' Responses to Gambling Promotions During Sports Broadcasts by Problem Gambling Severity. *Journal of gambling studies* 33(4): 1051-1065, doi <https://dx.doi.org/10.1007/s10899-017-9671-9>.

Hing N, Sproston K, Brook K, Brading R. (2017) The Structural Features of Sports and Race Betting Inducements: Issues for Harm Minimisation and Consumer Protection. *Journal of gambling studies* 33(2): 685-704, doi <https://dx.doi.org/10.1007/s10899-016-9642-6>.

Hing N, Russell AMT, Li E, Vitartas P. (2018) Does the uptake of wagering inducements predict

- impulse betting on sport? *Journal of Behavioral Addictions* 7(1): 146-157, doi <https://dx.doi.org/10.1556/2006.7.2018.17>.
- Hollingshead SJ, Kim HS, Wohl MJ, Derevensky JL. (2016) The social casino gaming-gambling link: Motivation for playing social casino games determines whether self-reported gambling increases or decreases among disordered gamblers. *Journal of Gambling Issues* 33: 52-67.
- Landon J, du Preez KP, Page A, Bellringer M, Roberts A, Abbott M. (2018) Electronic gaming machine characteristics: it's the little things that count. *International Journal of Mental Health and Addiction* 16(2): 251-265.
- James RJE, O'Malley C, Tunney RJ. (2017) Understanding the psychology of mobile gambling: A behavioural synthesis. *British journal of psychology* 108(3): 608-625, doi <https://dx.doi.org/10.1111/bjop.12226>.
- Kairouz S, Fiedler I, Monson E, Arsenault N. (2017) Exploring the effects of introducing a state monopoly operator to an unregulated online gambling market. *Journal of Gambling Issues* 37: 136-148.
- Khazaal Y, Chatton A, Achab S, Monney G, Thorens G, Dufour M, Zullino D, Rothen S. (2017) Internet Gamblers Differ on Social Variables: A Latent Class Analysis. *Journal of gambling studies* 33(3): 881-897, doi <https://dx.doi.org/10.1007/s10899-016-9664-0>.
- Kim HS, Wohl MJ, Salmon MM, Gupta R, Derevensky J. (2015) Do Social Casino Gamers Migrate to Online Gambling? An Assessment of Migration Rate and Potential Predictors. *Journal of Gambling Studies (Online)* 31(4): 1819-1831, doi <http://dx.doi.org/10.1007/s10899-014-9511-0>.
- Kim HS, Wohl MJA, Gupta R, Derevensky J. (2016) From the mouths of social media users: A focus group study exploring the social casino gaming-online gambling link. *Journal of Behavioral Addictions* 5(1): 115-121, doi <https://dx.doi.org/10.1556/2006.5.2016.014>.
- King DL, Gainsbury SM, Delfabbro PH, Hing N, Abarbanel B. (2015) Distinguishing between gaming and gambling activities in addiction research. *Journal of Behavioral Addictions* 4(4): 215-220, doi <https://dx.doi.org/10.1556/2006.4.2015.045>.
- King DL, Delfabbro PH. (2016) Early exposure to digital simulated gambling: A review and conceptual model. *Computers in Human Behavior* 55: 198-206, doi <http://dx.doi.org/10.1016/j.chb.2015.09.012>.
- Li H, Mao LL, Zhang JJ, Xu J. (2015) Classifying and profiling sports lottery gamblers: A cluster analysis approach. *Social Behavior and Personality* 43(8): 1299-1318, doi <http://dx.doi.org/10.2224/sbp.2015.43.8.1299>.
- Li E, Rockloff MJ, Browne M, Donaldson P. (2016) Jackpot structural features: Rollover effect and goal-gradient effect in EGM gambling. *Journal of gambling studies* 32(2): 707-720.
- Lin H-W, Lu H-F. (2015) Elucidating the association of sports lottery bettors' socio-demographics, personality traits, risk tolerance and behavioural biases. *Personality and Individual Differences* 73: 118-126.
- Lopez-Gonzalez H, Estevez A, Griffiths MD. (2018) Controlling the illusion of control: A grounded theory of sports betting advertising in the UK. *International Gambling Studies* 18(1): 39-55.
- Lopez-Gonzalez H, Estevez A, Jimenez-Murcia S, Griffiths MD. (2018) Alcohol drinking and low nutritional value food eating behavior of sports bettors in gambling advertisements. *International Journal of Mental Health and Addiction* 16(1): 81-89.
- Lopez-Gonzalez H, Guerrero-Sole F, Griffiths MD. (2018) A content analysis of how 'normal' sports betting behaviour is represented in gambling advertising. *Addiction Research & Theory* 26(3): 238-247.
- Macey J, Hamari J. (2018) Investigating relationships between video gaming, spectating esports, and

- gambling. *Computers in Human Behavior* 80: 344-353, doi <http://dx.doi.org/10.1016/j.chb.2017.11.027>.
- MacLaren VV. (2016) Video Lottery is the Most Harmful Form of Gambling in Canada. *Journal of gambling studies* 32(2): 459-485, doi <https://dx.doi.org/10.1007/s10899-015-9560-z>.
- Marchica L, Derevensky J. (2016) Fantasy sports: A growing concern among college student-athletes. *International Journal of Mental Health and Addiction* 14(5): 635-645.
- Martin RJ, Nelson SE, Gallucci AR. (2016) Game On: Past Year Gambling, Gambling-Related Problems, and Fantasy Sports Gambling Among College Athletes and Non-athletes. *Journal of gambling studies* 32(2): 567-579, doi <https://dx.doi.org/10.1007/s10899-015-9561-y>.
- Molde H, Holmøy B, Merkesdal AG, Torsheim T, Mentzoni RA, Hanns D, Sagoe D, Pallesen S. (2018) Are Video Games a Gateway to Gambling? A Longitudinal Study Based on a Representative Norwegian Sample. *Journal of gambling studies*, doi 10.1007/s10899-018-9781-z.
- Montes KS, Weatherly JN. (2017) Differences in the Gambling Behavior of Online and Non-online Student Gamblers in a Controlled Laboratory Environment. *Journal of gambling studies* 33(1): 85-97, doi <http://dx.doi.org/10.1007/s10899-016-9613-y>.
- Mulkeen J, Abdou HA, Parke J. (2017) A three stage analysis of motivational and behavioural factors in UK internet gambling. *Personality and Individual Differences* 107: 114-125, doi <http://dx.doi.org/10.1016/j.paid.2016.11.007>.
- Murch WS, Clark L. (2019) Effects of bet size and multi-line play on immersion and respiratory sinus arrhythmia during electronic gaming machine use. *Addictive Behaviors* 88: 67-72.
- Newall PW. (2017) Behavioral complexity of British gambling advertising. *Addiction Research & Theory* 25(6): 505-511.
- Nower L, Caler KR, Pickering D, Blaszczyński A. (2018) Daily Fantasy Sports Players: Gambling, Addiction, and Mental Health Problems. *Journal of gambling studies* 34(3): 727-737, doi <https://dx.doi.org/10.1007/s10899-018-9744-4>.
- Papineau E, Lacroix G, Sevigny S, Biron J, Corneau-Tremblay N, Lemetayer F. (2018) Assessing the differential impacts of online, mixed, and offline gambling. *International Gambling Studies* 18(1): 69-91.
- Petry NM, Gonzalez-Ibanez A. (2015) Internet gambling in problem gambling college students. *Journal of gambling studies* 31(2): 397-408, doi <https://dx.doi.org/10.1007/s10899-013-9432-3>.
- Prentice C, Wong IA. (2015) Casino marketing, problem gamblers or loyal customers? *Journal of Business Research* 68(10): 2084-2092.
- Quigno J, Zhang L. (2016) Casino customers' intention to join a loyalty rewards program: The effect of number of tiers and gender. *Cornell Hospitality Quarterly* 57(2): 226-230.
- Quilty LC, Lobo DS, Zack M, Crewe-Brown C, Blaszczyński A. (2016) Hitting the jackpot: the influence of monetary payout on gambling behaviour. *International Gambling Studies* 16(3): 481-499.
- Redondo I. (2015) Assessing the risks associated with online lottery and casino gambling: A comparative analysis of players' individual characteristics and types of gambling. *International Journal of Mental Health and Addiction* 13(5): 584-596.
- Remond J-J, Romo L. (2018) Analysis of Gambling in the Media Related to Screens: Immersion as a Predictor of Excessive Use? *International Journal of Environmental Research and Public Health* 15(1): 58, doi <http://dx.doi.org/10.3390/ijerph15010058>.
- Riva P, Sacchi S, Brambilla M. (2015) Humanizing machines: Anthropomorphization of slot machines increases gambling. *Journal of experimental psychology. Applied* 21(4): 313-325, doi <https://dx.doi.org/10.1037/xap0000057>.

- Sanders J, Williams R. (2018) The Relationship Between Video Gaming, Gambling, and Problematic Levels of Video Gaming and Gambling. *Journal of gambling studies*, doi 10.1007/s10899-018-9798-3.
- Sigerson L, Li AYL, Cheung MWL, Cheng C. (2017) Examining common information technology addictions and their relationships with non-technology-related addictions. *Computers in Human Behavior* 75: 520-526, doi <http://dx.doi.org/10.1016/j.chb.2017.05.041>.
- Stead M, Dobbie F, Angus K, Purves RI, Reith G, Macdonald L. (2016) The Online Bingo Boom in the UK: A Qualitative Examination of Its Appeal. *PloS one* 11(5): e0154763, doi <https://dx.doi.org/10.1371/journal.pone.0154763>.
- Talberg ON. (2017) Can we expect more students dropping out of education to play poker or has online poker become too challenging? *Journal of Gambling Issues* 37: 59-86.
- Teichert T, Gainsbury SM, Muhlbach C. (2017) Positioning of online gambling and gaming products from a consumer perspective: A blurring of perceived boundaries. *Computers in Human Behavior* 75: 757-765.
- Wann DL, Zapalac RK, Grieve FG, Partridge JA, Lanter JR. (2015) An examination of sport fans' perceptions of the impact of the legalization of sport wagering on their fan experience. *UNLV Gaming Research & Review Journal* 19(2): 21-40.
- Wijesingha R, Leatherdale ST, Turner NE, Elton-Marshall T. (2017) Factors associated with adolescent online and land-based gambling in Canada. *Addiction Research & Theory* 25(6): 525-532.
- Wohl MJ, Salmon MM, Hollingshead SJ, Kim HS. (2017) An examination of the relationship between social casino gaming and gambling: The bad, the ugly, and the good. *Journal of Gambling Issues* 35: 1-23.
- Worhunsky PD, Rogers RD. (2017) An Initial Investigation of Individual Rate-of-Play Preferences and Associations with EGM Gambling Behavior. *Journal of gambling studies*: 1-17.
- Yoo M, Singh A. (2016) Comparing loyalty program tiering strategies: An investigation from the gaming industry. *UNLV Gaming Research & Review Journal* 20(2): 19-40.
- Yuan J. (2015) Examining the gambling behaviors of Chinese online lottery gamblers: are they rational? *Journal of gambling studies* 31(2): 573-584, doi <https://dx.doi.org/10.1007/s10899-014-9443-8>.
- Zhang M, Yang Y, Guo S, Cheok C, Kim Eng W, Kandasami G. (2018) Online Gambling among Treatment-Seeking Patients in Singapore: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health* 15(4): 832, doi <http://dx.doi.org/10.3390/ijerph15040832>.

## **Efficacy and effectiveness of treatments**

- Abbott M, Hodgins DC, Bellringer M, Vandal AC, Katie Palmer Du P, Landon J, Sullivan S, Rodda S, Feigin V. (2018) Brief telephone interventions for problem gambling: a randomized controlled trial. *Addiction* 113(5): 883-895, doi <http://dx.doi.org/10.1111/add.14149>.
- Bae H, Han C, Kim D. (2015) Desensitization of triggers and urge reprocessing for pathological gambling: a case series. *Journal of gambling studies* 31(1): 331-342, doi <https://dx.doi.org/10.1007/s10899-013-9422-5>.
- Bouchard S, Robillard G, Giroux I, Jacques C, Loranger C, St-Pierre M, Chretien M, Goulet A. (2017) Using virtual reality in the treatment of gambling disorder: The development of a new tool for cognitive behavior therapy. *Frontiers in Psychiatry Vol 8, ArtID 278*.
- Boudreault C, Giroux I, Jacques C, Goulet A, Simoneau H, Ladouceur R. (2018) Efficacy of a Self-Help Treatment for At-Risk and Pathological Gamblers. *Journal of gambling studies* 34(2): 561-580, doi <https://dx.doi.org/10.1007/s10899-017-9717-z>.

- Boughton R, Jindani F, Turner NE. (2017) Closing a treatment gap in Ontario: Pilot of a Tutorial Workbook for women gamblers. *Journal of Gambling Issues* 36: 199-231.
- Boughton RR, Jindani F, Turner NE. (2016) Group treatment for women gamblers using web, teleconference and workbook: Effectiveness pilot. *International Journal of Mental Health and Addiction* 14(6): 1074-1095.
- Bucker L, Bierbrodt J, Hand I, Wittekind C, Moritz S. (2018) Effects of a depression-focused internet intervention in slot machine gamblers: A randomized controlled trial. *PLoS one* 13(6): e0198859, doi <http://dx.doi.org/10.1371/journal.pone.0198859>.
- Campos MD, Rosenthal RJ, Chen Q, Moghaddam J and Fong TW (2016) A self-help manual for problem gamblers: The impact of minimal therapist guidance on outcome. *International Journal of Mental Health and Addiction* 14(4): 579-596.
- Casey LM, Oei TPS, Raylu N, Horrigan K, Day J, Ireland M, Clough BA. (2017) Internet-Based Delivery of Cognitive Behaviour Therapy Compared to Monitoring, Feedback and Support for Problem Gambling: A Randomised Controlled Trial. *Journal of gambling studies* 33(3): 993-1010, doi <https://dx.doi.org/10.1007/s10899-016-9666-y>.
- Challet-Bouju G, Bruneau M, Victorri-Vigneau C, Grall-Bronnec M. (2017) Cognitive remediation interventions for gambling disorder: A systematic review. *Frontiers in Psychology Vol 8 2017, ArtID 1961* 8.
- Choi S-W, Shin Y-C, Kim D-J, Jung-Seok C, Kim S, Seung-Hyun K, Youn H. (2017) Treatment modalities for patients with gambling disorder. *Annals of General Psychiatry* 16, doi <http://dx.doi.org/10.1186/s12991-017-0146-2>.
- de Brito AMC, de Almeida Pinto MG, Bronstein G, Carneiro E, Faertes D, Fukugawa V, Duque A, Vasconcellos F, Tavares H. (2017) Topiramate Combined with Cognitive Restructuring for the Treatment of Gambling Disorder: A Two-Center, Randomized, Double-Blind Clinical Trial. *Journal of gambling studies* 33(1): 249-263, doi <https://dx.doi.org/10.1007/s10899-016-9620-z>.
- Dixon MR, Wilson AN, Habib R. (2016) Neurological evidence of acceptance and commitment therapy effectiveness in college-age gamblers. *Journal of Contextual Behavioral Science* 5(2): 80-88.
- Dowling NA, Merkouris SS, Lorains FK. (2016) Interventions for comorbid problem gambling and psychiatric disorders: Advancing a developing field of research. *Addictive Behaviors* 58: 21-30, doi <https://dx.doi.org/10.1016/j.addbeh.2016.02.012>.
- Echeburua E, Amor PJ, Gomez M. (2017) Current psychological therapeutic approaches for gambling disorder with psychiatric comorbidities: A narrative review. *Salud Mental* 40(6): 299-305, doi <http://dx.doi.org/10.17711/SM.0185-3325.2017.038>.
- Egorov AY. (2017) The Use of Agomelatine (Valdoxan) in the Treatment of Gambling: A Pilot Study. *Neuroscience and Behavioral Physiology* 47(7): 795-798, doi <http://dx.doi.org/10.1007/s11055-017-0470-7>.
- Garcia-Caballero A, Torrens-Lluch M, Ramirez-Gendrau I, Garrido G, Valles V, Aragay N. (2018) The efficacy of motivational intervention and cognitive-behavioral therapy for pathological gambling. *Adicciones* 30(3): 217-222, doi <http://dx.doi.org/10.20882/adicciones.965>.
- Gay A, Boutet C, Sigaud T, Kamgoue A, Sevos J, Brunelin J, Massoubre C. (2017) A single session of repetitive transcranial magnetic stimulation of the prefrontal cortex reduces cue-induced craving in patients with gambling disorder. *European Psychiatry* 41: 68-74.
- Giroux I, Goulet A, Mercier J, Jacques C, Bouchard S. (2017) Online and mobile interventions for problem gambling, alcohol, and drugs: A systematic review. *Frontiers in Psychology Vol 8 2017, ArtID 954* 8.
- Goslar M, Leibetseder M, Muench HM, Hofmann SG, Laireiter A-R. (2017) Efficacy of face-to-face

versus self-guided treatments for disordered gambling: A meta-analysis. *Journal of Behavioral Addictions* 6(2): 142-162, doi <https://dx.doi.org/10.1556/2006.6.2017.034>.

Harris N, Mazmanian D. (2016) Cognitive behavioural group therapy for problem gamblers who gamble over the internet: A controlled study. *Journal of Gambling Issues* 33: 170-188.

Harvey P. (2016) Effectiveness and efficiency in the treatment of gambling disorder: reflections on the Dodo Bird Conjecture. *Journal of health services research & policy* 21(3): 178-182, doi <https://dx.doi.org/10.1177/1355819615625430>.

Jimenez-Murcia S, Tremblay J, Stinchfield R, Granero R, Fernandez-Aranda F, Mestre-Bach G, Steward T, del Pino-Gutierrez A, Bano M, Moragas L, Aymami N, Gomez-Pena M, Tarrega S, Valenciano-Mendoza E, Giroux I, Sancho M, Sanchez I, Mallorqui-Bague N, Gonzalez V, Martin-Romera V, Menchon JM. (2017) The Involvement of a Concerned Significant Other in Gambling Disorder Treatment Outcome. *Journal of gambling studies* 33(3): 937-953, doi <http://dx.doi.org/10.1007/s10899-016-9657-z>.

Kourgiantakis T, Saint-Jacques MC, Tremblay J. (2018) Facilitators and Barriers to Family Involvement in Problem Gambling Treatment. *International Journal of Mental Health and Addiction* 16(2): 291-312, doi <http://dx.doi.org/10.1007/s11469-017-9742-2>.

Kovanen L, Basnet S, Castren S, Pankakoski M, Saarikoski ST, Partonen T, Alho H, Lahti T. (2016) A Randomised, Double-Blind, Placebo-Controlled Trial of As-Needed Naltrexone in the Treatment of Pathological Gambling. *European addiction research* 22(2): 70-79, doi <https://dx.doi.org/10.1159/000435876>.

Lee BK, Awosoga O. (2015) Congruence Couple Therapy for Pathological Gambling: A Pilot Randomized Controlled Trial. *Journal of gambling studies* 31(3): 1047-1068, doi <https://dx.doi.org/10.1007/s10899-014-9464-3>.

Luquiens A, Tanguy M-L, Lagadec M, Benyamina A, Aubin H-J, Reynaud M. (2016) The Efficacy of Three Modalities of Internet-Based Psychotherapy for Non-Treatment-Seeking Online Problem Gamblers: A Randomized Controlled Trial. *Journal of medical Internet research* 18(2): e36, doi <https://dx.doi.org/10.2196/jmir.4752>.

Maynard BR, Wilson AN, Labuziński E, Whiting SW. (2018) Mindfulness-Based Approaches in the Treatment of Disordered Gambling: A Systematic Review and Meta-Analysis. *Research on Social Work Practice* 28(3): 348-362, doi <http://dx.doi.org/10.1177/1049731515606977>.

McIntosh CC, Crino RD, O'Neill K. (2016) Treating Problem Gambling Samples with Cognitive Behavioural Therapy and Mindfulness-Based Interventions: A Clinical Trial. *Journal of gambling studies* 32(4): 1305-1325.

Nayoski N, Hodgins DC. (2016) The efficacy of individual Community Reinforcement and Family Training (CRAFT) for concerned significant others of problem gamblers. *Journal of Gambling Issues* 33: 189-212.

Nehlin C, Nyberg F, Jess K. (2016) Brief Intervention within Primary Care for At-Risk Gambling: A Pilot Study. *Journal of gambling studies* 32(4): 1327-1335.

Neighbors C, Rodriguez LM, Rinker DV, Gonzales RG, Agana M, Tackett JL, Foster DW. (2015) Efficacy of personalized normative feedback as a brief intervention for college student gambling: a randomized controlled trial. *Journal of consulting and clinical psychology* 83(3): 500-511, doi <https://dx.doi.org/10.1037/a0039125>.

Nilsson A, Magnusson K, Carlbring P, Andersson G, Gumpert CH. (2018) The Development of an Internet-Based Treatment for Problem Gamblers and Concerned Significant Others: A Pilot Randomized Controlled Trial. *Journal of gambling studies* 34(2): 539-559, doi [10.1007/s10899-017-9704-4](https://dx.doi.org/10.1007/s10899-017-9704-4).

- Oei TPS, Raylu N, Lai WW. (2018) Effectiveness of a Self Help Cognitive Behavioural Treatment Program for Problem Gamblers: A Randomised Controlled Trial. *Journal of gambling studies* 34(2): 581-595, doi <https://dx.doi.org/10.1007/s10899-017-9723-1>.
- Park C-B, Park SM, Gwak AR, Sohn BK, Lee J-Y, Jung HY, Choi S-W, Kim DJ, Choi J-S. (2015) The effect of repeated exposure to virtual gambling cues on the urge to gamble. *Addictive Behaviors* 41: 61-64, doi <https://dx.doi.org/10.1016/j.addbeh.2014.09.027>.
- Penna AC, Kim HS, de Brito AMC, Tavares H. (2018) The impact of an exercise program as a treatment for gambling disorder: A randomized controlled trial. *Mental Health and Physical Activity* 15: 53-62, doi <http://dx.doi.org/10.1016/j.mhpa.2018.07.003>.
- Petry NM, Rash CJ, Alessi SM. (2016) A randomized controlled trial of brief interventions for problem gambling in substance abuse treatment patients. *Journal of consulting and clinical psychology* 84(10): 874-886, doi <https://dx.doi.org/10.1037/ccp0000127>.
- Petry NM, Ginley MK, Rash CJ. (2017) A systematic review of treatments for problem gambling. *Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors* 31(8): 951-961, doi <https://dx.doi.org/10.1037/adb0000290>.
- Rodda SN, Lubman DI, Jackson AC, Dowling NA. (2017) Improved Outcomes Following a Single Session Web-Based Intervention for Problem Gambling. *Journal of gambling studies* 33(1): 283-299, doi <https://dx.doi.org/10.1007/s10899-016-9638-2>.
- Ronzitti S, Soldini E, Smith N, Bayston A, Clerici M, Bowden-Jones H. (2018) Are Treatment Outcomes Determined by Type of Gambling? A UK Study. *Journal of Gambling Studies (Online)*: 1-11, doi <http://dx.doi.org/10.1007/s10899-018-9752-4>.
- Sauvaget A, Bulteau S, Guilleux A, Leboucher J, Pichot A, Valriviere P, Vanelle J-M, Sebille-Rivain V, Grall-Bronnec M. (2018) Both active and sham low-frequency rTMS single sessions over the right DLPFC decrease cue-induced cravings among pathological gamblers seeking treatment: A randomized, double-blind, sham-controlled crossover trial. *Journal of Behavioral Addictions* 7(1): 126-136, doi <https://dx.doi.org/10.1556/2006.7.2018.14>.
- Schuler A, Ferentzy P, Turner NE, Skinner W, McIsaac KE, Ziegler CP, Matheson FI. (2016) Gamblers Anonymous as a Recovery Pathway: A Scoping Review. *Journal of gambling studies* 32(4): 1261-1278.
- Smith DP, Battersby MW, Harvey PW, Pols RG, Ladouceur R. (2015) Cognitive versus exposure therapy for problem gambling: Randomised controlled trial. *Behaviour research and therapy* 69: 100-110, doi <https://dx.doi.org/10.1016/j.brat.2015.04.008>.
- Smith DP, Fairweather-Schmidt AK, Harvey PW, Battersby MW. (2018) How does routinely delivered cognitive-behavioural therapy for gambling disorder compare to "gold standard" clinical trial? *Clinical psychology & psychotherapy* 25(2): 302-310, doi <https://dx.doi.org/10.1002/cpp.2163>.
- Stewart MJ, MacNevin PL, Hodgins DC, Barrett SP, Swansburg J, Stewart SH. (2016) Motivation-matched approach to the treatment of problem gambling: A case series pilot study. *Journal of Gambling Issues* 33: 124-147.
- Swan JL, Hodgins DC. (2015) Brief interventions for disordered gambling. *Canadian Journal of Addiction* 6(2): 29-36.
- Tolchard B. (2016) Outcome of treatment seeking rural gamblers attending a nurse-led cognitive-behaviour therapy service: A pilot study. *International Journal of Nursing Sciences* 3(1): 89-95, doi <http://dx.doi.org/10.1016/j.ijnss.2016.01.004>.
- Tolchard B. (2017) Cognitive-behavior therapy for problem gambling: a critique of current treatments and proposed new unified approach. *Journal of mental health (Abingdon, England)* 26(3): 283-290, doi <https://dx.doi.org/10.1080/09638237.2016.1207235>.



Toneatto T. (2016) Single-session interventions for problem gambling may be as effective as longer treatments: Results of a randomized control trial. *Addictive Behaviors* 52: 58-65, doi <https://dx.doi.org/10.1016/j.addbeh.2015.08.006>.

Turner NE, McAvoy S, Ferentzy P, Matheson FI, Myers C, Jindani F, Littman-Sharp N, Malat J. (2017) Addressing the issue of problem gambling in the criminal justice system: A series of case studies. *Journal of Gambling Issues* 35: 74-100.

Wong DFK, Chung CLP, Wu J, Tang J, Lau P and Wan JPC (2015) A Preliminary Study of an Integrated and Culturally Attuned Cognitive Behavioral Group Treatment for Chinese Problem Gamblers in Hong Kong. *Journal of gambling studies* 31(3): 1015-1027, doi <https://dx.doi.org/10.1007/s10899-014-9457-2>.

Yakovenko I, Quigley L, Hemmelgarn BR, Hodgins DC, Ronksley P. (2015) The efficacy of motivational interviewing for disordered gambling: systematic review and meta-analysis. *Addictive Behaviors* 43: 72-82, doi <https://dx.doi.org/10.1016/j.addbeh.2014.12.011>.

Zhuang XY, Wong DFK, Ng TK, Jackson AC, Dowling NA, Herman HL. (2018) Evaluating the Effectiveness of an Integrated Cognitive-Behavioural Intervention (CBI) Model for Male Problem Gamblers in Hong Kong: A Matched-Pair Comparison Design. *Journal of Gambling Studies (Online)*: 1-17, doi <http://dx.doi.org/10.1007/s10899-018-9747-1>.

## Prevention and harm minimisation

Auer MM, Griffiths MD. (2015) Testing normative and self-appraisal feedback in an online slot-machine pop-up in a real-world setting. *Frontiers in Psychology Vol 6 2015, ArtID 339 6*.

Auer MM, Griffiths MD. (2015) The use of personalized behavioral feedback for online gamblers: An empirical study. *Frontiers in Psychology Vol 6 2015, ArtID 1406 6*.

Auer MM, Griffiths MD. (2016) Personalized behavioral feedback for online gamblers: A real world empirical study. *Frontiers in Psychology Vol 7 2016, ArtID 1875 7*.

Auer M, Griffiths MD. (2018) Cognitive Dissonance, Personalized Feedback, and Online Gambling Behavior: An Exploratory Study Using Objective Tracking Data and Subjective Self-Report. *International Journal of Mental Health and Addiction* 16(3): 631-641, doi <http://dx.doi.org/10.1007/s11469-017-9808-1>.

Blaszczynski A, Cowley E, Anthony C, Hinsley K. (2016) Breaks in Play: Do They Achieve Intended Aims? *Journal of gambling studies* 32(2): 789-800, doi <https://dx.doi.org/10.1007/s10899-015-9565-7>.

Bond KS, Dart KM, Jorm AF, Kelly CM, Kitchener BA, Reavley NJ. (2017) Assisting an Australian Aboriginal and Torres Strait Islander person with gambling problems: a Delphi study. *BMC psychology* 5(1): 27, doi <https://dx.doi.org/10.1186/s40359-017-0196-x>.

Caillon J, Grall-Bronnec M, Perrot B, Leboucher J, Donnio Y, Romo L, Challet-Bouju G. (2018) Effectiveness of At-Risk Gamblers' Temporary Self-Exclusion from Internet Gambling Sites. *Journal of gambling studies*, doi 10.1007/s10899-018-9782-y.

Canale N, Vieno A, Griffiths MD, Marino C, Chieco F, Disperati F, Andriolo S, Santinello M. (2016) The efficacy of a web-based gambling intervention program for high school students: A preliminary randomized study. *Computers in Human Behavior* 55: 946-954, doi <http://dx.doi.org/10.1016/j.chb.2015.10.012>.

Diehr AJ, Rule M, Glassman T, Daniels-Witt QR, Saidou F. (2017) A coordinated health communication campaign addressing casino and sports gambling among undergraduate students. *Journal of Gambling Issues* 37: 87-107.

Dragicevic S, Percy C, Kudic A, Parke J. (2015) A descriptive analysis of demographic and behavioral

- data from Internet gamblers and those who self-exclude from online gambling platforms. *Journal of gambling studies* 31(1): 105-132, doi <https://dx.doi.org/10.1007/s10899-013-9418-1>.
- Drawson AS, Tanner J, Mushquash CJ, Mushquash AR, Mazmanian D. (2017) The use of protective behavioural strategies in gambling: A systematic review. *International Journal of Mental Health and Addiction* 15(6): 1302-1319.
- Edgerton JD, Biegun J, Roberts LW. (2016) Player Behavioral Tracking and Personalized Feedback in On-line Gambling: Implications for Prevention and Treatment of Problem Gambling. *Journal of Addiction and Prevention*, 4(2): 8.
- Forsstrom D, Hesser H, Carlbring P. (2016) Usage of a Responsible Gambling Tool: A Descriptive Analysis and Latent Class Analysis of User Behavior. *Journal of gambling studies* 32(3): 889-904, doi <https://dx.doi.org/10.1007/s10899-015-9590-6>.
- Forsstrom D, Jansson-Frojmark M, Hesser H, Carlbring P. (2017) Experiences of Playscan: Interviews with users of a responsible gambling tool. *Internet Interventions* 8: 53-62, doi <http://dx.doi.org/10.1016/j.invent.2017.03.003>.
- Gainsbury S, Aro D, Ball D, Tobar C, Russell A. (2015) Determining optimal placement for pop-up messages: Evaluation of a live trial of dynamic warning messages for electronic gaming machines. *International Gambling Studies* 15(1): 141-158.
- Gainsbury SM, Aro D, Ball D, Tobar C, Russell A. (2015) Optimal content for warning messages to enhance consumer decision making and reduce problem gambling. *Journal of Business Research* 68(10): 2093-2101.
- Gainsbury SM, Jakob L, Aro D. (2018) Understanding end-user perspectives to enhance perceived value uptake of harm-minimization tools: Considering gambler's views of a pre-commitment system. *International Gambling Studies* 18(1): 22-38.
- Ginley MK, Whelan JP, Pfund RA, Peter SC, Meyers AW. (2017) Warning messages for electronic gambling machines: Evidence for regulatory policies. *Addiction Research & Theory* 25(6): 495-504.
- Goh EC, Ng V, Yeoh BS. (2016) The family exclusion order as a harm-minimisation measure for casino gambling: The case of Singapore. *International Gambling Studies* 16(3): 373-390.
- Graydon C, Dixon MJ, Harrigan KA, Fugelsang JA, Jarick M. (2017) Losses disguised as wins in multiline slots: Using an educational animation to reduce erroneous win overestimates. *International Gambling Studies* 17(3): 442-458.
- Haeusler J. (2016) Follow the money: Using payment behaviour as predictor for future self-exclusion. *International Gambling Studies* 16(2): 246-262.
- Harris A, Parke A. (2016) The interaction of gambling outcome and gambling harm-minimisation strategies for electronic gambling: The efficacy of computer generated self-appraisal messaging. *International Journal of Mental Health and Addiction* 14(4): 597-617.
- Harris A, Griffiths MD. (2017) A critical review of harm-minimisation tools. *Journal of Gambling Studies*, 33(1):187-221. DOI 10.1007/s10899-016-9624-8 <https://www.ncbi.nlm.nih.gov/pubmed/27289237>
- Harris A, Griffiths MD. (2018) The Impact of Speed of Play in Gambling on Psychological and Behavioural Factors: A Critical Review. *Journal of gambling studies* 34(2): 393-412, doi <https://dx.doi.org/10.1007/s10899-017-9701-7>.
- Harris A, Parke A, Griffiths MD. (2018) The Case for Using Personally Relevant and Emotionally Stimulating Gambling Messages as a Gambling Harm-Minimisation Strategy. *International Journal of Mental Health and Addiction* 16(2): 266-275, doi <http://dx.doi.org/10.1007/s11469-016-9698-7>.
- Hing N, Russell A, Tolchard B, Nuske E. (2015) Are there distinctive outcomes from self-exclusion?

An exploratory study comparing gamblers who have self-excluded, received counselling, or both. *International Journal of Mental Health and Addiction* 13(4): 481-496.

Hing N, Sproston K, Tran K, Russell AMT. (2017) Gambling Responsibly: Who Does It and To What End? *Journal of gambling studies* 33(1): 149-165, doi <https://dx.doi.org/10.1007/s10899-016-9615-9>.

Huic A, Kranzelic V, Dodig Hundric D, Ricijas N. (2017) Who Really Wins? Efficacy of a Croatian Youth Gambling Prevention Program. *Journal of gambling studies* 33(3): 1011-1033, doi <https://dx.doi.org/10.1007/s10899-017-9668-4>.

Keen B, Blaszczynski A, Anjoul F. (2017) Systematic Review of Empirically Evaluated School-Based Gambling Education Programs. *Journal of gambling studies* 33(1): 301-325, doi <https://dx.doi.org/10.1007/s10899-016-9641-7>.

Kotter R, Kraplin A, Bühringer G. (2018) Casino Self- and Forced Excluders' Gambling Behavior Before and After Exclusion. *Journal of gambling studies* 34(2): 597-615, doi <https://dx.doi.org/10.1007/s10899-017-9732-0>.

Kotter R, Kräplin A, Pittig A, Bühringer G. (2018) A Systematic Review of Land-Based Self-Exclusion Programs: Demographics, Gambling Behavior, Gambling Problems, Mental Symptoms, and Mental Health. journal article. *Journal of gambling studies*, doi 10.1007/s10899-018-9777-8.

Ladouceur R, Shaffer P, Blaszczynski A, Shaffer HJ. (2017) Responsible gambling: A synthesis of the empirical evidence. *Addiction Research & Theory* 25(3): 225-235.

Landon J, du Preez KP, Bellringer M, Page A, Abbott M. (2016) Pop-up messages on electronic gaming machines in New Zealand: Experiences and views of gamblers and venue staff. *International Gambling Studies* 16(1): 49-66.

Langham E, Rockloff M, Browne M, Best T. (2017) Could EGM player-tracking systems help link gamblers to treatment services in Australia: A thematic analysis of counsellor and community educators' perspectives. *International Gambling Studies* 17(3): 471-489.

Marchica L, Derevensky JL. (2016) Examining personalized feedback interventions for gambling disorders: A systematic review. *Journal of Behavioral Addictions* 5(1): 1-10, doi <https://dx.doi.org/10.1556/2006.5.2016.006>.

Marionneau V, Jarvinen-Tassopoulos J. (2017) Consumer protection in licensed online gambling markets in France: The role of responsible gambling tools. *Addiction Research & Theory* 25(6): 436-443.

Martens MP, Arterberry BJ, Takamatsu SK, Masters J, Dude K. (2015) The efficacy of a personalized feedback-only intervention for at-risk college gamblers. *Journal of consulting and clinical psychology* 83(3): 494-499, doi <https://dx.doi.org/10.1037/a0038843>.

McCormick AV, Cohen IM, Davies G. (2018) Differential Effects of Formal and Informal Gambling on Symptoms of Problem Gambling During Voluntary Self-Exclusion. *Journal of Gambling Studies (Online)*: 1-19, doi <http://dx.doi.org/10.1007/s10899-018-9743-5>.

Meyer G, von Meduna M, Brosowski T, Hayer T. (2015) Compliance check of gambler and youth protection in German amusement arcades: A pilot study. *International Gambling Studies* 15(3): 343-360.

Oh BC, Ong YJ, Loo JM. (2017) A review of educational-based gambling prevention programs for adolescents. *Asian Journal of Gambling Issues and Public Health* 7(1): 1-16, doi <http://dx.doi.org/10.1186/s40405-017-0024-5>.

Palmer du Preez K, Landon J, Bellringer M, Garrett N, Abbott M. (2016) The Effects of Pop-up Harm Minimisation Messages on Electronic Gaming Machine Gambling Behaviour in New Zealand. *Journal of gambling studies* 32(4): 1115-1126.

Percy C, Franca M, Dragicevic S, d'Avila Garcez A. (2016) Predicting online gambling self-exclusion: An analysis of the performance of supervised machine learning models. *International Gambling Studies* 16(2): 193-210.

Pickering D, Blaszczynski A, Gainsbury SM. (2018) Multi-Venue Self-Exclusion for Gambling Disorders: A Retrospective Process Investigation. *Journal of Gambling Issues* (38).

Quilty LC, Robinson J, Blaszczynski A. (2015) Responsible gambling training in Ontario casinos: Employee attitudes and experience. *International Gambling Studies* 15(3): 361-376.

Rintoul A, Deblaquiere J, Thomas A. (2017) Responsible gambling codes of conduct: Lack of harm minimisation intervention in the context of venue self-regulation. *Addiction Research & Theory* 25(6): 451-461.

Rockloff MJ, Donaldson P, Browne M. (2015) Jackpot Expiry: An Experimental Investigation of a New EGM Player-Protection Feature. *Journal of gambling studies* 31(4): 1505-1514, doi <https://dx.doi.org/10.1007/s10899-014-9472-3>.

St-Pierre RA, Derevensky JL, Temcheff CE, Gupta R, Martin-Story A. (2017) Evaluation of a school-based gambling prevention program for adolescents: Efficacy of using the theory of planned behaviour. *Journal of Gambling Issues* 36: 113-137.

Stein DJ. (2015) Academic-Industry Partnerships in Alcohol and Gambling: a Continuum of Benefits and Harms. *The Israel journal of psychiatry and related sciences* 52(2): 81-84.

Subramaniam M, Satghare P, Vaingankar JA, Picco L, Browning CJ, Chong SA, Thomas SA. (2017) Responsible gambling among older adults: a qualitative exploration. *BMC psychiatry* 17(1): 124, doi <https://dx.doi.org/10.1186/s12888-017-1282-6>.

Tanner J, Dawson AS, Mushquash CJ, Mushquash AR, Mazmanian D. (2017) Harm reduction in gambling: A systematic review of industry strategies. *Addiction Research & Theory* 25(6): 485-494.

Walker DM, Litvin SW, Sobel RS, St-Pierre RA. (2015) Setting Win Limits: An Alternative Approach to "Responsible Gambling"? *Journal of gambling studies* 31(3): 965-986, doi <https://dx.doi.org/10.1007/s10899-014-9453-6>.

Wohl MJ, Davis CG, Hollingshead SJ. (2017) How much have you won or lost? Personalized behavioral feedback about gambling expenditures regulates play. *Computers in Human Behavior* 70: 437-445.

Wood RT, Wohl MJ. (2015) Assessing the effectiveness of a responsible gambling behavioural feedback tool for reducing the gambling expenditure of at-risk players. *International Gambling Studies* 15(2): 1-16.

Wood RTA, Griffiths MD. (2015) Understanding Positive Play: An Exploration of Playing Experiences and Responsible Gambling Practices. *Journal of gambling studies* 31(4): 1715-1734, doi <https://dx.doi.org/10.1007/s10899-014-9489-7>.

Zhang MWB, Yi Y, Cheok CCS. (2016) Internet based personalized feedback interventions for gamblers in Singapore: First results. *Technology and health care: official journal of the European Society for Engineering and Medicine* 24(2): 177-183, doi <https://dx.doi.org/10.3233/THC-151117>.

## Understanding and measuring harm

Abbott MW. (2017) Commentary on Currie et al. (2017): Low-risk gambling limits-A bridge too far? *Addiction* 112(11): 2021-2022.

Binde P, Romild U, Volberg RA. (2017) Forms of gambling, gambling involvement and problem gambling: Evidence from a Swedish population survey. *International Gambling Studies* 17(3): 490-507.

- Bischof A, Meyer C, Bischof G, John U, Wurst FM, Thon N, Lucht M, Grabe H-J, Rumpf H-J. (2016) Type of gambling as an independent risk factor for suicidal events in pathological gamblers. *Psychology of addictive behaviors: journal of the Society of Psychologists in Addictive Behaviors* 30(2): 263-269, doi <https://dx.doi.org/10.1037/adb0000152>.
- Browne M, Greer N, Rawat V, Rockloff M. (2017) A population-level metric for gambling-related harm. *International Gambling Studies* 17(2): 163-175.
- Browne M, Rawat V, Greer N, Langham E, Rockloff M, Hanley C. (2017) What is the harm? Applying a public health methodology to measure the impact of gambling problems and harm on quality of life. *Journal of Gambling Issues* 36: 28-50.
- Browne M, Goodwin BC, Rockloff MJ. (2018) Validation of the Short Gambling Harm Screen (SGHS): A Tool for Assessment of Harms from Gambling. *Journal of gambling studies* 34(2): 499-512, doi <https://dx.doi.org/10.1007/s10899-017-9698-y>.
- Browne M, Rockloff MJ. (2018) Prevalence of gambling-related harm provides evidence for the prevention paradox. *Journal of Behavioral Addictions* 7(2): 410-422, doi <https://dx.doi.org/10.1556/2006.7.2018.41>.
- Canale N, Vieno A, Griffiths MD. (2016) The Extent and Distribution of Gambling-Related Harms and the Prevention Paradox in a British Population Survey. *Journal of Behavioral Addictions* 5(2): 204-212, doi <https://dx.doi.org/10.1556/2006.5.2016.023>.
- Castren S, Kontto J, Alho H, Salonen AH. (2018) The relationship between gambling expenditure, socio-demographics, health-related correlates and gambling behaviour-a cross-sectional population-based survey in Finland. *Addiction (Abingdon, England)* 113(1): 91-106, doi <https://dx.doi.org/10.1111/add.13929>.
- Castren S, Perhoniemi R, Kontto J, Alho H, Salonen AH. (2018) Association between gambling harms and game types: Finnish population study. *International Gambling Studies* 18(1): 124-142.
- Cowlshaw S, Kessler D. (2016) Problem Gambling in the UK: Implications for Health, Psychosocial Adjustment and Health Care Utilization. *European addiction research* 22(2): 90-98, doi <https://dx.doi.org/10.1159/000437260>.
- Cowlshaw S, Suomi A, Rodgers B. (2016) Implications of gambling problems for family and interpersonal adjustment: results from the Quinte Longitudinal Study. *Addiction* 111(9): 1628-1636, doi <http://dx.doi.org/10.1111/add.13402>.
- Currie SR, Hodgins DC, Casey DM, El-Guebaly N, Smith GJ, Williams RJ, Schopflocher DP. (2017) Deriving low-risk gambling limits from longitudinal data collected in two independent Canadian studies. *Addiction (Abingdon, England)* 112(11): 2011-2020, doi <https://dx.doi.org/10.1111/add.13909>.
- Delfabbro P, King D. (2017) Prevention paradox logic and problem gambling: Does low-risk gambling impose a greater burden of harm than high-risk gambling? *Journal of Behavioral Addictions* 6(2), pp. 163–167.
- Dowling N, Suomi A, Jackson A, Lavis T, Patford J, Cockman S, Thomas S, Bellringer M, Koziol-Mclain J, Battersby M, Harvey P, Abbott M. (2016) Problem Gambling and Intimate Partner Violence: A Systematic Review and Meta-Analysis. *Trauma, violence & abuse* 17(1): 43-61, doi <https://dx.doi.org/10.1177/1524838014561269>.
- Dowling NA, Suomi A, Jackson AC, Lavis T. (2016) Problem Gambling Family Impacts: Development of the Problem Gambling Family Impact Scale. *Journal of gambling studies* 32(3): 935-955, doi <https://dx.doi.org/10.1007/s10899-015-9582-6>.
- Eby LT, Mitchell ME, Gray CJ, Provolt L, Lorys A, Fortune E, Goodie AS. (2016) Gambling-related problems across life domains: An exploratory study of non-treatment-seeking weekly gamblers. *Community, Work & Family* 19(5): 604-620.

- Gainsbury SM, Abarbanel B, Blaszczynski A. (2017) Intensity and gambling harms: Exploring breadth of gambling involvement among esports bettors. *Gaming Law Review* 21(8): 610-615.
- Gill KJ, Heath LM, Derevensky J, Torrie J. (2016) The Social and Psychological Impacts of Gambling in the Cree Communities of Northern Québec. *Journal of Gambling Studies (Online)* 32(2): 441-457, doi <http://dx.doi.org/10.1007/s10899-015-9553-y>.
- Goodwin BC, Browne M, Rockloff M, Rose J. (2017) A typical problem gambler affects six others. *International Gambling Studies* 17(2): 276-289.
- Heiskanen M, Toikka A. (2016) Clustering Finnish Gambler Profiles Based on the Money and Time Consumed in Gambling Activities. *Journal of gambling studies* 32(2): 363-377, doi <https://dx.doi.org/10.1007/s10899-015-9556-8>.
- Johnson LT, Ratcliffe JH. (2017) A partial test of the impact of a casino on neighborhood crime. *Security Journal* 30(2): 437-453, doi <http://dx.doi.org/10.1057/sj.2014.28>.
- Keen B, Pickering D, Wieczorek M, Blaszczynski A. (2015) Problem gambling and family violence in the Asian context: a review. *Asian Journal of Gambling Issues and Public Health* 5(1): 1-16, doi <http://dx.doi.org/10.1186/s40405-015-0008-2>.
- Kim HS, Hodgins DC, Bellringer M, Abbott M. (2016) Gender Differences Among Helpline Callers: Prospective Study of Gambling and Psychosocial Outcomes. *Journal of gambling studies* 32(2): 605-623, doi <https://dx.doi.org/10.1007/s10899-015-9572-8>.
- Langham E, Thorne H, Browne M, Donaldson P, Rose J, Rockloff M. (2016) Understanding gambling related harm: a proposed definition, conceptual framework, and taxonomy of harms. *BMC public health* 16: 80, doi <https://dx.doi.org/10.1186/s12889-016-2747-0>.
- Laursen B, Plauborg R, Ekholm O, Larsen CVL, Juel K. (2016) Problem Gambling Associated with Violent and Criminal Behaviour: A Danish Population-Based Survey and Register Study. *Journal of gambling studies* 32(1): 25-34, doi <https://dx.doi.org/10.1007/s10899-015-9536-z>.
- Li E, Browne M, Rawat V, Langham E, Rockloff M. (2017) Breaking Bad: Comparing Gambling Harms Among Gamblers and Affected Others. *Journal of gambling studies* 33(1): 223-248, doi <https://dx.doi.org/10.1007/s10899-016-9632-8>.
- Lloyd J, Hawton K, Dutton WH, Geddes JR, Goodwin GM, Rogers RD. (2016) Thoughts and acts of self-harm, and suicidal ideation, in online gamblers. *International Gambling Studies* 16(3): 408-423.
- Loo JMY, Shi Y, Pu X. (2016) Gambling, Drinking and Quality of Life: Evidence from Macao and Australia. *Journal of gambling studies* 32(2): 391-407, doi <https://dx.doi.org/10.1007/s10899-015-9569-3>.
- Manning V, Koh PK, Yang Y, Ng A, Guo S, Kandasami G, Wong KE. (2015) Suicidal ideation and lifetime attempts in substance and gambling disorders. *Psychiatry Research* 225(3): 706-709, doi <https://dx.doi.org/10.1016/j.psychres.2014.11.011>.
- Markham F, Doran B, Young M. (2016) The relationship between electronic gaming machine accessibility and police-recorded domestic violence: A spatio-temporal analysis of 654 postcodes in Victoria, Australia, 2005-2014. *Social science & medicine (1982)* 162: 106-114, doi <https://dx.doi.org/10.1016/j.socscimed.2016.06.008>.
- Moghaddam JF, Yoon G, Campos MD, Fong TW. (2015) Social and behavioral problems among five gambling severity groups. *Psychiatry Research* 230(2): 143-149, doi <https://dx.doi.org/10.1016/j.psychres.2015.07.082>.
- Moghaddam JF, Yoon G, Dickerson DL, Kim SW, Westermeyer J. (2015) Suicidal ideation and suicide attempts in five groups with different severities of gambling: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *The American journal on addictions* 24(4): 292-298, doi <https://dx.doi.org/10.1111/ajad.12197>.

- Okunna NC, Rodriguez-Monguio R, Smelson DA, Volberg RA. (2016) An evaluation of substance abuse, mental health disorders, and gambling correlations: An opportunity for early public health interventions. *International Journal of Mental Health and Addiction* 14(4): 618-633.
- Pickering D, Keen B, Entwistle G, Blaszczynski A. (2018) Measuring treatment outcomes in gambling disorders: a systematic review. *Addiction* 113(3): 411-426, doi <http://dx.doi.org/10.1111/add.13968>.
- Rawat V, Browne M, Bellringer M, Greer N, Kolandai-Matchett K, Rockloff M, Langham E, Hanley C, Du Preez KP and Abbott M (2018) A tale of two countries: comparing disability weights for gambling problems in New Zealand and Australia. *Quality of life research: an international journal of quality of life aspects of treatment, care and rehabilitation* 27(9): 2361-2371, doi <https://dx.doi.org/10.1007/s11136-018-1882-8>.
- Roberts A, Landon J, Sharman S, Hakes J, Suomi A, Cowlshaw S. (2018) Gambling and physical intimate partner violence: Results from the national epidemiologic survey on alcohol and related conditions (NESARC). *American Journal on Addictions* 27(1): 7-14, doi <http://dx.doi.org/10.1111/ajad.12656>.
- Ronzitti S, Soldini E, Lutri V, Smith N, Clerici M, Bowden-Jones H. (2016) Types of gambling and levels of harm: A UK study to assess severity of presentation in a treatment-seeking population. *Journal of Behavioral Addictions* 5(3): 439-447, doi <https://dx.doi.org/10.1556/2006.5.2016.068>.
- Ronzitti S, Soldini E, Smith N, Potenza MN, Clerici M, Bowden-Jones H. (2017) Current suicidal ideation in treatment-seeking individuals in the United Kingdom with gambling problems. *Addictive Behaviors* 74: 33-40, doi <https://dx.doi.org/10.1016/j.addbeh.2017.05.032>.
- Salonen AH, Alho H, Castren S. (2016) The extent and type of gambling harms for concerned significant others: A cross-sectional population study in Finland. *Scandinavian journal of public health* 44(8): 799-804, doi <https://dx.doi.org/10.1177/1403494816673529>.
- Samuelsson E, Sundqvist K, Binde P. (2018) Configurations of gambling change and harm: qualitative findings from the Swedish longitudinal gambling study (Swelogs), *Addiction Research & Theory*, 26:6, 514-524, DOI: 10.1080/16066359.2018.1448390
- Salonen AH, Hellman M, Latvala T, Castren S. (2018) Gambling participation, gambling habits, gambling-related harm, and opinions on gambling advertising in Finland in 2016. *NAD Nordic Studies on Alcohol and Drugs* 35(3): 215-234, doi <http://dx.doi.org/10.1177/1455072518765875>.
- Shannon K, Anjoul F, Blaszczynski A. (2017) Mapping the proportional distribution of gambling-related harms in a clinical and community sample. *International Gambling Studies* 17(3): 366-385.
- Sharman S, Murphy R, Turner JJD, Roberts A. (2019) Trends and patterns in UK treatment seeking gamblers: 2000-2015. *Addictive Behaviors* 89: 51-56, doi <http://dx.doi.org/10.1016/j.addbeh.2018.09.009>.
- Winkler P, Bejdova M, Csemy L, Weissova A. (2017) Social Costs of Gambling in the Czech Republic. *Journal of gambling studies* 33(4): 1293-1310, doi <https://dx.doi.org/10.1007/s10899-016-9660-4>.

## **Support for policy development and regulatory effectiveness**

Alexius S. (2017) Assigning responsibility for gambling-related harm: Scrutinizing processes of direct and indirect consumer responsabilization of gamblers in Sweden. *Addiction Research & Theory* 25(6): 462-475.

Billieux J, Achab S, Savary J-F, Simon O, Richter F, Zullino D, Khazaal Y. (2016) Gambling and problem gambling in Switzerland. *Addiction* 111(9): 1677-1683, doi <http://dx.doi.org/10.1111/add.13252>.

Buil P, Sole Moratilla MJ, Garcia Ruiz P. (2015) Online Gambling Advertising Regulations in Spain. A

- Study on the Protection of Minors. *Adicciones* 27(3): 198-204.
- Burke DD, Meek BP, Norwood JM. (2016) Exploring the legality of the lucrative world of fantasy sports. *Journal of Legal, Ethical and Regulatory Issues* 19(1): 38-55.
- Choliz M. (2016) The Challenge of Online Gambling: The Effect of Legalization on the Increase in Online Gambling Addiction. *Journal of gambling studies* 32(2): 749-756, doi <https://dx.doi.org/10.1007/s10899-015-9558-6>.
- Choliz M, Saiz-Ruiz J. (2016) Regulating gambling to prevent addiction: more necessary now than ever. *Regular el juego para prevenir la adiccion: hoy mas necesario que nunca*. 28(3): 174-181, doi <https://dx.doi.org/10.20882/adicciones.820>.
- David JL, Thomas SL, Randle M, Bowe SJ, Daube M. (2017) A comparative content analysis of media reporting of sports betting in Australia: Lessons for public health media advocacy approaches. *BMC public health* 17(1): 878, doi <http://dx.doi.org/10.1186/s12889-017-4866-7>.
- Fogarty M. (2017) The place of cultural competency in 'responsible gambling' practice: Challenging notions of informed choice. *Addiction Research & Theory* 25(6): 444-450.
- Fogarty M, Coalter N, Gordon A, Breen H. (2018) Proposing a health promotion framework to address gambling problems in Australian Indigenous communities. *Health promotion international* 33(1): 115-122, doi <https://dx.doi.org/10.1093/heapro/daw060>.
- Francis L, Livingstone C, Rintoul A. (2017) Analysis of EGM licensing decisions by the gambling regulator, Victoria, Australia. *International Gambling Studies* 17(1): 65-86.
- Ladouceur R, Blaszczynski A, Shaffer HJ, Fong D. (2016) Extending the Reno model: responsible gambling evaluation guidelines for gambling operators, public policymakers, and regulators. *Gaming Law Review and Economics* 20(7): 580-586.
- Ladouceur R, Shaffer P, Blaszczynski A, Shaffer HJ. (2018) Responsible Gambling Research and Industry Funding Biases. *Journal of gambling studies*, doi 10.1007/s10899-018-9792-9.
- Hancock L, Smith G. (2017) Critiquing the Reno Model I-IV international influence on regulators and governments (2004-2015)-The distorted reality of "responsible gambling". *International Journal of Mental Health and Addiction* 15(6): 1151-1176.
- Hancock L, Smith G. (2017) Replacing the Reno Model with a robust public health approach to "responsible gambling": Hancock and Smith's response to commentaries on our original Reno Model critique. *International Journal of Mental Health and Addiction* 15(6): 1209-1220.
- Hancock L, Ralph N, Martino FP. (2018) Applying Corporate Political Activity (CPA) analysis to Australian gambling industry submissions against regulation of television sports betting advertising. *PloS One* 13(10), doi <http://dx.doi.org/10.1371/journal.pone.0205654>.
- Shaffer HJ, Ladouceur R, Blaszczynski A, Whyte K. (2016) Extending the RENO model: Clinical and ethical applications. *American Journal of Orthopsychiatry* 86(3): 297.
- Shaffer HJ, Blaszczynski A, Ladouceur R. (2017) Truth, Alternative Facts, Narrative, and Science: What Is Happening to Responsible Gambling and Gambling Disorder? *International Journal of Mental Health and Addiction* 15(6): 1197-1202.
- Hodgins DC, Petry NM. (2016) The world of gambling: The national gambling experiences series. *Addiction* 111(9): 1516-1518, doi <http://dx.doi.org/10.1111/add.13445>.
- Jackson AC, Christensen DR, Francis KL, Dowling NA. (2016) Consumer Perspectives on Gambling Harm Minimisation Measures in an Australian Jurisdiction. *Journal of gambling studies* 32(2): 801-822, doi <https://dx.doi.org/10.1007/s10899-015-9568-4>.
- Kolandai-Matchett K, Bellringer M, Landon J, Abbott M. (2018) A process evaluation of the 'Aware' and 'Supportive Communities' gambling harm-minimisation programmes in New Zealand. *European*



*Journal of Public Health* 28(2): 369-376.

Kolandai-Matchett K, Landon J, Bellringer M, Abbott M. (2018) A national public health programme on gambling policy development in New Zealand: Insights from a process evaluation. *Harm Reduction Journal* 15(1): 11, doi <http://dx.doi.org/10.1186/s12954-018-0217-y>.

Kwok-Kit T, Hung EPW, Lei CMW, Wu AMS. (2018) Public Awareness and Practice of Responsible Gambling in Macao. *Journal of Gambling Studies (Online)*: 1-20, doi <http://dx.doi.org/10.1007/s10899-018-9750-6>.

Livingstone C, Adams PJ. (2016) Clear principles are needed for integrity in gambling research. *Addiction (Abingdon, England)* 111(1): 5-10, doi <https://dx.doi.org/10.1111/add.12913>.

Marionneau V. (2015) Justifications of national gambling policies in France and Finland. *NAD Nordic Studies on Alcohol and Drugs* 32(3): 295-309, doi <http://dx.doi.org/10.1515/nsad-2015-0027>.

Martyres K, Townshend P. (2016) Addressing the needs of problem gamblers with co-morbid issues: Policy and service delivery approaches. *Journal of Gambling Issues* 33: 68-81.

Miller HE, Thomas SL. (2018) The problem with 'responsible gambling': Impact of government and industry discourses on feelings of felt and enacted stigma in people who experience problems with gambling. *Addiction Research & Theory* 26(2): 85-94.

Miller HE, Thomas SL, Smith KM, Robinson P. (2016) Surveillance, responsibility and control: An analysis of government and industry discourses about "problem" and "responsible" gambling. *Addiction Research & Theory* 24(2): 163-176.

Raisamo S, Warpenius K, Rimpelä A. (2015) Changes in minors' gambling on slot machines in Finland after the raising of the minimum legal gambling age from 15 to 18 years: A repeated cross-sectional study. *Nordic Studies on Alcohol and Drugs* 32(6): 579-590, doi <http://dx.doi.org/10.1515/nsad-2015-0055>.

Rossow I, Bang Hansen M. (2016) Gambling and gambling policy in Norway--an exceptional case. *Addiction (Abingdon, England)* 111(4): 593-598, doi <https://dx.doi.org/10.1111/add.13172>.

Selin J. (2016) From self-regulation to regulation-An analysis of gambling policy reform in Finland. *Addiction Research & Theory* 24(3): 199-208.

St Clair Buchanan J, Elliott G. (2017) Reconciling conflicting demands in the EGM industry: Government, industry, media and the community. *Journal of Gambling Issues* 35: 125-157.

Tessenyi J, Kovacs P. (2016) A study of the connection between gambling and crime in Hungarian prisons. *International Journal of Law and Psychiatry* 47: 176-180, doi <http://dx.doi.org/10.1016/j.ijlp.2016.04.004>.

Thomas SL, Lewis S, Westberg K. (2015) 'You just change the channel if you don't like what you're going to hear': gamblers' attitudes towards, and interactions with, social marketing campaigns. *Health expectations: an international journal of public participation in health care and health policy* 18(1): 124-136, doi <https://dx.doi.org/10.1111/hex.12018>.

Thomas SL, Randle M, Bestman A, Pitt H, Bowe SJ, Cowlshaw S, Daube M. (2017) Public attitudes towards gambling product harm and harm reduction strategies: An online study of 16-88 year olds in Victoria, Australia. *Harm Reduction Journal* 14(1): 49, doi <http://dx.doi.org/10.1186/s12954-017-0173-y>.

Young M, Markham F. (2015) Beyond disclosure: Gambling research, political economy, and incremental reform. *International Gambling Studies* 15(1): 6-9.

Zhao Y, Marchica L, Derevensky JL, Shaffer HJ. (2017) The Scope, Focus and Types of Gambling Policies Among Canadian Colleges and Universities. *Canadian Psychology* 58(2): 187-193, doi <http://dx.doi.org/10.1037/cap0000092>.

## GREY LITERATURE REFERENCES

Abbott M. (2017) The epidemiology and impact of gambling disorder and other gambling-related harm Discussion paper for the 2017 WHO Forum on alcohol, drugs and addictive behaviours, WHO Headquarters, Geneva, 26-28 June 2017.

[http://www.who.int/substance\\_abuse/activities/fadab/abbot\\_gambling\\_forum.pdf](http://www.who.int/substance_abuse/activities/fadab/abbot_gambling_forum.pdf)

ACIL Allen Consulting, Deakin University, Central Queensland University and The Social Research Centre (2017) Fourth Social and Economic Impact Study of Gambling in Tasmania: Report 2. Tasmanian Department of Treasury and Finance, Hobart. <https://www.treasury.tas.gov.au/liquor-and-gaming/gambling/reduce-harm-from-gambling/social-and-economic-impact-studies>

Allen+Clarke (2015) Informing the 2015 Gambling Harm Needs Assessment Final Report For The Ministry of Health 31 July 2015. New Zealand: Allen+Clarke.

<https://www.health.govt.nz/system/files/documents/publications/informing-2015-gambling-harm-needs-assessmnt-jul15.pdf>

Anderson TR. (2016) Administrative review of gambling regulation in South Australia. Government of South Australia, Adelaide. <https://www.cbs.sa.gov.au/news/gambling-regulation-measures-included-state-budget-cbs-news>

Australian Wagering Council (2016) Submission 11: Interactive Gambling Amendment (Sports Betting Reform) Bill 2015. Sydney, Australian Wagering Council.

<https://www.aph.gov.au/Parliamentary.../SportsBetting/.../SportsBetting/report.pdf>

Bellringer M, Palmer du Preez K, Pearson J, Garrett N, Koziol-McLain J, Wilson D, Abbott M. (2016). Problem gambling and family violence in help-seeking populations: Co-occurrence, impact and coping. Wellington, New Zealand. New Zealand Ministry for Health.

<https://www.health.govt.nz/publication/problem-gambling-and-family-violence-help-seeking-populations-co-occurrence-impact-and-coping>

Bellringer M, Garrett N, Kolandai-Matchett K, Abbott M. (2015) Offshore gambling by New Zealanders study. Auckland: Auckland University of Technology, Gambling and Addictions Research Centre.

<https://www.health.govt.nz/publication/offshore-gambling-new-zealanders-study>

Blaszczynski A, Anjoul F, Shannon K, Keen B, Pickering D, Wieczorek M. (2015) Gambling Harm Minimisation Report. Commissioned by NSW Government Department of Trade & Investment Office of Liquor, Gambling and Racing. Sydney: The University of Sydney Gambling Treatment Clinic, The University of Sydney.

[https://www.responsiblegambling.nsw.gov.au/\\_data/assets/pdf\\_file/0020/138116/gambling-harm-minimisation-report.pdf](https://www.responsiblegambling.nsw.gov.au/_data/assets/pdf_file/0020/138116/gambling-harm-minimisation-report.pdf)

Bowden-Jones H, Drummond C, Thomas S. (2016) Rapid Evidence Review of Evidence-Based Treatment for Gambling Disorder in Britain. London, UK: Royal College of Psychiatrists.

[https://www.rcpsych.ac.uk/pdf/RAPID\\_EVIDENCE\\_REVIEW\\_PG\\_RCPSYCH\\_DEC2016.pdf](https://www.rcpsych.ac.uk/pdf/RAPID_EVIDENCE_REVIEW_PG_RCPSYCH_DEC2016.pdf)

Brown T. (2017) Online Gambling: Problem Gamblers and the Multi-Operator Self Exclusion Scheme. House of Lords Library Brief. <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/LLN-2017-0082>

Browne M, Bellringer M, Greer N, Kolandai-Matchett K, Rawat V, Langham E, Rockloff M, Palmer K, Preez D, Abbott M. (2017) Measuring the Burden of Gambling Harm in New Zealand. Auckland:

Central Queensland University and Auckland University of Technology.

<https://niphmhr.aut.ac.nz/research-centres/gambling-and-addictions-research-centre/research-reports>

Browne M, Greer N, Armstrong T, Doran C, Kinchin I, Langham E, Rockloff M. (2017) *The social cost of gambling to Victoria*. North Melbourne, Vic: Victorian Responsible Gambling Foundation.

<https://responsiblegambling.vic.gov.au/resources/publications/the-social-cost-of-gambling-to-victoria-121/>

Browne M, Langham E, Rawat V, Greer N, Li E, Rose J, Rockloff M, Donaldson, P Thorne H, Goodwin B, Bryden G, Bes, T. (2016) Assessing gambling-related harm in Victoria: a public health perspective. Victorian Responsible Gambling Foundation, Melbourne.

<https://responsiblegambling.vic.gov.au/about-us/news-and-media/assessing-gambling-related-harm-victoria-public-health-perspective/>

Centre for Rural Health, UTAS (2018) Occurrence and Correlates of Gambling Behaviour among International UTAS Students. A report commissioned by the Department of Health and Human Services, Tasmania Centre for Rural Health, University of Tasmania January 2018.

[https://www.dhhs.tas.gov.au/\\_data/assets/pdf\\_file/0010/281791/International\\_Students\\_Gambling\\_Study\\_Report\\_FINAL.pdf](https://www.dhhs.tas.gov.au/_data/assets/pdf_file/0010/281791/International_Students_Gambling_Study_Report_FINAL.pdf)

Conolly A, Davies B, Fuller E, Heinze N, Wardle H. (2018) Gambling behaviour in Great Britain in 2016: Evidence from England, Scotland and Wales. NatCen Report Prepared for Gambling Commission.

<https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-behaviour-in-Great-Britain-2016.pdf>

Conolly A, Fuller E, Jones H, Maplethorpe N, Sondaal A, Wardle H (2017) Gambling behaviour in Great Britain in 2015. Evidence from England, Scotland and Wales. NatCen Social Research, UK.

<https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-behaviour-in-Great-Britain-2015.pdf>

Davidson T, Rodgers B, Taylor-Rodgers E, Suomi A, Lucas N (2015) 2014 Survey on gambling, health and wellbeing in the ACT. Centre for Gambling Research, School of Sociology, Research School of Social Sciences, College of Arts & Social Sciences, Australian National University.

[https://www.gamblingandracing.act.gov.au/\\_data/assets/pdf\\_file/0010/846901/2014-Survey-on-Gambling,-Health-and-Wellbeing-in-the-ACT-.pdf](https://www.gamblingandracing.act.gov.au/_data/assets/pdf_file/0010/846901/2014-Survey-on-Gambling,-Health-and-Wellbeing-in-the-ACT-.pdf)

De Bruin D, Labree M. Prevalence of Problem Gambling Among Participants of Online Gambling. Utrecht: CVO Research & Consultancy.

[https://www.wodc.nl/binaries/2626-summary\\_tcm28-74183.pdf](https://www.wodc.nl/binaries/2626-summary_tcm28-74183.pdf)

Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong. (2017) Report on the Study of Hong Kong People's Participation in Gambling Activities in 2016.

Commissioned by The Ping Wo Fund. The Hong Kong Polytechnic University, Hong Kong.

[http://www.hab.gov.hk/file\\_manager/en/documents/policy\\_responsibilities/others/gambling\\_report\\_2016.pdf](http://www.hab.gov.hk/file_manager/en/documents/policy_responsibilities/others/gambling_report_2016.pdf)

Department for Digital, Culture, Media & Sport (2018) Government response to the consultation on proposals for changes to Gaming Machines and Social Responsibility Measures. UK.

<https://www.gov.uk/government/consultations/consultation-on-proposals-for-changes-to-gaming-machines-and-social-responsibility-measures>

Department of Justice and Attorney-General, Queensland (2017) Queensland Household Gambling Survey 2016-17. Office of Regulatory Policy. Brisbane, QLD.

<http://www.clubsqld.com.au/CQDocuments/media%20and%20advocacy/2018/queenslandhouseholdgamblingsurvey2016-17.pdf>

Dickins M, Thomas A. (2016a) Gambling in culturally and linguistically diverse communities in Australia. Australian Gambling Research Centre Discussion Paper 7.

<https://aifs.gov.au/agrc/sites/default/files/agrc-dp7-gambling-cald.pdf>

Dickins M, Thomas A. (2016b) Is it gambling or a game? Simulated gambling games: Their use and regulation (AGRC Discussion Paper No. 5). Melbourne: Australian Gambling Research Centre, Australian Institute of Family Studies. <https://aifs.gov.au/agrc/sites/default/files/agrc-dp5-simulated-gambling-paper.pdf>

Dowling N, Merkouris S, Rodda S, Smith D, Lavis T, Lubman D, Austin D, Harvey P, Cunningham J, Battersby M. (2018) Development and evaluation of an online gambling self-directed program: effective integration into existing services. Victorian Responsible Gambling Foundation, Melbourne. <https://responsiblegambling.vic.gov.au/resources/publications/development-and-evaluation-of-an-online-gambling-self-directed-program-effective-integration-into-existing-services-348/>

Dowling N, Youssef G, Greenwood C, Merkouris S, Suomi, A, Room R. (2018) The development of empirically derived Australian responsible gambling limits. Victorian Responsible Gambling Foundation, Melbourne. <https://responsiblegambling.vic.gov.au/resources/publications/the-development-of-empirically-derived-australian-responsible-gambling-limits-406/>

Elton-Marshall T, Wijesingha R, Veselka L, Williams C, Carton M, Pradeep B, Hudson R, Chiodo C, Turner NE. (2017) A public health approach to gambling: A report prepared for Gambling Research Exchange Ontario (GREO). London, Ontario: Centre for Addiction and Mental Health.

[http://www.greo.ca/Modules/EvidenceCentre/files/Elton-Marshall%20et%20al%20\(2017\)%20Gambling%20as%20a%20public%20health%20issue.pdf](http://www.greo.ca/Modules/EvidenceCentre/files/Elton-Marshall%20et%20al%20(2017)%20Gambling%20as%20a%20public%20health%20issue.pdf)

Ethnic Communities Council of Victoria (2018) Gambling Harm. Prevention with Culturally and Linguistically Diverse Communities. Interim Report. September 2018. Ethnic Communities Council of Victoria. <http://eccv.org.au/wp-content/uploads/2018/10/Interim-Report-ECCV-Gambling-Harm-Prevention-Final.pdf>

Financial Counselling Australia (2016) Problem gambling financial counselling: Survey and case studies, April 2016. Melbourne, Victoria: FCA.

<https://www.financialcounsellingaustralia.org.au/getattachment/Corporate/Publications/Problem-Gambling-Financial-Counselling-Survey-and-Case-Studies.pdf>

Fulton C. (2015) Playing Social Roulette: The Impact of Gambling on Individuals & Society in Ireland. Dublin, Ireland: University College Dublin.

<https://www.ucd.ie/t4cms/Playing%20Social%20Roulette%20-%20Handout.PDF.pdf>

Fulton C. (2016) Developments in the Gambling Area: Final report to the Department of Justice & Equality. Dublin, Ireland: University College Dublin.

[http://www.justice.ie/en/JELR/Final\\_report\\_to\\_the\\_Department\\_of\\_Justice\\_and\\_Equality-Developments\\_in\\_the\\_Gambling\\_Area.pdf/Files/Final\\_report\\_to\\_the\\_Department\\_of\\_Justice\\_and\\_Equality-Developments\\_in\\_the\\_Gambling\\_Area.pdf](http://www.justice.ie/en/JELR/Final_report_to_the_Department_of_Justice_and_Equality-Developments_in_the_Gambling_Area.pdf/Files/Final_report_to_the_Department_of_Justice_and_Equality-Developments_in_the_Gambling_Area.pdf)

Gainsbury S, Abarbanel B, Butler J, Philander K. (2017) Customized responsible gambling messaging as a tool to encourage help-seeking (Final Report: MGRP-FR-14-1-11). Manitoba, Canada.

<https://www.manitobagamblingresearch.com/system/files/private/Full%20Report-%20Customized%20RG%20Messaging%20as%20a%20Tool%20to%20Encourage%20Help-Seeking.pdf>

- Gainsbury SM, King DL, Abarbanel B, Delfabbro P, Hing N. (2015) Convergence of gambling and gaming in digital media. Melbourne, Vic.: Victorian Responsible Gambling Foundation. <https://apo.org.au/sites/default/files/resource-files/2015/12/apo-nid60654-1227501.pdf>
- Gainsbury S, King D, Delfabbro P, Hing N, Russell A, Blaszczynski A, Derevenský J. (2015) The use of social media in gambling. Gambling Research Australia. Melbourne. <https://infohub.gambleaware.org/wp-content/uploads/2016/03/grasocialmediareport.pdf>
- Gambling Commission (2018) Gambling participation in 2017: Behaviour, awareness and attitudes. Annual report. Gambling Commission, UK. <https://www.gamblingcommission.gov.uk/PDF/survey-data/Gambling-participation-in-2017-behaviour-awareness-and-attitudes.pdf>
- Gambling Commission (2016) Quarterly Research Briefing 01/16. Apr 6, 2016
- Gambling Research Exchange Ontario (2017) Applying a public health perspective to gambling harm. Gambling Research Exchange, Ontario. <https://www.greo.ca/en/programs-services/resources/Applying-a-public-health-perspective-to-gambling-harm---October-2017.pdf>
- Georgiou D, King K, Talbot A, Carter R. (2015) Trends in Gambling Behaviour 2008-2014 Prepared for Gambling Commission. Birmingham, UK: DATABUILD Research and Solutions. <https://www.gamblingcommission.gov.uk/PDF/survey-data/Trends-in-gambling-participation-2008-2014.pdf>
- Gillies M. (2016) Toward a public health approach for gambling related harm: a scoping document. Scottish Public Health Network. [https://www.scotphn.net/wp-content/uploads/2016/08/2016\\_08\\_02-ScotPHN-Report-Gambling-PM-Final-002.pdf](https://www.scotphn.net/wp-content/uploads/2016/08/2016_08_02-ScotPHN-Report-Gambling-PM-Final-002.pdf)
- Hare S. (2015) Study of Gambling and Health in Victoria. Victoria, Australia: Victorian Responsible Gambling Foundation and Victorian Department of Justice and Regulation. <file:///Users/lawn0003/Downloads/Research-report-study-of-gambling-and-health-in-vic-2015.pdf>
- Harrison GW, Jessen LJ, Lau M, Ross D. (2016) Gambling Problems in the General Danish Population: Survey Evidence. Center for the Economic Analysis of Risk, Robinson College of Business, Georgia State University, USA & Copenhagen Business School, Denmark. [https://cear.gsu.edu/files/2016/06/WP\\_2016\\_02\\_Gambling-Problems-in-the-General-Danish-Population-Survey-Evidence-JUNE-2016.pdf](https://cear.gsu.edu/files/2016/06/WP_2016_02_Gambling-Problems-in-the-General-Danish-Population-Survey-Evidence-JUNE-2016.pdf)
- Hing N, Russell A, Hronis A. (2016) Behavioural indicators of responsible gambling consumption. Melbourne: Victorian Responsible Gambling Foundation. <https://responsiblegambling.vic.gov.au/resources/publications/behavioural-indicators-of-responsible-gambling-consumption-64/>
- Hing N, Russell AM, Rawat V. (2018) Direct messages received from wagering operators. Victorian Responsible Gambling Foundation. <https://responsiblegambling.vic.gov.au/resources/publications/direct-messages-received-from-wagering-operators-409/>
- Hing N, Russell A, Rockloff M, Browne M, Langham E, Li E, Lole L, Greer N, Thomas A, Jenkinson R, Rawat V Thorne H. (2018) Effects of wagering marketing on vulnerable adults, Victorian Responsible Gambling Foundation, Melbourne. <https://responsiblegambling.vic.gov.au/resources/publications/effects-of-wagering-marketing-on-vulnerable-adults-408/>
- Jenkinson R, de Lacy-Vawdon C, Carroll M. (2018) Weighing up the odds: young men, sports and betting. Victorian Responsible Gambling Foundation, Melbourne.

<https://responsiblegambling.vic.gov.au/resources/publications/weighing-up-the-odds-young-men-sports-and-betting-394/>

King D. (2018) Online gaming and gambling in children and adolescents – Normalising gambling in cyber space. Victorian Responsible Gambling Foundation, Melbourne.

<https://responsiblegambling.vic.gov.au/resources/publications/online-gaming-and-gambling-in-children-and-adolescents-normalising-gambling-in-cyber-places-479/>

Kolandai-Matchett K, Bellringer M, Landon J, Mundy-McPherson S, Abbott M, Bailey M. (2015a) Evaluation of problem gambling interventions and public health services: A review of literature.

Auckland: Auckland University of Technology, Gambling and Addictions Research Centre.

<http://infohub.gambleaware.org/document/evaluation-problem-gambling-interventions-public-health-services-review-literature/>

Kolandai-Matchett K, Bellringer M, Landon J, Abbott M. (2015b) Evaluation of problem gambling public health services: An analysis of provider progress reports. Auckland: Auckland University of

Technology, Gambling and Addictions Research Centre. <https://infohub.gambleaware.org/wp-content/uploads/2016/09/Supplementary-Report-2-Analysis-of-provider-progress-reports-Final-Sept-2015.pdf>

Li E, Browne M, Langham E, Thorne H, Rockloff M. (2018) Implicit associations between gambling and sport. North Melbourne, Vic: Victorian Responsible Gambling Foundation.

<https://responsiblegambling.vic.gov.au/resources/publications/implicit-associations-between-gambling-and-sport-350/>

Littman-Sharp N. (2017) Treatment for Disordered Gambling: Current Evidence and Recommendations. Ontario, Canada: Gambling Research Exchange Ontario.1-4.

[http://www.greo.ca/Modules/EvidenceCentre/files/Littman-Sharp\\_\(2017\)\\_Treatment\\_for\\_Disordered\\_Gambling.pdf](http://www.greo.ca/Modules/EvidenceCentre/files/Littman-Sharp_(2017)_Treatment_for_Disordered_Gambling.pdf)

Livingstone C. (2017) How electronic gambling machines work. (AGRC Discussion Paper 8). Melbourne: Australian Gambling Research Centre, Australian Institute of Family Studies.

[https://aifs.gov.au/agrc/sites/default/files/publication-documents/1706\\_argc\\_dp8\\_how\\_electronic\\_gambling\\_machines\\_work.pdf](https://aifs.gov.au/agrc/sites/default/files/publication-documents/1706_argc_dp8_how_electronic_gambling_machines_work.pdf)

Lubman D, Rodda SN, Hing N, et al. (2015) Gambler Self-Help Strategies: A Comprehensive Assessment of Self-Help Strategies and Actions. Gambling Research Australia. Melbourne.

[https://www.responsiblegambling.nsw.gov.au/\\_data/assets/pdf\\_file/0018/138114/Gambler-self-help-strategies-A-comprehensive-assessment-of-self-help-strategies-and-actions.pdf](https://www.responsiblegambling.nsw.gov.au/_data/assets/pdf_file/0018/138114/Gambler-self-help-strategies-A-comprehensive-assessment-of-self-help-strategies-and-actions.pdf)

Mäkipää L, Laitakari S. (Eds)(2016) Benchmarking Report by the Nordic Gambling Supervisory Authorities. Finnish National Police Board/ Gambling Administration

[https://www.arpajaishallinto.fi/instancedata/prime\\_product\\_julkaisu/intermin/embeds/arpajaishallintowwwstructure/56775\\_Benchmarking\\_2016\\_report\\_Final.pdf?5730951814f2d588](https://www.arpajaishallinto.fi/instancedata/prime_product_julkaisu/intermin/embeds/arpajaishallintowwwstructure/56775_Benchmarking_2016_report_Final.pdf?5730951814f2d588)

Martin D. (2017) Consumer technology and the future of online gambling: How the 5 biggest consumer tech trends will shape the internet gambling sector (2017-2020). Amsterdam, Netherlands: Acapture.

<https://www.acapture.com/wp-content/uploads/2017/07/Consumer-technology-and-the-future-of-online-gambling-by-Acapture.pdf>

Miller HE. (2015) Background Paper: Risk Factors for Problem Gambling: Environmental, Geographic, Social, Cultural, Demographic, Socio-Economic, Family and Household. Victorian Responsible

Gambling Foundation, Melbourne. <http://www.greo.ca/Modules/EvidenceCentre/Details/risk-factors-problem-gambling-environmental-geographic-social-cultural-demographic-socio>

Monash Council (2017) Gambling Machine Harm Minimisation Measures - Consultation Paper. Melbourne, Victoria: Monash Council. [https://engage.vic.gov.au/download\\_file/1612/600](https://engage.vic.gov.au/download_file/1612/600)

NSW Government/Australia's Health P/L (2016) The Impact of Gambling Help Services on problem gambling in NSW. Research Report. Sydney, NSW: NSW Health, Justice, Liquor and Gaming NSW. [https://www.responsiblegambling.nsw.gov.au/\\_data/assets/pdf\\_file/0004/138118/Impact-evaluation-of-NSW-Gambling-Help-services.pdf](https://www.responsiblegambling.nsw.gov.au/_data/assets/pdf_file/0004/138118/Impact-evaluation-of-NSW-Gambling-Help-services.pdf)

Packman C, Rowlingson K. (2018) Problem gambling in Birmingham A Rapid Assessment Report. University of Birmingham <https://www.birmingham.ac.uk/Documents/college-social-sciences/social-policy/CHASM/2018/CHASM-Problem-Gambling-Report.pdf>

Palmer (2015) Sports betting research: Literature review. Gambling Research Program, Department of Health & Human Services, Tasmania. [https://www.dhhs.tas.gov.au/\\_data/assets/pdf\\_file/0006/170772/Sports\\_Betting\\_Literature\\_Review.pdf](https://www.dhhs.tas.gov.au/_data/assets/pdf_file/0006/170772/Sports_Betting_Literature_Review.pdf)

Parke J, Parke A, Blaszczynski A. (2016) Key Issues in Product-based Harm Minimisation: Examining theory, evidence and policy issues relevant to Great Britain. [10.13140/RG.2.2.30894.10560](https://doi.org/10.13140/RG.2.2.30894.10560).

Podesta J, Thomas A. (2017) Betting restrictions and online wagering in Australia: A review of current knowledge. Melbourne: Australian Gambling Research Centre, Australian Institute of Family Studies. [https://www.dss.gov.au/sites/default/files/documents/11\\_2017/final\\_report\\_-\\_betting\\_restrictions\\_report.pdf](https://www.dss.gov.au/sites/default/files/documents/11_2017/final_report_-_betting_restrictions_report.pdf)

Responsible Gambling Strategy Board (2017a) Research Program 2017-2019. London, UK. <https://www.rgsb.org.uk/PDF/Research-programme-2017-2019-May-2017.pdf>

Responsible Gambling Strategy Board (2017b) One Year On: Progress delivering the National Responsible Gambling Strategy. London, UK. <https://www.rgsb.org.uk/PDF/Strategy-progress-report-2016-2017.pdf>

Responsible Gambling Strategy Board (2016) The National Responsible Gambling Strategy 2016-17 to 2018-19. London, UK. <https://www.rgsb.org.uk/PDF/Strategy-2016-2019.pdf>

Responsible Gambling Council, (2016). Best practices for self-exclusion reinstatement and renewal. Centre for the Advancement of Best Practices. Ontario, Canada. <https://www.responsiblegambling.org/rg-news-research/rgc-centre/insight-projects/docs/default-source/research-reports/insight---best-practices-for-self-exclusion-reinstatement-and-renewal>

Rintoul A, Thomas A. (2017) Pre-commitment systems for electronic gambling machines: Preventing harm and improving consumer protection (AGRC Discussion Paper No. 9). Melbourne: Australian Gambling Research Centre, Australian Institute of Family Studies. <https://aifs.gov.au/agrc/publications/pre-commitment-systems-electronic-gambling-machines-preventing-harm-and-imp>

Rockloff M, Donaldson P, Browne M, Greer N, Moskovsky N, Armstrong T, Thorne H, Goodwin B, Langham E. (2016) Innovation in Traditional Gambling Products. Gambling Research Australia.

Melbourne. <https://www.gamblingresearch.org.au/publications/innovation-in-traditional-gambling-products-2016>

Rockloff M, Greer N, Armstrong T, Thorne H, Langham E, Moskovsky N, . . . Li E. (2018) Mobile EGMs Apps – The perfect substitute or the perfect storm? North Melbourne, Vic: Victorian Responsible Gambling Foundation.

<https://responsiblegambling.vic.gov.au/resources/publications/mobile-egms-apps-the-perfect-substitute-or-the-perfect-storm-407/>

Rockloff M, Thorne H, Goodwin B, Moskovsky N, Langham E, Browne M, . . . Rose J. (2015) EGM environments that contribute to excess consumption and harm. Australia: Victorian Responsible Gambling Foundation.

[https://insidegambling.com.au/\\_data/assets/pdf\\_file/0009/25587/Rockloff\\_EGM\\_environments\\_that\\_contribute\\_to\\_excess\\_consumption\\_and\\_harm\\_Nov\\_2015.pdf](https://insidegambling.com.au/_data/assets/pdf_file/0009/25587/Rockloff_EGM_environments_that_contribute_to_excess_consumption_and_harm_Nov_2015.pdf)

Rodda SN, Lubman D, Dowling NA. (2017) Online support needs and experiences of family members affected by problem gambling. Melbourne: Australian Institute of Family Studies.

<https://aifs.gov.au/agrc/sites/default/files/publication-documents/agrc-rr-online-support-web.pdf>

Rodda S, Lubman D, Dowling N. (2016) Online and on-demand support for people affected by problem gambling The potential for e-mental health interventions. Australian Gambling Research Centre, Discussion Paper No. 6. Melbourne, Victoria: Australian Institute of Family Studies.

<https://aifs.gov.au/agrc/sites/default/.../agrc-dp6-emental-health-final-20160801.pdf>

Rodgers B, Suomi A, Davidson T, Lucas N, Taylor-Rodgers E. (2015) Preventive Interventions for Problem Gambling: A Public Health Perspective Final Report 10 February 2015. Canberra, ACT: Australian National University.

[https://www.gamblingandracing.act.gov.au/\\_data/assets/pdf\\_file/0009/745047/Formatted-Final-PI-Report-for-publication.pdf](https://www.gamblingandracing.act.gov.au/_data/assets/pdf_file/0009/745047/Formatted-Final-PI-Report-for-publication.pdf)

Royal Australian and New Zealand College of Psychiatrists (RANZCP) (2017) Position Statement 45. Problem Gambling. RANZCP.

[https://www.ranzcp.org/Files/Resources/College\\_Statements/Position\\_Statements/ps45-pdf.aspx](https://www.ranzcp.org/Files/Resources/College_Statements/Position_Statements/ps45-pdf.aspx)

Schottler Consulting (2017a) Research into the separation of ATMs and gaming machines in NSW. A report to Liquor and Gaming, NSW.

[https://www.responsiblegambling.nsw.gov.au/\\_data/assets/pdf\\_file/0003/138162/Research-into-separation-of-ATMs-and-gaming-machines-in-NSW\\_Final-Report.pdf](https://www.responsiblegambling.nsw.gov.au/_data/assets/pdf_file/0003/138162/Research-into-separation-of-ATMs-and-gaming-machines-in-NSW_Final-Report.pdf)

Schottler Consulting (2017b) The harm minimisation impact of third party exclusion schemes and possible future directions for NSW.

[https://www.responsiblegambling.nsw.gov.au/\\_data/assets/pdf\\_file/0004/138163/Harm-minimisation-impact-of-third-party-exclusions-and-possible-future-directions-for-NSW\\_Final-Report.pdf](https://www.responsiblegambling.nsw.gov.au/_data/assets/pdf_file/0004/138163/Harm-minimisation-impact-of-third-party-exclusions-and-possible-future-directions-for-NSW_Final-Report.pdf)

Siegloff S. (2017) Exploring the nature of gambling issues for young people living in rural communities.

Melbourne, Victoria: Anglicare Victoria. [https://www.anglicarevic.org.au/wp-content/uploads/2018/03/Exploring-the-nature-of-gambling-issues-for-young-people\\_new.pdf](https://www.anglicarevic.org.au/wp-content/uploads/2018/03/Exploring-the-nature-of-gambling-issues-for-young-people_new.pdf)

South Australian Council of Social Services (SACOSS) (2018) Gambling Harm Prevention Policies: SA State election 2018. SACOSS, Adelaide.

[https://www.sacoss.org.au/sites/.../Gambling%20Harm%20Prevention\\_FINAL.pdf](https://www.sacoss.org.au/sites/.../Gambling%20Harm%20Prevention_FINAL.pdf)

South Australian Centre for Economic Studies (2015) Gambling and Casinos. Report commissioned by Gambling Research Australia. Adelaide, Australia: SACES.



<https://www.adelaide.edu.au/saces/docs/responsible-gambling-and-casinos-final-report-december-2015.pdf>

Sproston K, Hanley C, Brook K, Hing N, Gainsbury S. (2016) Marketing of Sports Betting and Racing (ORC International Ref. 13086). Gambling Research Australia. Melbourne.

[https://www.gamblingresearch.org.au/sites/default/files/embridge\\_cache/emshare/original/public/2016/09/74/bb765bd30/gramarketingofsbandrb.pdf](https://www.gamblingresearch.org.au/sites/default/files/embridge_cache/emshare/original/public/2016/09/74/bb765bd30/gramarketingofsbandrb.pdf)

Stenning & Associates (2017) Contemporary gambling harm minimisation policies and initiatives: A Desktop Review. Final Report Version 1.0. Prepared for the Tasmania Liquor and Gaming Commission. <https://www.treasury.tas.gov.au/Documents/Desktop%20review%20report%20-%20Stenning%20-%20Gambling%20Mandatory%20Code%20Review.pdf>

Stevens M. (2017) Northern Territory 2015 Gambling Prevalence and Wellbeing Survey. Darwin, NT: Charles Darwin University. [https://justice.nt.gov.au/\\_data/assets/pdf\\_file/0019/424135/nt-2015-gambling-prevalence-and-wellbeing-survey.pdf](https://justice.nt.gov.au/_data/assets/pdf_file/0019/424135/nt-2015-gambling-prevalence-and-wellbeing-survey.pdf)

Thimasarn-Anwar T, Squire H, Trowlan H, Martin G. (2017) Gambling report: Results from the 2016 Health and Lifestyles Survey. Wellington, New Zealand: Health Promotion Agency Research and Evaluation Unit. [https://www.hpa.org.nz/sites/default/files/Final-Report\\_Results-from-2016-Health-And-Lifestyles-Survey\\_Gambling-Feb2018.pdf](https://www.hpa.org.nz/sites/default/files/Final-Report_Results-from-2016-Health-And-Lifestyles-Survey_Gambling-Feb2018.pdf)

Thomas A, Rintoul A, Deblaquiere J, Armstrong A, Moore S, Carson R, Christensen D. (2016) Review of electronic gaming machine pre-commitment features: Transaction history statements. Melbourne: Australian Institute of Family Studies. <https://aifs.gov.au/agrc/publications/pre-commitment-limit-setting>

Thomas A, Vasiliadis S, Deblaquiere J. (2015) Australian gambling research priorities: Summary findings from consultations conducted by the Australian Gambling Research Centre. Melbourne: Australian Institute of Family Studies. <https://aifs.gov.au/agrc/publications/australian-gambling-research-priorities>

Van Dyke N, Jenner D, Maddern C. (2016) The role of loyalty programs in gambling: final report of findings from audit of electronic gaming machine gambling venues, literature review, online discussion boards and longitudinal telephone survey. Gambling Research Australia. Melbourne. [https://www.gamblingresearch.org.au/sites/default/files/embridge\\_cache/emshare/original/public/2016/09/86/4299f3f3f/loyalty\\_programs\\_final%2Breport\\_25jan2016.pdf](https://www.gamblingresearch.org.au/sites/default/files/embridge_cache/emshare/original/public/2016/09/86/4299f3f3f/loyalty_programs_final%2Breport_25jan2016.pdf)

Van Rooij AJ, Vanden Abeele MMP, Van Looy J. (2017) Gambling and Gaming in Belgium: Opportunities and Risks associated with Online Digital Gambling. Ghent, Belgium: imec-mict-Ghent University. [https://www.researchgate.net/profile/Antonius\\_Van\\_Rooij/publication/321423526\\_Gambling\\_and\\_Gaming\\_in\\_Belgium\\_Opportunities\\_and\\_Risks\\_associated\\_with\\_Online\\_Digital\\_Gambling/links/5a214e7d0f7e9b10b973116b/Gambling-and-Gaming-in-Belgium-Opportunities-and-Risks-associated-with-Online-Digital-Gambling.pdf](https://www.researchgate.net/profile/Antonius_Van_Rooij/publication/321423526_Gambling_and_Gaming_in_Belgium_Opportunities_and_Risks_associated_with_Online_Digital_Gambling/links/5a214e7d0f7e9b10b973116b/Gambling-and-Gaming-in-Belgium-Opportunities-and-Risks-associated-with-Online-Digital-Gambling.pdf)

Victorian Responsible Gambling Foundation (2017) Responsible Gambling: Past, present and future. Victorian Responsible Gambling Foundation, Melbourne. <https://responsiblegambling.vic.gov.au/about-us/news-and-media/responsible-gambling-past-present-and-future/>

Victorian Responsible Gambling Foundation (2015) Background Paper: Using a Public Health Approach in the Prevention of Gambling-Related Harm. Melbourne, Victoria: VRGF.  
<https://responsiblegambling.vic.gov.au/search/?q=Background+Paper%3A+Using+a+Public+Health+Approach+in+the+Prevention+of+Gambling-Related+Harm.+>

Wohl M, Santesso D, Hollingshead S, Amar M. (2018). Facilitating limit setting and limit adherence. Manitoba, Canada. Manitoba Gambling Research Program.  
[https://www.manitobagamblingresearch.com/system/files/private/Full%20Report-Facilitating%20Limit%20Setting%20%2526%20Limit%20Adherence\\_0.pdf](https://www.manitobagamblingresearch.com/system/files/private/Full%20Report-Facilitating%20Limit%20Setting%20%2526%20Limit%20Adherence_0.pdf)

Williams R, Hann R, Schopflocher D, West B, McLaughlin P, White N, King K, Flexhaug T. (2015) Quinte longitudinal study of gambling and problem gambling. Report prepared for the Ontario Problem Gambling Research Centre. Guelph, Ontario. <https://opus.uleth.ca/bitstream/handle/10133/3641/QLS-OPGRC-2015.pdf>

## APPENDICES

### Appendix 1: Database Search Outputs

#### DATABASE 1: **MEDLINE**

Search Strategy: Medline

#	Searches	Results
1	GAMBLING/	4899
2	((patholog* or problem* or addict* or compulsiv* or impulsive* or crav* or disorder*) adj7 gambl*).tw,kw.	4097
3	(ludomania or ludopath*).tw,kw.	3
4	(gambl* or betting or wagering or pokie* or lotter* or casino* or keno).tw,tw.	9907
5	(machine adj3 (gaming or fruit or slot)).tw,tw.	283
6	(video* and lotteri*).tw,kw.	8
7	1 or 2 or 3 or 4 or 5 or 6 or 7	11481
8	Video Games	1041
9	7 and 8	60
10	7 or 9	11481
11	(treat* or efficacy or effect* or "harm minimisation" or "responsible gambling" or attitude* or behavio?r* or prevalence or population or harm or policy or regulation).tw,kw.	11316517
12	BEHAVIOR THERAPY/	26395
13	Harm Reduction/	2499
14	Treatment Outcome/	866652
15	SELF EFFICACY/	17633
16	PSYCHIATRIC REHABILITATION/ or REHABILITATION/	17900
17	"PATIENT ACCEPTANCE OF HEALTH CARE"/	40306
18	Public Opinion/	17737

19	INTENTION/	9689
20	Therapeutics/	8323
21	TECHNOLOGY/ or INFORMATION TECHNOLOGY/	8802
22	((trend* or emerg* or future* or interactive or innovat*) and technolog*).tw,kw.	94461
23	PREVALENCE/ or Prevalence.tw,kw.	624596
24	Public Health/ or Public Health Administration/ or Public Health Practice/ or exp public policy/ or Community Health Services/ or Community health planning/ or Health Promotion/	297039
25	(public adj2 (health or policy or policies)).tw,kw.	212479
26	9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23	11918216
27	8 and 24	8194
28	limit 25 to (english language and humans and yr="2015 -Current")	1119

## DATABASE 2: **Emcare**

Database(s): Ovid Emcare 1995 to 2018 week 40

Search Strategy:

#	Searches	Results
1	gambling/	1141
2	pathological gambling/	2790
3	((patholog* or problem* or addict* or compulsiv* or impulsive* or crav* or disorder*) adj7 gambl*).tw,kw.	2455
4	(ludomania or ludopath*).tw,kw.	0
5	(gambl* or betting or wagering or pokie* or lotter* or casino* or keno).tw,tw.	5571
6	(machine adj3 (gaming or fruit or slot)).tw,tw.	163
7	(video* and lotteri*).tw,kw.	6
8	or/1-7	5959

9	video game/	833
10	9 and 8	12
11	10 or 8	5959
12	(treat* or efficacy or effect* or "harm minimisation" or "responsible gambling" or attitude* or behavior* or prevalence or population or harm or policy or regulation).tw,kw.	2649891
13	behavior therapy/	14483
13	harm reduction/	3804
14	treatment outcome/	211803
15	self concept/	38547
16	psychosocial rehabilitation/ or rehabilitation/	49006
17	"PATIENT ACCEPTANCE OF HEALTH CARE"/	22715
18	public opinion/	4138
13	behavior/	24459
20	therapy/	134539
21	technology/	56811
22	information technology/	9465
23	((trend* or emerg* or future* or interactive or innovat*) and technolog*).tw,kw.	36419
24	PREVALENCE.tw,kw. or prevalence/	247143
25	public health/	81248
26	public health service/	24851
27	exp policy/	70928
28	community care/	21217
29	health care planning/	33055
30	health promotion/	42165
31	(public adj2 (health or policy or policies)).tw,kw.	101970

32	or/12-31	2965641
32	11 and 32	4545
33	limit 33 to (human and english language and yr="2015 -Current")	1119

### DATABASE 3: PsycInfo

Search Strategy:

#	Searches	Results
1	gambling/ or pathological gambling/	7203
2	((patholog* or problem* or addict* or compulsiv* or impulsive* or crav* or disorder*) adj7 gambl*).ti,ab,id.	6012
3	(ludomania or ludopath*).ti,ab,id.	5
4	(gambl* or betting or wagering or pokie* or lotter* or casino* or keno).ti,ab,id.	12861
5	(machine adj3 (gaming or fruit or slot)).ti,ab,id.	433
6	(video* and lotteri*).ti,ab,id.	13
7	or/1-6	19411
8	computer games/	6574
9	7 and 8	193
10	7 or 9	13030
11	(treat* or efficacy or effect* or "harm minimisation" or "responsible gambling" or attitude* or behavior?r* or prevalence or population or harm or policy or regulation).ti,ab,id.	2552130
12	Behavior Therapy/	13407
13	Harm Reduction/	2914
14	Treatment Outcomes/	31374
15	Self-Efficacy/	20528

16	rehabilitation/	18612
17	Public Opinion/	8054
18	intention/ or behavioral intention/	14815
19	technology/ or information technology/	42661
20	((trend* or emerg* or future* or interactive or innovat*) and technolog*).ti,ab,id.	35497
21	PREVALENCE.ti,ab,id.	105331
22	Public Health/	19386
23	exp Government Policy Making/	41424
24	community services/ or community mental health services/ or public health services/	25984
25	health promotion/	22763
26	(public adj2 (health or policy or policies)).ti,ab,id.	56536
27	or/11-26	2631790
28	10 and 27	9985
29	limit 28 to (human and english language and yr="2015 -Current")	2260

#### **DATABASE 4: Proquest: Health & Medicine databases**

ab((((patholog\* OR problem\* OR addict\* OR compulsiv\* OR impulsive\* OR crav\* OR disorder\*) NEAR/6 gambl\*) OR ludomania OR ludopath\* OR gambl\* OR betting OR wagering OR pokie\* OR lotter\* OR casino\* OR keno OR (machine NEAR/2 (gaming OR fruit OR slot)) OR (video\* AND lotteri\*)) AND ((treat\* OR efficacy OR effect\* OR "harm minimisation" OR "responsible gambling" OR attitude\* OR behavio\*r\* OR prevalence OR population OR harm OR policy OR regulation OR ((trend\* OR emerg\* OR future\* OR interactive OR innovat\*) AND technolog\*) OR (public NEAR/1 (health OR policy OR policies)))) AND (pd(20150101-20190201) AND PEER(yes)) or ti((((patholog\* OR problem\* OR addict\* OR compulsiv\* OR impulsive\* OR crav\* OR disorder\*) NEAR/6 gambl\*) OR ludomania OR ludopath\* OR gambl\* OR betting OR wagering OR pokie\* OR lotter\* OR casino\* OR keno OR (machine NEAR/2 (gaming OR fruit OR slot)) OR (video\* AND lotteri\*)) AND ((treat\* OR efficacy OR effect\* OR "harm minimisation" OR "responsible gambling" OR attitude\* OR behavio\*r\* OR prevalence OR population OR harm OR policy OR regulation OR ((trend\* OR emerg\* OR future\* OR interactive OR innovat\*) AND technolog\*) OR (public NEAR/1 (health OR policy OR policies)))) AND (pd(20150101-20190201) AND PEER(yes))

**n=1,388**

## DATABASE 5: Web of Science

# 9	4,317	(#4 OR #2 OR #1) AND LANGUAGE: (English) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=2015-2018</i>
# 8	7,289,985	#7 OR #6 OR #5 <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 7	56,522	TI=((public NEAR/1 (health OR policy OR policies))) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 6	26,268	TI=((trend* OR emerg* OR future* OR interactive OR innovat*) AND technolog*) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 5	7,227,506	TI=((treat* OR efficacy OR effect* OR "harm minimisation" OR "responsible gambling" OR attitude* OR behavio* OR prevalence OR population OR harm OR policy OR regulation)) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 4	3	TI=((video* AND lotteri*)) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 3	648	TI=((machine NEAR/2 (gaming OR fruit OR slot))) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 2	18,223	TI=(ludomania OR ludopath* OR gamb* OR betting OR wagering OR pokie* OR lotter* OR casino* OR keno) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>
# 1	3,261	TI((((patholog* OR problem* OR addict* OR compulsiv* OR impulsive* OR crav* OR disorder*) NEAR/6 gamb*)) <i>Indexes=SCI-EXPANDED, SSCI, A&amp;HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=1900-2018</i>

n=975



**DATABASE 6: Scopus**

((patholog\* OR problem\* OR addict\* OR compulsiv\* OR impulsive\* OR crav\* OR disorder\*) NEAR/6 gambl\*) OR ludomania OR ludopath\* OR gambl\* OR betting OR wagering OR pokie\* OR lotter\* OR casino\* OR keno OR (machine NEAR/2 (gaming OR fruit OR slot)) OR (video\* AND lotteri\*) AND (treat\* OR efficacy OR effect\* OR "harm minimisation" OR "responsible gambling" OR attitude\* OR behavio\* OR prevalence OR population OR harm OR policy OR regulation OR ((trend\* OR emerg\* OR future\* OR interactive OR innovat\*) AND technolog\*) OR (public NEAR/1 (health OR policy OR policies)))

**n=4,137**

## Appendix 2: Mixed Methods Appraisal Tool (MMAT)

Category of study designs	Methodological quality criteria	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	<i>Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening</i>				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5. Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				

4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

## Appendix 3: Summary Tables of the Peer-Reviewed Literature

Adults= aged 18 and over if not specified otherwise

Table 1: Attitudes and behaviours towards gambling in vulnerable or target groups (N=20 Australian studies) .....	140
Table 2: Emerging technologies and new trends (N=92 studies) .....	1466
Table 3: Long term efficacy and effectiveness of treatments (N=23 RCTs) .....	171
Table 4: What works in prevention and harm minimisation (N=55) .....	1788
Table 5: Understanding and measuring harm (N=38 studies) .....	192

**Table 1: Attitudes and behaviours towards gambling in vulnerable or target groups (N=20 Australian studies)**

Author(s) & year/ Study location	Study type/ NHMRC Evidence Level/ grade of evidence	Participants/ Intervention and comparator groups /study aim	Primary outcome measures	Main findings	Limitations <sup>2</sup>	Recommendations
<i>Adolescents</i>						
Dixon et al. (2016) Australia	Cross-sectional; Level IV; Moderate	612 high school students took part in a face-to-face survey, to examine the moderating role of coping strategies and parenting styles on their gambling involvement	Gambling involvement, DSM-IV, GAS	Adaptive coping styles employed by adolescents and consistent disciplinary practices by parents were buffers of gambling problems at low levels of adolescent gambling involvement, but failed to protect adolescents when their gambling involvement was high	Self-reported measures and participants from different schools limit the generalizability of the findings	Further longitudinal studies are needed to examine the relationship between adolescents' coping strategies and parental practices
King & Delfabbro (2016) Australia	Cross-sectional; Level IV; Moderate	824 adolescents took part in a survey, to capture their perceptions of parental influences on commercial and simulated gambling activities	Gambling activities, parental influences, PG symptoms	Results showed that young people's perceptions of parents' measures to limit, restrict or oversee online and electronic activities were not significantly associated with youth simulated gambling. Also, their perceptions of parental influences were not significant predictors of PG behaviours	Self-reported measures; lacked measures on financial expenditure, did not consider influence of peers and online strangers	Future studies need to examine potential differences in how adolescents develop an understanding of different gambling activities without parental influences. More preventative measures are needed to tackle PG among adolescents

<sup>2</sup> Limitations and recommendations identified in the articles

Li et al. (2018) Australia	Randomised Controlled Trial; Level II; High	Phase 1: 848 adolescents were randomly assigned to four experimental conditions, based on a 2x2 between-subjects designs, to complete an IAT between gambling and sport Phase 2: 848 adolescents completed an online survey	ATGS	The results supported the existence of an implicit association between gambling and sport among the participants. This implicit association became stronger when they saw sport-relevant (vs. sport-irrelevant) gambling logos, or gambling-relevant (vs. gambling-irrelevant) sport names. Additionally, this implicit association was positively related to the amount of sport viewing for participants with more favourable gambling attitudes. Lastly, gambling attitudes and advertising knowledge, rather than the implicit association, turned out to be significant predictors of the explicit intention to gamble	Convenience sample	Further longitudinal studies would require to understand the long-term influences of the implicit association on gambling behaviour and any associated outcomes (e.g. harms)
<i>Young people</i>						
Deans, Thomas, Derevensky et al. (2017) Australia	Qualitative; M Level 3	50 semi-structured face-to-face interviews were conducted, men sports bettors (aged 20-37)	Attitudes and opinions regarding sports betting	The saturation of marketing for betting products including through sports-based commentary and sports programming, normalised betting. Inducements offered by the industry were effective marketing strategies-participants felt greater control over the gambling outcomes and often signed up with more than one betting provider	Participants were football bettors and thus, the findings may not be generalizable to young men bet on other sports	Gambling strategies are providing more sophisticated marketing strategies to normalise gambling, which require prevention.
Deans, Thomas, Daube et al. (2017) Australia	Qualitative; M Level 3	50 semi-structured face-to-face interviews were conducted, men sports bettors (aged 20-37)	The role of peer influences on the normalisation of sports wagering	Participants perceived that sports wagering was a 'normal' and socially accepted activity, and a natural 'add on' to sports. There were clear indicators that sports wagering was becoming embedded within existing peer based sporting rituals, The shaping of gambling/sport discussions, created a sense of identity and a point of conversation for peers. Some participants spoke of the social pressure to gamble to 'fit in' with their friends.	Participants were football bettors and thus, the findings may not be generalizable to young men bet on other sports	The adoption of a social norms approach (independent of the gambling industry and as part of a comprehensive public health approach) as a preventive technique to counter the over-represented normative portrayals of young men's wagering behaviours
Nekich & Ohtsuka (2016) Australia	Qualitative; M Level 3	Interviews were conducted with 7 young recreational gamblers, to explore key dilemmas and challenges of a generation regarding	Positive and negative impacts of gambling advertisements	The current findings demonstrated the participants' attempts to understand and legitimise their gambling. It also found that young adults faced a series of dilemmas when deciding whether to gamble and to what extent they gambled. Their discourse highlighted the tension between individual	Generalisation beyond demographics and age groups require caution	Further study is needed to establish the relationships between discourse and gambling practices

		impact of gambling advertisements		agency, societal expectations and familial influence		
Scholes-Balog et al. (2016) Australia	Cross-sectional; Level IV; Moderate	2261 young adults completed a survey in 2010 (T1, age 21) and 2012 (T2, age 23) to explore patterns of problem gambling	Two items measuring problem gambling based on the Brief Biosocial Gambling Screen and the South Oaks Gambling Screen	The majority of the sample (91.69%) were resistors (no PG at T1 and T2), 3.62% were new incidence PG cases, 2.63% were desistors (PG at T1 but not T2), and 2.07% reported persistent PG at T1 and T2. Individual civic activism was protective of new incidence PG, while affiliation with antisocial peers and frequent alcohol use increased the risk of persistence. Persistent problem gamblers also experienced the greatest number of poor behavioural outcomes at T2. New incidence was associated with internalising symptoms at T2, while desistance was not associated with any behavioural outcomes.	Data were drawn from a large longitudinal study and therefore the measure of PG was necessarily brief. The period between T1 and T2 was quite brief	Suggests the need to consider variation in the course of young adult PG in order to provide efficacious prevention and intervention approaches, and to protect against relapse. Future research should measure changes over longer time periods
<i>College/University students</i>						
O' Loughlin & Blaszczynski (2018) Australia	Randomised Controlled Trial; Level II; Moderate	120 male first-year students randomly assigned to one of three conditions-a) gambling operator posting on FB, b) peer posting on FB and c) print media	Socio-gambling demographics, media exposure, GAS, GIS, PGSI, Manipulation check	Gambling attitude and intentions did not differ between averaged peer and gambling operator FB postings compared to traditional media. However, gambling advertisements appeared to influence gambling attitudes and mid-term gambling intentions when posted by a gambling operator compared to a peer on FB	The single, 30 s viewing of an advertisement in this study might have been unable to generate a robust effect	Regulations applied to gambling advertisements presented in traditional media ought to be extended to those appearing on social media platforms
<i>Children</i>						
Bestman et al. (2017) Australia	Qualitative; M Level 3	Interviews were conducted with 45 children, to explore their attitudes towards EGMs	Attitudes towards EGMs	Attitudes towards EGMs were reinforced by the child's knowledge of adults' EGM behaviours. Some older children's attitudes were positively reinforced by the perception that profits from the machines would go back to their local sporting teams	Convenience sample from one geographical area	Further research should explore the range of other ancillary factors that contribute to children's knowledge about EGMs, and policy makers should consider more effective strategies to prevent children from being exposed to EGMs in community venues
Pitt et al. (2016) Australia	Mixed-methods; M Level 2	Mixed-methods study of 152 parent/child (8-16 years) dyads at sporting sites	Sports wagering promotions, perceptions of the	Children recruited from rugby and football sites significantly recalled seeing promotions compared to children from soccer sites. Both children and parents identified seeing	Due to the nature of the study, findings are not generalizable	Regulation should comprehensively address the placement, quantity and

			normalisation of wagering	promotions most commonly on television and at stadiums and perceived sport wagering as a normal part of sport		content of wagering marketing aligned with sport
Pitt et al. (2017) Australia	Qualitative; M Level 3	48 semi-structured face-to-face interviews were conducted, with Melbourne living children (aged 8-16)	Perceptions of the popularity of different gambling products, current engagement with gambling, future gambling consumption intentions	Findings indicated that family (engagement with gambling, culturally valued events) and media (marketing) were positively shaping children's gambling attitudes, behaviours and consumption intentions	Due to the qualitative nature of the study, findings are not generalizable	Government policies and regulations should prevent children from exposure to gambling related products
Pitt et al. (2017) Australia	Qualitative; M Level 3	48 semi-structured face-to-face interviews were conducted, with Melbourne living children (aged 8-16)	Impact of televised sports betting advertisements	Children had detailed recall of sports betting advertisements and an extensive knowledge of sports betting products and terminology. 'Humour' was seen as the most engaging appeal strategy	Due to the qualitative nature of the study, findings are not generalizable	Evidence-based education campaigns may counter the positive messages children receive from the sports betting industry. Future studies with stronger designs should examine the effect of such campaigns
<i>Women</i>						
McCarthy et al. (2018) Australia	Mixed-methods; M Level 2	509 women (aged 16+) from Victoria and New South Wales were surveyed online on gambling behaviour for 4 products: casino, EGM, horse and sports betting	Gambling behaviour	Younger women (aged 16-34) exhibited a higher proportion of PG, were significantly more likely to bet on sports and gamble at casinos, and perceived them as less harmful. Qualitative data indicated that younger women engaged with gambling products as a part of social engagement, due to their 'ease of access' and 'chance of winning big'	Sample was skewed towards women with more education, with higher socio-economic status and with more PG. The sample was also not representative of community participants	A gendered approach is needed, to tackle the PG in different subgroups of women, by taking into consideration the unique factors associated with their gambling. More research with longitudinal designs are needed to explore and examine different strategies that might be useful for different subgroups
<i>Incarcerated populations</i>						
Fan (2017) Australia	Comparative study without controls; Level III-3; Moderate	A retrospective study involving 66 prisoners who completed a survey, to determine their attitudes and triggers towards	EIGHT Gambling Screen, GABS, IGS	There was a significant correlation between GABS and IGS, and between IGS and the EIGHT Gambling Screen. The results indicated that attitudes towards and beliefs about gambling did not directly influenced the severity of the participants' gambling problem. Attitudes and beliefs were more	Small sample with unequal gender ratio. Being a retrospective study, the sample might have contained both current and non-current problem gamblers	This study suggested that problem gamblers needed assistance in dealing with their triggers for gambling, and in changing their attitudes towards and beliefs about gambling.

		gambling before their incarceration		closely linked to their triggers for gambling that carried more weight in the severity of their PG		Future studies can measure PG among offenders who have already been released into the community, and examine association between their attitude towards and beliefs about gambling
Riley & Oakes (2015) Australia	Cross-sectional; Level IV; Moderate	Surveyed 105 male prisoners in South Australia to explore lifetime prevalence of problem gamblers and examine the relationship between gambling and current term of imprisonment	Early Intervention Gambling Health Test (EIGHT Screen)	55% of participants indicated a lifetime prevalence of problem gambling. One-fifth of all respondents reported their current term of imprisonment was related to gambling.	The study was conducted at a low-security male prison, limiting its generalisability. It is unclear if the gambling problems existing prior to incarceration or developed while in prison	It is important to screen for gambling-related problems among male prisoners
Riley et al. (2017) Australia	Cross-sectional; Level IV; Moderate	Surveyed 74 female prisoners in South Australia to explore lifetime prevalence of problem gambling, help-seeking behaviour, and association with incarceration	Early Intervention Gambling Health Test (EIGHT Screen)	64% of participants indicated problem gambling with one in six reporting they were incarcerated due to offending related to problem gambling. Problem gamblers whose incarceration was related to PG were more likely to indicate they had gambled to try and win money to repay debts than problem gamblers incarcerated for unrelated offending. 19% of problem gamblers reported having previously sought help.	Small sample size and limited generalisability	Women's prisons may provide an opportunity to engage this high-risk population with effective treatment
<i>Minorities</i>						
Radermacher et al. (2016) Australia	Qualitative; M Level 3	Interviews and focus groups with 18 key informants and 36 participants of Tamil and Chinese communities, to explore perceptions of gambling	The role and nature of stigma in relation to gambling	The desire to save face (a form of stigma management) significantly influenced what is said about gambling and the reluctance of problem gamblers to seek help	Due to the qualitative nature of the study, findings are not generalizable	More research needs to explore culturally appropriate, tailored interventions that can tackle PG in minorities
<i>Aboriginal and Torres Strait Islander</i>						
Maltzahn et al. (2018) Australia	Qualitative; M Level 3	26 bingo players of Sunraysia Aboriginal community were interviewed, to	Pleasures and risks associated with bingo playing	Bingo was variously a site that reinforces social connectedness, a source of fun and excitement and a strategy to find solace or respite in the face of personal pain and	Due to the qualitative nature of the study, findings are not generalizable	The study argued for enhanced regulation of commercial bingo and suggested implementing not-



		understand the complex benefits and harms associated with bingo playing		structural injustice. In contrast with other forms of gambling, bingo presents risks that can be managed. However, people also described harms including exhausting the family budget, family conflict and encouragement to commence other forms of gambling		for-profit bingo as a harm reduction strategy. Further research should investigate the regulatory framework for bingo and mechanisms for limiting the cost, evaluate existing harm-reduction interventions on Aboriginals, and explore the impact of bingo and other gambling sites as a non-discriminatory space for Aboriginals
<i>People with mental health problems</i>						
Manning et al. (2017) Australia	Cross-sectional; Level IV; Moderate	837 adult mental health patients were surveyed, to determine rates of PG and substance use problems	Gambling activities, psychiatric diagnosis, PGSI, AUDIT-C	The gambling participation rate was 41.6%. 52.6% of all gamblers were identified as either low-risk, moderate-risk, or problem gamblers. Patients classified as problem and moderate-risk gamblers had significantly elevated rates of nicotine and illicit drug dependence. Current diagnosis of drug use, borderline personality, bipolar affective and psychotic disorders were significant predictors of PG	Acutely unwell patients of the mental health service were not surveyed (45%), and thus the estimated prevalence of PG might be conservative. Also, self-reported measures	The study recommends that mental health services should embed routine screening into clinical practice, and train clinicians in the management of PG
Haydock et al. (2015) Australia	Cross-sectional; Level IV; Moderate	442 adults with psychotic disorders attending mental health services were surveyed to determine prevalence and correlates of problem gambling	Canadian Problem Gambling Index	151 participants screened positive to past year gambling. 4.1% were classified as low risk gamblers, 6.4% were moderate risk gamblers and 5.8% were problem gamblers. Moderate risk/problem gamblers were more likely to be male, have left school with no qualifications and have sought financial assistance in the last year. Significant association with substance use, including alcohol use disorders and use of cannabis and 'other' drugs (excluding cannabis).	The study does not illuminate temporal sequencing regarding the onset of psychotic disorders, substance-related conditions and gambling problems. It was necessary to combine groups of moderate risk and problem gamblers for the purposes of statistical comparison.	Clinicians should screen for comorbid gambling problems in people with psychosis. There is a need for additional research into this area

**ATGS: Attitude Towards Gambling Scale; AUDIT-C: Alcohol Use Disorders Identification Test- Consumption; DSM: Diagnostic and Statistical Manual of Mental Disorders, Fourth/Fifth Edition; EGM: Electronic Gaming Machine; EIGHT: Early Intervention Gambling Health Test; FB: Facebook; GABS: Gambling Attitudes and Beliefs Survey; GAS: Gambling Attitudes Scale; GIS: Gambling Intention Scale; IAT: Implicit Association Test; IGS: Inventory of Gambling Situations; PG: Problem Gambling; PGSI: Problem Gambling Severity Index**

**Table 2: Emerging technologies and new trends (N=92 studies)**

Author(s) & year/ Study location	Study type/ NHMRC Evidence Level/ grade of evidence	Participants/ Intervention and comparator groups/study aim	Primary outcome measures	Main findings	Limitations	Recommendations
<i>Online/Internet/Mobile gambling</i>						
Baggio et al. (2016)  France & Switzerland	Cross-sectional comparisons; Level IV; Moderate	Data was used from two population-based samples of adolescents aged 17 years in France (N=2240), and Switzerland (N=944), to investigate co-morbidity of PG and PIU among adolescent internet and land-based gamblers	Internet gambling, PG and PIU-analysing data using classic approach vs network perspective	PG and PIU appeared as separate disorders, but their relationship was increased among internet gamblers in comparison with land-based gamblers. The network perspective appeared as a promising avenue for a better understanding of addictive disorders, but it should not replace the classic approach, which showed increased levels of addictive behaviours among internet gamblers	Limitations regarding variables' assessment (PIU), and inability to determine causality	Studies with older participants are needed to generalize these findings for other populations
Baggio et al. (2017)  France	Cross-sectional; Level IV; Moderate	Data was used from a sample of adolescents (N=9910), to test whether the relationship between Internet gambling and gambling problems persisted when including variables related to gambling involvement (time spent gambling and diversity of gambling formats) as predictors	Money and time spent gambling, diversity of gambling, internet gambling	Results showed that internet gamblers had significantly more problems than land-based gamblers. However, relationship decreased when diversity of gambling formats and time spent gambling were controlled separately, and became non-significant when they both were included in the model. To conclude, time spent gambling and diversity of gambling formats rather than internet gambling should be considered as detrimental gambling behaviours	Due to the nature of the study design, causal paths between variables could not be tested. Also, 'internet gambling' included both online and offline samples	This study was a step forward in changing the conceptual model of PG, with gambling involvement as a main variable. However, longitudinal studies with subsamples of problem gamblers are needed to investigate the importance of time spent in gambling and to achieve a better understanding of the causality of the identified variables
Barrault & Varescon (2016)  France	Cross-sectional; Level IV; Moderate	245 regular poker players' online survey data was collected, to compare online and live players	Socio-demographic characteristics, SOGS, gambling practice, ImpSS,	Socio-demographic characteristics: Young men, executives or students, mostly single and working full-time. Online players played significantly more often whereas live players reported significantly longer gambling sessions. Sensation seeking was high	Self-selected sample	At-risk populations (high sensation seekers and impulsive people, with matching socio-demographic profiles) could be specifically targeted for preventive actions. Treatment for pathological poker players could also

			levels of gambling intensity	across all groups, whereas impulsivity significantly distinguished players according to the intensity of gambling		take into account the role of impulsivity and sensation seeking
Biolcati et al. (2015) Italy	Cross-sectional; Level IV; Moderate	For this study, 256 adult online poker players took part in an online survey to examine various aspects of their poker playing behaviour	Online poker game mode, frequency of gambling, DSM-IV-TR, <i>Narcissism</i> , <i>Impulsivity</i> , <i>Self-esteem</i>	Results showed that only 1.6% poker players met the DSM-IV-TR diagnostic criteria for pathological gambling. Generally, poker players had low scores on <i>narcissism</i> and <i>impulsivity</i> , and high scores on <i>self-esteem</i>	Sample consisted mainly of males, and of a particular forum. Self-reported measures	Future studies should analyse online poker players as concerns variables such as relationship styles, sense of loneliness, agreeableness etc. Also, more studies are needed to investigate control populations to directly compare the Texas Hold'em online poker player with the general population as well as other gamblers; the personality variables examined in this study as well as others (e.g. sensation seeking, competitiveness, deferment of gratification).
Blaszczynski et al. (2016) Australia	Cross-sectional; Level IV; Moderate	4,594 gamblers were asked to complete an online survey, to investigate differences in mental health status in exclusive online, exclusive land-based, and mixed Internet and land-based samples of gamblers drawn from the general population	Internet gambling behaviour, Canadian PGSI, K6, Gambling related consequences	Findings indicated that mixed gamblers exhibited higher PGSI, more gambling involvement and more alcohol consumption than exclusive online gamblers. Land-based gamblers experienced higher levels of psychological distress, self-acknowledged need for treatment, and help-seeking behaviour.	Evidence is inconclusive due to the study design. Also, the impact of gambling mode, involvement, motivations or preferences, or gambling characteristics were not fully examined	Understanding the characteristics of different problem gambling subpopulations may inform the development of more effective targeted interventions. Also, longitudinal studies are needed to unravel causal relationships implicated by the current findings
Costes et al. (2016) France	Cross-sectional; Level IV; Moderate	Data was used from an online survey (N=3860), to assess differences in gambling patterns and related harm between online gamblers who use licensed versus unlicensed sites	Game-Play patterns, regulatory status of gambling sites, gambling-related problems, demographics	Overall, 53.7% of online gamblers reported gambling exclusively on licensed sites. Characteristics of those who bet on regulated activities on unlicensed sites were likely to be female, younger, less educated, inactive in the labour market and more likely to perceive their financial situation to be difficult. Gambling on unlicensed sites were also associated with more intense gambling patterns and more gambling-related problems	Self-reported measures; the recruitment strategy might not be comprehensive, the information collected regarding the 'legal status' of the sites was assessed via a composite indicator	Gambling activities carried out on state licensed sites were associated with less overall harms to gamblers; this evidence can be used as an educational RG tool

d'Astous & Gaspero 2015 France & Canada	Mixed-methods; M Level 2	Combination of a qualitative study (N=12) and a survey (N=161), examined the occurrence of heuristic (i.e., intuitive and fast) and analytic (i.e., deliberate and slow) processes among people who engaged in online sports betting on a regular basis	Qualitative: description of processes by which participants arrived at a sports betting decision Survey: monetary gains, experience in online sports betting, propensity to collect and analyse relevant information prior to betting, use of bookmaker odds	Results showed that heuristic and analytic processes act as mediators of the relationship between experience and performance	Small sample mostly recruited from France via online	The study showed the value of the dual mediation process model for research that looked at gambling activities from a judgmental and decision-making perspective. However, more research is needed to confirm these findings and explore its applicability in other populations and types of gambling
Deans et al. (2016) Australia	Qualitative; M Level 3	Interviews with 50 men (aged 20-37) sports bettors, to explore the ways in which online and land-based environments influence gambling risk behaviours	Factors that encouraged individuals to gamble, and impacted risky gambling behaviours	Online factors: globalisation of betting markets and options, easy access via mobile, virtual nature of amounts spent and lost, industry inducements Land-based factors: provide a conducive atmosphere- televised sports, multiple forms of gambling, supply of alcohol, cash in hand wins, exciting social atmosphere, 'a male gambling subculture', gambling promotions	The sample was skewed towards young men with higher education and socio-economic status. Also, the sample was focused on football bettors and might not be representative of horse/race bettors etc.	Future studies should keep exploring these contextual factors on range of bettors
Effertz et al. (2018) German	Secondary analysis; - -	Data was collected from the PAGE survey (2010-11) for 15,023 participants (aged 14-64), to estimate the effect of online gambling on gambling problems and resulting economic health costs	DSM-V, gambling days, CIUS	Results showed that, on average, relacing 10% of offline gambling with online gambling increases the likelihood of being a problematic gambler by 8.8-12.6%. This increase is equivalent to 139, 322 problematic gamblers and 27.24 million euro per year of additional expenditures in the German health sector	Being a secondary analysis, it is likely that the sample does not accurately represent the current population	Findings need to be tested via more recent data. Future research should also include social and/or economic cost of gambling as opposed to the treatment cost only
Estevez et al. (2017) Spain	Cross-sectional; Level IV;	Data was collected from 2743 treatment-seeking male GD	SOGS, DSM-V, Temperament and Character	No differences in terms of gambling severity were identified between groups. However, GD patients who exclusively bet online	Unequal sample size in subgroups; only	Online sports gamblers appeared to be a vulnerable group that need more attention. Future research should include stronger

	Moderate	patients; to examine the differences between adults with GD who exclusively make sports bets online, GD patients that are non-sports internet gamblers, and offline gamblers	Inventory, Socio-demographic and clinical data	appeared to possess distinct personality characteristics (e.g. persistence) and higher debt levels compared with offline gamblers	male patients; no control group	study designs with larger, and more balanced samples to verify these findings
Frahn et al. (2015) Australia	Randomised Controlled Trial; Level II; High	128 university students (aged 18-24) were randomised to one of four conditions: control (no practice), standard 90% return to player, inflated return to player and inflated return with pop-up messages; to examine the behavioural effects of practice modes in simulated slot machine gambling	Demographic and gambling experience, PGSI, bet size	The results showed that players exposed to inflated or 'profit' demonstration modes placed significantly higher bets in the real-play mode as compared to the other groups. However, the groups did not differ in relation to how long they persisted in the real-play mode. Also, pop-up messages had no significant effect on monetary gambling behaviour	The sample might not be representative of general young population, and of more experienced gamblers	Findings of this study highlighted the need for careful regulation and monitoring of internet gambling sites, and further research on the potential risks of simulated gambling activities for vulnerable segments of the gambling population
Gainsbury et al. (2015a) Australia	Comparative study without controls; Level III-3; Moderate	The study described the results of an analysis of 2,522,299 bets placed with an Australian online wagering operator over a 1-year period	Betting patterns for sports and races	The majority of bets placed were for a win (45.31%) and were placed on races (86.74%) or sports (11.29%). However, 77.63% of the bets were losses. Overall, wagering was deemed as an entertainment activity, and the majority of customers were motivated by factors other than simply winning money	Data from only one operator	Further research is required to specifically compare betting patterns and outcomes for wagering and gaming
Gainsbury et al. (2015b) Australia	Cross-sectional; Level IV; Moderate	This study compared problem with non-problem and at-risk Internet gamblers to understand further why some Internet gamblers experience gambling-related harms, using an online survey with a	Gambling behaviour scale, internet gambling questions, gambling attitudes, gambling knowledge and beliefs test, PGSI	Problem gambling respondents were younger, less educated, higher household debt, lost more money, gambled on a greater number of activities, and were more likely to use drugs than non-problem and at-risk gamblers. Problem gamblers also had more irrational beliefs about gambling. Internet problem gamblers in particular disclosed problems with sleeping and eating patterns	Self-reported outcomes, less female participants, incomplete PGSI, inclusive definition of 'internet gamblers'	Evidence-based RG strategies are required to tackle the problems with internet gambling. Also, future research should concentrate on a more involved sample of internet gamblers.

		sample of 2799 internet gamblers		due to electronic payment methods and constant availability		
Gainsbury et al. (2015c) Australia	Cross-sectional; Level IV; Moderate	15,006 adults completed measures assessing past 12-month gambling participation, via a telephone survey	Gambling activities, Interactive gambling and beliefs, PGSI, K6, consumption of alcohol/tobacco/drugs	64.3% reported of gambling at least once, with 8.1% having gambled online. Interactive gamblers gambled on a greater number of activities overall. This study concluded that the nature of gambling participation is shifting with more having interacting gambling, specially males and younger population	Only participants with landline phone were sampled for the survey, thus, there is a potential of recruiting interactive gamblers who used mobiles only	Future studies should address this limitation
Gainsbury et al. (2015d) Australia	Cross-sectional; Level IV; Moderate	4594 respondents took part in an online survey who identified themselves as Internet-only (IG), land-based only (LBG) or mixed-mode (MMG) gamblers	Interaction between gambling activities and modes of access	Results showed significant socio-demographic differences between groups, with the LBGs being older and MMGs the younger. MMGs engaged in the greatest variety of gambling, most likely to gamble frequently on sports and races. LBGs had a higher proportion of problem gamblers than IGs and more likely to play EGM weekly.	Participants were self-selected and data could not be weighted to be representative of the population. Also, the online survey might have excluded non-internet users.	There is further need to explore the interaction between forms and modes of gambling to understand the risk of PG. A non-internet sample and mode of survey is needed for future studies to include all sorts of users
Gainsbury et al. (2016) Australia	Cross-sectional; Level IV; Moderate	An online survey of 4724 used propensity score matching, to estimate the consequence of gambling offline, or online through a computer, as compared to mobile or other supplementary devices	General and internet gambling behaviour, PGSI, gambling attitudes	Online computer gamblers had lower gambling problems compared to those used mobile or supplementary devices. Age, marital and employment status were predictors of how people gambled online	Self-selected participants, self-reported outcomes	As supplementary devices continue to evolve, research should continue examining the relation between technological access points and gambling harms
Gainsbury et al. (2017) Australia	Cross-sectional; Level IV; Moderate	In this study, 501 adults took part in an online survey, to describe the	Gambling behaviour, offshore gambling, demographics	Esports bettors have a higher proportion of females, individuals with Asian ethnic background, young, and with higher household income compared to sports	Unequal sample size, Self-rated measures	Future research should try to understand the motivations for online gambling among different cohorts, to guide online gambling regulations. Besides, Esports is a relatively

		characteristics of online Esports gamblers as compared to those wagering on sports online		bettors. This is quite different from white males that are typically featured in betting advertisements. Esports bettors were also more frequent gamblers, used greater variety of devices, were more likely to use offshore sites, and likely early technology adopters.		new area of gambling, which needs more research
Gainsbury et al. (2018) Australia	Cross-sectional; Level IV; Moderate	3199 online gamblers took part in an online survey, to explore the extent to which they use offshore as compared to domestic gambling sites	Gambling behaviour, reasons for choosing sites, awareness of and impact of online gambling legislation, and PG	Results showed that only 25.8% of online gamblers used offshore sites, and they were more involved with gambling featuring greater PG severity	Self-selected participants, and thus might not be fully representative of all Australian online gamblers. Self-reported outcomes	Future studies should aim to understand the specific harms experienced in relation to the use of offshore gambling sites, including differentiating between various gambling activities. Research should also seek to understand the features and signals that consumers use to identify a gambling site as domestically licensed as compared to offshore, or other features used to indicate a 'safe' site
Giotakos et al. (2017) Greece	Cross-sectional; Level IV; Moderate	789 military personnel took part in a survey; the study examined their internet gambling in relation to internet addiction, substance use, online sexual engagement and suicidality	Socio-demographic data, internet gambling practices, online sexual engagement, internet addiction, suicidality and psychoactive substance use	Results showed that internet addiction significantly predicted engagement with online gambling, followed by substance use in general, and in particular, the use of cocaine or heroin	Self-reported assessment tools, self-constructed measure (online sexual engagement)	Web-based and telephone-based online gambling prevention programmes are needed to target Greek army personnel posted in remote border area.  Future studies can involve more sophisticated methods such as data mining, and co-examine latent gambling (dealing with the stock market) and their interaction with online and conventional gambling practices
Goldstein et al. (2016) Canada	Comparative study without controls; Level III-3; Moderate	108 young adult regular gamblers took part in a study that examined differences between young adult online and non-online gamblers	Information gathered at baseline and over 30 days during which participants reported on their moods, gambling behaviour, and reasons for initiating and discontinuing gambling	Males, baseline coping motives for gambling and negative affect emerged as significant correlates of online gambling. Online gamblers scored higher on a baseline measure of pathological gambling and spent more money over the 30 days. Non-online gamblers on the other side, consumed more alcohol while gambling. Online gambling was more often initiated for personal reasons whereas non-online gambling was often initiated for social reasons	The sample was predominantly comprised of men, university students, regular gamblers and those who never sought treatment. Also, use of measure that was not validated (reasons for discontinuing gambling)	The study gave preliminary evidence that coping strategies might be particularly important to reduce risks for online gamblers, whereas strategies for non-online gamblers should focus on the social aspects of gambling. Future research should use more representative sample and validated measures to confirm these findings

Gray et al. (2015) Iceland	Comparative study without controls; Level III-3; Moderate	Betting records of 398 internet gamblers was analyzed, to observe the trends within the Icelandic lottery and sports betting platform	Betting days, money wagered, numbers of bets, money lost	Researchers observed that a typical subscriber bet approximately 3 days per month and made fewer than two bets per gambling day, each worth approximately the equivalent of USD 4. Subscribers lost the bulk (96%) of the amount they wagered, for a total loss of approximately USD 40 across the 2-year window of observation	The evidence is limited to only one internet gambler operator	Further research should triangulate on a fuller description of problematic Internet gambling using a combination of betting records and self-report measures
Haefeli et al. (2015) Austria	Exploratory; - Low	A sample of 1008 emails from 150 self-excluders and 150 controls of an online gambling operator was reanalysed, to explore the possibility of an early identification of gambling related problems in online gambling by using automated text analysis software	LIWC tool (to derive quantitative markers from written player correspondence)	A combined model, relying on human rating as well as the scales Anger, Time and Causation, derived from automated text analysis, displayed improved validity and classification rate. The results are true for English and German languages	Reanalysis of Hafeli et al. (2011) data, self-exclusion would unlikely to identify all potential problem gamblers	Results indicated that automated text analysis could be deployed as an expert system to prioritize cases and to support human judgement. However, these findings need to be confirmed using more recent data and by comparing with other market data
Hing et al. (2015) Australia	Qualitative; M Level 2	Interviews with 25 male moderate risk and problem internet gamblers were conducted to explore the psychosocial factors and processes related to maintaining and losing control during internet gambling	Loss of control, control strategies used by internet gamblers, and the perceived utility of online RG measures	The most frequently identified aspects of internet gambling leading to impaired control were use of digital money, access to credit, lack of scrutiny and ready accessibility. Participants used arrange of self-limiting strategies with variable success and suggested that more comprehensive RG measures were required of internet gambling operators	No woman was recruited	Further research is needed to more accurately determine the effect of various features of internet gambling on PG, ideally using real player data from internet gambling operators. Equally, the efficacy of online RG measures in preventing and minimising gambling harm needs investigation
Hing et al. (2017) Australia	Cross-sectional; Level IV; Moderate	An online survey of 4594 gamblers was carried out, to identify the risk factors for gambling problems on online EGM, race betting and sports betting	Risk factors for gambling problems	Key risk factors for online EGM gambling were: more frequent play on online EGMs, substance use when gambling, and higher psychological distress. For both online sports and race betting: being male, younger, speaking a language other than English, more frequent betting and more negative attitude toward gambling were commonly identified risk factors. Additionally, identified factors were: a) higher psychological stress	Self-reported data. The analyses were unable to take into account multiple modes and forms of gambling	Tailored interventions can help high risk gamblers



				for online sports betting; and b) engagement with more gambling forms, self-reported semi-professional/professional and illicit drug use whilst gambling for online race betting		
Kairouz et al. (2018) Canada	Comparative study without controls; Level III-3; Moderate	Data was derived from two sources: general population survey of 2009 (N=11,888), & of 2012 (N=12,008); plus behavioural data from OPD for 4,591,298 (2009-10) and 2,909,562 (2013) unique real money poker identities; to examine gambling patterns before and after legalization of online gambling	Participation in gambling activities, Poker-specific questions, OPD-UHH behavioural data	The prevalence of internet gambling remained stable: 1.5% of the population gambled online in 2012 compared to 1.4% in 2009. Of those surveyed, 82.5% continued to gamble on unregulated sites in 2012 and data from OPD-UHH confirmed that 90% of all real money online poker players still bet on unregulated sites in 2013	OPD-UHH data are limited in terms of market coverage as it does not comprise all available online poker websites	The study suggested that government stakeholders should consider alternative approaches for managing online gambling offerings. Also, further longitudinal analyses are needed to disentangle the effects of legalisation of online gambling
Khazaal et al. (2017) Switzerland	Cross-sectional; Level IV; Moderate	372 online French or English gamblers took part in an online survey, to characterize online gamblers based on social variables	Social variables, GMQ, GRCS, IAT, PGSI, SDHS, UPPS-P Impulsive Behaviour Scale	Three clusters were found based on social and psychological measures: lonely indebted (C1: 6.5%), not lonely not indebted (C2: 75.4%), and not lonely indebted gamblers (C3:18%). Participants of C1 were particularly at higher risk of PG. The three groups differed on most assessed outcomes except for sensation seeking sub-score	Self-selected sample, one-item question dichotomous assessments of loneliness and indebtedness	Specific intervention strategies could be implemented for groups at risk. Further studies on the social aspects of online gambling and in-game social interactions are needed
Montes & Weatherly (2017)	Comparative study with controls; Level III-2; Moderate	Online (N=19) and non-online (N=26) student gamblers; to examine their differences in the gambling behaviour in a controlled, laboratory environment	Number of hands played, errors committed, credits wagered	Results showed that online gamblers engaged in potentially more deleterious gambling behaviour than non-online gamblers	Small sample, unlikely representation of community online gamblers	Research is needed to examine differences in the gambling behaviour online and non-online gamblers, in a controlled, laboratory environment
Mulkeen et al. (2017) UK	Cross-sectional; Level IV; Moderate	617 internet players' responses were collected through online survey, to determine their	PGSI	Most significant factors perceived by players were escape and relaxation; financial motivation; social and competition. In terms of player views in relation to RG practices and behavioural factors both self-exclusion and self-help; and game design are identified	Self-selected sample	The study recommended that there was a need for a more transparent system that placed emphasis on tangible or auditable means of demonstrating ethical responsibilities, and to determine areas of improvement

		motives for gambling online		as the key factors. Other factors such as proactive RG; transparent terms and conditions; and use of player information were not acknowledged as significant factors by players. Financial motive to gamble were divided into the following sub-motives: 'to win money' and to 'earn income'		
Papineau et al. (2018) Canada	Cross-sectional; Level IV; Moderate	810 regular gamblers were recruited from an online panel; to assess the differential impacts of online, mixed, and offline gambling	Gambling behaviour, gambling impacts, socio-demographics	Online gambling resulted in an extra burden of impacts in several aspects of lives: work, relationship, mental/physical health, finances etc. Results also showed that combined with offline gambling, online gambling significantly increased the burden of impacts in terms of both the number and intensity of impacts	Convenient sample, self-reported data	More detailed analyses of gambling behaviours (frequency or intensity, expenditures, types of gambling, visiting state-run or not-state-run sites, and impacts reported) were not conducted and should be the subject of further work. Multi-treatment analyses for each type of gambling would be also relevant
Petry & Gonzalez-Ibanez (2015) USA	Randomised Controlled Trial; Level II; High	Internet (N=57) and non-internet college student problem gamblers (N=60) were compared, to evaluate a brief intervention to reduce gambling	SOGS, NODS, ASI-G	Recent internet gamblers demonstrated similar reductions in gambling over time and in response to the brief interventions as non-internet gamblers	Brief intervention with short-term follow-up	PG awareness campaigns, assessing for gambling problems in students and integrating prevention and brief treatment interventions may reduce the internet gambling-related harms among college students. However, studies incorporating long-term follow-ups are needed to examine the sustainability of such brief interventions
Redondo (2015) Spain	Secondary analysis; - -	Data was sourced from 2010 AIMC survey (N=10,409 individuals aged 14 and over), to assess the risks associated with online lottery and casino gambling	Socio-demographics, psychographic variables (e.g. sociability, impulsiveness, level of trust in internet)	The study revealed that online lottery/casino players, compared to their offline counterparts, had more psychographic risk factors such as a higher level of trust in the internet, which could increase susceptibility to unscrupulous manipulation	4 multi-item variables did not reach 'internal consistency' (e.g. ethical orientation, level of trust in the internet)	Future interventions should be target-specific. More research is needed exploring variables such as tendency towards escapism, attitude to risk, capacity for self-control
Remond & Romo (2018) France	Cross-sectional; Level IV; Moderate	432 adults took part in a survey; to investigate the intricacies between the player interface proposed by the screens (in particular on smartphone applications or in video games) and gambling	Canadian PGI, GRCS, QPI, PIU Questionnaire, SAS, Video Game Addiction Test	Findings suggested immersion variables made it possible to understand the cognitive participation of individuals towards screens in general, the practice of gambling on screens and the excessive practice of screens	The research was constructed from self-assessment, dealing with general behavioural behaviour with respect to screens and the internet and not	Future studies should incorporate neuropsychological measurements and longitudinal analysis to allow a more precise glimpse of the cognitive processes related to immersion variables

					only on immersion experienced during a main task	
Sigerson et al. (2017) USA	Cross-sectional; Level IV; Moderate	A survey was conducted including 1001 adults, to investigate the relationships of information technology addictions with other behavioural addictions	Young's Diagnostic Questionnaire, The Smartphone Addiction Scale-Short Version, The Bergen Facebook Addiction Scale, Short-Form Internet Gaming Disorder Scale, PGSI, AUDIT	The spectrum approach conceptualised information technology addiction as a cluster of disorders comprising not only shared risk factors and symptoms but also distinct characteristics. The findings further revealed that information technology is more similar to other behavioural addictions than substance-related addictions	Not all kinds of information technology, behavioural and substance addictions have been studied. Self-reported measures	Future research should study information technology addictions and other behavioural addictions together, and explore the commonalities and differences among them
Stead et al. (2016) UK	Qualitative; M Level 3	Examination of 10 online bingo websites and data of 12 female bingo players, to investigate the appeal of online bingo	Motivations to play bingo	Comparison of the website content with participants' reasons to play bingo showed congruence between the strategies used by the bingo websites and the motivations of bingo players themselves and the benefits which they seek; suggesting that bingo websites strive to replicate and update the sociability of traditional bingo halls	Only female participants	Future research is required to understand how the online bingo industry is regulated, as well as the effects of online bingo on individual gambling 'careers'
Talberg (2017) Norway	Qualitative; M Level 3	4 'current or former professional' and 8 'amateur' young poker players (aged 20-30), and 3 "old-timers" (aged 36-50) were interviewed about changes in online poker and problems with combining poker and education	Attitude towards online poker, and education	Participants revealed that prioritizing between poker and education could be understood in terms of a weight balance (income from poker). Since the current poker population are more skilful, the games have become less profitable even for the best players and thus, reduce a student's inclination to drop out of education	Only male participants	More research on poker players' learning processes and on variety of learning methods are needed, to better understand how a dedication to playing poker affects students' lives
Teichert et al. (2017) German	Cross-sectional; Level IV; Moderate	A survey of 1000 individuals, to gather an understanding about the multifaceted market space of	Comparison between 16 online gaming and 9 gambling products	The study provided evidence for enduring market boundaries between online gambling and gaming products, but indicated several fine-grained similarities on the level of specific products. Products encountering	Subjective measures	Further research could include more in-depth qualitative components to verify this study's findings. Additional research is also needed with adolescents and young adults as these populations are likely to engage in

		online gambling and gaming from a consumer perspective		elements of skill, planning, consideration and achievements over time were perceived differently from those that were more playful and less realistic with immediate outcomes. Consumers saw connections between games and gambling products, which might explain the joint usage of and migration between products		online activities and may be at specific risk of developing gambling problems
Wijesingha et al. (2017) Canada	Secondary analysis; - -	Data was sourced from 2012-13 YGS (n=10,035 students in grades 9-12), to examine factors associated with online gambling for adolescents and compare this to land-based gamblers to examine whether the profile of online gamblers were unique	Current gambling, gambling mode, free gambling games online, socio-demographics GPSS	Adolescents being males, with any PG severity (low to high) and who played free games, were significantly more likely to gamble online than those who did not have a gambling problem	Self-rated measures	Future research should monitor the impact of recent online gambling legalization on adolescents. Harm reduction approaches should be in place to prevent the negative impacts of online gambling on minors
Yuan (2015) China	Comparative study without controls; Level III-3; Moderate	Data was compiled from multiple sources to create a unique Chinese peer to peer (P2P) online lottery gambling data set (n = 388,123), to examine the rationality of Chinese online lottery gamblers (proposers /followers)	Total cost, number of shares, winning money, price, return rates, commission, number of draws, proposers and observations	Results found that Chinese online P2P lottery gamblers were significantly more likely to join a lottery package if it was proposed by proposers with higher return rates, suggesting that this population showed 'irrational' lottery gambling behaviour	Preliminary findings, needs more research to support them	Future research should examine the reasons behind online lottery gamblers' 'irrational' behaviour, and its monetary consequence
Zhang et al. (2018) Singapore	Cross-sectional; Level IV; Moderate	100 treatment-seeking patients took part in a survey, to explore the harm associated with online gambling	Socio-demographics, mode of gambling, debt, loss, wait-time before seeking treatment	The majority of the participants were male, aged under 30 (48%), and of Chinese ethnicity. The median largest ever debt and loss incurred as a result of online gambling was significantly larger than that due to offline. 18.4% participants waited between 1 to 2 years from their first online gambling experience to seek treatment and 17.3% waited for more than 10 years	No validated questionnaires were used to determine the characteristics of the online gambling problems and related harms	Cohort studies are needed to determine longitudinal progression and outcomes

<i>Simulated gambling games (e.g. social casinos)</i>						
Abarbanel & Rahman (2015) USA	Cross-sectional; Level IV; Moderate	339 online real money gamblers' data was collected through a survey, to examine the relationship between player demographics and gambling preferences and frequency of online casino participation	Gambling behaviour, gambling frequency, time and money spent gambling, demographics	Female real money gamblers, and those who did not complete high school, participated in social casino games with significantly higher frequency. Also, players who participated frequently in social casino games were likely to spend more time in real money online gambling	Independent tests	Future research should investigate a dataset of social casino players and look at their real money gambling behaviour
Dussault et al. (2017) Canada	Case series with pre-post-test; Level IV; Moderate	1220 adolescents (aged 14-18) who never played with real money took part in a survey and were re-contacted after a year; to assess the potential transition from playing with simulated gambling games to gambling with real money	Assessment of participation in simulated versions of online gambling, gambling with real money, impulsivity, frequency of alcohol and cannabis use	At follow-up, 28.8% of the participants had gambled for the first time with real money. Results also revealed that the predictive association between simulated gambling and gambling with real money only held for adolescents who transitioned from simulated poker to poker with real money	Convenient sample, relatively short time frame between predictors and outcomes	The findings highlighted the need for regulation and monitoring on internet gambling poker sites, and further research to assess the mechanisms at work to understand the impact of simulated gambling. Measure of simulated gambling can be more refined by taking into account the type of environment involved (e.g. practice/demo games provided by gambling industries)
Gainsbury et al. (2015e) Australia	Cross-sectional; Level IV; Moderate	3178 internet gamblers took part in an online survey, to examine differences between single or multiple account holders	Gambling behaviours, factors influencing online gambling, risk of experiencing PG	Results revealed that multiple account holders were more involved gamblers, gambling on more activities and more frequently, and had higher rates of gambling problems. Also, this group selected gambling sites based on price, betting options, payout rates and game experience whereas single account holders prioritized legality and consumer protection features	The current study does not allow inferences about the causal nature of relationships between variables	As the majority of internet gamblers use multiple accounts, more universal RG strategies are needed to assist gamblers to track and control their expenditure to reduce risks of harm. Future research should also explore how internet gamblers use multiple sites and their motivations for doing so
Hayer et al. (2018) German	Case series with pre-post-test; Level IV; Moderate	1178 school pupils took part in a longitudinal survey, to examine if simulated gambling activities predicted gambling with real money during adolescents	Monetary gambling, simulated gambling activities	12% of the adolescents belonged to the subgroup of 'onset gamblers' and first reported experience with monetary gambling at the second stage of surveying. Logistic regression analysis demonstrated that this migration process was fostered by 1) participation from home in simulated gambling on social networks, and 2) significant exposure to advertising	Self-reported measures, the 'in-house' measures were not validated/evaluated	There is a need to develop informative and explanatory materials aimed at involved adults (parents, teachers), to promote RG in schools

Hollingshead et al. (2016) Canada	Cross-sectional; Level IV; Moderate	140 disordered gamblers were surveyed, to test the idea that motivation to play social casino games would predict changes in self-reported gambling behaviour among disordered gamblers	PGSI, Gambling Motives Questionnaire, skill building, gambling urge reduction, gambling behaviours	Results showed that disordered gamblers who were motivated to play social casino games for the social connection it provided or for skill building, reported an increase in their gambling. Conversely, playing in order to cope with negative life events or for excitement was not predictive of gambling. However, gamblers who reported playing social casino games to reduce cravings to gamble reported an overall decrease in gambling	Subjective measures. Also, own questionnaires used (for gambling urge reduction, skill building), which might need further validation	There might be a potential that social casino games are not solely bad for all disordered gamblers, but need further research to examine this notion. A more objective measure of changes in the amount of time and money spent gambling subsequent to playing social casino games would provide a more accurate representation of how social casino gaming influences gambling
Kim et al. (2016) Canada	Qualitative; M Level 3	Three focus groups (N=30) were conducted with university students, to explore the potential link between social casino games and online gambling	Link between social media, social casino games and online gambling	While many young adults felt immune to effects of social casino games, there was a general consensus that social casino games might facilitate the transition to online gambling among younger teenagers (aged 12-14), due to the ease of accessibility and early exposure	Sample was restricted to young adults (university students)	More studies are needed to further examine the link between social casino games and online gambling in order to mitigate the harms social casino games might have on the development of future gambling behaviours
Kim et al. (2016) Canada	Case series with pre-post-test; Level IV; Moderate	409 social casino gamers who never gambled online, took part in a survey and were re-contacted after 6 months; to examine the extent to which social casino gamers migrate to online gambling and to identify the potential predictors of such migration	Baseline measures on social casino games: Time spent, reasons for playing (skill building, enjoyment, competition), credits/tokens paid. Follow-up measure: If ever gambled online for money	At follow-up, approximately 26% of social casino gamers reported having migrated to online gambling. Importantly, engagement in micro-transactions was the only unique predictor of migration from social casino gaming to online gambling	High dropout rate at 6-month follow-up, there likely to be other important predictors that were not assessed	Gambling industry has taken full advantage of today's wired world by offering multiple ways of internet gambling and promoting them through social medias (e.g. Facebook). Therefore, more research is needed in this important area of inquiry to minimize the potential harms of social casino gaming
<i>Electronic/mechanical automation of traditional gambling games</i>						
Armstrong et al. (2016) Australia	Qualitative; M Level 3	The study conducted an Australian national environmental scan of electronically and mechanically enhanced table-game and community-game	VICES: Visual/audio enhancements, illusion of control, cognitive complexity, expedited play,	The findings suggested that automation provided the potentials for provision of products that intensify gambling engagement with the attendant potential for gambling-related harm	The study was based on observation, and thus had limited opportunity to explore the	Future research should focus on which features of automated products are most appealing to gamblers, and how they alter relative popularity and safety of different forms of gambling

		products to identify the characteristics of these automated products Australia-wide	social customisation		dynamics of the product	
Goodwin et al. (2017) Australia	Qualitative; M Level 3	Six focus groups with regular bingo, poker and casino table game players and sport bettors (N=40) were conducted, to explore player experiences with both traditional and innovated gambling products	VICES: Visual/audio enhancements, illusion of control, cognitive complexity, expedited play, social customisation	Findings suggested that traditional games were perceived as more social, more enjoyable and less harmful. This was largely attributed to the low social interaction, expedited play and increased potential for consumption that is associated with EGM-type gambling activity	In the sports betting focus group, more than half of the group were female, with majority of the participants being traditional sports bettors	This study strengthened the validity of using VICES framework, but suggested some revisions.  Also, further quantitative research is suggested to validate these findings in a broader and more representative sample
<i>Multi-county lotteries</i>						
Baker et al. (2016) Austria, Belgium, France, Ireland, Luxembourg, Portugal, Spain, Switzerland, UK	Comparative study without controls; Level III-3; Moderate	The study examined more than 8 years of Euromillions sales data for individual states, to assess whether a jackpot win in a country increases subsequent sales in that country	'Compatriot win effect' with only one assumption that the lottery draw is random	Results suggested elevated sales over 12 draws following a national win. When the effect size was modelled: it proved to be modest in size for average jackpot wins but much larger and longer lasting for the highest pay-outs	What the findings say about rationality of players is less clear	The results could also be further explored in the context of choice of game design
<i>Loyalty programs</i>						
Baloglu et al. (2017) USA	Cross-sectional; Level IV; Moderate	262 casino clients (mostly lower-class African American and Hispanic local residents) took part in a survey; to develop and test a model of loyalty	loyalty program benefits (as positive barriers) and switching costs (as negative barriers) on emotional commitment and loyalty behaviours	The findings showed that trust, perceived switching cost, and emotional commitment to the casino are more likely to influence relational or emotional outcomes such as word of mouth and voluntary partnership whereas the loyalty program is more likely to influence transactional outcomes such as repeat visitation and time spent in the casino. The emotional commitment served as a partial mediator in the model	The findings are limited to unidirectional influences among the variables in the model	Future research can investigate the moderating effect of loyalty program membership on the relationship between switching costs/trust and customer loyalty
Quigno & Zhang (2016) USA	Comparative study with controls; Level III-2;	164 participants took part in a quasi-experimental study that examined the	2 (Tiers: two vs four) X 2 (Gender: male vs female)	The results indicated that male customers exhibited more positive attitudes and higher level of intention to join a program that has four tiers (vs two tiers). Conversely, female	This study was aimed at gambling promotion/to	The findings can be used to prevent gambling promotion at casinos

	Moderate	combined effect of number of tiers and gender on customers' attitudes and intention to join a loyalty rewards program		customers' attitudes and joining intentions were stronger when facing a loyalty rewards program containing two tiers (vs. four tiers). The underlying psychological mechanism was individuals' need for status (NFS)	identify marketing strategy	
Yoo & Singh (2016) USA	Secondary analysis; - -	450 members' data was obtained from an upscale Las Vegas casino hotel (2011); to examine the effectiveness of a loyalty program on members' behavioural usage level from different tiering strategies	Purchase frequency and transaction size	Study results did not support the research hypothesis that card tiers have a significant effect on behavioural loyalty, indicating that purchase behaviour factors are not significantly related to card tiers	This study was aimed at gambling promotion/to identify marketing strategy	The findings can be used to prevent gambling promotion at casinos
Prentice & Wong (2015) China	Cross-sectional; Level IV; Moderate	321 casino players took part in the first survey, to identify customer acquisition and retention strategies in casinos. 300 casino players took part in the second survey, to examine the mediating role of gambling behaviours in the relationship between casino marketing/loyalty strategies (derived from survey 1) and problem gambling	Length of stay, gambling frequency, gambling budget, average bet size	Results from testing the hypotheses in the second survey confirmed some proposed relationships and failed to support others. There was a significant effect of 'Fengshui' on PG. Loyalty program had direct and indirect effects on gambling	The strategies included in this study were rather limited	From RG perspective, the employees should avoid approaching those who gamble in large volume and play for long hours in the casino, as these behaviours lead to PG
<i>Instant lotteries</i>						
Brochado et al. (2018)	Cross-sectional; Level IV; Moderate	Data were collected from 748 voluntary respondents while gambling in store, to determine the main attributes of the	Gamblers' motivations, demographics and socioeconomic profiles, gambling activities	Results revealed that instant lotteries were popular among younger individuals, females, those with lower income and educational groups with self-esteem motivations. National lottery gamblers were older and driven by safety motivations. The	Since the data were collected in retail stores, the respondents could be both occasional or	Different types of lotteries appealed to heterogeneous demographics and motivations. Therefore, future research should study gambling motivations in different groups regarding different lottery products



		frequency of participation by gamblers in different types of lotteries (i.e., traditional vs. instant)		Euromilhoes game attracted males with financial motivations	regular gamblers	
<i>Sports wagering advertising</i>						
Deans et al. (2016) Australia	Mixed-methods; M Level 2	Interpretive content analysis of 85 sports wagering advertisements from 11 Australian and multinational wagering companies	Sports wagering advertisements	Ten major appeal strategies emerged targeting mostly young males; symbols relating to sports fan rituals and behaviours, and mateship were the most common strategies used within advertisements.	Due to the nature of the study design, the findings are not generalizable	Future research should try to better understand the impact of marketing on the normalisation of sports wagering on young males, and explore ways to prevent related gambling harm
Hing et al. (2017) Australia	Cross-sectional; Level IV; Moderate	The study examined whether responses to for online sports betting during televised sports broadcasts varied with problem gambling severity amongst 455 internet sports bettors participating in an online survey	PGSI, The Sponsorship Response Scale, Attitude to the promotions, and their impact on gambling behaviour	Results indicated that young male internet sports bettors were more vulnerable to these promotions, particularly if they held positive attitudes towards the sponsors	Non-representative sample, restricted to one jurisdiction, self-reported measures	Further prospective studies should aim to untangle causal relationships between exposure to promotions, related attitudes and problem gambling
Lopez-Gonzalez et al. (2018) UK & Spain	Mixed-methods; M Level 2	The study examined a sample of British and Spanish sports betting television adverts (N=135) from 2014 to 2016; to understand how bettors and betting were being represented	Content of sports betting advertising categorised into 7 themes: identification, characters and situations, sports fan identification, risky behaviours, online betting, wager placement, other variables	Results showed a male-dominant betting representation with no interaction between women. Typically, bettors were depicted surrounded by people but isolated in their betting, emphasising the individual consumption practice that mobile betting promotes. A little empirical evidence indicated that betting while watching sport in betting adverts is associated with emotionally charged situations such as celebrations and/or alcohol drinking. Bettors were typically depicted staking small amounts of money with large potential returns, implying high risk bets.	British adverts were overrepresented . The extraction method via Youtube time stamps might underrepresent those made in 2014-15. The study also did not explore bookmakers	Overall, the study provided preliminary evidence in understanding the social representation of betting behaviour by bookmakers and critiques the problematic consequences of such representation from a public health perspective
Lopez-Gonzalez et al. (2018)	Mixed-methods; M Level 2	The study examined a sample of British and Spanish soccer	Low Nutritional Value Food (LNVF) eating,	The results suggested that betting advertising aligned drinking alcohol with sports culture and significantly associated	The results are only preliminary	Media and advertising regulators (as well as policymakers more generally) should be cognizant and react to the symbolic linkage

UK & Spain		betting television adverts (N=135) from 2014 to 2016; examined the representation of alcohol drinking and low nutritional value food eating in sports betting advertising	alcohol drinking, gambling behaviour	emotionally charged sporting situations such as watching live games or celebrating goals with alcohol. Additionally, alcohol drinking is more frequent in betting adverts with a higher number of characters, linking friendship bonding and alcohol drinking (especially beer) in the context of sports gambling		of independent risky behaviours, particularly in contexts of enhanced emotions and impulses, such as popular sports, and considering the appeal of such content to children
Lopez-Gonzalez et al. (2018)  UK	Qualitative; M Level 3	Grounded theory study of a British sample of sports betting advertisements (N = 102) from 2014 to 2016	Content of sports betting advertising	The analysis revealed that individual themes aligned in a single core narrative, constructing a dual persuasive strategy of sports betting advertising: i) to reduce the perceived risk involved in betting while ii) enhancing the perceived control of bettors	Data might not be representative of the larger evolution of sports betting advertising over a longer time period	The study concluded that the construction of a magnified idea of control in sports betting advertising is a cause for concern that required close regulatory scrutiny
Newall (2017)  UK	Comparative study with controls; Level III-2; Moderate	1467 soccer fans took part across five experiments (designed based on content analysis of advertisements), to examine the behavioural complexity of British gambling advertising	Behavioural complexity of British gambling advertising	A content analysis of high-impact televised soccer adverts showed that most advertised gambles were for complex events. Soccer fans rarely formed rational probability judgments for the complex events dominating gambling advertising, but were much better at estimating simple events. British gambling advertising is concentrated on the complex products that mislead consumers the most	Participants in experiments 1-4 were recruited from online crowdsourcing websites whereas for experiment 5, they were recruited from social media	Only educated, informed consumers, who fully understand the relevant risks of different gambling products, can gamble responsibly
Hanss et al. (2015)  Norway	Cross-sectional; Level IV; Moderate	6,034 gamblers took part in a survey, to investigate the impact of gambling advertising on gambling involvement, knowledge and awareness	EGAQ, PGSI, exposure to gambling advertising, demographics	Overall, impacts were strongest for the knowledge dimension, and for all 3 dimensions, the impact increased with level of advertising exposure. Problem gamblers (N=57) reported advertising impacts concerning involvement more than recreational gamblers, and this finding was not attributable to differences in advertising exposure. Additionally, younger and male gamblers reported stronger impacts on both gambling involvement and knowledge	Self-report measures, possibility of social desirability and recall biases	Future research can measure and compare the impact of different gambling advertising media (e.g. TV, radio, internet), contexts (e.g. point-of-sale, sports sponsorship, gambling portrayal in films), content (e.g. humour, sexuality, glamour) and design elements (e.g. use of colour, symbols of wealth, sounds of paid-out coins)
<i>Wagering inducements</i>						

Hing et al. (2018) Australia	Cross-sectional; Level IV; Moderate	1,813 sports bettors took part in an online survey, to examine whether the uptake of wagering inducements predicted impulse betting on sport	Proportion of planned bets, impulse bets before match commencement and during play, frequency of using wagering inducements	More frequent users of wagering inducements had a greater tendency to place impulse in-play bets, which were also predicted by problem gambling, higher buying impulsiveness, higher frequency of watching sports, younger age and higher education status. Sport bettors with a greater tendency to place impulse bets before match commencement also tended to have higher buying impulsiveness and younger, but used inducement less frequently and tended to be females, less-educated and non-problem, moderate risk or problem gamblers	Convenience sample that overrepresented problem gamblers. Absolute values such as frequencies should be interpreted with caution. Also, self-reported measures	Additional research employing different methodologies are required to identify casual effects between variables, and to clarify the direction of associations found in this study
Hing et al. (2017) Australia	Exploratory; - Low	Scan of all inducements offered on the websites of 30 major race and sports betting brands	Structural features of sports and race betting inducements	223 separate inducements were located that were categorised into 15 generic types, all offering financial incentives to purchase. These comprised: sign-up offers, refer-a-friend offers, matching stakes/deposits, winnings paid for 'close calls', bonus or better odds etc. Only few contained RG message; play through conditions of bonus bets were particularly difficult to interpret and failed basic requirements for informed choice	Desk-research conducted over a short period	Empirical research is urgently needed to determine the actual influence of different type of inducements on betting attitudes and intentions, on the commencement, continuation and intensification of betting, on different aspects of PG and on consumer protection
<i>Fantasy football (sub-set of online gambling)</i>						
Dwyer et al. (2018) USA	Cross-sectional; Level IV; Moderate	546 DFS participants were surveyed online, to examine problem gambling severity in conjunction with motives, perceptions, and consumption behaviour	Demographics, motives, perceptions of the activity, participatory behavior, PGSI, MSSFP	Results suggested that DFS participants behave similarly with participants in other forms of gambling activities. In addition, the findings suggested that additional consumer protections might be needed to prevent further problem behavior such as chasing	Self-reported measures	Additional consumer protections might be needed to prevent further problem behaviour such as chasing.  Future research should aim DFS participants' direct comparison with PG behaviour, and explore them in other sports as well
Dwyer & Weiner (2018) USA	Cross-sectional; Level IV; Moderate	The study surveyed 535 DFS and TFS football participants; in order to understand differences and similarities in the causality orientations of participation (skill or chance), and	Autonomy (skill), controlled, impersonal (chance), anxiety, enjoyment, fantasy sport-related consumption	The results suggested the differences between the activities are not extreme. However, differences were found in which causality orientations influenced enjoyment and which emotion mediated the relationship between perceived skill and consumption	Additional attitudes and emotions might be at play, which were not explored	Future research can explore: the potential PG behaviour among DFS participants, the impact of DFS participation on favourite NFL team fandom, an investigation into factors influencing the escape motives in DFS-only participants and effects on the lack of a communication platform for DFS competitors

		tested enjoyment and anxiety for mediating effects on causality orientations and consumption behaviour				
Marchica & Derevensky (2016) USA	Comparative study without controls; Level III-3; Moderate	Using data from 2004, 2008 and 2012 NCAA studies, this study explored the prevalence and growth in fantasy sports among student-athletes	GAQ, DSM-IV-TR	Overall, a steady increase in fantasy sports participation (for money or fun) in college was found looking at these three studies. Additionally, approximately half of college student-athletes who qualified as at risk or having gambling problems were found to have participated in fantasy sports wagering	Self-reported data; university students and thus, might not be proper representation of community participants	There needs to be increased refinement of educational programs on gambling with special attention paid to newer and electronic/internet methods of gambling
Martin et al. (2016) USA	Cross-sectional; Level IV; Moderate	The study examined gambling behaviour among 692 college students (D1 & CIR athletes vs non-athletes)	Past-year gambling, gambling-related problems, and fantasy sport gambling	Compared to females, males observed higher rates of past year gambling, fantasy sports participation, fantasy sports gambling, and gambling-related problems. Among males, we found that CIR athletes observed the highest rates of past-year gambling and fantasy sports participation; D1 athletes observed higher rates than NAs	Convenience sample from a private religious university	Gambling education need to be incorporated into other health education programs (e.g. drug, sex, alcohol) and during new student orientation
Nower et al. (2018) USA	Secondary analysis; - -	Data was sourced from a state-wide prevalence survey (N=2146), to investigate gambling, addiction and mental health problems among DFS players	frequency, and preferences of gambling behaviour, PGSI, comorbid conditions	Overall, a higher number of gambling activities, high frequency gambling, male gender and reports of suicidal thoughts in the past year were most predictive of DFS players. Being Hispanic and/or single also doubled the odds of DFS play	Small sample size	Future research should examine the motivations and possible ecological sub-types of DFS players and the nature and course of DFS play, particularly in relation to gambling behaviour and the development of gambling and other problems
<i>Link between video gaming and gambling</i>						
Forrest et al. (2016) Australia	Cross-sectional; Level IV; Moderate	485 video game players (aged 16-68) took part in an online survey, to examine concurrent video gaming and gambling habits	Gambling habits, GAS	Gambling involvement was found to be a generally unpopular activity among regular video game players. No significant association was found between frequency of video game play and frequency of gambling	Self-selection, self-measure outcomes. Also, the correlational nature of the study meant that causation could not be inferred	Future research should examine the impact of gambling promotion exposures on video game players, and how they avoid gambling engagement etc.
Macey & Hamari (2018)	Cross-sectional; Level IV;	Data was collected from 613 video game players, to investigate	GAS, PGSI	Video game addiction was found to be negatively associated with offline gambling, online gambling and problem gambling. Also,	Self-selected samples, lack of diversity in the	This study concluded that video games do not act as developmental pathways to gambling; rather it questions the claims

Finland	Moderate	relationships between a range of gambling activities and the consumption of video games in general, and the newly emergent phenomenon of Esports in particular		video game consumption had only small, positive association with video game-related gambling and problem gambling. Consumption of Esports had small to moderate association with video game-related gambling, online and problem gambling	sample with only 6.2% being females	that problem gaming and problem gambling are fundamentally connected
Molde et al. (2018) Norway	Case series with pre-post-test; Level IV; Moderate	4601 participants (aged 16-74) took part in a longitudinal study, to examine if video games were a gateway to gambling	GAS for adolescents, Canadian PGSI	There was a positive relationship between scores on problematic gaming and later scores on problematic gambling, whereas there was no evidence of the reverse relationship	self-reported measures, GAS for adolescents was also used in the older sample	Future research should continue monitoring the possible reciprocal behavioural influences between gambling and video gaming
Sanders & Williams (2018) Canada	Cross-sectional; Level IV; Moderate	3942 adults took part in an online survey, to examine the relationship between video gaming, gambling and their problematic levels	PPGM, BAM-VG, DSM-V, UPPS-P	Most past year video gamers reported gambling (78.5%) and most past year gamblers reported playing video games in the past year (70.7%). Both problem gamers and gamblers had similar demographics, high rates of mental health problems, and impulsivity. Although the risk factors and manifestation of problem gaming and problem gambling were similar, involvement and/or over-involvement in one was not a strong predictor of involvement and/or over-involvement in the other	The average age of the sample was quite old at 43.6 years. Also, the research question could not be adequately answered due to the cross-sectional design	Further research is needed to understand whether video gaming serves as an entry point or 'getaway' to gambling
<i>Social media advertising</i>						
Abarbanel et al. (2017) Australia	Qualitative; M Level 3	115 unique social casino gaming advertisements were analysed	Social casino gaming advertisements	The advertisements were targeted towards young adults. The content focused on glamorization of gambling, winning, normalization, play for free etc. Notably, 90% of the advertisements did not contain RG language	Content analysis was dependent on images collected over one session; did not explore how they were received by young adults; small sample	Gaming companies need to embrace corporate social responsibilities by showing warning messages on advertisements and ensuring that marketing do not encourage excessive gambling
Gainsbury, King et al. (2015)	Qualitative; M Level 3	19 individuals working in the Australian gambling industry were interviewed	Social media marketing	All were active on social media. The platforms were used to maintain customer base and attract new customers, Gambling-related content was usually balanced against	Invitations sent directly to individuals known to the	There is a need for ongoing monitoring of the effect of social media advertising

				non-gambling content. Few operators provided specific responsible gambling messages.	research team were all accepted. Therefore, the sample is not representative of all gambling operators within Australia	
Gainsbury et al. (2016) Australia	Exploratory; - Low	101 gambling operators' data was examined, to investigate how social media is used to promote gambling activities	Websites and social media profiles of gambling operators	Results showed that Facebook and Twitter were the dominant platforms used, most commonly by casinos and online wagering operators. A key finding was that online gambling operators included gambling content with both related news and unrelated content, as way of normalizing gambling within a broader social context. Also, most operators did not incorporate RG messages	Preliminary findings, requires survey to confirm these findings	Further research could investigate consumer engagement with gambling operators on social media, how it impacted consumers' gambling behaviour
Gainsbury et al. (2016) Australia	Cross-sectional; Level IV; Moderate	964 gamblers completed an online survey; to investigate the impact of social media gambling marketing on moderate-risk and problem gamblers	Demographics, gambling behaviour, time spent on social media, exposure to and engagement with gambling operators on social media and their impact on gambling behaviour, PGSI	Moderate-risk and problem gamblers were more likely to be impacted by social media promotions, and these might play a role in exacerbating disordered gambling	Self-reported data	Future research should verify these self-reported findings with behavioural data. However, policymakers should focus on the potential negative impact of social media gambling marketing on behavioural addiction anyway
<i>Sports betting</i>						
Gassmann et al. (2017) German	Cross-sectional; Level IV; Moderate	The study used an online survey to collect data on who bets on sports (N=634), to reexamine the socioeconomic profile of German sports bettors	Age, gender, income, interests in sports and probability of betting	Results showed that the typical sports-bettor is 32 years old and male, had a low household income, was highly interested in sports, and was willing to take risks	Non-representative sample with younger, better educated population who had lower income than national average	More empirical studies are needed on sports bettors, identifying their characteristics, gambling patterns etc.

Hing et al. (2017) Australia	Cross-sectional; Level IV; Moderate	4,594 gamblers took part in an online survey, to identify demographic, behavioural and normative risk factors for PG amongst online EGM players, race bettors and sports bettors	PGSI, K6, Gambling behaviour	Key risk factors for EGM players: frequent play on EGM, substance use when gambling, higher K6 Sports bettors: Being male, younger, lower income, migrants, higher K6 and more negative attitudes towards gambling Race bettors: Being male, younger, migrants, more PG behaviours	Self-report measures, unequal sample size for the sub-groups	Future studies with stronger study designs should examine the casual direction between PG and risk factors
Li et al. (2015) China	Cross-sectional; Level IV; Moderate	4980 adults were surveyed, for classifying and profiling sports lottery gamblers	SAPG	5 distinctive clusters of sports gamblers were identified: casual, escalated, at-risk, compulsive and problem players. They all differed in both terms of demographic and behavioural characteristics	The results might not be generalizable to all Chinese cities	More research is needed on this topic to confirm these findings
Lin & Lu (2015) Taiwan	Cross-sectional; Level IV; Moderate	1032 on-site bettors took part in a survey, to elucidate the association of sports lottery bettors' socio-demographics, personality traits, risk tolerance and behavioral biases	NEO-FFI, measures of risk tolerance and herding behaviours, betting patterns, socio-demographics	The bettors with neuroticism have lower risk tolerance, and the bettors with greater neuroticism, openness and agreeableness exhibit apparent normative herding behaviours	Results might not reasonably explain the relationship between the personality traits and behaviours of bettors via virtual channels for participants who were on-site sports lottery bettors of physical channels	Future studies can explore the motivations of sports lottery bettors for participating in the underground economy (i.e. illegal betting) and compare the economic scale with the legitimate betting market to reveal other key factors that influence the decision-making of bettors
Wann et al. (2015) USA	Cross-sectional; Level IV; Moderate	580 sport fans' survey data was collected, to examine possible changes in fandom by investigating fans' perceptions of the impact of increasing legalized sport wagering on their fan experience, interest in sport, and sport consumption	Demographics, ECO, SFQ	Results indicated that expected impacts were small and generally positive and these effects were greatest among groups historically active in sport gambling	The study was focused on in-person consumption and did not consider online sport viewing. Also, convenience sample of university students	Given that a great deal of wagering occurs online, future research should examine the manner and extent to which individuals report that increasing the legalization of sport wagering would impact their online betting and their consumption of sport in the internet

*Video lottery*

MacLaren (2016) Canada	Cross-sectional; Level IV; Moderate	250 frequent VLT players were surveyed, to examine VLT's impact on PPG	Canadian PGI, PGSI, VLT involvement (frequency, duration, expenditure)	The relative risk of PPG was higher among VLT players than it was for other common forms of gambling (e.g. slots, lottery, horse racing). VLT gambling is also the most expensive gambling habit in Canada	Self-reported measures	Future research should aim to answer the degree to which different types of problem and non-problem gamblers prefer multiple forms of gambling
<i>Anthropomorphisation of slot machines</i>						
Riva et al. (2015) Italy	Comparative study with controls; Level III-2; Moderate	Four experimental studies were conducted with slot machine players (S1=85, S2=50, S3=80, S4=200), to test whether anthropomorphizing slot machines would increase gambling	Anthropomorphization of slot machines	Results showed that exposing people to an anthropomorphized description of a slot machine increased gambling behaviour and reduced gambling outcomes	Verbal description has been used for slot machine anthropomorphization	Future research should examine the underlying mechanisms of the link between slot machine anthropomorphization and gambling behaviour, and also investigate how individual differences can impact this link
<i>EGM/Jackpot</i>						
Browne et al. (2015) Australia	Mixed-methods; M Level 2	A pre-play survey of 234 adult gamblers, and live observation plus recording of their EGM play measures (N=442 sessions) were conducted; to examine the impact of EGM jackpots on players' behaviour	PGSI, priming, total time, money spent, play rate, demographics	Primed participants were more likely to select jackpot-oriented EGMs, and primed at-risk gamblers tended to select machines with a higher median jackpot prize amount than others. Neither PGSI nor priming was associated with the rate at which participants switched machines. EGM jackpots were associated with great spend overall, and PGSI score was associated with a greater spend per play. Positive interactions were found between jackpots and PGSI, and PGSI and priming in terms of predicting greater persistence	Shadowing might have influenced players' natural behaviour	Future research could potentially use large datasets gathered by government-or-corporate-sponsored player behaviour tracking technologies, to uncover both between-participant effects, and within-session dynamics
Donaldson et al. (2016) Australia	Randomised Controlled Trial; Level II; High	107 participants were randomly assigned to three conditions: hidden jackpot, mystery jackpot or control condition (no jackpot); to examine the effects of these conditions on gambling intensity	Speed of bets, persistence	Gambling intensity was greater when the jackpot value was unknown, especially when a winning-symbol combination suggested that a win was possible. There is some evidence to suggest a marginal positive contribution of hidden jackpots to risky playing behaviour	Laboratory experiment	Future research on hidden jackpots can



Landon et al. (2016)	Qualitative; M Level 3	40 gamblers took part in 6 focus groups, to explore EGM characteristics	EGM characteristics	Two groups of EGM characteristics were identified: winning and betting. Overall, free spin features were identified in all groups as the most attractive characteristics of EGMs. The important characteristics were consistent across different levels of gamblers, with the key behavioural difference being a self-reported 'expertise' and 'strategic' approach to gambling amongst higher-frequency gamblers and problem gamblers in treatment	No information was collected on participants' current PG status as this would likely have impacted negatively on recruitment	Characteristics such as free spin features, and other frequent small win-related events coupled with low denomination EGMs with multiple playable lines should be the focus of further research and harm minimisation efforts
Li et al. (2016) Australia	Randomised Controlled Trial; Level II; High	123 gamblers were randomly assigned to an experiment with 2x2x2 factorial design : progressive vs non-progressive, deterministic vs non-deterministic, small jackpot vs large jackpot or control condition (no jackpot); to examine jackpot's rollover effect and goal-gradient effect in EGM gambling	Bet size, betting speed, number of bets, EGM attitudes, PGSI	Three major findings: a) Players placed the largest bets (20.3% higher than the average) on large jackpot EGMs that were represented to be deterministic and non-progressive. b) Large jackpot that were non-deterministic and progressive also promoted high bets (17.8% higher than the average), resembling the 'rollover effect' demonstrated in lottery betting. c) Neither the hypothesized goal-gradient effect nor the rollover effect was evident among players betting on small jackpot machines	Lab-based study is limited by external validity	Relatively new area of research, similar studies should be conducted to confirm these findings- specially in real settings
Murch et al. (2019)	Comparative study without controls; Level III-3; Moderate	72 male undergraduate students played an authentic EGM while providing electrocardiogram data; to examine the effects of bet size and multi-line play on immersion and respiratory sinus arrhythmia (RSA) during EGM use	RSA, PGSI, heart rate	Results suggested that multi-line EGMs capture attention across a range of play-styles, and that immersion might be effectively amplified by multi-line play	Student sample, only males	Future research avenue lies in applying eye tracking to monitor attentional allocation during EGM play, and relationships with immersion
Quilty et al. (2016)	Cross-sectional; Level IV; Moderate	187 adults completed an online survey, to examine the influence of monetary payout	Canadian PGI, GMQ, UPPS-P, PANAS	Results suggested that gambling behaviours increased with monetary payout even across qualitatively different gambling products, and across gamblers with different motivations	Long questionnaire, self-reported measures	The restriction of monetary payouts warranted further research attention as a form of PG prevention

		on gambling behaviour		for gambling, levels of impulsivity, and negative affect		
Worhunsky & Rogers (2018)	Comparative study without controls; Level III-3; Moderate	72 male regular gamblers played virtual slot machines in pairs offering sequentially adjusted game speeds, to estimate the individual rate-of-play preferences and associations with EGM gambling behaviour	I-ROP, NODS, BIS-11, GBQ	Estimated I-ROPs ranged from less than one half second to over seven seconds and were negatively associated with cognitive ability, but not related to PGSI, impulsiveness, or gambling-related cognitions. Subsequent gambling sessions on EGMs offering individually calibrated faster and slower gaming speeds were associated with greater and reduced risk-related gambling behaviours respectively	Participants were only male gamblers. The study was completed in a laboratory environment	I-ROPs represent a potentially informative construct for exploring influences of gaming speed on gambling behaviour, and may lend insight into potential risk-related behaviour an individual vulnerability with respect to commercially available EGMs that warrants additional research

ASI: Addiction Severity Index; BAM-VG: Behavioural Addiction Measure-Video Games; BIS: Barrat Impulsiveness Scale; CIR: Club/intramural/recreational; CIUS: Compulsive Internet Use Scale; D1: Division I; DFS: Daily Fantasy Sports; ECO: Economic Motivation; EGAQ: Effects of Gambling Advertising Questionnaire; EGM: Electronic Gaming Machine; GAS: Game Addiction Scale; GAQ: Gambling Activities Questionnaire; GBQ: Gambling-related Beliefs Questionnaire; GD: Gambling Disorder; GMQ: Gambling Motives Questionnaire; GPSS: Gambling Problem Severity Subscale; GRCS: Gambling Related Cognitions Scale; IAT: Internet Addiction Test; ImpSS: Impulsive Sensation Seeking; I-ROP: Individual Rate-of-Play; K6: Kessler Psychological Distress Scale; LIWC: Linguistic Inquiry and Word Count; MSSFP: Motivational Scale for Fantasy Football Participation; NCAA: National Collegiate Athletic Association; NEO-FFI: NEO Five-Factor Inventory; NODS: National Opinion Research Center Screen; OPD-UHH: Online Poker Database of the University of Hamburg; PAGE: Pathological Gambling and Epidemiology; PANAS: Positive and Negative Affect Schedule; PG: Problem Gambling; PGI: Problem Gambling Index; PGSI: Problem Gambling Severity Index; PIU: Problematic Internet Use; PPGM: Problem and Pathological Gambling Measure; QPI: Questionnaire on the Propensity to Immersion; RG: Responsible Gambling; SAPG: Scale Assessing Problem Gambling; SAS: Smartphone Addiction Scale; SDHS: Short Depression-Happiness Scale; SFQ: Sport Fandom Questionnaire; SOGS: South Oaks Gambling Screen; TFS: Traditional-only Fantasy Sports; UPPS-P: UPPS Impulsive Behaviour Scale-P

**Table 3: Long term efficacy and effectiveness of treatments (N=23 RCTs)**

Author(s) & year/ Study location	Study type/ NHMRC Evidence Level/Grade of evidence	Participants/Intervention and comparator groups	Primary outcome measures	Main findings	Limitations	Recommendations
<i>Telephone/Web interventions</i>						
Abbott et al. (2018)  New Zealand	Randomised Controlled Trial; Level II; High	462 adults with PG took part in a telephone intervention, were randomly allocated into 4 subgroups> 1) single motivational interview (MI), 2) single motivational interview plus cognitive-behavioural self-help workbook (MI+W), 3) single motivational interview plus cognitive-behavioural self-help workbook plus four booster follow-up telephone interviews (MI+W+B), and finally, 4) helpline standard care or treatment as usual (TAU)	Days gambled, dollars lost per day, treatment goal success	No differences were found across treatment arms, although participants showed large reductions in gambling during the 12-month follow-up period. Sub-group analysis showed improved days gambled and dollars lost for MI+W+B for those with greater problem severity and greater distress	The study did not examine the active ingredients/underlying mechanism that contributed towards the significant positive outcomes. Also, self-reported measures and large drop-out rate might have impacted the results	Replication of this study in face-to-face, community settings and with broader treatment seeking patients would be beneficial for generalisability
Bucker et al. (2018)  Germany	Randomised Controlled Trial; Level II; High	140 individuals with self-reported gambling and mood problems were randomly allocated either to a depression-focused internet intervention group or to a wait-list control group	PHQ-9, YBOCS, SOGS	The intervention led to a significant reduction in depression and in gambling-related symptoms at the 8-week follow-up	The dropout rate was significantly higher in the intervention group indicating that the treatment might not have met participants' expectations/needs. Also, the subdivision of problematic and pathological gamblers was not considered. Finally, self-reported measures were used	Studies with larger samples and longer follow-ups are needed to improve statistical power and to assess the intervention's sustainability. Also, a tailored program is recommended as per patients' emotional and cultural needs, to enhance program acceptance and adherence. Patients might also benefit from learning techniques to regulate impulse control
Casey et al. (2017)  Australia	Randomised Controlled Trial;	174 adults with gambling problems were randomly allocated into either of these 3	GSAS	Both treatment groups showed significant positive outcomes after	Wait-list participants received treatment before follow-up (due to ethics) and thus there was no	Future research should explore methods and additional ways of using

	Level II; High	subgroups> 1) internet-based cognitive behavioural therapy (I-CBT), Internet-based motivation, feedback, and support (I-MFS) program and or to a wait-list control group		12 months, with I-CBT showing more promising results overall	comparing follow-up data for wait-list vs treatment groups	I-CBT, to increase participants' engagement and thus decrease dropout rate and to reach a wider population with gambling problems
Luquiens et al. (2016) France	Randomised Controlled Trial; Level II; High	992 adult non-treatment seeking gamblers were randomly recruited into either of these 4 subgroups: 1) waiting list (control group), 2) PNF on their gambling status by a pre-programmed email ,3) email with a self-help book containing a cognitive behavioural therapy (CBT) program with no guidance and 4) the same CBT program emailed weekly by a trained psychologist with personalized guidance	PGSI	There was a significant reduction in PGSI for all three groups including the control group at 6-week, except for CBT group with weekly email guidance. This last group also had the highest dropout rate. However, no significant differences were found between the groups at 6 or 12-week	The study design was deeply naturalistic and there were no exclusion criteria for recruitment except for age, which might not represent the right population (e.g. unintended recruitment of participants with severe mental disorders)	Comorbidities, natural course of illness and intrinsic motivation should be considered in the future designs
Nilsson et al. (2018) Sweden	Randomised Controlled Trial; Level II; Moderate	18 gamblers and CSO (N=36) were randomised to either BCT or individual CBT for the gambler, to investigate the impact of BCT for PG	NODS; TLFB	Both groups of gamblers improved on all outcome measures, but there were no significant differences between the groups. The CSOs in the BCT group lowered their scores on anxiety and depression more than the individual CBT group. Participants were followed up post-treatment and at 3- and 6-months follow-up	Small sample size, shorter follow-up	Long-term results and an increased power could allow for more in-depth analyses regarding the efficacy of BCT for gambling
<i>Self-help</i>						
Boudreault et al. (2018) Canada	Randomised Controlled Trial; Level II; High	62 at-risk and pathological adult gamblers were randomly assigned to either a self-help treatment group or to the waiting list (control group)	DSM-V	The treatment group showed significant reduction in DSM-V compared to the control group. Participants appreciated both self-help workbook and therapists' telephone interviews. The study also had a low dropout rate (13% at week 11). All significant changes were maintained through 1. 6 and 12-month follow-ups.	Self-reported outcomes; no data for waiting-list group beyond 11-week (due to ethics); trial therapists who conducted assessments were not blind to the trial condition	Future studies should consider the effect of therapists' feedback, which deemed as an important contributor to the positive treatment outcomes

Campos et al. (2016) USA	Randomised Controlled Trial; Level II; Moderate	87 adult pathological gamblers were randomly assigned into two groups- a) workbook only group (W) or to b) workbook with therapist guidance group (WB+G)	Proportion of participants gambling, money spent gambling, GSAS	Gambling abstinence was higher and sustained longer for WB+G group; money spent was lower for WB and lower GSAS was found for both groups at completion and at 1-year follow-up but with WB+G showing more rapid reductions. Overall, WB+G was more efficacious	Absence of a wait-list/control group; high dropout rate (50%); self-reported GSAS	Future studies should examine active components of the WB that lead change; impact of motivational interview in conjunction with the WB; and methods to sustain in-treatment gains of brief interventions
Oei & Lai (2018) Australia	Randomised Controlled Trial; Level II; High	110 adult problem gamblers were randomly allocated to either self-help cognitive behavioural treatment (SHCBT) program or to a 6-week waitlist condition	Canadian PGI, GRCS, GUS, DASS	Participants from the treatment group showed significant improvement in all primary outcomes compared to the control group. Follow-up at Time 2 occurred after completing SHCBT (approx. 7 weeks) or after the 6-week wait period	No follow-up scores	Future studies should consider different cultural groups, participants' socio-demographic variables and medical and psychiatric history
Rodda et al. (2018) Australia	Randomised Controlled Trial; Level II; High	198 gamblers randomised to bi-weekly SMS vs treatment as usual (TAU)	Gambling Symptom Severity	There was a significant decrease in gambling symptoms and time and money spent posttreatment. No significant difference between SMS and TAU (i.e. SMS did not increase the effect of e-mental health). 12-week follow-up.	Lower than expected proportion of participants who completed follow-up evaluation.	Further development of intervention and recruitment strategies, and offer empirical estimates of within group statistical parameters for future power calculations
<i>Medication</i>						
Kovanen et al. (2016) Finland	Randomised Controlled Trial; Level II; High	101 adult pathological gamblers were randomly allocated to either placebo or to naltrexone (medication)	YBOCS, the effect of pharmacotherapy	No significant treatment group differences were observed. Follow-up period was unclear	Due to ethical reasons, there was no treatment group without psychosocial support or control group; comorbid conditions were not accounted; there was no recording of participants attending any other therapies (e.g. support group or internet self-help program)	Further research is needed with larger sample size. Also, patients' characteristics should be explored to see what moderates the effect of pharmacotherapy and the psychosocial support
de Brito et al. (2017) Brazil	Randomised Controlled Trial; Level II; Moderate	30 outpatients were treated with either Topiramate or placebo combined with a brief cognitive intervention	GSAS, PG-YBOCS, GBQ, BIS-11, SAS	Topiramate proved superior to placebo in reducing gambling craving, time and money spent gambling, cognitive distortions related to gambling and social adjustment. No significant effects	Small sample, short time frame of the trial (12-week), no screening for substance use	Future longitudinal studies with longer follow-up are needed where psychotherapy alone and pharmacological

				were found on impulsivity or depression		treatment alone can be compared
<i>Acceptance and Commitment Therapy (ACT)</i>						
Dixon et al. (2016) USA	Randomised Controlled Trial; Level II; High	18 participants were randomly allocated to either Acceptance and Commitment Therapy (ACT) or remained untreated (controlled group)	BOLD	Post-treatment, disordered gamblers reported higher rates of psychological flexibility and mindfulness than controlled gamblers. Also, brain activation patterns were significantly different between groups (8-week follow-up)	The intervention was multi-component and thus, it was difficult to deter which component(s) was most effective. The treatment was manualised in nature and thus, participants could not have lower or higher number of sessions as/if needed	Future studies should explore tailored program by considering problem gamblers' underlying causes of gambling (e.g. accessing escape vs accessing social attention or tangible items), what triggers their urge etc.
<i>CBT</i>						
Smith et al. (2015) Australia	Randomised Controlled Trial; Level II; Moderate	87 adult treatment seeking problem gamblers with electronic gaming machines were randomly allocated to cognitive therapy (CT) or to behavioural (exposure-based) therapy	VGS	Both groups experienced comparable improvement in VGS scores at 12 weeks and 6-month follow-up	Loss of statistical power 1. due to a deficit in the target recruitment numbers and 2. higher drop-out rate (41%); lack of active control group; self-reported outcome measures	Large-scale trials are needed to compare both CT and BT individually and combined to enhance retention rates; longer follow-up is also needed to assess long-term benefits
Wong et al. (2015) Hong Kong	Randomised Controlled Trial; Level II; High	38 adult problem gamblers were randomly assigned to either experimental group (CBT + individual counselling services) or to control condition (individual counselling services only).	DASS, SOGS, GRCS, GUS, Gambling Activity Record	There was a significant decrease in gambling severity (SOGC) and frequencies (follow-up period unclear)	Small sample size, the experimental group received CBT in a group, and thus it was difficult to infer whether the effectiveness was due to the CBT alone	More research with larger sample size and follow-ups is needed to determine the solid effectiveness. It may also be necessary to develop a female-specific treatment program
<i>Family involvement</i>						
Lee & Awosoga (2015) Canada	Randomised Controlled Trial; Level II; High	15 couples (adult pathological gamblers and their spouses) were randomly allocated to treatment group (congruence couple therapy) or no treatment control group.	GSAS, BSI, DAS, STIC	Significant improvement was found in the treatment group couples at post-treatment and follow-up for gambling symptoms (G-SAS), mental distress (BSI) and family systems function (STIC), but not for couple relationship (DAS). (20-week follow-up)	Short-term follow-ups (at two months)	'Usual treatment control' is preferable to 'no treatment control' for ethical reasons. Counselors' training that targets micro-skills in the middle phase of CCT should be reinforced for higher treatment adherence. Mid-term (1

						year) and longer-term follow-ups (2 year) are also recommended
Nayoski & Hodgins (2016) Canada	Randomised Controlled Trial; Level II; Moderate	31 adult 'concerned significant others' (CSO) of problem gamblers (close relative or partner) were randomly allocated to Community Reinforcement and Family Training (CRAFT) individual intervention or to CRAFT workbook	DSM-IV, TLFB, BSI, RHS, RAS	No significant difference was found between the groups. Effect size showed positive outcome for both interventions. Follow-up interviews were at 3-months and 6 months	Small sample size due to recruitment problems	Further research with larger sample size is required to conclude that 'no statistical significant' difference lies between the two groups
<i>Mindfulness</i>						
McIntosh et al. (2016) Australia	Randomised Controlled Trial; Level II; High	77 treatment seeking adult gamblers were randomly allocated to CBT, Mindfulness or Treatment as Usual groups	DSM-V, SOGC, frequency and intensity of gambling urges	All three groups resulted large effect size improvement in DSM at post-treatment and at follow-up (3- and 6-month)	Small sample size; assessment and psycho-education provided to all participants in the first three sessions; only four sessions offered to CBT and Mindfulness participants to ensure maximum completion	Future research should examine the treatment mechanisms for different interventions and how heterogeneous groups of problem gamblers respond to different interventions
<i>Transcranial magnetic stimulation</i>						
Gay et al. (2017) France	Randomised Controlled Trial; Level II; High	22 treatment-seeking adults with gambling disorder received real or sham treatment with rTMS in random order	YBOCS, DAS	rTMS significantly decreased cue-induced (gambling video) craving (DAS). No significant effect of rTMS was observed on gambling behaviour (YBOCS) after 7 days	Small sample size; a single-item VAS was used to assess craving	RCT with larger sample size and repeated rTMS sessions are required to confirm the effectiveness of this treatment. Different subgroups of problem gamblers also need to be compared
Sauvaget et al. (2018) France	Randomised Controlled Trial; Level II; High	30 pathological gamblers received both active and sham rTMS in random order	VAS, GACS	There was a significant decrease in the gambling urge for both groups (not only for the active group)	Small sample size	Additional studies with larger sample size are needed to determine the effect of rTMS and a placebo lead-in should be used to exclude placebo responders
<i>Brief intervention</i>						
Neighbours et al. (2015) USA	Randomised Controlled Trial;	252 adult college student at-risk gamblers were randomly assigned to receive a computer-	SOGS, Gambling Quantity and	There was a significant intervention effects in reducing perceived norms for quantities lost	All self-reported outcome measures; potential concerns regarding	Future study should evaluate the study while administered remotely, to

	Level II; Moderate	delivered PNF or attention-control feedback	Perceived Norms Scale, Gambling Problems Index, Measure of Identification with Groups	and won, and in reducing actual quantity lost and gambling problems at the 3-mo follow-up. All intervention effects except reduced gambling problems remained at the 6-month follow-up. Results also suggested that PNF worked better for those who more strongly identified with other student gamblers.	selection bias; the study was conducted in a lab	avoid any interaction with the provider. Also, future study can compare between a computer-based feedback with and without a therapist
Petry et al. (2016) USA	Randomised Controlled Trial; Level II; High	217 adult problem gamblers were randomly allocated to a brief psychoeducation, or to a brief advice or to a motivational enhance therapy + cognitive behaviour therapy (MET+CBT) session	SOGC, DSM-IV, TLFB	Assessments were at baseline and 2, 5, 8, 12, 16, 20, and 24 months later. MET+CBT was more efficacious in decreasing gambling than providing a brief single session intervention	Therapist attention and expectancy effects were not controlled in the longer duration intervention relative to the briefer ones. The results can only be generalized to problem gamblers who present for substance use treatment	Future studies should evaluate interventions among other populations with gambling problems
<i>Exercise</i>						
Penna et al. (2018) Brazil	Randomised Controlled Trial; Level II; High	59 adult gambling disorder patients were randomly allocated to exercise (treatment) or stretching (control) groups	GFS-SR, MINI	The results found no significant differences between the treatment and control group in gambling severity. However, a greater improvement in psychiatric comorbidities were observed for the treatment group	The control group might have been introduced to unwanted treatment ingredients such as social connections and moderate exercise. Also, the study did not have long-term follow-up. The positive outcome of the treatment could be also attributable to 'social interactions'	Future studies should exclude participants with concurrent psychotherapy and/or psychiatric medications; examine the effects of dosage; account for participants' gender and fitness level pre-post intervention; deliver the treatment one-to-one to ensure that the positive outcome is not due to social interactions
<i>Length of treatment</i>						
Toneatto (2016) Canada	Randomised Controlled Trial; Level II; High	120 problem gamblers randomized to one of four treatments: six sessions of cognitive therapy, behaviour therapy, and motivational therapy or a single-session intervention	Gambling frequency, gambling wagers, DSM-IV	All four groups showed significant improvement as a result of treatment that endured throughout the follow-up period, with no significant between group differences on the primary outcome measures. Follow-up was at 12-months.	Lack of objective measures of treatment fidelity, unequal sample sizes, lack of statistical power. Also, the absence of no-treatment group. Also, the motivational intervention group received a workbook that others did not	Future studies should compare interventions with equal sample size and account for any additional treatment (e.g. workbook)



AUDIT: Alcohol Use Disorders Identification Test; BCT: Behavioural Couples Therapy; BOLD: Blood Oxygenation Level Dependent; BSI: Brief Symptom Inventory, CBT: Cognitive Behavioural Therapy; CSO: Concerned Significant Others; DAS: Dyadic Adjustment Scale; DASS: Depression Anxiety and Stress Scales; DSM: Diagnostic and Statistical Manual of Mental Disorders, Fourth/Fifth Edition; FFMQ: Five Factor Mindfulness Questionnaire; GACS: Gambling Craving Scale; GFS-SR: Gambling Follow-up Scale Self-Report Version; GRCS: Gambling Related Cognitions Scale; GSAS: Gambling Symptom Assessment Scale; GUS: Gambling Urge Scale; K10: Kessler 10 Scale; MINI: Mini International Neuropsychiatric Interview; NODS: National Opinion Research Center Screen; PHQ-9: Patient Health Questionnaire-9; PF: Personalised Feedback; PGI: Problem Gambling Index; PNF: Personalised Normalized Feedback; RAS: Relationship Assessment Scale; RHS: Relationship Happiness Scale, rTMS: repetitive transcranial magnetic simulation; SOGS: South Oaks Gambling Screen; STIC: Systematic therapy Inventory of Change; TLFB: Timeline Followback; VAS: Visual Analog Scale; VGS: Victorian Gambling Screen; WSAS: Work and Social Adjustment Scale; YBOCS: Yale-Brown Obsessive Compulsive Scale

**Table 4: What works in prevention and harm minimisation (N=55)**

Author(s) & year/ Study location	Study type/ NHMRC or JBI Evidence Level/ Grade of evidence	Participants/ Intervention and comparator groups/study aim	Primary outcome measures	Main findings	Limitations	Recommendations
<b>Harm minimisation: a) Multiple</b>						
Edgerton, Biegun & Roberts (2016) -	Narrative review; - Low	Narrative review of responsible gambling tools	Existing RG strategies	Encouraging evidence for RG tools that incorporate player behavioural tracking and personalised feedback.	Only provides a brief overview of research of particular RG tools. Did not follow a systematic approach to searching and identifying studies for inclusion	More research is needed to discern which RG tools work best in which combination for which types of games and which types of gamblers. Research exploring the use of player behavioural tracking and personalised feedback in the treatment context merits further study
Harris & Griffiths (2017) -	Critical review; - Moderate	Critical review of the harm-minimisation tools available for electronic gambling	Harm minimisation strategies	The use of breaks in play, 'pop-up'/warning messages, limit setting, prohibition and modification of note acceptors and behavioural tracking	Participants were of different categories (non-problem gamblers, problem gamblers etc.) and also tested under different context. Thus, findings were not generalizable or comparable	The tools might better work for non-problem gamblers. Future research in this field should remain both creative and flexible to both deal with potential changing landscapes of gambling, as well as to continue to develop new approaches
Harris & Griffiths (2018) -	Critical review; - Moderate	Critical review of the impact of speed of play in gambling, with discussion of implications for harm minimisation	Existing body of evidence relating to speed of play in gambling	There was a consistent finding across studies that fast games were rated as more exciting for all gamblers, particularly appealing to problem gamblers. Behavioural results showed that fast games encouraged more wagers, longer game play, and problem gamblers particularly had difficulty in ceasing gambling	In terms of the behavioural impact of game speed, results were widely varied. There was a lack of studies with longitudinal designs and large sample size that made it difficult to provide definitive conclusions regarding the impact of the game speed on both problem and non-problem gamblers and how they compared	Researchers should investigate ways of implementing harm-minimisation tools that have the effect of making gambling safer by facilitating self-control, but that are less conducive to detracting from the overall enjoyment and experience of gambling such as showing game speeds. Also, research is required to ascertain the psychological mechanisms that mediate the relationship between game speed and overt gambling behaviour

Ladouceur et al. (2017)	Critical review; - Moderate	Synthesis of the empirical evidence on RG strategies	Existing RG strategies	Self-exclusion, behavioural characteristics, setting gambling limits, specific RG features, staff responding to patron RG	This study did not follow traditional methodology in study inclusion and their quality assessment	Limit setting is only effective for some individuals and can increase gambling problems for others. Therefore, stakeholders should be careful and conservatively considerate about the target population
Marionneau & Jarvinen-Tassopoulos (2017)  France	Exploratory; - Low	18 gambling websites were analysed, for the conformity of French operators to the requirements and the potential effects of consumer protection measures	RG tools proposed/ offered by the operators	All licenced websites conform to the legal obligations that included verifying players' identity, displaying a warning banner on the risks of gambling, informing about a possibility of self-exclusion, providing a limit-setting tool and information on players' account history.	The proposed tools had some shortcomings related to difficulties in using or finding them, ineffectiveness as they were not mandatory and their emphasis on player responsibility. The study itself also had limitations- small sample size, no access to the RG tools before the law of 2010	There is room for improvement in implementing RG tools by- increasing provider responsibility, making all tools mandatory and binding, active promotion of available responsible gambling features and removing scientifically inaccurate information on PG. Future studies could also compare between different jurisdictions, authorised vs unauthorised sites, sites that have abandoned the French market vs remained in the market, RG tools available online vs offline environment
Stein (2015)  South Africa	Discussion; - -	Discussion paper on academic-industry partnership	Academic-industry partnership	Academic-gambling industry collaborations could be dynamic; they can entail a continuum of moral jeopardy and unmanageable conflicts of interest	A discussion paper and thus, did not have sufficient information/evidence on harm minimisation strategies	More work is needed to determine how best to facilitate academic-gambling industry collaborations to mitigate addiction-related harms and to optimise public health
Tanner et al. (2017)	Systematic review; M Level 1	Systematic review of industry harm reduction strategies	Industry- implemented or environmental- level strategies (distinct from RG behavioural strategies)	Most effective strategies in reducing gambling time or expenditure included: self-appraisal pop-up messages, \$1 maximum bets, removal of large note acceptors and ATMs, reduced operating hours, and smoking bans	Most of the original studies had low quality evidence and thus, results might not be conclusive	Further research that employs rigorous longitudinal experimental designs with appropriate control conditions are needed to draw firm conclusions
Wood & Griffiths (2015)  UK	Cross-sectional comparisons; Level IV; Moderate	1484 'positive players' were compared with 209 problem players via an online survey	Playing experiences and RG practices	RG strategies used by positive players- setting spending limit, setting time limit, taking cash only, leaving ATM cards at home, working out what one can afford to lose). Problem gamblers on the other side, mentioned of playing with friends and family	Participants were not randomly selected and thus, might not be a true representation of British population. The use of self-	For problem gamblers, social play may not be inherently safer than gambling alone. Also, players in general, may identify more with the term 'positive play' than 'RG', as it is frequently

				as a RG strategy, which in fact can have a negative impact on the persons' family and friends	reported data was a shortfall too.	aimed at problem gamblers. Further research with control group is needed to examine these possibilities
<i>b) Personalised feedback</i>						
Auer & Griffiths (2015) UK	Comparative study with controls; Level III-2; Moderate	Comparison of the behavioural tracking data of two representative random samples of 800,000 gambling sessions, to compare two conditions: simple pop-up vs enhanced pop-up message	Number of gamblers stopped playing after the pop-up message	The enhanced pop-up message with additional normative and self-appraisal content had doubled the number of gamblers who stopped playing compared to the simple pop-up message	The sample did not have any socio-demographic variables collected and thus, it was unknown if the groups in two conditions differed in any key variables. As such, the gamblers were not necessarily the same during the pre and post pop-up messaging.	Future studies should examine the specific impacts of different theoretical concepts (e.g. normative beliefs, self-appraisal, information) that aids self-efficacy
Auer & Griffiths (2015) UK	Comparative study with controls; Level III-2; Moderate	Comparison of 1,015 online gamblers exposed to <i>mentor</i> (a RG tool providing PF), with 15,216 matched controls	Time and money spent gambling	Results showed that experimental group spent significantly less time and money gambling compared to controls that did not receive <i>mentor</i>	Results' reliability is limited as data was collected from one online gambling environment. Also, the experimental participants volunteered for the study and thus, might already have the desire to gamble less. As such, control group might not have acted as a true control	Replicating the results with other operators and other gambling channels (e.g. EGM) would help further corroborate the findings. Also, future studies should examine the causal mechanisms as well as participants' motivations and cognitive mechanisms, to deter what caused the positive outcomes of the RG tool.
Auer & Griffiths (2016) Norway	Comparative study with controls; Level III-2; Moderate	17,452 players were assigned to 6 groups (including control); assessing three RGs: PF, normative feedback or recommendation	TL, amount of money wagered, GGR	Compared to the control group, all groups that received some kind of messaging significantly reduced their gambling behaviour. Also, normative feedback did not change behaviour significantly more than PF	It was a brief intervention; players were selected from one online platform only. Also, players selectively retrieved the message and the information remained static. It was also difficult to compare the players to the control group due to the fact that message retrieval was voluntary	Future studies could investigate long-term and more regular use of personalised message, how they address different types of behaviours (binge/high loss/high win gambling etc.), how they impact further gambling behaviour, and also secondary analysis of behaviour connected to the retrieval of personalised messaging
Auer & Griffiths (2018) Norway	Comparative study without controls; Level III-3; Moderate	11,829 players were included in a study that sent them personalised information on	TL	The overall results contradicted the hypothesis that players experiencing cognitive dissonance would decrease their gambling expenditure	Brief intervention, sample comprised of one online platform only	Gambling behaviour should be assessed over longer periods of time. The objective information collected using tracking data should be complemented with

		gambling behaviour via email				self-recollected information about players' cognitive beliefs and motivations to play
Forsstrom et al. (2016) Sweden	Comparative study without controls; Level III-3; Moderate	The user behaviour of 9528 online gamblers who voluntarily used a RG tool (track history and PF), was analysed	Number of visits to the site, self-tests made and advice used	Descriptive statistics showed that overall the functions of the tool had a high initial usage and a low repeated usage. Further analysis on user categorisation showed that self-testers and multi-function users used the tool to a higher extent and were more likely to be problem gamblers	User categorisation and risk assessment was based on the descriptive results, as such, different categorisation or risk evaluation might have yielded different results	Further analysis should be carried out to answer when users utilize the different functions; what days/time they visit the site; and in what order they use different functions. Also, more examination is needed regarding the risk assessment tool- how it impacts users' behaviour over time
Forsstrom et al. (2017) Sweden	Qualitative; M Level 3	20 interviews were carried out with gamblers, to explore their experiences of a RG tool	Experiences of Playscan	Two main themes were identified: 'usage of Playscan and the gambling site', 'experiences of Playscan' with sub-themes: 'lack of feedback from the tool' and 'confusion when signing up to use Playscan'	The study had sub-population with low/medium/high-risk categories, with 6-7 participants in each group. Thus, the overall number might not be enough to compare the sub-categories	Providing more feedback directly to users is a suggested solution to increase usage of the RG tool
Gainsbury et al. (2015) Australia	Comparative study without controls; Level III-3; Moderate	667 regular gamblers were surveyed to evaluate the first in situ trial with warning messages for EGM	Effectiveness of dynamic warnings appearing either in the middle or on the periphery of EGMs, PGSI	Results demonstrated that warning messages appearing in the middle of an EGM screen during play are likely to be more effective than messages on the periphery	As data was not assessed over time, it was not possible to evaluate the potential for dynamic warnings to reduce harm	Future trials should consider modifying the display of the messages (in terms of colours, fonts etc.), to distinguish it from the 'error message'
Gainsbury et al. (2015) Australia	Comparative study without controls; Level III-3; Moderate	667 regular gamblers were surveyed to evaluate the impact of a warning message content for EGM	Message content recall and impact on thoughts and behaviours, PGSI	Participants recalled messages that encouraged self-appraisal to a greater extent than messages providing information. Both message types had a small impact on behaviour by reducing gambling consumption; with messages that specifically discussed money spent appeared to have the greatest impact	The format of the messages (e.g. colour, font, size) could not be manipulated past the existing venue/machine protocol	Salient and effective warnings that interrupt continuous and excessive consumption can serve as the first line of defence in the prevention of harmful behaviours and impede consumers' movement towards addiction. Future research should also test the format and timing of the messages
Ginley et al. (2017) USA	Systematic review; M Level 1	Systematic review of 31 qualitative studies on warning messages for EGM	Warning messages for EGM	All studies largely supported the use of warning messages. The mode of message display, design, and context were all found to influence the impact of messages. Messages were most effective when they popped-up on	Narrative synthesis	Future studies can explore impact of warning messages on other forms of gambling such as table games, bingo and lotteries

				the canter screen, created an interruption in play, and required active removal by the player. Also, messages were more effective when they were brief, easy to read and direct		
Harris & Parke (2016) UK	Comparative study without controls; Level III-3; Moderate	30 gamblers (aged 16-24) took part in an experiment, where they gambled on the outcome of a computer-simulated gambling task	Gambling behaviour, impact of pop-up messaging	Escalating betting trends were found in both winning and loss conditions, meaning both extremes can be problematic. Self-appraisal message was only effective in reducing overall speed of betting during periods of loss and failed to reduce overall betting intensity	The results indicated that different mechanisms worked to produce same behaviour for both extremes of winning and loss conditions, which needed further exploration but was beyond the scope of this study	Harm minimisation strategies would be best implemented using algorithmic software that detects periods of loss as opposed to a time-cued intervention, to help curb escalating trends in betting size and intensity and to instil a greater sense of control in the gambler
Harris et al. (2018)	Discussion; - -	Discussion paper on the case for using personally relevant and emotionally stimulating gambling message	Personally relevant and emotionally stimulating gambling message	Emotionally stimulating messages (familial impact, long-term financial conditions etc.) may have the advantage of capturing attention above and beyond traditionally RG messaging	Discussion paper and thus, does not have empirical evidence	Future research needs to test the impact of emotional messages on both at-risk and problem gamblers and also need to consider participants' age etc. (e.g. messages on familial impact might not suit young gamblers)
Landon et al. (2016) New Zealand	Qualitative; M Level 2	A series of focus groups was held with 40 gamblers and 19 staff from casino and non-casino venues	Experiences with pop-up messages on EGM	Most participant thought that pop-up messages were ineffective as a harm-minimisation measure. Venue staff participants viewed pop-up messages much more negatively than gamblers	Being a qualitative study, the outcome might be distorted by factors such as social desirability biases, demand characteristics, emotive experiences etc. Also, in-depth interviews might have given different outcomes	There remains a need for a detailed empirical assessment of the impact of pop-up messages.
Marchica & Derevensky (2016)	Systematic review M Level 1	Systematic review of PF interventions for gambling disorders	PF interventions	Results showed that PF treatment groups showed decreases in a variety of gambling behaviours as compared to control groups	Only 6 studies were found and included in this review, which was not a limitation of the study itself. However, a meta-analysis could have strengthened this study	Existing evidence is still limited and additional research is required in this field
Martens et al. (2015) USA	Randomised Controlled Trial; Level II; High	333 college gamblers were randomised into 1 of 3 conditions: PF, education (EDU), assessment only(AO)	Money spent gambling, gambling frequency, Canadian PGI	Individuals in the PF condition reported less money spent and fewer gambling-related problems than those in the AO condition. There were no differences between any other conditions.	There was only a single follow-up during the trial	The findings can be generalisable if future research also include students with different race and culture, recruited from multiple universities

Palmer du Preez et al. (2016) New Zealand	Cross-sectional; Level IV; Moderate	460 EGM gamblers took part in a telephone survey, to assess the effects of pop-up messages	Money spent gambling, PGSI	57% participants were aware of pop-up message and 38% saw them often. Gamblers who reported seeing pop-up messages, 50% read the message content. 25% believed that the messages helped them spending less money on gambling, which was also statistically significant	The study found modest effect of the pop-up messages	Future studies can explore on why a large number of participants do not respond to pop-up messages
Wohl et al. (2017) Canada	Comparative study without controls; Level III-3; Moderate	649 players took part in a casino-based study, to evaluate a PF on their gambling behaviour	Amount wagered, amount lost	Results indicated that players generally have a poor grasp of their wagering and following the receipt of the PF, almost all participants reported an intention to maintain or reduce their gambling expenditure	The study response rate was moderate at 43.3%, and researchers were not given access to the behavioural tracking data of non-responders- thus, the comparison was not possible.	Future studies should consider examination of PF over a longer time period than only once
Wood & Wohl (2015) Canada	Comparative study with controls; Level III-2; Moderate	779 players who opted to receive behavioural feedback via Playscan, was compared to a matched sample of 779 who did not opt to receive the feedback	Amounts of money deposited and wagered	Results showed that at-risk players who used the tool significantly reduced the amounts of money deposited and wagered compared to players who did not use the tool	There was no way to verify independently the extent to which the risk classifications (Green, Yellow, Red) conform to established categories of problem and at-risk gambling	Further research might examine whether there are any differences in attitudes to gambling and self-control, between those who decide to use a behavioural feedback tool and those choose not to
Zhang et al. (2016) Singapore	Comparative study without controls; Level III-3; Moderate	Primary results of a study, where a cumulative total of 708 participants took part in an online-based PF intervention	PGSI	59.2% of the participants who sought help with the online intervention, had a diagnosis of PG. Most of these help-seekers were males, had high education and were employed.	This was a brief online intervention, and as such, researchers could not include theory-driven behavioural models and related materials	Future studies should aim at developing internet based interventions that are based on theory driven behavioural change models
<i>c) Community/family intervention</i>						
Bond et al. (2017) Australia	Mixed methods; M Level 2	The Delphi expert consensus method was used to develop a set of guidelines on how a family or community member can assist an Aboriginal or Torres Strait Islander person with gambling problems	Helping statements regarding gambling problems	A total of 22 experts rated 407 helping statements. There were 225 helping statements that were endorsed by at least 90% of participants, and thus, were used to develop the guidelines	There was a possibility that some participants rated statements that were beyond their expertise, leading to an omission of useful items	Further evaluation is needed of the actions recommended by this newly developed guideline. Also, future research to develop guidelines for 'affected others' (family/friends etc.) would be beneficial

Goh et al. (2016) Singapore	Qualitative; M Level 2	Interviews conducted with 105 family members who applied for Family Exclusion Orders (FEOs) to prevent a gambler from entering the casinos (able to apply if the family has experienced harm caused by his/her gambling)	Issues experienced by family members that provided the impetus for them to apply for the FEO	Financial harm (on both gamblers and family members), domestic violence (including verbal abuse), impact on family relationships, and mental harm on family members were the key factors for family members to apply for FEO. Positive ratings of the FEO stemmed from a sense of relief experienced by mother and wife applicants in particular. Possible reasons behind these outcomes are explicated using intrinsic motivation theory, with sensitivity to gender relations within the family	An important limitation lies in the lack of views from the recipients of FEO	Future research should provide a holistic view of the impact of the FEO by including the perspectives of both problem gamblers and their family members
<i>d) Protective behavioural strategies</i>						
Blaszczynski et al. (2016) Australia	Randomised Controlled Trial; Level II; Moderate	141 university students were randomised into 1 of 3 conditions while playing 15 min computer simulated Black Jack: no break, 3 min break, 8 min break; to assess their impacts in reducing game cravings	GCS, DES, PCGP	Results indicated that cravings increased rather than decreased with imposed breaks in play, and the strength of cravings were higher following the eight-compared to 3-min break. The study concluded that breaks in play in isolation might produce counterproductive, unintended, and even perverse effects	These are preliminary findings and warrant further investigation	The policy implications for responsible gambling strategies is that breaks in play should be accompanied with warning and/or personal appraisal messages to achieve optimal effects of RG tools
Dragicevic et al. (2015) UK	Comparative study with controls; Level III-2; Moderate	A comparison study of internet gamblers: 347 self-excluders vs 871 controls	Gender, gambling outcomes, player behaviour, self-exclusion features	Self-excluders were younger, more likely to suffer losses and more likely to adopt riskier gambling positions than the controls, but there was little difference in terms of mean gambling hours per month or minutes per session. Younger and older males were likely to self-exclude faster than middle-aged males, but no such patterns were found for the female self-excluders	There were more data from control group, which might have influenced some of the results. The format of the data structures provided challenges, that requires further analysis	Future research should compare behaviours of different types of self-excluders (e.g. serial, repeat, never returned self-excluders), and their length of abstinence and how it impacted their further gambling behaviour
Drawson et al. (2017)	Systematic review; M Level 1	Systematic review of protective behavioural strategies in gambling	Protective behavioural strategies	Self-exclusion, time limit setting, monetary limit setting, cashless, card-based gambling programs	The amount of evidence available was limited and of low quality for the majority of strategies. There were also inconsistencies in study findings	Additional research in this area is warranted



Caillon et al. (2018) France	Randomised Controlled Trial; Level II; High	60 gamblers were randomly assigned to the experimental (implementation of a self-exclusion measures) or control condition	Money wagered, time spent gambling, GRCS, PGSI, GACS	The results found that self-exclusion had no short-term impact but had a mid-term impact on gambling habits	Small sample of at-risk gamblers who might not subjectively experience any difficulty with their gambling practice, and this might have modified the impact of self-exclusion	Several modifications have to be made to improve temporary self-exclusion tool's effectiveness
Gainsbury et al. (2018) Australia	Qualitative; M Level 2	6 focus groups were conducted with 31 regular EGM gamblers, to explore their views of a pre-commitment system	Assessing activity statements, setting limits, viewing dynamic messages, taking breaks	Positive attitudes about the system were expressed; but expressed as a more relevant tool for problem gamblers. The study captured views of low-risk, med-risk and problem gamblers through separate focus groups, and found that different groups would benefit from different strategies as appropriate	The study intended to include a larger sample, but experienced higher than expected drop-out rates who did not attend the planned focus groups.	Design and implementation strategies such as incorporating flexibility in features, ease of use, appropriate terminology, and educational efforts may address gamblers' concerns, particularly regarding privacy and potential stigma
Haeusler (2016) Austria	Comparative study with controls; Level III-2; Moderate	1348 players who decided to self-exclude from gambling, were compared to a random (but unmatched) 1348 controls, to examine payment behaviour as predictor for future self-exclusion	Gambling frequency, payment behaviour	The number and amount of deposits, the variance of withdrawals, the amount of funds subject to reversed withdrawals and the usage of mobile phone billing were found to be positively associated with self-exclusion; the number of active gambling months and the usage of electronic wallets and prepaid cards negatively	It is likely that there may be subjects in the sample who suffered gambling-related problems but did not self-exclude, as self-exclusion does not cover full spectrum of problems.	The predictors identified can serve as heuristics for practical application if the results are found to be generalisable. Thus, follow-up work should attempt to cross-validate the findings against customers from a different online gambling label, operating in a different regulatory framework.
Hing et al. (2015) Australia	Comparative study with controls; Level III-2; Moderate	86 adult problem gamblers were allocated into either of these 3 groups: self-exclusion + counselling, self-exclusion but no counselling, counselling but no self-exclusion	Gambling frequency, PGSI, GUS, Gambling Consequences Scale, GHQ12, CAGE	All treatment groups showed sustained improvement on most outcomes. Outcomes did not differ for self-exclusion combined with counselling. Compared to non-excluders, more self-excluders abstained from most problematic gambling behaviours. Findings suggested that self-exclusion might have similar short-term outcomes to counselling alone and may reduce harm in the short-term	Surveys relied on self-report and retrospective data; large drop outs; comparative groups were not matched in terms of numbers or other socio-demographic variables.	Long-term follow-up with stronger study design is needed to reach definitive conclusions
Kotter et al. (2018) -	Systematic review; E Level 1; High	Systematic review and qualitative synthesis of 19 studies on land-based self-exclusion programs	Land-based self-exclusion programs	Self-excluders were predominantly men in their early or mid-forties. Changes after exclusion revealed wide ranges in the rates of abstinence (13-81%), rates of gambling reduction (29-92%), and rates of exclusion breaches (8-59%). The records consistently demonstrated significant changes in	Meta-analysis could not be attempted due to the non-comparable study variables	The shortcoming of widely varied magnitude of effects and continuity of gambling after exclusion could be minimized using improved access controls and the extension of exclusion to other gambling segments

				pathological gambling from before exclusion (61-95%) to after exclusion (13-26%)		
Kotter et al. (2018) German	Cross-sectional comparisons; Level IV; Moderate	187 self-excluders and 28 forced-excluders' data was collected via an online survey and/or face-to-face interview, to compare their behaviours before and after exclusion	Gambling abstinence, frequency and amount of gambling	Self and forced excluders showed similar abstinence rates (19.3%, 28.6%) and reductions (67.4%, 60.7%). However, forced excluders reported a significantly greater initial gambling intensity compared to self-excluders. Overall, results indicated that 20.5% of excluders stopped all gambling activities and another 66.5% reduced their gambling	Experimental design was not employed due to ethics and an alternative option like a matched control group of unbanned gamblers were not possible to recruit in the study's specific setting	The results call for specific needs for practical improvements: the casino control system has to be checked, exclusion policy has to be extended to other gambling segments, and the exclusion process should integrate easily accessible support options to cope with gambling urges. Also, studies assessing excluders in long-term prospective study designs beginning precisely at point of exclusion (or even before) are required
Langham et al. (2017) Australia	Qualitative; M Level 2	33 counsellor and community educators were interviewed regarding EGM player-tracking systems	Potential contribution of EGM player-tracking system to help link gamblers with problems to treatment services	Thematic analysis revealed that the effective provision of links to treatment should consider how technological innovation can be leveraged to: improve the appropriateness of links to the intended audience, ensure the links are presented visually and temporarily to improve attention, and engage people at different levels of gambling behaviour and be consistent with broader public health programmes	In terms of participants' characteristics, there was a strong bias towards metropolitan locations, with no representation of remote areas. Also, there was a significant gender bias of females in terms of both treatment providers and community health organizations.	Further empirical studies are required to determine the most effective deployment of the messages
McCormick et al. (2018) Canada	Comparative study without controls; Level III-3; Moderate	269 gamblers completed two telephone interviews over a 6-month period, to analyse the effects of a voluntary self-exclusion (VSE) program on PG symptoms- for program violators vs continued to gamble vs completely abstained	PGSI, accessing PG counselling	Program violators had significantly smaller PGSI difference scores compared to those who continued to gamble outside the casino and those who completely abstained from all gambling. There were no significant differences between those who gambled informally and those who abstained. Further analysis also showed that access to counselling and length of enrolment positively contributed to the PGSI score reduction	The form of counselling (e.g. CBT) and whether participants completed treatment or dropped out were not recorded, which could help interpret the results with more confidence	Future studies can explore characteristics associated with group membership that may help to identify which participants can successfully engage in non-casino based gambling without re-triggering symptoms of PG

Meyer et al. (2015) German	Exploratory; - Low	29 amusement arcades were visited 15 times by covert gamblers (researchers), to observe the staff response to problematic gambling behaviour	Observation data on visitor volume, staff reactions to problematic gambling behaviour, self-exclusion, age checks	The findings showed that only in 5% cases, staff adequately responded to evident signs of problematic gambling behaviours	Pilot study with purposive, small sample size. Reliability of data collection needs improvement	The results indicated the necessity of regular external evaluations of amusement arcades, for successful implementation of harm-minimisation measures. Also, introducing a nationwide self-exclusion programme may enhance the staff compliance.
Percy et al. (2016) UK	Comparative study with controls; Level III-2; Moderate	845 online gamblers' gambling behaviour data was analysed, to evaluate the potential for using machine learning techniques to identify individuals who used self-exclusion	Gambling session data used in a predictive model that tested 4 techniques: Logistic regression, Bayesian networks, Neural networks and Random forest	Results found that Random forest technique was the most effective methods, which achieved an accuracy improvement of 35% against the baseline estimates	Self-exclusion used as a single proxy for harm was a limitation. Also, the complexity involved in interpreting self-exclusion events, and the model itself, raises further research, legal and practical concerns (e.g. discussing clinical risks and possible interventions)	These models need further testing-applying to a larger and more varied data-sets, in a live environment
Pickering et al. (2018) Australia	Comparative study without controls; Level III-3; Moderate	A retrospective study (survey) of 44 gamblers who took part in a 24-months multi-venue self-exclusion program	Gambling history prior self-exclusion, motives for and barriers preventing self-exclusion, additional help-seeking behaviour before/during entry into the self-exclusion program, Canadian PGSI, DASS-21, WHOQOL	Approximately two-thirds of the sample reported self-excluding in response to financial loss and hardship. Over one-third breached the program by gambling in a nominated exclusion venue, the primary reason being a failure to cope with negative emotions. Concomitantly, fear of embarrassment, if detected, was cited as the main variable contributing to compliance	Self-selected small sample, high attrition rate	Future longitudinal studies are needed to demonstrate a causal link between participation in self-exclusion programs and positive outcomes
Rockloff et al. (2015) Australia	Randomised Controlled Trial; Level II; High	132 volunteers were randomised into 3 conditions: 'relevant' message, 'irrelevant' message and control, to test an EGM player-protection feature	Average bet size, betting speed and persistence betting	Jackpot expiry ('relevant' message) was effective in limiting player losses, while there was no evidence that it reduced self-rated player enjoyment of the simulated EGM experience	The EGM was a simplified version of commercial multiline machine, and thus participants might not have reacted in this experiment entirely in the same way they would in a real venue	Future research would benefit by exploring jackpot expiry in more naturalistic settings, and with repeated play

Walker et al. (2015) USA	Comparative study with controls; Level III-2; Moderate	900 simulated casino patrons played slot under 7 scenarios, to explore the effect of a self-imposed win limit by running slot machine simulations in which the treatment group of players had self-imposed and self-enforced win and loss limits, while the control group had a self-imposed loss limit or no limit	Money spent, time spent	The 'win limit' resulted improvement in player performance and reduced casino profits	Modified utility function (data analysis) could lead to different conclusions, which is a key limitation of this study	More research is needed to determine whether the results would be significantly different for other types of games such as EGMs with jackpot, poker, blackjack etc. Future research could also examine the psychological effects and experiences associated with win limits
<i>e) Casino employee RG training</i>						
Quilty et al. (2015) Canada	Cross-sectional; Level IV; Moderate	130 casino employees completed online survey, to elicit their perspectives and experiences of responsible gambling	Training, indicators of PG, responses towards PG	Indicators: Gambling expenditures, gambling duration, self-exclusion, verbal or physical aggression Responses: report to supervisor/manager, engaging players in conversation, refer to RG services and information (including self-exclusion) Although a range of observed signs were described as useful by the staff, effective responses to such signs were viewed as a challenge. Also, job satisfaction was inversely related to perceived challenges of responding to signs	This study was exploratory and retrospective in nature, thus, has some methodological limitations	Future study should explore the role of organisational trust, support, politics and accountability to better understand and enhance RG initiatives
<i>f) RG codes of conduct</i>						
Rintoul et al. (2017) Australia	Mixed-methods; M Level 2	This study triangulated RG related data from Code of Conduct (CoC) documents, unannounced observation of 11 EGM venues, and interviews and focus groups conducted	Harm-minimisation interventions	Results showed only isolated evidence of supportive interactions between staff and gamblers to address gambling harm. The weight of evidence demonstrated that venues often failed to respond to signs of gambling problems, and thus contradicted with their CoC responsibilities.	Observations took place for short amount of time and were not repeated; non-English speaking gamblers could not be included for interviews; only 2 venue's staff participated in the research out of the 11 observed	A range of measures have been proposed to complement supportive interventions by staff: banning food and beverage service at machines, limiting cash withdrawals, using behavioural tracking algorithms to identify behavioural problems and binding universal pre-commitment systems.

		with 40 gamblers and 20 professionals				
<b>Prevention: a) Education/health communication</b>						
Canale et al. (2016) Italy	Randomised Controlled Trial; Level II; Moderate	Twelve classes of high-school students (adolescents) were randomly assigned to either conditions: 95 students in the intervention (PF and online training) vs 73 students in the control group (PF only)	SOGS (revised for adolescents), attitudes toward the profitability of gambling	Students in the intervention group reported a reduction in gambling problems (SOGC) relative to the controls. Also, frequent gamblers from the control group showed less realistic attitudes toward the profitability of gambling. However, there were no differences in gambling frequency, expenditure and attitudes toward the profitability of gambling between the two groups.	Reliance on self-reported outcome, relatively short follow-up period, relatively small sample	Intervention efficacy for adolescents may be improved by developing activities based on individual factors such as motives. Also, more research is needed employing objective measures, longer follow-ups and testing them with a larger sample
Diehr et al. (2018) USA	Mixed-methods; M Level 2	431 participants completed central intercept survey, to assess the impact of two health communication messages (posters) targeting casino and sports betting disorder	Assessment of the posters (content, design, impact)	Results revealed females preferred the casino message more; individuals who lost more money than intended understood the message more than those who never lost more than planned or who never gambled. For the sports betting message, the only significant association was between students' understanding of the advertisement and race/ethnicity	Weak survey instruments; subjective measures; no additional psychometric testing	Targeted materials with support of college administrators can deter disordered gambling
Graydon et al. (2017) Canada	Comparative study without controls; Level III-3; Moderate	54 novice players (university students) took part in an intervention, to explore whether a short education animation about Losses Disguised as Wins (LDW) could significantly reduce LDW-triggered win overestimation	Canadian PGI, practice spin categorization, LDW-triggered win overestimation effect, subjective-experience (excitement, enjoyment, arousal scores)	Win overestimates were significantly reduced in LDW game for players exposed to the LDW animation	Participants were not playing with their own money, which could in turn potentially have effects on participants' subjective game experiences or their motivation to attend to game outcomes	Future research may evaluate the effectiveness of the animation on reducing LDW mis-categorization with individuals of varying experience levels and at different post-animation time points
Huic et al. (2017) Croatia	Randomised Controlled Trial; Level II; Moderate	190 high school students (aged 14-17) were randomly assigned to training vs no training groups, to evaluate a youth	CAGI, CBS, gambling activities, generalized self-efficacy	Results showed significant changes in the post-test sessions for the training group. There was also better knowledge about gambling and less gambling related cognitive distortions. However, immediate effects on protective factors such as problem solving	Study instruments such as problem-solving skills, and resistance to peer pressure were constructed for this study and was not validated	Future research should involve long-term evaluation to determine whether the observed changes are also linked to behavioural change

		gambling prevention program		skills, refusal skills, and general self-efficacy were not observed		
Keen et al. (2017)	Systematic review; M Level 1	Systematic review of empirically evaluated school-based education programs	Empirical studies on adolescent gambling prevention interventions	There is a discord between current practice and evidence-based practice, as found from the 20 studies. To prevent adolescent gambling problems, program should be implemented universally, as early as possible (age 10 onward). Programs should focus on long-term impact of gambling (financial loss, impact on family etc.). The content and delivery of the programs will be more effective if targeted/age-specific	The strength of the efficacy of the reviewed programs remains unclear due to the notable methodological flaws of the included studies	Future research should examine behavioural outcomes rather than cognitive outcomes using stronger study designs
Oh et al. (2017)	Narrative review; - Low	Narrative review of educational-based PG prevention programs for adolescents	Effective educational-based programs in the area of adolescent PG	17 studies included have consistently reported on effectiveness of the programs on adolescents' risk factors (e.g. enhanced knowledge, positive attitudes). However, there is insufficient evidence to conclude that these programs can effectively reduce actual youth gambling behaviour	There was no attempt to synthesize the outcomes of the studies (i.e. no meta-analyses etc.)	Future studies should examine programs that use cognitive-behavioural approach to provide opportunities for knowledge application into gambling settings. Also, more follow-up studies are required to gauge the actual behavioural change in youth
St-Pierre et al. (2017)  Canada	Randomised Controlled Trial; Level II; High	280 high school students were randomly assigned to either an intervention (prevention video based on NAE and TPB constructs) or a control condition	GAS, GINS, GIS	Results revealed that the video was not effective in producing desired changes in NAEs, the key constructs of the TPB, or the frequency of gambling behaviour. The findings suggest that the video, delivered as a universal preventive intervention, may be insufficient for modifying these outcome variables	Preliminary findings generated from a convenience sample, and more research is needed for definitive conclusions	Future studies should investigate the prevention tool's efficacy in improving knowledge or decreasing misconceptions about gambling, as well as its suitability as a selective preventive intervention for higher frequency adolescent gamblers or problem gamblers
<i>b) Health promotion &amp; responsible gambling</i>						
Hing et al. (2017)  Australia	Cross-sectional; Level IV; Moderate	860 gamblers on high-risk products, recruited through gambling venues and online wagering operator, were surveyed about their use of RG strategies	Knowledge of RG behaviours, understanding of and support for the term 'responsible gambling'	Knowledge of RG strategies was reasonably high amongst all gambler risk groups, but lower-risk groups were more likely to use RG strategies. Predictors of lower-risk gambling included: greater confidence in their understanding of RG, endorsement of lower gambling expenditure and frequency limits, fewer erroneous gambling beliefs, more likely to gamble for pleasure, setting a money limit in advance of gambling etc.	The RG strategies included were restricted to those promoted by one major responsible gambling agency in one jurisdiction	Further research is needed to confirm the current results amongst a random population sample, while prospective research is needed to establish causality between uptake of RG strategies and non-harmful gambling

Subramaniam et al. (2017) Singapore	Qualitative; M Level 3	25 older adults (aged 60 and above) were interviewed, to explore RG	Cognitive and behavioural strategies employed to regulate gambling	Delayed gratification, perception of futility of gambling, setting limits, maintaining balance, help-seeking and awareness of disordered gambling in self or in others. Family interventions included pleading and threatening, compelling help-seeking, and family exclusion order (FEO)	The study did not examine gambling operator initiatives to encourage RG and the FEO was also not explored	Further studies including longitudinal designs are needed to determine the effectiveness of these RG strategies
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CAGI: Canadian Adolescent Gambling Inventory; CBS: Cognitive Beliefs Scale; CBT: Cognitive Behavioural Therapy; DES: Dissociative Experience Scale; EGM: Electronic Gambling Machine; GAS: Gambling Attitudes Scale; GCS: Gambling Craving Scale; GGR: Gross Gaming Revenue; GHQ12: General Health Questionnaire 12; GINS: Gambling Injunctive Norms Scale; GIS: Gambling Intention Scale; NAE: Negative Anticipated Emotions; PG: Problem Gambling; PGI: Problem Gambling Index; PCGP: Problem Card Game Playing; PF: Personalised Feedback; PGSI: Problem Gambling Severity Index; RG: Responsible Gambling; TL: Theoretical loss; TPB: Theory of Planned Behaviour

**Table 5: Understanding and measuring harm (N=38 studies)**

Author(s) & year/ Study location	Study type/ NHMRC Evidence Level/ grade of evidence	Participants/ Intervention and comparator groups (/study aim)	Primary outcome measures	Main findings	Limitations	Recommendations
<i>Harm measurement: a) PGSI</i>						
Binde et al. (2017) Sweden	Secondary analysis; - -	Data of a gambling population survey of 4991 participants was used, to explore the association between PG and in different forms of gambling	Forms of gambling, gambling involvement, PG, gambling intensity	The study found that while many PGs regularly participate in multiple forms of gambling, half of PGs participate regularly in one or two forms of gambling.	No exploration of causal relationships between variables was possible due to the nature of the study. Also, the study could not distinguish between online and offline gamblers, which might obscure the results	RG initiatives should focus on those forms of gambling that are more closely associated with PG
Browne et al. (2017) Australia	Secondary analysis; - -	Data was sourced from 2014 Study of Gambling and Health, Victoria with 13,544 adult participants	Burden of gambling harm	Gambling-related harm was associated with 101,675 years of life lost: appx two-thirds that of alcohol use and dependence, major depressive disorder. Also, milder but non-negligible harm accrued to 85% of the gambling population (moderate and low-risk gamblers)	Co-morbidities and method variance in DW were not considered	The study suggested that the tendency to conflate the (typically low) prevalence of PG with total gambling is misleading, and argued for a broader population-health based measure
Browne et al. (2017) Australia	Cross-sectional; Level IV; Moderate	The study aimed to establish a relationship between PGSI and HRQoL using a population health method using data of 786 population panel and 51 gambling experts	PGSI, HRQoL	Results generated a calculation DW for PG (.44). PG harm appears to be similar to that of a manic episode of bipolar disorder and severe alcohol abuse disorder	General population sample often did not provide reliable estimates	Future research should refine and validate DW for different levels of PG severity
Gainsbury et al. (2017) Australia	Cross-sectional; Level IV; Moderate	In this study, 501 adults took part in an online survey, to explore the breadth of gambling involvement among Esports bettors	Gambling behaviour, PGSI	The Esports bettors had significantly greater gambling involvement both in terms of breadth of activities used	Self-recruited sample, unequal sample size, Self-rated measures. The specific types of	Longitudinal studies are needed to investigate the etiology of problems



				and frequency of use compared to the sports bettors	Esports bet on was not assessed, nor was respondents' engagement in Esports as a spectator or player	
Ronzitti et al. (2016) UK	Cross-sectional; Level IV; Moderate	736 treatment-seeking individuals with gambling disorders were assessed, to verify the association of PGSI with particular gambling activities	Types of gambling, levels of harm	The PGSI score was significantly higher for lower stakes gaming machine gamblers and for FOBT gamblers	The results could be different for non-treatment-seeking gamblers in the general population. The study measures were subjective, recall-based	Further research on gambling subtypes are necessary for a better understanding and recognition of different patient groups, according to their gambling behaviour
<i>b) PGSI and SOGS</i>						
Castren et al. (2018) Finland	Secondary analysis; - -	3555 adults' data from the Finnish Gambling 2015 survey was used, to investigate the association between gambling harms and game types	PGSI, SOGS	Aged 18-24, gambling several times a week, high relative expenditure, online gambling and engaging weekly either in scratch games, betting games or slot machine gambling were associated with a higher number of gambling harms. Chasing losses was the most typical harm among online poker players and fast-paced daily lottery game players, while poor self-control was the most typical harm with other game types	The respondents might have experienced other harms that were not detected by the instruments	A comprehensive instrument for measuring gambling-related harm needs to be used to gain more in-depth understanding of a harms in a larger context
<i>c) Canadian Problem Gambling Index</i>						
Currie et al. (2017) Canada	Comparative study without controls; Level III-3; Moderate	Data was sourced from Quinte longitudinal study (N=3054) and Leisure, Lifestyle and Lifecycle project (N=809), to derive low-risk gambling limits	Gambling behaviours, and harm	Longitudinal data showed low-risk gambling thresholds of eight times per month, \$75CAN total per month and 1.7% of income spent on gambling-all of which are higher than previously derived limits from cross-sectional data. Gamblers	Subtle differences in the gambling participation questions across surveys; the reliability and validity of self-reported gambling expenditure is only moderate	The limits proposed in the current study require further validation with longitudinal studies

				who exceed any of the three low-risk limits are four times more likely to experience future harm than those who do not		
Gill et al. (2016) Canada	Cross-sectional; Level IV; Moderate	A survey was conducted with 506 participants, to examine the social and psychological impacts of gambling in the Cree communities	Canadian PGI, ASI, BDI and the computerized Diagnostic Interview Schedule for psychiatric diagnoses	Overall, 69.2% respondents participated in any gambling/gaming activities over the past year with 20.6% classed as moderate/high risk gamblers and 3.2% as the problem gamblers	Self-rated outcomes	The study suggested that future interventions for gambling disorders should alongside focus on other group of dysfunctional behaviours such as substance abuse problems
<i>d) 72-item checklist (harms across 6 domains)</i>						
Browne & Rockloff (2018) Australia	Cross-sectional; Level IV; Moderate	1524 gamblers (non-lottery forms) attended an online survey, to assess whether PP applies to gambling	Exploring the prevalence of 72 harmful consequences across four risk categories of PG	The majority of harms in the 72-item list, including serious harms were more commonly associated with lower risk gamblers	Self-reported measures, no consideration of offsetting benefits that might accrue from gambling and binary scoring could affect the interpretation of results	Future research might consider reducing the breadth of harms surveyed, thus making room for measurement of the frequency and duration of the experienced harm
Langham et al. (2016) Australia	Mixed methods M Level 3	Data regarding harms from gambling was gathered using four separate methodologies, a literature review, focus groups and interviews with professionals involved in the support and treatment of gambling problems, interviews with people who gamble and their affected others, and an analysis of public forum posts for people experiencing problems with gambling and their affected others	Development of a conceptual framework	Proposes a definition and conceptual framework of gambling related harm	Provisional work on the definition of harm	Further research is needed to operationalise the taxonomy and determine the prevalence of harms within the population
Li et al. (2017) Australia	Cross-sectional comparisons ; Level IV; Moderate	3076 gamblers and 2129 affected others completed a survey, to compare gambling harms among gamblers and affected others	PGSI	The results indicated large commonalities in the experience of harms reported by gamblers and affected others. Further, gamblers appeared to 'export' about half of the	Heterogeneity of affected others was not considered. Also, affected others calculated PGSI second-hand	Strategies need to be taken to prevent PG harms on not only on gamblers but also on affected others

				harms they experienced to those around them		
Salonen et al. (2018) Finland	Secondary analysis; - -	An overview of the results of the 2016 Finnish Gambling Harms Survey, with a population sample of 7186 and clinical sample of 119	Gambling participation, habits, related harms and opinions on advertisements	Frequency of gambling in the population sample was characteristically once a week, while in the clinical sample it was daily. The clinical sample also perceived gambling advertising as obtrusive and as a driving force for gambling	Secondary analysis, more empirical research is needed to confirm these findings	Future research should aim to understand what type of external factors pertaining to policy and governance may contribute to the shift from recreational to PG
<i>e) SGHS</i>						
Browne et al. (2018) Australia	Cross-sectional; Level IV; Moderate	1524 gamblers took part in an internet panel, to validate the SGHS	72-item harms checklist, Personal Wellbeing Index, PGSI	Psychometric analysis suggested very strong reliability, homogeneity and unidimensionality. Wellbeing decreased linearly with the number of harms indicated. Results concluded that weighted SGHS score could be aggregated at the population level to yield a sensitive and valid measure of gambling harms	SGHS does not measure social and economic harm and thus, should not be treated as a complete measure of the 'cost' of gambling	SGHS or metrics that can be derived from it such as DW or HRQoL can achieve more sensitive and valid monitoring of the population-level impact of gambling
<i>f) DSM-IV</i>						
Canale et al. (2016) UK	Secondary analysis; - -	Data was derived from 7756 individuals participating in the British Gambling Prevalence Survey 2010, to examine whether PP applies to this population in relation to gambling related harm	Adapted version of DSM-IV, PGSI, gambling involvement	The PP proved to be a promising way of examining gambling-related harm. Also, development of 'low-risk' gambling limits based on gambling appeared feasible	Authors commented that assessment of gambling-related harm was not completely satisfactory. Also, self-reported outcomes, and the sample size for subgroups were small.	Further research is needed to examine the feasibility of low-risk limits
<i>g) PG-FIM</i>						

Dowling et al. (2016) Australia	Mixed-methods; M Level 2	212 treatment seeking problem gamblers' data were used, to create PG-FIM	Development of the PG-FIM	The PG-FIM was comprised of three factors: financial impacts, increased responsibility impacts, psychosocial impacts with good psychometric properties	Family members were not included in the sample	The psychometric properties of the PG-FIM require investigation using family members samples
<i>h) Specifically designed/Individual questions</i>						
Kim et al. (2016) New Zealand	Secondary analysis; - -	Secondary analysis of an outcome study of NZ gambling helpline (N=150), to examine the gender differences on treatment outcomes	Impacts of gambling on social life, employment, family and health	Results showed that at baseline, women described greater problem severity but shorter problem duration, greater distress and lower quality of life than men. However, men were more likely to access treatment. Both groups showed improved outcomes post-treatment and did not have any significant differences	Self-reported measures, small sample size	Future controlled study incorporating objective measures are needed to confirm these findings
Eby et al. (2016) USA	Qualitative; M Level 3	In-depth interviews of 161 non-treatment-seeking frequent gamblers, to explore gambling-related problems	Gambling-related problems across life domains	The majority of problems were relational, financial, work and school related	There was no comparison on different types of gambling, and no information collected on co-morbid psychological problems	Socio-demographics of the study population might have shed some light on why this group does not seek treatment. Further quantitative research should also examine associations between specific aspects of gambling and spill-over into non-work and work life
Shannon et al. (2017) Australia	Cross-sectional comparisons ; Level IV; Moderate	391 clinical and 151 community gamblers took part in a survey, to map the proportional distribution of gambling related harms	Gambling related harms	Results suggested that while high-impact harms such as suicide and divorce are commonly associated with PG, the reported frequency is low. Most gamblers sustain low-impact harms such as reduced savings and worry	The assessment required insight on the part of respondents to determine the causal links between their gambling and associated harms	The findings are a basis for developing a psychometrically valid measure of gambling-related harm
<i>Specific forms of harm: a) Multiple</i>						

Cowlshaw & Kessler (2016) UK	Secondary analysis; - -	Data were derived from the 2007 Adult Psychiatric Morbidity Survey of 7403 adults, to examine the associations involving PG and indicators of mental and physical health	Associations involving PG, indicators of mental and physical health, psychological adjustments and health care usage	There were associations with PG and mental health (anxiety, neurotic symptoms, substance use problems) and psychosocial maladjustment (suicidality, financial difficulties and social support). There were limited influences on physical health	The cut-off criteria for at-risk and PG were arbitrary. Different measures had reference to different time-frame (e.g. past week, past year, since 16 years of age)	Future research should focus on non-specialist health-care settings using stronger study designs
Okunna et al. (2016) USA	Cross-sectional; Level IV; Moderate	Evaluated the prevalence of recreational gambling, and cooccurring conditions prior to gambling expansion in Massachusetts (MA), and assesses associations between gambling and co-occurring behavioral, and mental health disorders.	Association between gambling and co-occurring behavioural and mental health disorders	Recreational gambling is significantly associated with obesity, alcohol consumption, heavy smoking, prescription drug use, and poor mental health.	Sampling and survey methodology	Early public health interventions before gambling expansion are of critical importance.
Samuelsson, Sundqvist & Binde (2018) Sweden	Qualitative M Level 3	Interviews with 40 gamblers who had participated in the Swelogs Swedish Longitudinal Gambling Study	Configurations of gambling change and harm	The experience of gambling harm is highly subjective	The participants had previously reported negative consequences of gambling and so the results are not generalisable to gamblers' experiences more broadly	The subjective experience of harm should be taken into account when designing/developing prevention and harm reduction measures
<i>b) Mental health</i>						
Bischof et al. (2016) Germany	Cross-sectional; Level IV; Moderate	442 pathological gamblers took part in CAPI, to examine the impact of type of gambling for suicidal events	Suicidal events	High financial loss, mood disorders, gambling on EGM in gambling halls or bars and being female were associated with suicidal events. Other gambling types such as casino games or betting on sports, or the number of DSM-IV were not independently associated with suicidal events	Suicidal events was measured as part of the depression questions whereas suicidality might occur in the absence of depressive symptoms	Future research should focus on longitudinal studies to scrutinize the relationship and the mechanisms of EGM use and the risk of suicidal events
Llyod et al. (2016) UK	Cross-sectional; Level IV;	A web-based study of 4125 online gamblers, to examine the thoughts and acts of self-harm and suicidal ideation	Thoughts and acts of self-harm and suicidal ideation	Self-reported non-gambling-related self-harm was negatively related to age and	Web-based survey, self-selected sample, possibility of over-	Further longitudinal research is needed in order to determine whether the associations

	Moderate			marital status, and positively related to problematic alcohol use. Self-reported acts of self-harm both related and unrelated to gambling were associated with drug misuse. Thoughts and acts of gambling-related self-harm were associated with PG, gambling involvement and parental PG. All types of self-harm were associated with mood disorder symptoms, unemployment and certain gambling motivations	representation of online gamblers. Also, there was no clear indication of whether the sample was treatment-seeking	observed indicate predictive risk factors for future self-harm. Also, future research could explore whether found predictors of gambling-related self-harm apply within samples of exclusively offline gamblers, amongst gamblers from different geographical locations and amongst samples of treatment-seeking problem gamblers
Manning et al. (2015) Singapore	Cross-sectional comparisons ; Level IV; Moderate	The medical records of drug patients (N=879), alcohol (N=754) and gambling disorders (N=554) were examined, to explore differences in suicidal ideation and lifetime attempts between substance and gambling addictions	Suicidal ideation and lifetime attempts in substance and gambling disorders	Rates of suicidal ideation (thoughts, and plan) but not lifetime attempts were significantly higher among gambling than substance use patients. Co-morbidity, debt, being female and being a gambling patient were significant predictors of suicidal behaviours	Self-reported data	The findings highlighted the importance of screening for suicidality, even in the absence of co-morbidity, particularly among gambling disorder patients with debts. Also, suicide risk should be assessed periodically and referral to suicidal prevention interventions routinely offered to this vulnerable population. Future research should include corroborative reports of suicidal ideation from patients' CSO
Moghaddam et al. (2015) USA	Secondary analysis; - -	Data of 13,578 participants of NESARC survey were collected, to compare suicidal ideation and suicide attempts in five groups with different severities of PG	DSM-IV criteria for pathological, non-gambling, low-risk, at-risk, PG and pathological gambling	PG was associated with suicidal ideation and suicide attempts after adjustment for sociodemographic variables. Pathological gambling was associated with suicidal ideation and suicidal attempts after adjustment for sociodemographic variables	Self-reported data. Suicidal events was measured as part of the depression questions whereas suicidality might occur in the absence of depressive symptoms	Both mental and physical health professionals including GPs should educate patients about problem and pathological gambling, and screen for gambling related problems including suicidal ideation. Also, further research of the demographic indicators relating to these five gambling groups would be beneficial

Ronzitti et al. (2017) UK	Cross-sectional; Level IV; Moderate	A clinical sample of 903 treatment-seeking pathological gamblers was analysed, to examine the relationship between pathological gambling and current suicidal ideation	PGSI, PHQ-9, suicidal ideation and attempts, GAD-7, AUDIT-consumption, drug-use behaviours, gambling behaviours	46% of the patients reported current suicidal ideation. People with current suicidal thoughts were more likely to report greater PG severity, depression and anxiety compared to those without suicidality. Also, past suicidal ideation and higher anxiety might be predictive factors of current suicidality	Voluntary treatment-seeking sample, which might be different to non-treatment-seeking populations. Self-reported measures, no information on the severity of suicidal ideation and suicide attempts	Subgroup of individuals with pathological gambling, more anxiety symptoms and a lifetime history of suicidal ideation may benefit from a more intensive treatment programs. Future longitudinal studies should aim to identify factors leading to suicidal attempts from suicidal ideations
Sharman et al. (2019) UK	Case series with pre-post-test; Level IV; Moderate	Case files of 768 treatment-seeking gamblers collected for 2000-2015 were analysed, to examine the trends and patterns in treatment seeking gamblers	Different forms of gambling and increase in attempted suicide, comorbid mental health problems and medication	Prevalence of different forms of gambling identified as problematic has changed over time: FOBTs, sports betting, and poker have become more common whereas horse and dog racing, the national lottery have become less common. Online gambling has increased over-time. Also, gamblers are more likely to have attempted suicide, co-occurring mental health disorder and to start treatment having already been prescribed medication	Cell counts were low (fewer frequency in some years) for some categories, and thus meaningful analysis was not possible. Enough data was unavailable for female gamblers and thus, a gender comparison was not attempted	The recent harm-prevention strategies are more focused on FOBTs, and there is a need for paying attention into the sports betting, poker and internet gambling areas as well. Also, more research is needed on female gamblers
<i>c) General health</i>						
Castern et al. (2018) Finland	Cross-sectional; Level IV; Moderate	Population-based survey of 3251 participants (aged 15-74), to examine the relationship between gambling expenditure, socio-demographics, health-related correlates and gambling behaviour	Expenditure shares, WGE, MGE, MHI-5, AUDIT-C, SOGS	Males are significantly associated with both weekly and monthly gambling expenditure. Also, people with lower incomes contribute proportionally more of their income to gambling compared to middle and high-income groups	Self-reported data. Overall household income and how it might impact gambling behaviours, was not explored	More research is needed to explore regional differences and specific game types, particularly in disadvantaged areas
<i>d) Family/Interpersonal adjustment</i>						

Cowlshaw et al. (2016) Canada	Comparative study with controls; Level III-2; Moderate	4121 'general' and 'at-risk' population were recruited in a study, to understand the implications of gambling problems for family and interpersonal adjustment	PGSI (ARG/MR or PG), family functioning, social support, relationship satisfaction	Baseline measures of ARG and MR did not predict rates of change in trajectories of family or interpersonal adjustment. Rather, the annual measures of MR predicted time-specific decreases in family functioning, social support and relationship satisfaction	The representativeness of the sample was affected by missing and intermittent data. Some measures had weak or no psychometric evidence	Specialist services need to focus on both gamblers and their family members
<i>e) Intimate partner/Family violence</i>						
Markham et al. (2016) Australia	Secondary analysis; - -	654 postcode-level data in Victoria between 2005-2014 were used, to determine the relationship between EGM accessibility and police-recorded DV	Police recorded family incidents, DV related physical assaults, EGM and gambling venues accessibility	Significant associations of policy-relevant magnitudes were found between all domestic violence and EGM accessibility variables	Police records routinely undercount DV. Also, postcodes are not the ideal spatial units for conducting this kind of analysis.	Experimental research using geocoded police data is required to determine if reducing gambling accessibility is likely to reduce the incidence of DV
Roberts et al. (2018) USA	Secondary analysis; - -	This study examined data of NESARC survey of 25,631 adults, to examine the association between gambling and physical IPV	AUDADIS-IV, Conflict Tactics Scale-R	PG was associated with increased odds of both IPV perpetration for males and females and with IPV victimization for females only	Self-reported IPV data, short version of Conflict Tactics Scale, inconsistency in data collection between both waves	There is a need for PG treatment services to remain vigilant for both IPV perpetration and victimization and consider potential identification
<i>f) Impact on others</i>						
Goodwin et al. (2017) Australia	Cross-sectional comparisons; Level IV; Moderate	Problem gamblers (N=3076) and those affected by someone else's gambling (N=2129) took part in an online survey, to estimate the number of affected others for the typical problem gambler	Number of people affected by problem gamblers	A typical problem gambler affects six others. As expected, low-risk and moderate-risk gamblers affected fewer people	Self-reported measures, online recruitment might lead to over-representation of problem gamblers and under-representation of affected others in the sample	Future campaigns may be tailored to provide the most relevance assistance to the people at most risk and to those posing risk to others by continuing research on this topic
Salonen et al. (2016) Finland	Secondary analysis; - -	4515 participants' data were collected via a population survey, to investigate the proportion of CSO	Proportion of CSO, extent and types of gambling harms for CSO	Overall, the proportion of CSOs was 19.3%, and of them 59.5% had experienced one or more harms. Females experienced more harms than males	Single-item instrument	CSOs and their position in evaluating gambling harms



g) Financial impact						
Heiskanen & Toikka (2016) Finland	Secondary analysis; - -	Data of Finnish Gambling Survey 2011 (N=4484) was used, to cluster gambler profiles based on the money and time consumed in gambling activities	Clustering Finnish gambler profiles	Six profiles of gamblers were identified, from infrequent to omnivorous gamblers. Highest PG prevalence was in the groups of sport betting + EGM and omnivorous gamblers, which were both dominated by men	Needs further investigation to establish the findings	Future studies ought to explore more profoundly the differences between identified gambler sub-groups. Multivariate analyses predicting PG through a combination of cluster membership, gambling behaviour and socio-economic characteristics should be completed
h) Social costs						
Winkler et al. (2017) Czech Republic	Secondary analysis; - -	Data was taken from 2012 National Substance Abuse Research consisting of 2134 participants (aged 15-64), to determine the social costs of gambling	Epidemiological and economic data	In 2012, social costs of gambling were estimated to range between 541,619 and 619,608 thousand EUR. While personal and family costs accounted for 63% of all social costs, direct medical costs were only estimated to range from 0.25 to 0.28% of all social costs	Representativeness of some of the epidemiological data utilized in this study might be limited. The robustness of the 'cost' is also not guaranteed	Limitations stemmed from initial assumptions suggested that methodology for the calculation of the social costs of gambling needed further development
i) Crime/Violence						
Johnson & Ratcliffe (2017) USA	Comparative study without controls; Level III-3; Moderate	Examination of 96 months' crime data, to determine the impact of a casino on neighbourhood crime	Impact of a casino on neighbourhood crime	Results indicated that the operation of the casino had no significant effect on violent street felonies, vehicle crime, drug crime or residential burglary in the surrounding community	Based on the data of a single casino and thus, not generalizable	Relatively new research area, requires further exploration
Laursen et al. (2016) Denmark	Secondary analysis; - -	Data was derived from Danish Health and Morbidity Survey (2005-10) for 384 problem gamblers and 18,241 non-problem gamblers (included non-gamblers), to examine the association between PG and violent and criminal behaviour	Measurement of PG and criminal behaviour, types of charges	Results showed problem gamblers had significantly higher odds of being charged than non-problem gamblers. There was a strong association between PG and being charged except for road traffic charges; however, the association	PG was defined based on two questions, and therefore no clinical validation had been conducted	Future research should incorporate information on mental disorders and other personality traits that might confound the relation between PG and criminal behaviour

				was not stronger for economic charges than for violence and drug charges		
Moghaddam et al. (2015) USA	Secondary analysis; - -	Data was derived from the NESARC survey with 42,038 individuals, to identify the social and behavioural problems among five gambling severity groups	Five gambling groups were derived using DSM-IV criteria: non-gambling, low-risk, at-risk, problem and pathological gambling	All gambling severity levels were associated with an increased risk for a number of problematic behaviours. Financially oriented behaviours had the strongest associations with gambling	Self-reported data	Further examination of gambling problems in financial and criminal justice settings is recommended
<i>j) Disability weights</i>						
Rawat et al. (2018) New Zealand & Australia	Cross-sectional comparisons ; Level IV; Moderate	The study generated disability weight estimates for NZ using 48 experts' and 276 general population members' evaluation, and compared with Australian statistics, and with anxiety and alcohol use disorders	DW estimates, quality of life	DW estimates for all NZ gamblers were consistently higher than the Australian weights. The quality of life impact for PG in NZ was comparable to that experienced in severe alcohol use disorder	Experts were recruited via convenience sampling	Further work on gambling harms could include two types of visual analogue scales (with and without comparison conditions), randomise the protocol orders, and implement a wider variety of protocols such as discrete choice experiments (DCE)
<i>k) Quality of life</i>						
Loo et al. (2016) China & Australia	Cross-sectional comparisons ; Level IV; Moderate	359 Chinese university students' and 86 Australian university students' data were used, to evaluate the predictive ability of different psychological variables on pathological gambling behaviour	GUS, GRCS, SOGS, WHO-QoL, AUDIT	The research model fitted both pathological and non-gamblers and erroneous gambling-related cognitions served as a full mediator for the predictive relationship between gambling urge and pathological gambling in the Chinese sample, but served as a partial mediator in the Australian sample	Unequal sample sizes, self-reported measures	Future investigations should incorporate objective measures using community sample

ARG: At-risk gambling; ASI: Addiction Severity Index; AUDADIS: Alcohol Use Disorder and Associated Disability Interview Schedule, fourth version; AUDIT: Alcohol Use Disorders Identification Test; BDI: Beck Depression Inventory; CAPI: Computer Assisted Personal Interview; CSO: Concerned Significant Others; DSM: Diagnostic and Statistical Manual of Mental Disorders, Fourth/Fifth Edition; DV: Domestic Violence; DW: Disability Weight; FOBT: Fixed-Odds Betting Terminal; GAD-7: Generalized Anxiety Disorder; GRCS: Gambling Related Cognition Scale; GUS: Gambling Urge Scale; HRQoL: Health Related Quality of Life; IPV: Intimate Partner violence; MGE: Monthly Gambling Expenditure; MHI: Mental Health Inventory-5; MR: Moderate-risk; NESARC: National Epidemiologic Survey on Alcohol and Related Conditions; PG: Problem Gambling; PGI: Problem Gambling Index; PG-FIM: Problem Gambling Family Impact Scale; PGSI: Problem Gambling Severity Index; PHQ-9: Patient Health Questionnaire-9; PP: Prevention Paradox; SGHS: Short Gambling Harm Screen; SOGS: South Oaks Gambling Screen; WGE: Weekly Gambling expenditure; WHO-QoL: World Health Organisation Quality of Life

## Appendix 4: Grey Literature Summary Tables

Table 1: Gambling Prevalence (17 Reports).....	2033
Table 2: Attitudes and behaviours toward gambling in vulnerable or target groups (9 Reports).....	2133
Table 3: Emerging technologies and new trends (15 Reports).....	219
Table 4: Long term efficacy and effectiveness of treatments (9 Reports) .....	227
Table 5: What works in prevention and harm minimisation (12 reports) .....	2322
Table 6: Understanding and measuring harm (15 Reports) .....	23939
Table 7: Support for policy development and regulatory effectiveness (9 Reports) .....	248

**Table 1: Gambling Prevalence (17 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps <sup>3</sup> & Conflicting evidence
Abbott (2017) Global	Discussion paper  (11 pages)	Discussion paper on the global epidemiology of gambling	Greater gambling availability has led to increased consumption and increased problems in many parts of the world and the onset and progression of problem gambling remains unclear, with plateauing prevalence rates in the face of reduced gambling participation.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• There is an urgent need to place gambling on national and international public health agendas and strengthen evidence-based policy and prevention strategies, as well as greatly extend early intervention and treatment provision.</li> <li>• Understanding of wider gambling-related harms.</li> </ul>
Allen+Clarke (2015) New Zealand	Secondary analysis  Mixed-methods  (126 pages)	Literature review, report synthesis and data analysis of multiple gambling related data sources	This report on the National Gambling Study confirms several trends: <ul style="list-style-type: none"> <li>• Decline in gambling participation rates has steadied. Prevalence of problem gambling is the same as in 2011/12. Prevalence of moderate risk gambling and problem gambling has remained stable over the last decade.</li> <li>• Proportion participating weekly or more often in continuous forms of gambling has declined; proportion participating in four or more different gambling activities has also declined.</li> </ul>	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• More longitudinal and empirical studies to understand the efficacy of treatments.</li> <li>• Specific focus on Maori and Pacific populations is needed.</li> </ul>

<sup>3</sup> Gaps identified in the reports

			<ul style="list-style-type: none"> <li>• Substantial ethnic differences in the burden of gambling harm; combined rate of moderate risk gambling and problem gambling for Māori is more than three times higher than for European/Others; rate for Pacific peoples is more than four times higher. Unchanged for 2 decades.</li> <li>• Lotto is the most common form of gambling undertaken in New Zealand.</li> <li>• NCGMs [EGMs] =38% of expenditure but has dropped by almost 30% since 2004; spending on Lotteries products has increased over 60% in the same timeframe.</li> <li>• Men are more likely to be problem gamblers, and also more likely to contact the Gambling Helpline for help.</li> <li>• People living in neighbourhoods with the highest levels of deprivation were five times more likely to report moderate-risk/problem gambling. Neighbourhoods with higher levels of deprivation are more likely to offer opportunities for gambling.</li> <li>• Referrals from problem gambling services were more successful when service addressing comorbid issues (eg. mental health, drug addiction) were within the same provider.</li> </ul>	
Conolly et al. (2017)  UK	Quantitative Survey  (68 pages)	Gambling behaviour in Great Britain  PGSI used	<p>This report provides information about gambling behaviour in Great Britain using data combined from the Health Survey for England (HSE) 2015, the Scottish Health Survey (SHeS) 2015, and the Wales Omnibus 2015. The report describes the prevalence of gambling participation, at-risk gambling and problem gambling, and explores characteristics associated with gambling participation, at-risk gambling, and problem gambling.</p> <ul style="list-style-type: none"> <li>• 63% of adults (16+) in Great Britain had gambled in the past year, with men (66%) being more likely than women (59%) to do so.</li> <li>• The most popular gambling activities were the National Lottery (46%), scratchcards (23%), other lotteries (15%).</li> <li>• 3.9% of adults had a PGSI score which categorised them as at-risk gamblers.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Rates of problem gambling vary according to which gambling activities people undertake, with the lowest rates of problem gambling found among those who gambled on the National Lottery. Why?</li> </ul>

			<ul style="list-style-type: none"> <li>Men were more likely than women to be classified as a problem gambler (DSM-IV: 1.3% and 0.2% respectively) (PGSI: 1.1% and 0.1% respectively).</li> </ul>	
Conolly et al. (2018)  UK	Secondary analysis  Quantitative  (99 pages)	14,277 gamblers (aged 16 and over)  PGSI used	<p>Key findings:</p> <ul style="list-style-type: none"> <li>57% of adults (16+) in Great Britain had gambled in the past year, with men (62%) being more likely than women (52%) to do so.</li> <li>Most popular were National Lottery (41%), scratchcards (21%), other lotteries (14%).</li> <li>For men and women, gambling was highest among middle age groups and lowest among the youngest and oldest age groups.</li> <li>Overall gambling declined from 65% in 2012, 63% in 2015 to 57% in 2016. When excluding those who gambled on National Lottery draws only, participation in gambling has remained largely stable (43% in 2012, 45% in 2015 and 42% in 2016). However, online gambling or betting increased from 7% in 2012 to 10% in 2015 and 2016.</li> <li>Rates of low risk gambling were highest among those aged 16 to 24 (5.8%) and lowest among those aged 75 and over (0.4%). Rates of moderate risk gambling were highest among 25 to 34 year olds (2.1%) and 35 to 44 year olds (2.0%) and lowest among 65 and over (0.2%).</li> <li>Rates of low risk and moderate risk gambling were higher among men than women.</li> <li>Low risk gambling rates were highest among the unemployed (6.6%) and lowest among retired people (0.7%). Moderate risk gambling rates were highest among unemployed.</li> <li>Low risk gambling was higher among adults with comorbid mental ill-health.</li> <li>Low risk and moderate risk gambling were also significantly associated with increased weekly alcohol consumption.</li> <li>Problem gambling rates have remained largely stable.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Those with low well-being and probable mental ill health should be considered specific vulnerable groups and further work is needed to unpick the nature of these associations.</li> <li>Whilst rates of problem gambling are not increasing, neither are they decreasing. Why?</li> </ul>

<p>Davidson et al. (2015)</p> <p>Australia</p>	<p>Cross-sectional</p> <p>Qualitative</p> <p>(140 pages)</p>	<p>Phone interviews with approx. 2000 general population</p> <p>PGSI used</p>	<p>The survey report, commissioned by the ACT Gambling and Racing Commission, provides detailed information on gambling participation in the past 12 months (2014), in the ACT. Interviews covering attitudes towards gambling, gambling participation, expenditure, problems and harms as well as physical and mental wellbeing, socioeconomic and demographic characteristics, whether they had sought help for gambling related issues and whether they had close family with gambling problems.</p> <ul style="list-style-type: none"> <li>• About 55% of the ACT adult population had gambled in the last 12 months.</li> <li>• The most common activity was playing Lottery (33%), playing EGMs (20%), betting on horse or greyhound races (18%) and buying scratch tickets (15%).</li> <li>• The most common gambling activities undertaken using the internet were betting on sports (4%), races (4%) and Lottery (3%); 84% also gambled via other means.</li> <li>• Considerable reduction in gambling and expenditure since the 2009 Survey.</li> <li>• Significant reduction in the proportion of people reporting at least one symptom of problem gambling. Severe problem gambling was found amongst 0.4% of the adult population in 2014 compared to 0.5% in 2009.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Unpacking and profiling the overlap between gambling over the internet and via other means would provide valuable insight into whether or not the internet is particularly risky in terms of gambling problems.</li> <li>• Longitudinal research, including exploring why people with problems do not want or get help,</li> <li>• Family impacts of problem gambling in general population samples.</li> </ul>
<p>Department of Applied Social Sciences, The Hong Kong Polytechnic University (2016)</p> <p>Hong Kong</p>	<p>Cross-sectional</p> <p>Mixed-methods</p> <p>(258 pages)</p>	<p>Quantitative: 2,045 telephone interviews conducted among general public (aged 15-64). Also, 3318 questionnaires were collected from the youth (aged 15-22). Qualitative: 17 interviews among gamblers and 'significant others'. Also, 8 FGs were conducted among 38 participants (general public, young people, young people at-</p>	<p>Key findings:</p> <ul style="list-style-type: none"> <li>• 61.5% respondents gambled in the past year.</li> <li>• The tendency of gambling participation among Hong Kong population is decreasing gradually from 77.8% in 2001, 80.4% in 2005, 71.3% in 2008 and 62.3% in 2012, and 61.5% in 2016.</li> </ul> <p>General recommendations included increased and continued publicity and public education, remediation services, and funding support.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Gender has gradually become a weak predictor of gambling, which may imply that females are being exposed to the same level of risk as males in becoming problem gamblers.</li> </ul>

		risk and professional gamblers)		
Department of Justice and Attorney-General, QLD (2017)  Australia	Cross-sectional  Quantitative  (185 pages)	15,000 adults were interviewed using the Computer-Assisted Telephone Interview (CATI) system  CPGI used	Key findings: <ul style="list-style-type: none"> <li>• Lottery products (including lotto, instant scratch tickets and other lotteries) were used by 54.9% of Queensland adult population in the previous 12 months. 25% had purchased art union tickets or played gaming machines in the previous 12 months. 18% had bet on horse, harness or greyhound races and 15% had played Keno in the previous 12 months.</li> <li>• Prevalence of problem gambling has not changed significantly over time (2008-2016)</li> <li>• Prevalence of non-gambling, low risk and moderate risk gambling have slightly increased (2011-2016)</li> <li>• 7% of Queensland adults had experienced emotional problems because of someone else's gambling, 6% had experienced financial problems and 5% had experienced relationship problems.</li> <li>• Almost half of all low risk, moderate risk and problem gamblers had gambled while under the influence of alcohol or other drugs. About 19% of low risk gamblers, 22% of moderate risk gamblers and 52% of problem gamblers had felt seriously depressed in the last 12 months.</li> <li>• Young men aged 18–34 years were over-represented in the low risk (30%), moderate risk (25%) and problem gambling (29%) groups.</li> </ul>	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• Regional differences were noted in prevalence and type of gambling. Why?</li> </ul>
De Bruin & Labree (2015)  The Netherlands	Pre-post-test without control group  Quantitative  (2 pages)	509 gamblers completed an online questionnaire  SOGS and PGSI used	Key findings: <ul style="list-style-type: none"> <li>• Based on the combined results of the SOGS and PGSI, 5.2% of participants in online gambling qualify as problem players. 11.3% classify as at-risk players, with recreational players at 83.4%.</li> </ul>	<b>Gaps:</b> The nature of gambling problems in online gamblers.

			<ul style="list-style-type: none"> <li>Many online players take part several forms of online gambling. Most online players also participate in land-based gambling. The most played forms of online gambling are sports betting (49%) and poker (40%), gaming machines (24%), casino (20%) and bingo (14%). Online betting on horse- or greyhound racing (5%) or online scratch (3%) is less common.</li> </ul>	
<p>Gambling Commission (2018)</p> <p>UK</p>	<p>Quantitative Survey</p> <p>(58 pages)</p>	<p>Gambling behaviour in Great Britain</p> <p>PGSI used</p>	<p>This report presents annual estimates of gambling behaviour in Great Britain in 2017, and constitutes the Gambling Commission's regular tracker of gambling participation. The datasets have been gathered via a combination of telephone and online surveys. Prevalence of gambling, low-risk and problem gambling were similar to the 2015 NatCan survey.</p> <ul style="list-style-type: none"> <li>26% of online gamblers follow a gambling company on a social media platform with rates highest among 18-24 year olds.</li> <li>Facebook remains the most popular social media platform on which online gamblers follow gambling companies.</li> <li>51% of people have seen a gambling advert on the television in the past week and 46% of people have seen or heard a gambling sponsorship on the television or radio in the past week.</li> <li>Online gamblers are more likely to be prompted to spend money on gambling by advertising (e.g. seeing an advert on television) than social media posts.</li> <li>80% think there are too many opportunities for gambling and 71% think that gambling is dangerous for family life.</li> <li>64% think that people should have the right to gamble whenever they want.</li> </ul>	<p><b>Gaps:</b> Nil identified.</p>
<p>Georgiou et al. (2015)</p> <p>UK</p>	<p>Prospective cohort</p>	<p>The dataset contained 35,000 observations of the UK gamblers for 2008-2014</p>	<p>This report summarises the key findings over a 5-year period (2008-14), and considerations in planning future research.</p> <ul style="list-style-type: none"> <li>Gambling participation has remained steady.</li> </ul>	<p><b>Gaps:</b> Nil identified.</p>



	Quantitative (55 pages)		<ul style="list-style-type: none"> <li>• Remote gambling is growing quickly, and reaching new audiences, especially individuals aged over 35. The increase amongst people aged over 55 was statistically significant.</li> <li>• Participation in slot/fruit machines, bingo, virtual gaming machines played at a bookmaker's is declining.</li> <li>• The gap between men and women has remained predominantly stable; but gambling frequency gap has widened, with men gambling more frequently.</li> <li>• Frequency of play of high-frequency gamblers has increased, but number of high frequency gamblers decreased.</li> <li>• Disposable income was found to positively correlate with remote gambling; whereas, there was no association between disposable income and overall gambling participation levels.</li> </ul>	
Hare (2015)  Australia	Cross-sectional  Quantitative  (303 pages)	13,554 Computer Aided Telephone Interview (CATI) surveys were conducted among adults  PGSI used	<p>Significant decrease in:</p> <ul style="list-style-type: none"> <li>• Gaming machine participation (decreased 6.24% from 21.46 % in 2008 to 15.22% in 2014)</li> <li>• Scratch ticket participation (decreased 4.85% from 15.31% in 2008 to 10.46% in 2014)</li> <li>• Phone or SMS competition participation (decreased 1.40% from 7.35% in 2008 to 5.95% in 2014)</li> </ul> <p>Increase in:</p> <ul style="list-style-type: none"> <li>• Betting on racing (increased 3.71% from 16.40% in 2008 to 20.11% in 2014)</li> <li>• Sports and event betting participation (increased 1.15% from 3.96% in 2008 to 5.11% in 2014)</li> </ul> <p>Gender differences:</p> <ul style="list-style-type: none"> <li>• A larger decline in gaming machine participation for males (decreased 5.62 % to 17.22 % in 2014), compared to females (decreased 3.8 % to 16.28% in 2014)</li> <li>• Significant increase in sports betting participation for males (from 2.12% to 8.65%), yet not for females</li> <li>• Significant increase in racing betting for females (from 12.02% to 20.17%), yet not for males.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• At risk gamblers whose proportions are increasing.</li> <li>• Messages about gambling harm directed to low risk and moderate risk gamblers, given only a very small proportion of them report experiencing harm.</li> <li>• Why are there increases in the gambling frequency of moderate risk and problem gamblers and increases in the size of the low risk gambling risk category?</li> <li>• Increasing participation of females in wagering and role impact of the increasing feminisation of wagering. Implications for advertising (Spring Racing) and policy/regulation.</li> <li>• True random digit dial mobile sampling has not been undertaken in previous gambling prevalence studies in Australia (reliance on white pages recruitment methods). Many telephone-based prevalence studies do not include dual frame sampling and miss approx. 25% of</li> </ul>

			<p>Conclusions:</p> <ul style="list-style-type: none"> <li>• Significant declines in gaming machine participation and shifts in major channels for gaming machine play.</li> <li>• Online gaming machine play increased 4.9 times, online table game play increased 4.3 times and online sports betting increased 2.3 times. The internet could become a major access channel for both gaming machines and table games in the next one to two decades.</li> <li>• The decline in gaming machine participation was not accompanied by a decline in problem gambling.</li> </ul>	<p>population. Important given increased gambling behaviour in mobile users.</p> <ul style="list-style-type: none"> <li>• Understanding other gaps to help-seeking, beyond stigma &amp; embarrassment.</li> <li>• Researching ways to deliver loyalty and VIP programs without harm to gamblers.</li> <li>• Lotto, Powerball and the Pools feature as a highest-spend activity of a large proportion of moderate risk gamblers. What messaging would impact their spending?</li> <li>• Need for comprehensive programs and communications to treat and prevent problem gambling and its impacts within Indigenous communities.</li> </ul> <p><b>Conflicting findings</b> While removal of ATMs from venues is reported to have reduced gaming machine expenditure, moderate risk and problem gamblers withdrew a significantly larger amount of money from EFTPOS per gambling session, compared to non-problem gamblers. While this is not to diminish the value of ATM removals as a harm-minimisation measure, it may highlight the potential for high-risk gamblers to eventually self-correct to their previous behaviour over time, as demonstrated in smoking bans.</p>
Harrison et al. (2016)  Denmark	Cross-sectional  Quantitative  (85 pages)	8,405 adults (aged 18-75) completed online survey	95.4% of the population has no detectable risk, 2.9% has an early risk, 0.8% has an intermediate risk, 0.7% has an advanced risk, and 0.2% can be classified as problem gamblers. Used the Focal Adult Gambling Screen (FLAGS) and tests rigor against several other instruments (eg. PGSI, AUDIT, GACS, BAI, DSM-IV). Concluded that imposing a threshold gambling history leads to underestimation of the prevalence of gambling problems.	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Design of surveys may under-estimate gambling risk.</li> </ul>
Makipaa & Laitakari (2016)	Discussion paper  (54 pages)	A discussion paper on the Nordic gambling supervisory authorities	Summarises prevalence, gambling types, new trends and supervision by regulatory authorities across Sweden, Norway, Denmark and Finland.	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Aware of rising prevalence of online gambling, though no clear discussion of</li> </ul>

Denmark, Finland, Norway, Sweden				regulatory responses to minimise or measure potential harm.
Packman & Rowlingson (2018)  UK	Discussion paper	Exploratory research on Birmingham gamblers	<p>Key findings:</p> <ul style="list-style-type: none"> <li>• Approx. half of UK adult population gambled in the last four weeks. About one in ten gambled online in the past year.</li> <li>• Approx. 1% of the UK population have been identified as 'problem gamblers', 4% as low to moderate risk of problem gambling.</li> <li>• Those on lower incomes or unemployed, those from Asian/Asian British and Black British backgrounds, homeless people and prisoners are at greater risk.</li> <li>• Strong correlation between problem gambling and mental health problems.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Explore further the extent and nature of problem gambling and gambling-related harm. This research would look particularly at issues such as age and ethnicity as well as the role of deprivation and financial inclusion in relation to problem gambling.</li> <li>• Explore the role for (more) education and advice in relation to the prevention of problem gambling.</li> <li>• Prevention, identification and support services or problem gambling are needed on the supply and demand side of the issue.</li> </ul>
Stevens (2017)  Australia	Cross-sectional  Quantitative	<p>4,945 Computer Aided Telephone Interview (CATI) surveys were conducted among adults / Indigenous focus</p> <p>PGSI and Gambling Motivation and Expectancies Scale (GOES) used</p>	<p>Key Findings:</p> <ul style="list-style-type: none"> <li>• Annual gambling participation declined significantly for: Any gambling (including raffles), Lotteries, Raffles, Electronic gaming machines, Instant scratch tickets</li> <li>• Annual gambling participation increased significantly for: Racetrack betting, Sports betting</li> <li>• For racetrack betting and casino table games, women significantly increased their participation.</li> <li>• The increase between 2005 and 2015 in sports betting was only significant for men.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• What negative consequences do at-risk gamblers experience?</li> <li>• Do different motivations to gamble affect problem gambling risk and harms experienced?</li> <li>• What are the characteristics of people who experience harms from another person's gambling?</li> <li>• The significantly higher levels of problem gambling risk and harms experienced from another person's gambling amongst the Indigenous sample require more detailed analyses to better understand the extent of harm from gambling in this population.</li> </ul>
South Australian Centre for Economic Studies (2015)  Australia	Cross-sectional  Mixed-methods	Focus groups with casino gamblers and interviews with venue staff recruited from 13 casinos; fieldwork in Sydney, Melbourne and Adelaide.	<p>This large report flagged several research questions, many that have relevance to the current review's domains of interest:</p> <ul style="list-style-type: none"> <li>• Responsible gambling practices of casinos compared to hotels/clubs; potential differences in risks, technologies, and effectiveness of different policy approaches.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The effectiveness of casino responsible gambling intervention programs.</li> </ul>

	(322 pages)		<ul style="list-style-type: none"> <li>• Responsible gambling provisions and development of harm.</li> <li>• Potential impacts of changes in casino games/operation on the effectiveness of responsible gambling measures.</li> <li>• Changes in products and their presentation affect local gamblers.</li> <li>• Marketing that casinos undertake and how they affect local gamblers, including different ethnic groups.</li> <li>• Responsible gambling measures being taken by casinos; their target and impacts.</li> </ul> <p>Issues of interest:  (p.197) Casino size and regulatory obligations mean they have both a requirement and capacity to develop more sophisticated technology based systems and the capacity to analyse player data (where a player is a loyalty club member) such as intensity, duration and frequency of visitations and play as a tool to identify potential problem gamblers.  (p.201) Casinos offer continuous forms of gambling that are more likely to lead to impulse gambling that leads to harm.</p>	
Williams et al. (2015)  Canada	Cross-sectional  Longitudinal  (301 pages)	4,121 adults (age 17 and older)	Reports on the Quinte Longitudinal Study of gambling and problem gambling, a longitudinal study conducted in the Quinte region of Ontario, Canada from 2006 to 2011.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• The need for a wide array of educational and policy initiatives to address the multi-faceted biopsychosocial etiology of problem gambling.</li> <li>• The need to take into account comorbid mental health and substance abuse in treatment.</li> </ul>

**Table 2: Attitudes and behaviours toward gambling in vulnerable or target groups (9 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
Centre for Rural Health, UTAS (2018)  Australia	Cross-sectional  Quantitative  (63 pages)	1395 students (including 382 (27.4%) international) of University of Tasmania (UTAS) took part in an online survey	<p>The following, are examples of overall results:</p> <ul style="list-style-type: none"> <li>• 38.0% of international and 56.3% of domestic students (51.3% of all participants) reported engaging in one or more types of gambling over the past 12 months.</li> <li>• Casino table games -most often engaged in by international students, followed by instant lotteries EGMs. Instant lotteries and EGMs - most frequently engaged in by domestic students.</li> <li>• Betting on sporting or other events (eg. election results, was common among both international (7.6%) and domestic (10.5%) students.</li> <li>• Students falling in the problem gambling range, both international and domestic, had higher levels of smoking, alcohol and substance use, and poorer mental health.</li> <li>• 40% of international and 64% of domestic students in the problem gambling range reported that they needed to seek help for one of the abovementioned problems, but chose not to do so.</li> </ul>	<p><b>Gaps</b></p> <ul style="list-style-type: none"> <li>• The gambling behaviour of international University students in Australia, and the impact of this on students' health and well-being.</li> <li>• What health promotion and early intervention efforts are more effective at targeting male international students and those in their social networks?</li> </ul>
Dickins & Thomas (2016)  Australia	Discussion paper  (13 pages)	Discussion paper on gambling in Culturally and Linguistically Diverse (CALD) communities	<p>Key findings:</p> <ul style="list-style-type: none"> <li>• CALD communities within developed nations—including Australia—tend to participate in gambling less than the overall population, but those who do gamble may be more likely to experience problems.</li> <li>• CALD people who gamble may be more likely to develop problems than individuals from the general population due to different beliefs about luck and chance, factors relating to migration, and issues around stigma and shame.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Both specific CALD and culturally appropriate mainstream gambling help services are needed to support CALD gamblers and their families.</li> <li>• Research into varying CALD communities is still very limited and much of the existing research is now out of date.</li> <li>• Targeted research for groups identified as at-risk due to high participation or harms related to gambling should be prioritised.</li> <li>• Providing culturally appropriate information about gambling to individuals arriving in Australia is critical to ensure that they understand the risks of gambling, including how this may vary for different forms of gambling.</li> </ul>

			<ul style="list-style-type: none"> <li>• Stigma and shame can create considerable barriers to help seeking in CALD communities.</li> <li>• Increased access to gambling and migration stressors may increase the chance that migrants might gamble, placing them at additional risk of developing problems. „</li> </ul>	
<p>Ethnic Communities Council of Victoria (2018)</p> <p>Australia</p>	<p>Cross-sectional</p> <p>Quantitative</p> <p>(12 pages)</p>	<p>117 Victorian participants (members of the Ethnic Communities Council of Victoria and Victorian Multicultural Commission) completed a survey on the topic 'gambling harm prevention' via online or on paper</p>	<p>This is a preliminary report on a two-year Gambling Prevention Project which will proactively raise awareness of gambling harm among culturally diverse communities in Victoria An online survey about gambling harm was completed by 117 people drawn from ethnic communities across Victoria. Key findings:</p> <ul style="list-style-type: none"> <li>• 55% thought that gambling is a significant problem.</li> <li>• Top 3 perceived social harms as a result of gambling include financial loss, family breakdowns and family violence.</li> <li>• Pokies were of most concern to respondents.</li> <li>• 46% don't think their communities are discussing the social harm caused by gambling.</li> <li>• 57% of those who are vulnerable to and experiences social harm from gambling are male.</li> <li>• 44% think that individuals aged 30-60 years old experience social harm from gambling.</li> <li>• Most common response for why people gamble is to 'win/make money'.</li> <li>• Top 3 reasons why gambling harm is not discussed are shame/embarrassment, stigma and personal addiction.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Clearer health literate in-language information be provided to culturally diverse communities on the addictive design of EGMs.</li> <li>• More gambling and product harm information in languages other than English to community members who attend gambling venues.</li> <li>• More in-language gamblers' help services are needed.</li> <li>• Accreditation of in-language financial counselling services, including ethnic specific workers primarily employed in ethnic specific organisations.</li> <li>• More allocation of gambling industry resources toward high loss/low SEIFA LGAs with significant culturally diverse communities.</li> </ul>
<p>Palmer (2015)</p> <p>Australia</p>	<p>Cross-sectional</p> <p>Mixed methods</p>	<p>Literature review of sports betting research / focus on male youth (International literature)</p>	<p>Review commissioned by the Tasmanian Department of Health and Human Services into the proliferation, trends, and risks, particularly to vulnerable groups, of sports betting and its promotion in Australia and internationally. The normalisation of gambling has been referred to in</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Limited evaluations of education resources; improved understanding of gambling, but not positive behavioural change.</li> </ul>

	(29 pages)		<p>the literature as “gamblification”. Directions for further research are provided (p.21). Key themes to emerge were:</p> <ul style="list-style-type: none"> <li>• Sports bettors tended to be male, younger, higher socio-economic status, employed full time, better educated, with access to Internet.</li> <li>• Motivations for initial involvement include their perceived level of their knowledge and experience of the sport involved.</li> <li>• The global expansion of the Internet and associated media technologies has created an environment of “convenience gambling”, which is difficult to monitor and regulate.</li> <li>• Sports betting is perceived (along with doping and match fixing) as a threat to the integrity of Australian sport.</li> <li>• The saturation marketing of wagering brands during television broadcasts has embedded sports betting within the game.</li> <li>• Marketing messages about “risky” products at major sporting events (i.e. unhealthy foods and alcohol) need to include messages about gambling and sports betting more particularly.</li> </ul>	<ul style="list-style-type: none"> <li>• Few strategies, campaigns or interventions are targeted at young men or the youth market in relation to sports betting.</li> <li>• Dedicated studies of the practices and experiences of sports bettors.</li> <li>• Exploring how sports betting industry marketing strategies may affect the attitudes and behaviours of at risk groups (e.g. young male sports fans).</li> <li>• Exploring the extent to which public health and policy strategies, including harm minimisation messaging, are effective in responding to wagering industry marketing strategies during sporting matches.</li> <li>• A ‘watching brief’ for new markets for sports betting (eg. women, CALD).</li> <li>• Unpacking the notion of “gamblification”; normalisation of gambling.</li> <li>• Longitudinal studies with young people that can track their gambling activity and transitions into adult sports betting.</li> </ul>
Rodda, Lubman & Dowling (2017)  Australia	Quantitative survey plus 3 open questions  (34 pages)	62 family members recruited from Gambling Help Online,	Explored Online support needs and experiences of family members affected by problem gambling through their use of low-intensity and self-directed treatment options. Found that family members experience a significant range of gambling-related harms and access help for a variety of reasons; 57 resource needs were identified	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Family issues are likely ongoing, and while a single session of e-therapy was sufficient for many family members, resources need to be available for family members to access over the longer term and across the multitude of situations they will likely encounter.</li> <li>• More tailored supports are needed</li> <li>• Guidelines for families to identify gambling problems and seek help are needed.</li> </ul>
Royal Australian and New Zealand College of Psychiatrists (RANZCP) (2017)	Cross-sectional  Mixed methods  (8 pages)	Position statement / focus on mental health	This position statement by the RANZCP details concerns about problem gambling for people with mental illness and their families; and, conversely, the impacts of gambling for the development of mental illness. They highlight that the stigmatisation of problem gambling continues to act as a barrier to individuals accessing the	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>▪ Given the high levels of comorbidity, screening of mental health populations for problem gambling should be routine. Conversely, screening for other mental health issues, including the risk of suicide, is important among individuals presenting with gambling</li> </ul>

Australia			support they need. The RANZCP advocates that any response to problem gambling must be a respect for the person, their behavioural disorder and its treatments. Approximately 90% of people diagnosed with problem gambling have at least one other mental health diagnosis.	<p>problems. Education of the mental health workforce is limited, and it is unclear what assessment strategies are best for engaging this population.</p> <ul style="list-style-type: none"> <li>▪ Definitive research is required on naltrexone in the treatment of problem gambling.</li> </ul>
Siegloff (2017) Australia	Qualitative (38 pages)	Interviews (n=24), focus on young people in rural areas	<p>Study in rural Victorian communities explored:</p> <ol style="list-style-type: none"> <li>1. The motivations that lead to decisions to gamble, to seek help and not seek help.</li> <li>2. The origins and context of youth gambling.</li> <li>3. Perspective of youth gambling from affected others and youth not affected by gambling.</li> </ol> <p>One key theme and three subthemes emerged:  <b>Normalisation:</b> cultural accommodation of gambling, social acceptability within particular networks of young people, and availability and accessibility to gambling products, relating mainly to the influence of family, and less emphasis on peer socialisation. For Indigenous, parental gambling was the primary socialisation agency.  <b>Interaction between normalisation and trauma based experience:</b> normalisation needs to be viewed in the light of other complex psychosocial issues experienced by youth who gamble (eg. linked to experiences of trauma and intergenerational trauma, a learnt coping strategy to deal with past trauma).  <b>The role of structure and agency and normalisation:</b> inequalities experienced by Indigenous populations and low socioeconomic populations but also disadvantages experienced living in small rural communities (eg. poverty and lack of meaningful experiences linked to a lack of opportunity and employment).  <b>The hidden nature of gambling:</b> Youth do not recognise their gambling as a problem primarily because they don't experience the adult consequences of gambling. Also, it is not always viewed by professionals dealing with youth as a primary concern in the complex presentations of youth in their services.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The meaning of gambling in the rural context.</li> <li>• The meaning of gambling for youth in a rural context.</li> <li>• Help-seeking in a rural context and with youth.</li> </ul>



<p>Thimasarn-Anwar et al. (2017)</p> <p>New Zealand</p>	<p>Cross-sectional</p> <p>Quantitative</p> <p>(187 pages)</p>	<p>3,854 New Zealanders (including Maoris) aged 15 and over, were interviewed face-to-face in respondents' homes, using a Computer Assisted Personal Interview (CAPI) method</p>	<p>This report examines individual and household-level reported gambling-related harm in the past 12 months.</p> <ul style="list-style-type: none"> <li>• Pokies were the most commonly cited cause of gambling problems.</li> <li>• People living in more deprived areas, Māori and Pacific ethnicities were at greater risk of 'problem gambling' than those of other ethnicities.</li> <li>• Beliefs that playing pokies at a pub or club is more harmful than other forms of gambling has dropped.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• A meta-analysis including other New Zealand gambling reports is needed to provide greater statistical power and produce a more precise estimate of gambling-related harm.</li> <li>• While declines in gambling-related harm have been seen at the population level, ethnic disparities in experience of harm remain even after controlling for other demographic factors.</li> </ul>
<p>Thomas, Pitt &amp; Bestman (2017)</p> <p>Australia</p>	<p>Discussion paper for the VGRF</p> <p>(20 pages)</p>	<p>Focused on gambling and adolescents.</p>	<p>This discussion paper summarises the existing Australian evidence. It explored why young people gamble, prevalence and types of gambling in young people, how harm from gambling is recognised (or not) in young people (by them as part of help-seeking, and by others), and potential ways to respond to address gambling harm in young people.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The long-term effects of early exposure to gambling are unknown.</li> <li>• Evidence from others areas of public health (alcohol and tobacco) may inform action in this area; however, this is currently limited to basic and inconsistently delivered education programs in schools and sporting clubs, with little rigorous investigation of their impact.</li> <li>• Evidence of under-age sports-betting (one study found up to 20% of 15-17 year olds had bet on sports) suggests failures in policy, regulation, access and implementation. Access to online betting and use of Apps needs investigation.</li> <li>• Given teenagers are 4 times more likely to develop gambling problems than adults, and 1 in 5 adults with gambling problems started gambling before 18, more understanding of the life-course pathways to regular adult gambling (associated with harm and for the development of problem gambling) are needed.</li> <li>• The normalisation of gambling through marketing, particularly sports betting and digital marketing of gambling more broadly to young people, and its impact needs to be better understood and addressed.</li> </ul>

				<ul style="list-style-type: none"><li>• Limited knowledge on role of family, friends, and gambling venues exposure</li><li>• Gender differences in gambling (boys are more likely to gamble than girls): reasons unclear.</li><li>• The causal relationship between gambling and other adolescent risky behaviours is unclear.</li></ul> <p><b>Conflicting Evidence:</b></p> <ul style="list-style-type: none"><li>• A SA longitudinal study found those with problem gambling at 15 or 16 were not more likely than others to have signs of problem gambling at 21. I.e. The mechanisms may be more complex.</li></ul>
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**Table 3: Emerging technologies and new trends (15 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
<p>Australian Wagering Council (2016)</p> <p>Australia</p>	<p>Submission</p> <p>(41 pages)</p>	<p><b>Industry paper</b></p> <p>Submission: Interactive Gambling Amendment (Sports Betting Reform) Bill 2015</p>	<p>This document is included to provide an example of conflicting views (though, in general, submissions were excluded from the review). Many comments refute current evidence, particularly related to online wagering. Examples of comments are noted here (pp.2-3):</p> <ul style="list-style-type: none"> <li>• “We refute claims that there has been an explosion in gambling: there has been a shift in wagering (racing and sport) from traditional retail outlets to online as Australian consumers take advantage of new digital technologies and the mobile platform as their preferred betting platform, and there has been a shift from racing to sportsbetting but overall wagering spend per capita is broadly flat....</li> <li>• We also refute claims that online wagering regulation is uncontrolled. In fact, regulation is well-developed, and in some jurisdictions, compares well with international practice. But it is not consistent across Australia, and it ought to be. We support the case for national regulation....</li> <li>• We do not accept that sportsbetting is uncontrolled. There are good controls in place for this segment of Australia’s gambling market, which represents only 3% of Australia’s total annual gambling expenditure (pokies in clubs and pubs comprise 52.2% and casino gaming 20.7%), but these could and should be strengthened, by creating a national regulatory framework....</li> <li>• We argue that placing onerous restrictions on Australian licensed wagering operators will change those operators’ behaviour, but not that of consumers, who will seek what they want where they can.” (pp.2-3)</li> </ul> <p><b>They conclude:</b> “Our fundamental argument for amending the IGA is that wagering is here to stay, and consumers will use the power and freedom the internet gives them to make choices about how, and how much they wager. Legislation, to be effective,</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• How will restrictions on Australian licensed wagering operators change those operators’ behaviour?</li> <li>• Analysis and comparison of online wagering systems</li> </ul>

			needs to protect the integrity of Australian sport and racing, and safeguard Australian consumers in terms of consumer protections and harm minimisation whilst working with the grain of consumer choices...We support a national regulator, a national self-exclusion scheme, mandatory responsible gambling training, standards for account information and other provisions.”(pp.3-4)	
Dickins & Thomas (2016)  Australia	Discussion paper  (22 pages)	Simulated gambling games	Summarises what games are popular and where play occurs. The most popular forms of simulated gambling are poker, “pokies”, lotteries and casino-style games such as blackjack. However, there are other games that, while they do not appear to have a gambling theme, can include elements commonly associated with gambling.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• Further explorations of the types of simulated gambling to broaden the knowledge base and allow meaningful comparisons between the different types of simulated gambling.</li> <li>• How will wearable devices affect the usage of simulated gambling?</li> <li>• When do people play? Who plays and why?</li> <li>• Convergence and movement between gaming and gambling and how simulated gambling may increase vulnerability to problematic gambling?</li> <li>• Blurred boundaries between gambling and gaming, combined with social media advertising: how does exposure to this gambling-like experience serve to normalise gambling as a suitable and acceptable activity?</li> <li>• Motivations for movement from games to commercial gambling?</li> <li>• Are simulated gambling games as a replacement for gambling a protective for some individuals?</li> <li>• The current classification system is inadequate and fails to provide clear warnings.</li> <li>• A better understanding of addiction to simulated gambling is needed.</li> </ul>
Fulton (2016)  Ireland	Discussion paper  (140 pages)	Literature review and consultation with experts and stakeholders (via email)	This review highlights emerging trends and developments in gambling in Ireland since 2013, which looked at is the blurring of lines between online gambling and social media games which simulate gambling. <ul style="list-style-type: none"> <li>• Many gambling industry companies have merged, providing them with increasing opportunities to</li> </ul>	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• How to monitor and regulate children being exposed to advertising and promotions via these digital platforms?</li> <li>• Online age verification presents both technical and legal difficulties, and has led some to argue</li> </ul>

			<p>reduce debt, expand reach, offer more services and improve profits.</p> <ul style="list-style-type: none"> <li>• Increased regulation may have unintended consequences such as players choosing to move to less regulated sites to avoid restrictions on gambling.</li> <li>• Many social media posts try to appeal to new customers by promoting ease, enjoyment or possible winnings available with gambling and users are often encouraged to share information about the game through social media, invite friends, and in doing so can be rewarded with in-game prizes.</li> </ul>	<p>that parental responsibility and education be the primary focus. How to achieve this is unclear.</p> <ul style="list-style-type: none"> <li>• Since social casino gaming does not meet the legal definitions of gambling, it is not regulated by the same laws to which gambling are subject. How can harm be monitored and minimised?</li> <li>• How can online gambling data be best protected for purposes of preventing problem gambling, fraud and money laundering?</li> </ul>
<p>Gainsbury et al. (2015)</p> <p>Australia</p>	<p>Cross-sectional</p> <p>Mixed methods</p> <p>(337 pages)</p>	<p>Use of social media in gambling, literature review, surveys and interviews with range of stakeholders (Gambling operators, Social Media, Gaming, Policy and Prevention Experts, social media users)</p>	<p>This is a large report of a multi-stage study that aimed to identify and describe the availability and promotion of gambling and social casino game opportunities via social media; whether there has been a transition between social casino game play and gambling; and the potential for social media to be used to promote responsible gambling.</p> <p>Most social media users (88%) do not engage with gambling operators through social media. Younger respondents, those with higher levels of gambling problems and gamblers were significantly more likely to state that these promotions had increased their gambling.</p> <p>For some problem gamblers, playing social casino and practice games may exacerbate problems; whereas, for some, it lessened the urge to gamble and helped to resolve their gambling problems. 66% of adolescents 55% of adults agreed that social casino game operators encouraged them to try gambling. Though, similar proportions said social casino games had no impact on their desire to gamble or actual gambling.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Social media may act as a trigger for gambling by individuals in vulnerable groups. Who is more at risk?</li> <li>• How might social media be used to promote responsible gambling?</li> </ul>
<p>Gainsbury, King, Abarbanel, et al. (2015)</p> <p>Australia</p>	<p>Report for VRGF</p> <p>(148 pages)</p>	<p>Literature review and content analysis of advertising within social media</p>	<p>Explores convergence of gaming and gambling, its extent and consequences:</p> <ul style="list-style-type: none"> <li>• Positive association between gambling, problem gambling and playing social casino games.</li> <li>• Playing gambling-themed games may increase confidence in winning and persistence in gambling.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• There is no regulation specifically developed for gambling-themed games currently within Australia.</li> <li>• Causal direction and role of games for promoting gambling is unclear.</li> </ul>

			<ul style="list-style-type: none"> <li>• Most advertisements came from companies not regulated in Australia. Nearly 90% of advertisements did not include any responsible or problem gambling language.</li> </ul>	<ul style="list-style-type: none"> <li>• No firm evidence on consequences of gambling-themed games for young people (or role of different group characteristics and environments).</li> </ul>
Jenkinson et al. (2018)  Australia	Cross-sectional  Mixed-methods  (120 pages)	<p>Quantitative: online survey with 423 Melbourne living bettors (n=335) and non-bettors (n=88) aged 18-35</p> <p>Qualitative: 35 interviews with stakeholders: bettors (n=20) and affected others: administrators/coaches (n = 7) and parents (n = 3)</p>	<p>Focus on sports betting and the role that sporting organisations can play in supporting members to make informed, healthy choices about betting.</p> <ul style="list-style-type: none"> <li>• The average age of sports betting initiation was 18 years; however, 23% of bettors reported being under 18 when they first placed a bet on sports.</li> <li>• Bettors reported placing bets on 6 different sports (on average) during the previous 12 months; most commonly Australian Football League (AFL), horse racing, English Premier League (EPL) soccer and National Basketball Association (NBA) basketball. 75% bet across multiple types of sports betting.</li> <li>• Bets were typically placed online via a smartphone (61%) or computer/tablet/TV (18%), in a range of different locations including home (86%), licensed venue on smartphone (56%), licensed venue on self-serve terminal (49%) or at work, school or university (55%).</li> <li>• On average, bettors reported that 60% of all bets were planned in advance of an event, 30% were placed on impulse prior to an event, and 10% were placed on impulse during an event.</li> <li>• Overall, 64% reported having bet on sports while affected by alcohol during the previous 12 months; 51% said this led to spending more money or more bets than they otherwise would have done.</li> <li>• According to the PGSI, 15% of all bettors would be classified as “problem gamblers” and over 50% classified as at low or moderate risk.</li> <li>• Attitudes to sports betting advertising were mixed, but most felt that more regulation of sports betting advertising was needed.</li> <li>• Most participants noted that sports betting was too easily accessible.</li> </ul>	<p><b>Gaps</b></p> <ul style="list-style-type: none"> <li>• Impacts of regulation of betting on young adults who undertake sports betting.</li> <li>• What role should leagues and clubs play in supporting their members to make informed healthy choices about their gambling? How could this be measured?</li> <li>• Prospective, longitudinal research with young males to explore how sports betting behaviours and the experience of gambling-related harms change over time.</li> <li>• Types of gambling-related harms experienced by young male sports bettors (e.g., effects on mental health, relationship problems, reduced work or study performance, financial harms).</li> <li>• Barriers and enablers to help-seeking in this population.</li> <li>• What types of risk-reduction or self-regulation strategies do young male sports bettors employ to minimise gambling-related harm, and which strategies are most successful for them?</li> <li>• Impacts of the following on their sports betting and experience of gambling-related harm: alcohol and other drug consumption; wagering marketing (including different types of promotions and inducements); unplanned or impulse betting; relationship between sports betting and engagement in other gambling activities (e.g., emerging activities such as fantasy sports and e-sports, casino games, etc.); role do social networks (including informal and formal betting networks).</li> <li>• Barriers and enablers for sporting organisations in developing and implementing responsible gambling policies and practical responses?</li> </ul>

				<ul style="list-style-type: none"> <li>• Broader level strategies and initiatives to reduce gambling-related harm among young male sports bettors.</li> </ul>
Hing, Russell, Rawat (2018)  Australia	Report for VRGF  (80 pages)	Study involving survey and content analysis of messages.	Study looking at wagering push messaging (n=931) sent to 98 regular sports bettors. Push marketing by wagering operators is intense, received almost daily, and is particularly influential on betting behaviour – more often prompting regular bettors to place more, larger and riskier bets. Banning this push marketing, limiting message frequency, or requiring a rigorous opt-in system, would be prudent regulatory measures.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• Further evidence-based changes to wagering policies and practices, particularly to monitor effects on reducing betting-related harm.</li> <li>• Larger samples to determine impact on sub-populations (eg. women, CALD, indigenous).</li> <li>• Effects of direct wagering messaging on social norms, social practices, and socialisation, and on harm.</li> </ul>
King (2018)  Australia	Review/ Discussion paper  (98 pages)	A review of the literature on online gaming and gambling in children and adolescents	<p>This review examined convergence between gaming and gambling; specifically, exposure by children and adolescents to gambling-like activities in gaming, and also how they are marketed, and the potential impacts and consequences of this exposure (risks and protective factors for development of future gambling problems.</p> <ul style="list-style-type: none"> <li>• Recent innovations have enabled video games to provide monetised goods (ability to 'cash-out' with 'loot boxes' or in-game purchasing systems involving random virtual goods) which has facilitated unregulated gambling activities by third parties.</li> <li>• Exposure to gambling-like content on social media and popular online video games is common among Australian youth (with 9 in 10 13-17yos owning a mobile phone / 97% have access to internet at home).</li> <li>• Three online gambling products have links to online games: skin gambling; fantasy sports; and free play modes on gambling websites.</li> <li>• Simulated gambling may: (1) facilitate entry into a gambling subculture with avenues for progression to financial gambling; (2) enable interaction with a social network of peers and experienced gamblers that provide incentives to gamble, and; (3) enable covert and excessive use of these activities.</li> <li>• There are several known risk and protective factors; parental levels of monitoring, supervision and concern appear to be important.</li> </ul>	<b>Gaps</b> <ul style="list-style-type: none"> <li>• Evidence for gambling-like games to act as 'gateway effect' for adults gambling behaviours.</li> <li>• Adolescent involvement in fantasy sports and its impact on development of gambling problems, eg. Through transition to adult sports betting.</li> <li>• No Australian data on young people's involvement in emerging forms of unregulated gambling (eg. 'skin gambling').</li> <li>• Australian research on online advertising/marketing of gambling-like products, and its impact on youth.</li> <li>• Heterogeneity and high quantity of online gaming and gambling products and their interactions across media platforms poses various challenges to classification and regulation, including many located offshore and absence of design standards.</li> <li>• Awareness raising and education resources for parents.</li> <li>• Understanding and identifying which young people are more vulnerable to these products.</li> </ul>

Li, Browne, Langham et al. (2018) Australia	Report for VRGF 53 pages	Study involving Implicit Association Test (IAT) and survey	Study to assess the influences of sport-related gambling advertising on both adolescents (aged 14 and 17, n=915) and young adults (aged 18 and 24, n=930). <ul style="list-style-type: none"> <li>• Gambling and sport have become connected concepts in participants' minds.</li> <li>• Sport-related gambling sponsorship and advertising can shape the nonconscious minds of the Australian youth population.</li> </ul> A broader view of gambling advertising, including sponsorship etc, should be adopted, bringing it into line with current harm minimisation approaches to alcohol and tobacco.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• The long-term impact of this association is not possible to determine without longitudinal research</li> </ul>
Livingstone (2017) Australia	Discussion paper (20 pages)	A discussion paper on EGMs and their structural characteristics	Key Messages: <ul style="list-style-type: none"> <li>• EGMs use sophisticated techniques, designed to maximise spending and "time on device".</li> <li>• EGM designs very successfully employ psychological principals to maximise users' bet sizes and machine usage and increase the addictive potential of EGMs.</li> <li>• Users of EGMs, and policy makers, are mostly not well informed about the way the machines work, or the complex "game maths" behind them.</li> <li>• Australia has been slow to develop adequate policy responses to reduce harms.</li> </ul>	<b>Gaps</b> <ul style="list-style-type: none"> <li>• Researchers with regular access to probability accounting reports (PAR sheets), and actual game data. Improved access to actual game data, supported by the introduction of comprehensive pre-commitment systems, enabling de-identified data sets to be generated.</li> <li>• Research relating to many specific game characteristics and configurations. Facilitating researchers' understanding of the new generation of EGMs would assist regulators in the crafting and application of standards.</li> <li>• Access to better information and real-world data would benefit achieving the goals of a public health approach.</li> </ul>
Martin (2017) Netherlands	Discussion paper (27 pages) <b>Industry paper</b>	A discussion paper on the USA consumer technology and the future of online gambling	This is an industry-funded discussion paper, as its opening statements indicate: "Gambling, then, is a sector that has been massively rewarded for embracing technological changes. The gambling operators that have taken the lion's share of the spoils have been the ones that have best predicted what changes were coming and how they would affect their players' behavior. The question now is: what's next? ...And, most importantly, how will they affect the way people like to bet?" (p.3)	<b>Gaps</b> <ul style="list-style-type: none"> <li>• Impacts of increasing availability and use of 'big data' and data analytics: There are several potential impacts of these trends, specifically related to increased harm for particular population groups, but also for changing player/gambler behaviour, generally, as the authors expect and suggest.</li> </ul>



			<ul style="list-style-type: none"> <li>• Data analytics offers bookmakers more realistic odds, offers players potentially more accurate tips and strategic advice and offers online gambling companies the opportunity to create highly targeted marketing campaigns and personalized offers...Big data has the potential to be equally disruptive in the sportsbook scene.” (p.7)</li> <li>• Artificial intelligence could see the creation of poker bots capable of defeating any human player, massively disrupting the online casino sector.</li> <li>• More wearable tech and smart technology will create more consumer data collection points, further stimulate mobile gambling boom and make converging online and offline operations far easier.</li> <li>• Blockchain will improve customer trust in payment security and integrity of online games they play.</li> <li>• At the same time, blockchain’s decentralization and democratization of online gambling could massively shift the way people bet online and take power away from the major operators.</li> <li>• Virtual Reality is an exciting new channel for gambling, with an increasingly high rate of headset adoption and more major operators developing immersive games and experiences for this platform.</li> </ul>	
Rockloff et al. (2015)  Victoria Australia	Report for VRGF  68 pages	Literature review plus 2 qualitative studies to understand what features are most important to EGM players  PGSI	EGM environmental features that influence gambling decisions; three levels of contextual focus: platform, provider and machine. Platform type rated as most important. Differences in preferences between problem and non-problem gamblers, eg. the former preferring larger venues, and much less likely to give weight to the company they share. Males and younger gamblers more likely to prefer internet gambling. Problem gamblers more likely to be in high roller group. Social and Value segments of the market are contrarily associated with fewer problems and growth of these environments may make for safer gambling for players.	<b>Gaps:</b> Need better understanding of how environmental features may be differentially attractive to players with problems
Rockloff et al. (2016)	Cross-sectional	National survey of 13,748 current	Study investigating the impacts on gamblers’ attitudes and behaviour, and potential risks that result from the	<b>Gaps:</b>

Australia	Mixed methods  (230 pages)	gamblers; focus group with 10 players of automated table games; study of online panel of 189 participants as they played innovated Bingo.	newer automated presentations of traditional gambling products. Found that most gamblers prefer traditional games over the innovated counterparts. People do not spend more on automated table games than traditional games, only some aspects (illusion of control and social customisation/communication of winnings) indicate features of such games that could pose added risk. Regulatory approval of such games should consider these features.	<ul style="list-style-type: none"> <li>The risks posed by automated table games and future gambling technologies.</li> </ul> <p><b>Conflicting findings:</b></p> <ul style="list-style-type: none"> <li>Found minimal risks from automated table games, though new technologies are ever-emerging and their impact requires investigation.</li> </ul>
Rockloff, Greer, Armstrong et al. (2018)  Australia	Report for VRGF  98 pages	Study involving survey and 24-week longitudinal study.  PGSI	Study looking at impact of new technologies, such as gambling apps, on consumers, particularly children and adolescents. Found gambling themed games are not risk-free; there is a consistent association between gambling-themed app play and real- money gambling. They can encourage people to gamble “for real” and thereby expose them to the potential for gambling-related harm.	<p><b>Gaps:</b> None identified</p> <p><b>Conflicting findings:</b></p> <ul style="list-style-type: none"> <li>Concludes that gambling-themed apps as a potential substitute activity during treatment for gambling problems is counter-productive and potentially harmful.</li> </ul>
Van Rooij et al. (2017)  Belgium	Cross-sectional Mixed-methods  (92 pages)	Quantitative: 1841 Belgian adults (aged 18-81) took part in an online survey  Qualitative: 15 gamblers or ex-gamblers took part in interviews	This report on a national survey about online digital gambling confirms the widespread adoption of digital devices has introduced new opportunities for the gambling and gaming industries, changed the nature of gambling behaviour, and boundaries are rapidly blurring between various forms of gambling and playing for money. <ul style="list-style-type: none"> <li>Risky game types played by a younger audience continue to be lottery games, scratch-cards, sports betting and electronic gambling machines which are still predominantly played for real-money.</li> <li>Sportsbetting leads in online play.</li> <li>Online play is a mixed picture and interview participants liked the convenience, availability, and comfort of online play but were concerned about low thresholds to spending money, perceived increased addiction risk, and game honesty and online deposit safety. Government approved, legal websites were preferred.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Online play might change the nature of the gambling behaviour and reach a different audience, but this is not well documented.</li> <li>Psychological processes driving internet gambling behaviour are not understood.</li> <li>Tracking and new forms of prevention become possible online; online play facilitates improved tracking of players; however, how best to do this is not known.</li> <li>Would shifting the advertising focus from winning to entertainment have a positive impact on preventing/minimising gambling harm?</li> <li>Is in-school education about gambling risks effective? What form should it take?</li> <li>Video games, simulated gambling, and gambling games are increasingly interwoven, yet little is known about how to control for harm, or their short and long-term impacts.</li> </ul>

**Table 4: Long term efficacy and effectiveness of treatments (9 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
Bowden-Jones et al. (2016)  UK	Review paper	A rapid review of evidence-based treatment for gambling disorder in Britain	<p>The Royal College of Psychiatrists recommends the following:</p> <ol style="list-style-type: none"> <li>1. RCTs assessing the impact of psychological therapies and medication conducted in the UK rather than allowing US-based studies alone to inform clinical practice; experiences of gambling-related harm and the use of gambling-related products and treatment provision differ widely from country to country.</li> <li>2. Treatment services for problem gambling should have parity of esteem with other mental disorders, in particular alcohol, drug and tobacco addiction, and should be a core element of addictions treatment provision within the NHS.</li> <li>3. Naltrexone, as the treatment intervention of choice for treatment-resistant pathological gamblers, should be made available to all patients whose lives are affected negatively by their illness.</li> <li>4. NICE Guidelines for the treatment of gambling disorder are required to address a pathology that affects almost half a million people in England but has not been sufficiently prioritised by the NHS.</li> <li>5. Training in identifying and treating problem gambling symptoms should be a component of all medical school curricula and the postgraduate psychiatry training curriculum.</li> </ol>	<p><b>Gaps</b></p> <ul style="list-style-type: none"> <li>• RCTs with Australian focused samples and sufficient quality and rigor.</li> <li>• Parity of treatment services with other addictions.</li> <li>• Naltrexone prescribing should be more widely adopted for treatment-resistant pathological gamblers.</li> <li>• Clearer treatment guidelines for problem gambling.</li> <li>• Inclusion of assessment of gambling problems and harm as core component of medical school curricula.</li> </ul>
Dowling, Merkaris et al. (2018)  Australia	Two-arm parallel group pragmatic randomised trial  (139 pages)	206 problem gamblers  G-SAS	<p>Developed GamblingLessforLife, an empirically based 8-week Internet delivered cognitive-behavioural self-directed programme for gambling. Compared the programme delivered involving no professional guidance (PSD) to minimal support from a health care professional (GSD).</p> <p>There were no significant differences between the PSD and GSD conditions on almost all outcome measures at the 2- or 3-month follow-up evaluations. The only exception was for gambling frequency,</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Need for testing in terms of long-term follow-up</li> </ul>

			whereby the GSD group reported a greater reduction in days gambled than the PSD group	
Kolandai-Matchett et al. (2015a) New Zealand	Literature review / Report to Government (51 pages)	Literature review of outcomes from problem gambling and public health services.	Evaluation of problem gambling and public health services across 3 broad intervention types: Harm minimisation initiatives; Health promotion initiatives; and, Political determinants through the delivery of five types of public health services: (1) Policy Development and Implementation, (2) Safe Gambling Environments, (3) Supportive Communities, (4) Aware Communities, and (5) Effective Screening Environments.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>Evaluations of problem gambling services and interventions are largely focused on specific interventions and programmes.</li> <li>Evaluation of national level interventions (multimodal programmes) is limited.</li> </ul>
Kolandai-Matchett et al. (2015b) New Zealand	Report to Government (174 pages)	Audit of six-monthly narrative reports submitted by 20 problem gambling public health service providers to the Ministry of Health - July 2010 - June 2013.	Supplementary report - Analysis of provider progress reports/ clinical audits for problem gambling and public health services across the 5 types of public health services noted above.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>Evaluations of problem gambling services and interventions are largely focused on specific interventions and programmes.</li> <li>Evaluation of national level interventions (multimodal programmes) is limited.</li> </ul>
Littman-Sharp (2017) Global	Discussion paper (7 pages)	A discussion paper on treatment for disordered gambling.	Research indicates that a number of practices are either well-supported or promising for disordered gambling. Cognitive-behavioural therapy, motivational interviewing, mindfulness, brief and online interventions, treatments addressing concurrent disorders, pharmacotherapy, women and family-focused treatments have all shown evidence of effectiveness. <ul style="list-style-type: none"> <li>There have been sufficient high-quality studies using RCTs of CBT for disordered gambling, inclusive of meta-analyses.</li> <li>Most disordered gamblers sought help only as a last resort, when they were close to physical or psychological breakdown or financial ruin.</li> <li>Involvement of a concerned significant other (family member) is associated with significantly higher treatment attendance and reduced dropout, lower rates of relapse and better adherence to treatment guidelines. Higher functioning, better-resourced and less damaged families are more likely to engage in treatment together, with better outcomes from it.</li> </ul>	<b>Gaps:</b> <ul style="list-style-type: none"> <li>More attention is required to understand and treat gambling in the presence of client complexity, and the needs of subgroups and families.</li> <li>While brief treatments, such as motivational interviewing, have clear advantages for research, it is less clear which clients can and cannot benefit from these interventions.</li> </ul>

			<ul style="list-style-type: none"> <li>• A recent surge in web-based or web-assisted treatment studies is noted.</li> <li>• Women with addictions have different profiles than men, and do better when they receive services that address their specific needs.</li> <li>• Clients who are easy to treat will respond to most types of therapy. Treatment outcomes for gamblers with more complex needs (eg. comorbidities) are more mixed.</li> </ul>	
Lubman et al. (2015)  Australia	Cross-sectional  Mixed methods  (353 pages)	Literature review, audit of gambling related websites, online gambler forum (n-716 present and past gamblers), analysis of 85 online counselling transcripts, interviews with 30 gamblers.	Investigation of gambler self-help strategies. No strategy or action was identified that effectively dealt with an individual's gambling problem in isolation. Instead, participants described using a combination of strategies and actions that varied by their gambling situation (e.g., a combination of 'changing thoughts', 'health and wellbeing' and 'watching yourself' were most frequently used among participants in the action and maintenance groups, compared to 'limiting', 'planning' and 'managing finances' in the no problem group).	<p><b>Gaps:</b> Need for more evidence-based material on industry websites and in responsible gambling codes of practice to target information for particular stages and problem gambling states:</p> <ul style="list-style-type: none"> <li>• How do individuals use these strategies in practice?</li> <li>• How do they change during different stages of recovery?</li> <li>• What is the optimal number, and type of actions, required for a strategy to be effective, and which combinations are most effective for a person's particular stage of change?</li> <li>• Which strategies are most helpful as preventative actions, before a gambling problem develops?</li> <li>• Which strategies are most relevant to populations in different environments and cultures?</li> <li>• More gambling health literacy and stigma reduction programs for problem gambling to promote help-seeking.</li> </ul>
NSW Government/ Australia's Health P/L (2016)  Australia	Cross-sectional  Mixed-methods  (93 pages)	Quantitative: 43 counsellors and service managers and 137 current clients responded to the survey  Qualitative: 11 stakeholders and	This report is an evaluation of the RGF funded Gambling Help services, providing information about the impact the services in relation to problem gambling in NSW: outcomes being achieved; what is working well and what can be improved. The scope covered 56 problem gambling and financial counselling services and the NSW components of the Gambling Helpline and Gambling Help Online services.	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Further understanding of the unintended consequences of 'Gamble Responsibility' message is needed.</li> <li>• "Further research, policy and program development is needed about the emergence of online and sports gambling through internet and phones. All expert advice is that the extensive promotion and uptake of these is potentially</li> </ul>

		experts were interviewed	<p>Significant reductions in gambling frequency and spending, and improvements in psychosocial wellbeing were reported. Most clients reported partial or complete resolution of their gambling problems as a result of the counselling they had received.</p> <ul style="list-style-type: none"> <li>• When help seeking occurs, it is often in a crisis; however, poor engagement (eg. with the Helpline) means the opportunity to intervene can pass.</li> <li>• Stigma is a significant disincentive to disclosure and help seeking, especially in some CALD communities, and inhibits services' promotion and engagement with target groups.</li> <li>• The promotional message to "gamble responsibly" may have unintended consequences of "promoting and endorsing gambling; not providing a normative benchmark against which to measure one's own gambling behaviour; and implying problem gambling is a personal failing, which may both increase personal distress and reinforce shame and stigma."(p.5)</li> </ul>	<p>developing a new, larger and more difficult to reach cohort of problem gamblers who, consistent with current help seeking patterns, will present for assistance in subsequent years."(p.6)</p>
Rodda et al. (2016)  Global	Discussion paper (12 pages)	Discussion paper on the evidence and use of e-mental health support and treatment options	<p>This report is of the evidence and use of e-mental health support and treatment options and ways these may be developed in the future. Table 1 (pp.5-6) provides a summary of methods of delivering e-mental health support and their evidence base. Key messages:</p> <ul style="list-style-type: none"> <li>• The majority of e-mental health interventions have scarcely been evaluated.</li> <li>• E-mental health may provide an appropriate, cost-effective option for increasing the proportion of people seeking help with problem gambling.</li> <li>• Program evaluations are required for different groups and situations, to demonstrate the efficacy and effectiveness of treatment options.</li> <li>• Telephone-based treatments have accumulated the most comprehensive evidence base to date, but some other options also show promise.</li> <li>• Combinations of e-mental health interventions, and integration of e-mental health with traditional supports, seem to have the greatest potential for intervention programs.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The majority of e-mental health interventions have scarcely been evaluated.</li> <li>• There are some studies reporting evidence for online synchronous counselling, talk-based telephony, and online self-directed programs; there are a few studies on forums/message boards and online screening; and no evidence yet on SMS, video counselling, or online information as effective e-mental health interventions.</li> </ul>

<p>Thomas et al. (2015)</p> <p>Australia</p>	<p>RCT</p> <p>Mixed-methods</p> <p>(134 pages)</p>	<p>RCT: 297 help-seeking adult gamblers were randomly allocated into four intervention groups- Cognitive Behaviour Therapy (CBT), Behaviour Therapy (BT), Motivational Interviewing (MI) and Client-Centred Therapy (CCT)</p> <p>Qualitative: 56 participants from 4 different groups interviewed post-treatment</p>	<p>This report of a longitudinal study of treatment outcomes compared four different types of psychological treatment for problem gambling (measured pre-treatment, immediately post treatment, 6 months, and 12 months).</p> <p>The study showed that manualised psychological treatments delivered by well-trained psychologists resulted in durable and significant reductions in gambling behaviour (frequency, time spent and losses) and gambling symptoms were achieved. Reductions were unrelated to type of psychological treatment used. Reductions in gambling behaviour and symptoms was maintained for at least six months across the study participants. For the 193 participants for whom 12-month data has been collected, reductions were maintained.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Given CBT is expected to provide the most effective treatment outcome, why is it that type of psychological treatment does not seem to matter?</li> </ul> <p><b>Conflicting Evidence</b></p> <p>The somewhat unexpected result obtained in this study is that the exact content of the therapy used does not seem to affect the participant outcomes.</p>
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**Table 5: What works in prevention and harm minimisation (12 reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
Brown (2017) UK	Discussion paper (24 pages)	A discussion paper on the UK problem gamblers and the multi-operator self-exclusion scheme	This briefing provides background information on how gambling is regulated in the UK and the size of the domestic gambling sector. It examines the online multi-operator self-exclusion scheme (GAMSTOP - an industry-led and managed scheme, 2018) and provides information on recent developments regarding government policy and regulatory enforcement. Multi-operator self-exclusion schemes currently run across the industry for betting shops, casinos and bingo venues in the UK. However, no such scheme currently operates across online operators providing gambling services to consumers in the UK. The forthcoming scheme has received a range of criticisms. For example, Adam Bradford, the son of a gambling addict who was imprisoned for fraud offences: the proposal for the RGA to run the scheme was "like asking a policeman to arrest himself for a crime".	<b>Gaps:</b> Nil identified.
Gainsbury et al. (2017) Canada	Cross-sectional  Mixed-methods (72 pages)	Literature review  Qualitative: 39 adults (10 young adults, 10 seniors, 10 skill game gamblers and 9 frequent gamblers) took part in 4 focus groups	The review concluded that messages should empower gamblers to make their own decisions (ie. be non-judgmental and positive), rather than provide explicit directions or be limited to providing factual information. Differences are likely to exist between younger and older adults, regarding message preferences and their impacts. The focus group study confirmed that seniors preferred messages about limit setting, while young adults and frequent gamblers responded to messages about their own play and expertise. Skill game gamblers were interested in the odds of winning and their own outcomes over time.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>The response of online gamblers to targeted responsible gambling messages.</li> </ul>
Miller (2015) Australia	Review paper	Review paper on identifying risk factors to inform approaches	The review of risk factors for problem gambling examines a range of social determinants of gambling	<b>Gaps:</b>



	(24 pages)	to the prevention of problem gambling for Victorians	<p>within a public health framework. Example Key findings:</p> <ul style="list-style-type: none"> <li>• Accessibility of gambling is a significant risk factor for problem gambling.</li> <li>• There is some evidence that area-level socio-economic disadvantage is a risk factor for problem gambling. This may be independent of the effects of individual-level socio-economic disadvantage.</li> <li>• Male gender, being Indigenous, loneliness and being in the correctional system are risk factors for problem gambling.</li> <li>• Rates of problem gambling decline with age.</li> <li>• People employed in gambling venues may be at increased risk of problem gambling.</li> </ul>	<ul style="list-style-type: none"> <li>• More research is required to understand the multiple dimensions of accessibility, such as temporal and social.</li> <li>• No studies that examine lack of alternative leisure options and other services in the local area as a risk factor for problem gambling.</li> <li>• No previous research which examines whether urban or rural location is a risk factor for problem gambling.</li> <li>• Concepts such as social cohesion, social norms, social trust, social exclusion, social (dis)organisation and discrimination have not been studied in relation to problem gambling.</li> <li>• Limited evidence about the effect of community attitudes to gambling (normalisation) on gambling problems.</li> <li>• It is unclear whether membership of a CALD community, or recent migration to Australia is a risk or protective factor. There is preliminary international evidence that religious adherence may be a protective factor.</li> </ul>
<p>Monash Council (2017)</p> <p>Australia</p>	<p>Consultation Paper</p> <p>(8 pages)</p>	Submission	<p>This submission in response to the gambling machine harm minimisation measures consultation paper (by Schottler Consulting) was prepared with support of the Victorian Local Government Association &amp; Inner East Primary Care Partnership. Several important comments are made, including:</p> <ul style="list-style-type: none"> <li>• The \$200 per EFTPOS transaction limit is the one that is most strongly backed by evidence.</li> <li>• Strongly oppose the ability for venue operators be able to exchange personal cheques for cash: "The measure would be most likely to be used by people experiencing difficulties with EGMs, and would be likely to exacerbate harm."(p.3)</li> <li>• For venue operators, "There should be a separate offence for failure to respond to demonstrations of problem gambling...establishment of a Gambling and Liquor Ombudsman...This would make it easier for patrons to report instances where venues promote or allow gambling practices which generate harm." (p.5)</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Codes of conduct are not enforced in any meaningful way.</li> <li>• Action to limit proximity and density of EGMs in vulnerable communities.</li> </ul>

			<ul style="list-style-type: none"> <li>• “A self-exclusion system should be simple and easy to use. It should allow a person to restrict themselves from as many venues as they require. This system should be covered by a single point of entry” and administered by [a single body]...Gamblers should not have to go near, or liaise with gambling venues or the gambling industry in order to self-exclude.”(p.6)</li> <li>• “Two commonly used measures of access to EGMs are density and proximity (e.g. distance to an EGM)...capping the number of gaming machines in vulnerable communities should be an important component of the Government’s ongoing harm minimisation strategy. Despite this, action in this area has been weak.”(p.7)</li> </ul>	
Podesta & Thomas (2017) Australia	Cross-sectional Mixed-methods (58 pages)	A rapid evidence assessment (REA), ‘environmental scan’ of the websites of 20 Australian onshore wagering operators Qualitative: Interviews with 17 gamblers and 9 consultations with the industry stakeholders	<p>Key concerns regarding harm were:</p> <ul style="list-style-type: none"> <li>• Rapidly growing and changing nature of the interactive gambling sector and the challenges this presents for regulators.</li> <li>• Characteristics of interactive gamblers that sets them apart from the broader gambling population.</li> <li>• How access to Internet technology allows gamblers to identify and exploit inaccuracies in betting markets.</li> <li>• Consumer concerns about trust and how complaints are handled by industry.</li> <li>• Vulnerability of unregulated offshore markets to infiltration by organised crime, money laundering, match-fixing.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The occurrence of restrictions in Australian licensed online wagering operators and the impact of these on consumers’ gambling behaviour.</li> </ul>
Rintoul & Thomas (2017) Australia	Discussion paper (12 pages)	A discussion paper by AGRC on pre-commitment systems for EGMs	<p>Key messages:</p> <ul style="list-style-type: none"> <li>• “EGM users often underestimate their gambling expenditure. Pre-commitment can provide a way for gamblers to set and track monetary and time limits to prevent unintended, excessive use...</li> <li>• The extent to which registered EGM use is required across a large area (e.g., an entire jurisdiction) and whether maximum loss limits and time limits are binding and irrevocable are critical aspects of the success of a pre-commitment system capable of preventing and reducing harm.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Binding, universal pre-commitment systems will provide the best protection from harm; however, this design is not yet available in Australia.</li> </ul>

			<ul style="list-style-type: none"> <li>• A partial or incomplete system that does not require all gamblers to use the system may be ineffective in supporting gamblers to stick to pre-determined limits...</li> <li>• Uptake of limit setting in partial pre-commitment systems is low. Incorporating pre-commitment into an electronic loyalty program may provide users with conflicting messages about spending.”(p.2)</li> </ul>	
Schottler Consulting (2017)	Cross-sectional  Mixed-methods  (112 pages)	Literature review, an examination of evidence on separation of ATMs and gaming machines, stakeholder consultations (industry stakeholders and problem gambling counsellors and staff), four qualitative focus groups with EGM players (two groups each with non-problem/low risk gamblers and moderate risk/problem gamblers) and a quantitative online panel survey of 700 EGM players. PGSI used.	<p>This research examined the potential for a minimum distance between cash devices (ATMs) and Electronic Gaming Machines (EGMs) in NSW hotels and clubs to minimise the harm of problem gambling.</p> <p><b>Key findings</b></p> <ol style="list-style-type: none"> <li>1. Problem and moderate risk gamblers are more likely to use an ATM in venues and withdraw greater amounts for gambling than non-problem and low risk gamblers.</li> <li>2. ATM access is more likely to lead to overspending for at-risk gamblers than non-problem gamblers.</li> <li>3. Patterns of ATM use before EGM play are similar across risk segments. However, different patterns of ATM use emerged during EGM play and after gamblers had reached their gambling spend limits.</li> <li>4. EGM players believe that a minimum distance may be helpful in reducing gambling related harm.</li> <li>5. The impact of increasing the distance between ATMs and gaming areas is greater when all at-risk gamblers, rather than only problem gamblers, are considered.</li> <li>6. Moderate risk and problem gamblers are more likely to report feeling triggered to use an ATM upon sighting the ATM in the venue, compared to non-problem gamblers.</li> <li>7. Increasing the distance between ATM and gaming areas may have some impact on non-problem gamblers and non-gamblers, although impacts may be considerably less than for at-risk gamblers.</li> <li>8. Other ATM related measures may be effective in reducing harm for problem and at-risk gamblers.</li> <li>9. A range of cost and practical implications would need consideration if NSW venues were required</li> </ol>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• A range of measures have been proposed for placement of ATMs in gambling venues to reduce harm; however, whether these measures actually lead to harm minimisation has not been confirmed.</li> </ul>

			<p>to adhere to a minimum ATM distance from gaming areas.</p> <p><b>Conclusion (p.7):</b> “There is a potential harm-minimisation benefit in placing ATMs a minimum distance of 30m from the gaming area entrance in NSW pubs and clubs and out of the line of sight of gamblers. The capacity for individual venues to relocate ATMs at a minimum distance of 30m and the associated costs will vary significantly across venues and requires further investigation.”</p>	
Schottler Consulting (2017)	<p>Cross-sectional</p> <p>Mixed methods</p> <p>(141 pages)</p>	<p>A literature review, stakeholder and family member consultations, and survey was undertaken.</p>	<p>This report presents key findings of research to examine the potential for a third-party (eg. family, close friends, venues) exclusion scheme for pubs and clubs in New South Wales (NSW) to exclude or ban a person from a venue/s to protect family or other parties being affected by the person’s gambling (including the gambler).</p> <p><b>Key findings:</b></p> <ol style="list-style-type: none"> <li>7. Families support the need for third party exclusion legislation, as many impacts of problem gambling are not currently addressed through the NSW problem gambling services.</li> <li>8. Exclusion of problem gamblers from hotels and clubs is unlikely to be an effective means of reducing gambling harm experienced by families (and other affected third parties).</li> <li>9. There is limited use of existing third-party schemes in Australia.</li> <li>10. Domestic and family violence (DFV) may be a potential risk of a third-party scheme.</li> <li>11. Families and counsellors support the idea of venues performing venue-initiated exclusions as part of the Responsible Conduct of Gambling (RGC).</li> <li>12. Families, gamblers and counsellors reported that financial support, mandatory counselling and support for partners and families may have greater potential to minimise harm, than exclusion. Several characteristics were additionally identified as</li> </ol>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The evidence for third party exclusion schemes and how they should be designed remains limited.</li> <li>• Which third party exclusion schemes are most effective?</li> <li>• Are there unintended negative consequences and risks associated with third party exclusion schemes? If so, how can they be overcome?</li> </ul>

			<p>important in a future third party scheme (including for CALD/non-English speaking third parties).</p> <p><b>Conclusions (p.6):</b> "Third party exclusion alone is unlikely to play a significant role in minimising gambling harm to third parties, although it may be helpful for some gamblers ready to change their gambling behaviour...mandatory counselling of problem gamblers and financial restrictions to protect a family's financial resources may have greater potential to reduce harm to third parties impacted by problem gambling."</p>	
<p>Stenning and Associates (2017)</p> <p>Australia, Singapore, Hong Kong, Canada, New Zealand, South Africa, UK</p>	<p>Review paper</p> <p>(135 pages)</p>	<p>Review paper on contemporary gambling harm minimisation policies and initiatives</p>	<p>Review of contemporary gambling harm minimisation policies and initiatives developed (or are being developed) since the previous independent review of the social and economic impact of gambling in Tasmania.</p> <p>A high-level analysis of the effectiveness of RG controls by state/territory is shown in Table 1.</p> <ul style="list-style-type: none"> <li>In many cases, the identified effectiveness research is specific to gambling controls in the respective comparison jurisdiction.</li> <li>NSW appears to have effective RG controls in inducements, payment of winnings, and information to players.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>In NSW, less effective areas of RG controls were: advertising, player loyalty programs, access to cash, lighting, service of food and alcohol, clocks in gambling areas, staff training in recognising people with gambling problems, and exclusion schemes.</li> </ul>
<p>Thomas et al. (2016)</p> <p>Australia, New Zealand, Norway, Canada and Sweden</p>	<p>Cross-sectional</p> <p>Mixed-methods</p> <p>(86 pages)</p>	<p>A rapid evidence assessment (REA) by AGRC</p> <p>Qualitative: 13 consultations involving 21 professionals (across Australia and overseas)</p>	<p><b>Key findings:</b></p> <p>"Full, mandatory systems with non-exceedable limits offered with a wide jurisdictional reach in theory provide the best level of protection from harm, but they may be rejected by the community and so fail if the system is seen as too restrictive or paternalistic...A basic system including essential limit-setting options in an easy-to-use and clear system that includes regular opportunities to reset limits is optimal." (p.ix)</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Early pre-commitment systems and limit setting features are based on minimal evidence, and their design is driven by technological capability rather than theory or any clear understanding of gambler behaviour.</li> </ul>
<p>Thomas et al. (2015)</p> <p>Australia</p>	<p>Cross-sectional</p>	<p>Qualitative: 21 face-to-face and telephone consultations were conducted with key,</p>	<p>Several priority areas identified including:</p> <ul style="list-style-type: none"> <li>Prevalence studies perceived as not that helpful; need to be applied to specific groups and local contexts.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>What factors may protect against the development of harm, and factors related to non-harmful gambling? Need to better</li> </ul>

	Mixed-methods  (16 pages)	high-level stakeholders across Australia  Quantitative: 174 gambling-related professionals from all over Australia completed an online survey	<ul style="list-style-type: none"> <li>• Understanding of gambling harm.</li> <li>• Understanding and analysis of impacts of new technologies.</li> <li>• Effects of marketing on gambling</li> <li>• Improved research design and methodologies.</li> </ul>	<p>understand the relationship between consumption and harm so that safer consumption thresholds can be identified and communicated to the community, similar to the NHMRC guidelines for safe alcohol consumption.</p> <ul style="list-style-type: none"> <li>• Gambling-related harm for vulnerable groups.</li> <li>• Understanding online gambling, and ways to minimise harm associated with such products.</li> </ul>
Wohl et al. (2018)  Canada	Non-randomised uncontrolled trial  (39 pages)	Electronic Gambling Machine players took part in experimental studies- Study 1: N=98, Study 2.1: N=131, Study 2.2: N=141	This report involves research on informed decision making among EGM players; specifically, on understanding means to facilitate money limit setting and adherence, which RG practices central to harm minimization strategies. EGM players were shown an educational animation that explained the odds of winning and the benefits of pre-commitment either before play or when their pre-set money limit was reached (study 1). As predicted, players were more likely to endorse limit setting behaviour when they viewed the animation when their pre-set limit was reached rather than when it was viewed prior to the gambling session. The research also explored whether the kind of information provided to players about their limit (i.e., amount money and/or credits lost) influences limit adherence among EGM players. Pop-up messages on the slot machine showed either how many credits they had lost (study 2.1) or how many credits and dollars they lost (study 2.2); limit adherence did not vary by condition; players had trouble recalling pop-up message content. These results suggest RG information presented in a pop-up message is unlikely to influence limit adherence because players do not pay attention to the content of the message.	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• More research is needed on EGM design or other strategies to support more informed decision-making by gamblers <u>during</u> EGM play.</li> </ul>

**Table 6: Understanding and measuring harm (15 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
<p>ACIL Allen Consulting et al. (2017)</p> <p>Australia</p>	<p>Cross-sectional</p> <p>Mixed-methods</p> <p>(292 pages)</p>	<p>Quantitative: 5,000 telephone interviews among gamblers. Also, an Ecological Momentary Assessment (EMA) was administered via a smartphone app among 98 monthly gamblers</p> <p>Qualitative: 20 interviews with monthly gamblers and 20 interviews with 'affected others'</p> <p>PGSI used</p>	<p>The 2017 Tasmanian SEIS is comprised of two Volumes: Vol 1 focuses on the policy context and structure of the gambling industry, trends in gambling expenditure and government revenue, and the economic footprint of the gambling industry. Vol 2 (this report) details the 2017 SEIS prevalence survey results, and reports on interviews with gamblers and affected others.</p> <p><b>Results/Discussion</b></p> <ul style="list-style-type: none"> <li>• 58.5% of the Tasmanian population reported participating in some form of gambling activity in the past 12 months. Significant decline in the proportion of Tasmanian adults who participated in any gambling activity (from 61.2% in 2013 to 58.5% in 2017).</li> <li>• 10.8% of Tasmanian adults had participated in some form of online gambling in the last 12 months, up from 7.0% in the 2013 survey: most common forms were: buying lottery tickets (6.2% of all adults); betting on horse or greyhound racing (3.8%); and betting on sporting or other events (2.6%). Online gambling was most commonly undertaken on a mobile device; 8.2% of Tasmanian adults compared to 4.7% who used a desktop computer.</li> <li>• Participation in any gambling activity on the internet via a mobile device was significantly higher in 2017 (8.2%) than 2013 (3.9%), and betting on horse or greyhound races via a mobile device increased significantly, from 1.9% in 2013 to 3.3% in 2017.</li> <li>• A significant increase in mean annual expenditure on lotteries was noted between 2013 and 2017 (from \$431 to \$518).</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• The efficacy of low-risk gambling limits, which can be used in prevention and intervention policies and programs, is unknown.</li> </ul>
<p>Blaszczynski et al. (2015)</p>	<p>Cross-sectional</p>	<p>Quantitative:</p>	<p>International Literature Review, analysis of the Responsible Gambling Fund Client Data Set (NSW, Australian population), and survey using the</p>	<p><b>Gaps: (p.13-14)</b></p>

Australia	Mixed-methods  (340 pages)	<p>Analysis of Client Data Set (CDS) of 14,805 gamblers</p> <p>Qualitative: 4 FGs among 14 participants (3 industry representatives, 4 financial counsellors, 4 legal workers, 3 family members of problem gamblers). Also, information was collected and analysed from an 'online discussion board' where researchers and industry participants from both within Australia and overseas discussed the topic</p> <p>A further 29 researchers and industry representatives completed an online survey</p>	<p>ASTERIG, an instrument developed to systematically assess the risk potential of gambling products. Analysis of the RGF CDS reported on patterns of gambling product use generally across the NSW population, and a further breakdown of prevalence by sub-populations which included mental health, clinical treatment populations, analysis of harm by gambling product and demographic characteristics (eg. age, education, ethnicity).</p> <p>The main conclusion was that new directions in harm minimisation are required. The harm reduction framework for the future is one that prioritises excessive demand reduction at the individual level in light of new and emerging technologies that will make it increasingly difficult to impose regulations on gambling products. Strategies that aim to reduce or control the supply of gambling may become even less effective in a future world where technology and the internet provide boundless opportunities for gambling.</p>	<ol style="list-style-type: none"> <li>1. Shift focus from prevalence to measuring harms and individual level of excessive demand for gambling.</li> <li>2. Support the development of long-term prevention strategies that seek to mitigate individual levels of excessive demand for gambling without recourse to stigma or highlighting acute harms, in order to promote better engagement with the harm minimisation message.</li> <li>3. Legislate a whole-of-industry responsible code of practice, which extends restrictions on advertising to all risky gambling products, and prohibits all licensed gambling operators, including online bookmakers, from offering all types of inducements to new or existing customers in NSW.</li> <li>4. Mandatory reporting of the actual proportion of annual profitable gamblers.</li> <li>5. Positive alerts to players, in reference to 'losses disguised as wins', where the return is less than the amount wagered, be added to the Gaming Machine Prohibited Features Register on all future gaming machines.</li> <li>6. Prioritise the identification of psychosocial factors associated with an increased risk for harm.</li> <li>7. Support research that seeks to define personal financial thresholds at which harms are likely to emerge. This may include defining a new construct called a 'relative unit of gambling', similar in principle to a 'standard unit of alcohol', which may be used for the purpose of mass dissemination and harm minimisation.</li> </ol>
Browne et al. (2016)  Australia	Cross-sectional  Mixed-methods  (188 pages)	<p>Qualitative: FG &amp; interviews with 35 relevant health professionals, Interviews with 25 individuals affected by gambling (directly or through someone</p>	<p>Harms are described across individual, family and community levels.</p> <p>A suite of 4 sequentially linked studies centred on the issue of measuring harm which adopt a public health perspective. Quantitative harm estimates at the individual level were aggregated based on recent Victorian prevalence data, and analysed with respect to domains of harm, PGSI categories, demographics,</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• How we currently measure harm is inadequate and based on the narrow conceptualisation of the idea of harm being linked to clinical diagnosis, levels of severity or narrow measures of impact, and their failure to capture the harm beyond the individual or address the social construction of harm.</li> </ul>



		<p>else's gambling), 469 online forum posts were examined</p> <p>Quantitative: 4,136 individuals affected by gambling took online 'harms survey', a further 735 participants (both professionals and general public) completed health related quality of life (HRQL) online survey</p>	<p>and with respect to the harm caused by gambling relative to other health conditions:</p> <p>Harm is primarily due to damage to relationships, emotional/psychological distress, health, and financial impacts. For policymakers and regulators, there should be a broadening of focus from the prevention of "problem gambling" to the lessening of gambling problems.</p> <p>Conclusions: (p.146-7) Most of the attention given to gambling reform and public health efforts focuses on preventing people from becoming problem gamblers or assisting people who are problem gamblers. However, the largest aggregate source of harm is occurring outside this group.</p>	<ul style="list-style-type: none"> <li>• We need to move beyond the symptoms or behaviours of an individual and include the impact to the family, social networks and community.</li> <li>• Harms relating to people working in gambling-related fields.</li> <li>• Links between harm and other public health issues of prominence.</li> </ul>
<p>Browne, et al. (2017)</p> <p>New Zealand</p>	<p>Cross-sectional</p> <p>Mixed-methods</p> <p>(246 pages)</p>	<p>Qualitative: 3 FGs with 26 relevant health professionals, 8 FGs and 6 interviews among 51 individuals affected by gambling (directly or through someone else's gambling).</p> <p>Quantitative: 1,542 gamblers completed online 'harms survey', 324 participants (professionals and general public) completed health related quality of life (HRQL) online survey</p>	<p>This study mirrored the sequential linked studies undertaken by Browne et al. (2016) in Victoria and applied the design and questions to the New Zealand population, with results reinforcing the earlier findings from that set of studies.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Measurement and impact of harms from gambling.</li> <li>• The large proportion of gambling related harm is accruing to those who are not necessarily problem gamblers.</li> </ul>
<p>Browne, Greer, Armstrong et al. (2017)</p> <p>Victoria Australia</p>	<p>Report for VRGF</p> <p>157 pages</p>	<p>Literature review and synthesis of prior studies re cost, plus more rigorous analysis</p>	<p>When considering costs arising from PGs only, cost of gambling is \$2.4 billion - similar to prior estimates. However, there are further costs of \$2.4 billion and \$1.9 billion arising from lower risk categories (LR and MR), as well as \$0.3 billion in non-gambler specific costs; ie. total cost of \$7 billion.</p>	<p><b>Gaps:</b></p> <p>Rigor of how costs are determined needs to improve, especially to account for costs of low and moderate risk gambling.</p>

Department for Digital, Culture, Media & Sport (2018) UK	Cross-sectional  Quantitative  (78 pages)	7,361 participants took part in an online gambling-related survey. Participants included members of the public, industry representatives, healthcare professionals, both government and not for profit sector employee, campaigners etc. 243 also provided supplementary information and evidence	The UK Government launched a call for evidence on gaming machines and social responsibility measures across the industry in 2016. They received 275 responses; the submissions received helped to inform the preferred proposals which were subsequently outlined in a consultation which was published in October 2017. The consultation ran from 31 October 2017 to 23 January 2018. They received 7,361 survey responses from a wide range of interested parties, and a further 243 submissions of supplementary information and evidence. <a href="http://www.harrishagan.com/wp-content/uploads/bsk-pdf-manager/The_setting_the_agenda_for_responsible_gambling_141.pdf">http://www.harrishagan.com/wp-content/uploads/bsk-pdf-manager/The_setting_the_agenda_for_responsible_gambling_141.pdf</a> The chapter on research, education and treatment looks at support for those who experience harm.	<b>Gaps:</b> <ul style="list-style-type: none"> <li>• Understanding the complexities around identifying and implementing harm-minimisation measures.</li> <li>• Need more evidence for the impact of cutting limits on EGM play to target the greatest proportion of problem gamblers and mitigate the impact on those most vulnerable to harm, such as those in more deprived areas and those who are unemployed.</li> </ul>
Dowling, Youssef et al. (2018) Australia	Exploratory  Quantitative  (195 pages)	Combined datasets from the second and third Social and Economic Impact Study of Gambling in Tasmania (n=9,303) and the dataset from the 2014 Survey on Gambling, Health and Wellbeing in the ACT (n=2,294).	Aimed to “identify a set of empirically based responsible gambling limits that can be used to inform the development of responsible gambling guidelines for promotion to the Australian public”	<b>Gaps:</b> Nil identified
Financial Counselling Australia (2016) Australia	Cross-sectional  Mixed-methods  (118 pages)	Quantitative: Survey of 30 agencies across Australia  Qualitative: 68 case studies/client stories	As a result of problem gambling 90% of clients were unable to pay bills; 50% had borrowed money for their gambling either from commercial sources such as credit cards, payday loans, personal loans, or from their family; half of all clients had also experienced relationship breakdown due to problem gambling. Children regularly had to go without when the family was short of money. Relationship breakdown and social isolation were articulated many times, both as an impact of problem gambling, and as a trigger for clients starting or exacerbating problem gambling. The main form of problem gambling was poker machines (70%). Client cumulative losses due to problem gambling predominately fell into two	<b>Gaps:</b> Nil identified.

			<p>distinctive categories: either client losses of \$20,000 or less (45%), or client losses in excess of \$60,000 (30%). After financial counselling, the majority of clients (87%) had an improved financial position, improved mental and physical health (70%).</p> <p><b>Conclusion:</b> Problem gambling has a devastating impact on the lives of people affected by it. Specialist problem gambling financial counselling, however, does make a difference.</p>	
Fulton (2015) Ireland	Cross-sectional  Qualitative	Interviews with addiction service providers (N=10), gamblers (N=22), and social connections (N=22) were conducted. Also, 7 gambling industry representatives took part in a FG discussion	<p>This study explored gambling behaviour in Ireland, its impact on the individual, the gambler's relationships with social connections, and the wider impact of problem gambling behaviour on community and society.</p> <p>Conclusions: There are multiple areas where stakeholders' needs can be facilitated, including regulation and policy development to protect those vulnerable to negative outcomes associated with gambling. Importantly, collaboration among all stakeholders should be initiated.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Development of a regulatory framework and a social policy framework is urgently needed.</li> <li>• A national strategy for service provision is essential.</li> <li>• Further research into gambling behaviour and approaches and services is urgently needed.</li> </ul>
Gambling Commission (2016)  Global	Review paper (23 pages)	<p>Review paper on 17 global gambling studies.</p> <p><b>Industry report</b></p>	<p>The following themes are explored, with key policy implications highlighted for all studies. This is an <b>industry-driven report</b> and a number of its findings are likely to conflict with the large body of research from researchers concerned about gambling harm:</p> <ul style="list-style-type: none"> <li>• Participation in gambling has fallen from 57% in 2012 to 45% in 2015. At 0.5% of the population, rates of problem gambling are static.</li> <li>• Young people – 1. Gambling on poker in public locations and on the Internet are significant factors in both severity of gambling problems and past-year poker spending. Therefore, gender in itself may not influence poker gambling behaviours but rather the settings where students gamble on poker, given their gender. 2. Research to investigate the development of problem gambling in adolescence found a significant relationship between low levels of gambling involvement and parental intervention, showing that adolescents who are at risk of developing a</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• More could be done on the part of problem gambling support websites to actively reach out to problem gamblers to offer to support.</li> </ul> <p><b>Conflicting Evidence (see previous column)</b></p>

			<p>problem with gambling can be supported by their parents to curb their behaviour.</p> <ul style="list-style-type: none"> <li>• Gambling-related harm – 1. Research on types of people at greater risk of harm from gambling, and where they are located. In areas with a greater number of homelessness shelters and substance abuse treatment providers, risk is driven by rates of unemployment, ethnic group and large numbers of young people. High levels of unemployment as well as ethnic group as major driving factors in the other locations. 2. Research on the type of gambling and its association with suicidal events in pathological gamblers. The variables associated with suicidal events were high financial losses, mood disorders and being female. Gambling on EGMs in gambling halls or bars was associated with increased odds of suicidal events.</li> </ul>	
<p>Hing, Russell, Hronis (2016)</p> <p>Victoria Australia</p>	<p>Report for VRGF</p> <p>248 pages</p>	<p>Literature review, content analysis of gambling-related websites, and a survey of experts</p>	<p>Explored 'Responsible Gambling' and shift to 'Responsible Consumption of Gambling' (RCG). The aim was to develop the first set of commonly understood behavioural markers associated with gambling responsibly. Definition of RCG arising from the research:</p> <p>"Exercising control and informed choice to ensure that gambling is kept within affordable limits of money and time, is enjoyable, in balance with other activities and responsibilities, and avoids gambling-related harm."</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Require validation in subsequent research to create a Behavioural Indicators of Responsible Gambling Scale (BIRGS).</li> </ul>
<p>Parke et al. (2016)</p> <p>UK</p>	<p>Review paper (136 pages)</p>	<p>A technical report on the existing evidence and theory regarding the gambling products</p>	<p>This report reviews harm minimisation across the following domains:</p> <ul style="list-style-type: none"> <li>• Game characteristics</li> <li>• Ambient characteristics</li> <li>• Speed and frequency of gambling opportunities</li> <li>• Reward characteristics</li> <li>• Cost characteristics</li> <li>• Payment and accounting characteristics</li> <li>• Information characteristics</li> <li>• Product displacement in Gambling</li> </ul>	<p><b>Gaps: (p.12)</b></p> <ul style="list-style-type: none"> <li>• A stake-only reduction strategy to product-based harm minimisation ignores the role of game speed, game volatility and return-to-player (RTP). A coherent supplyside policy approach targeting cost of play to protect players must account for all parameters contributing to how much a consumer can lose.</li> <li>• Game features which greatly expedite game play (e.g., turbo mode or auto-play) should be reviewed.</li> </ul>

				<ul style="list-style-type: none"> <li>The use of debit cards, ATMs and digital wallets to access additional funds in gambling venues requires urgent consideration.</li> </ul>
Responsible Gambling Strategy Board (2016)  UK	Discussion paper  (38 pages)	Exploratory research on UK gamblers	<p>Following public consultation, a series of 5 objectives and 12 priority actions are proposed re gambling harm. The strategy has five priority objectives:</p> <ol style="list-style-type: none"> <li>To develop more effective harm minimisation interventions, in particular through further experimentation and piloting of different approaches.</li> <li>To improve treatment through better use of knowledge, data and evaluation.</li> <li>To build a culture where new initiatives are routinely evaluated and findings put into practice.</li> <li>To encourage a wider range of organisations in the public and private sector to accept their responsibility to tackle gambling-related harm.</li> <li>To progress towards a better understanding of gambling-related harm and its measurement.</li> </ol>	<p><b>Priority actions identified suggest several gaps:</b></p> <ol style="list-style-type: none"> <li><b>Understanding and measuring harm</b> - to create a more sophisticated understanding of the nature of harm associated with gambling; move away from more limited measurement tools, such as simply counting the number of problem gamblers.</li> <li><b>Engagement with relevant public sector bodies and other agencies</b> - to encourage greater acceptance of responsibility for delivering the strategy. This action calls for a broader range of organisations to use their skills, resources and influence to minimise gambling-related harm.</li> <li><b>Consolidating a culture of evaluation</b> - to build on the progress that has been made to evaluate initiatives and use the findings to target the future use of resources.</li> <li><b>Increased understanding of the effects of product characteristics and environment</b> - to understand the extent that product characteristics (e.g. stake size or speed of play) and environmental characteristics (eg. premises location or layout) contribute towards gambling-related harm.</li> <li><b>Improving methods of identifying harmful play</b> - to develop methods of identifying patterns of play that are linked to harm.</li> <li><b>Piloting interventions</b> - well-designed interventions to be piloted and evaluated. Approaches could include customer interaction, messaging or debit card blocking.</li> <li><b>Self-exclusion.</b> The establishment of multi-operator self-exclusion schemes is under way - increasing the levels of awareness of self-exclusion schemes among gamblers, advice agencies and others so as to improve effectiveness.</li> </ol>

				<p>8) <b>Education to prevent gambling-related harm</b> - better understanding of the effectiveness of steps that could be taken through education to minimise the risk of gambling-related harm.</p> <p>9) <b>Building the quality and capacity of treatment</b> - to ensure that treatment for those that need it is as effective and well-targeted as possible.</p> <p>10) <b>Widening and strengthening the research field and improving knowledge exchange</b> - to attract a wider range of researchers to fields of research relevant to this strategy. Crucial to success will be a demonstration of the independence and integrity of the commissioning process.</p> <p>11) <b>Horizon scanning</b> - to understand how the gambling market, or factors which may affect it, are developing and to identify emerging risks.</p> <p>12) <b>Public engagement</b> - to obtain the views of gamblers when developing initiatives designed to reduce gambling-related harm.</p>
Responsible Gambling Strategy Board (2017a)  UK	Discussion paper  (23 pages)	Exploratory research on UK gamblers	This document articulates the detail of the 12 priority action areas in the National Responsible Gambling Strategy. There are several ideas about research needs regarding gambling harm, among other priorities. 6 projects marked as highest priority (see gaps).	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Developing and identifying effective indicators of gambling-related harm</li> <li>• Building and testing a mechanism for measuring and monitoring gambling-related harm</li> <li>• The effect of advertising on children, young people and vulnerable people</li> <li>• Analysis to describe patterns of play on different gambling products and environments</li> <li>• How do we know what works in preventative education?</li> <li>• What works in gambling treatment?</li> </ul>
Responsible Gambling Strategy Board (2017b)	Discussion paper  (24 pages)	Series of meetings with industry representatives and advisory group members. Written	The document reports on progress with delivering the strategy and areas of continuing need/gaps. (p.6) "Ideally, we would be measuring progress by assessing the impact on the amount of gambling-	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• An evidence-based understanding of the link between harm and different gambling product characteristics and environments.</li> </ul>

UK		evidence was also collected from industry trade associations, larger operators and other stakeholders	related harm. Unfortunately, as is well known, the data do not as yet exist to allow that to happen.”	<ul style="list-style-type: none"> <li>• Evaluation of multi-operator self-exclusion schemes to determine their effectiveness as a harm minimisation tool.</li> <li>• Is preventative education effective in reducing gambling-related harm, and what are the best ways of delivering it to those who need it most?</li> </ul>
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**Table 7: Support for policy development and regulatory effectiveness (9 Reports)**

Author(s) & Year, Location	Document Type	Participants / Sample Focus	Summary	Gaps & Conflicting evidence
Anderson (2016)  Australia	Exploratory (154 pages)	An administrative review of gambling regulation in South Australia	<p>This document is a 2016 review of the current administrative arrangements for the regulation of commercial gambling in South Australia. The terms of reference for this review were to consider the adequacy, effectiveness and relevance of the State's administrative arrangements for the oversight of commercial gambling, including:</p> <p>(a) identification of opportunities to implement regulatory improvement to remove any inconsistencies associated with these regulatory arrangements;</p> <p>(b) administrative arrangements and commercial gambling frameworks as they relate to the not-for-profit club sector; and</p> <p>(c) any consequential amendments arising from the independent review of the Liquor Licensing Act 1997. The Review made recommendations to the Minister for Consumer and Business Services, which identified opportunities for regulatory improvement, and where relevant, the removal of administrative inconsistencies within the State's gambling regulatory framework. A range of general and more focused issues are identified and discussed. The following conclusions (p.134) were drawn:</p> <p>(a) There should be a Gambling Regulation (Administration) Act covering all forms of commercial gambling with its Objects aligned with the Liquor Licensing Act 1997;</p> <p>(b) The licensing of commercial gambling businesses including the approval of persons to work or occupy positions of authority within such businesses should be consistent across all forms of commercial gambling and have criteria and a regimen consistent with Liquor Licensing Act 1997;</p> <p>(c) Prescribed training for gaming managers and employees should mandate the requirement for such persons to also hold and maintain reciprocal responsible service of alcohol qualifications;</p>	<p><b>Gaps:</b> General issues identified by submissions to the review have relevance to potential current policy and regulation gaps:</p> <ul style="list-style-type: none"> <li>• What areas of gambling regulation should be modified and/or adjusted in an attempt to provide a parallel and cohesive system with the liquor licensing framework?</li> <li>• Are there opportunities to consolidate the roles of multiple government agencies which have a sphere of influence over commercial gambling to provide a more efficient and predictive regulatory framework?</li> <li>• The importance of having a working relationship between the Regulator, Industry and Stakeholders. What would that look like?</li> <li>• The absence of continuity, expertise and grassroots knowledge in regards to the Regulators of Gambling.</li> <li>• The current regulatory framework is considered complicated, cumbersome and confusing. Should there be a greater emphasis on consultative engagement, industry best practice and proactive strategies by the regulatory bodies?</li> <li>• Should there be a legal requirement for notification to the law enforcement body of any suspected unlawful gambling activity?</li> </ul>



			<p>(d) Where there is any discrepancy between liquor and gambling laws and regulations then as a general rule, gambling should always be secondary to liquor;</p> <p>(e) The regulation of both liquor and commercial gambling businesses should be under the control of a single regulator with the regulatory model encapsulating the role of the Licensing Court as the review and appellant body;</p> <p>(f) The compliance and enforcement regime should be strengthened to include the Commissioner of Police as suggested in the relevant submission;</p> <p>(g) The Office for Problem Gambling, either as part of DCSI or AGD to have a dedicated role in the management and provision of problem gambling help services, management of the voluntary exclusion schemes through its relationship with gambling providers and industry intervention agencies, research into problem gambling and strategic communications;</p> <p>and (h) Alignment of liquor and gambling barring management systems, potentially using a common user web-based interface, managed by the single regulator.</p>	
<p>Gambling Research Exchange Ontario (2017)</p> <p>Canada</p>	<p>Literature review</p> <p>(20 pages)</p>	<p>A literature review to inform the application of a public health perspective to gambling harm</p>	<p>Summarised the literature examining the relationship between problem gambling and comorbid mental health and substance abuse disorders. Explored the prevalence of gambling disorders among target demographics. Discusses the capacity for a public health framework to enhance and inform the prevention, policies, and treatment</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• There is a need for a unified public health approach to gambling</li> </ul>
<p>Elton-Marshall et al. (2017)</p> <p>Global</p>	<p>Review paper</p> <p>(63 pages)</p>	<p>A scoping review on 'a public health approach to gambling'</p>	<p>This review sought to:</p> <p>(1) Examine from a public health perspective how the social determinants of health (intermediate and structural determinants) relate to gambling and gambling related harms.</p> <p>(2) Examine the comorbidities of gambling with other substance use (including tobacco, alcohol, and marijuana).</p> <p>(3) Identify other jurisdictions that have approached gambling as a public health issue, determine their rationale where applicable, and provide examples of</p>	<p><b>Gaps:</b></p> <p>Would a public health approach similar to that applied to tobacco (ie. the Framework Convention on Tobacco Control (FCTC)) be transferable to the gambling area?</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• Article 6 relates to price and tax measures intended to reduce the demand, and there is some evidence to suggest that maximum bet allowances yield smaller losses and a reduction in gambling participation.</li> <li>• Article 9 proposes guidelines for testing and measuring the contents of tobacco products,</li> </ul>

			<p>their public health approaches including successes or lessons learned.</p> <p>(4) Identify approaches that have been adopted to address substance use that could perhaps be applied to gambling.</p> <p>They explored application of processes similar to Framework Convention on Tobacco Control (FCTC) to the gambling area (pp.33-38). The review concluded that "Existing approaches to gambling in Canada have often focused on micro-level approaches to gambling that blame individuals while ignoring the physical, cultural, social, and environmental contexts which may contribute to problematic gambling and gambling related harms....an approach to gambling that considers the social determinants of health is warranted. Given the comorbidity between gambling and other substance use (e.g., tobacco, alcohol, cannabis use), an efficient use of resources would be to adopt strategies that address multiple substance use and addictions including gambling. There have also been many advances in public health strategies addressing other substance use such as tobacco. Efforts to address prevention and treatment of gambling related harms could therefore adapt some of these successful strategies for gambling. Australia and New Zealand are examples of jurisdictions that have adopted a public health approach to gambling."(p.44)</p>	<p>and there is evidence that regulation of gambling game content and environment, and changes to EGM design and structure, can be effective harm reduction strategies.</p> <ul style="list-style-type: none"> <li>• Article 11 includes provisions for mandatory health warning labels on tobacco packaging. For gambling, emerging evidence may be useful in identifying gaming or advertising that provides misleading or erroneous perceptions and in developing responsive regulatory approaches.</li> <li>• Article 12 addresses the need to "promote and strengthen public awareness of tobacco control issues. Better education in the gambling area is needed, and evaluation of its impact is further needed.</li> <li>• Article 13 regulates tobacco-related advertising, promotion and sponsorship. The impact of several strategies and their targeting to at-risk groups has been researched for tobacco, but little is known about the impact for gambling.</li> <li>• Article 14 calls for demand reduction measures. Given the high comorbidity of gambling with other substance use, health care professionals could also be encouraged to screen for gambling disorders when a patient indicates that they are using other substances. Integration of problem gambling treatment services across different service sectors is also critical.</li> <li>• Article 20 calls for development and promotion of national research and coordination of research programmes at the regional and international levels. Many gaps in evidence/knowledge exist in the gambling area, possibly due to a scattergun approach to research that has created large breadth but limited depth in several areas.</li> </ul>
Gillies (2016) Scotland	Review paper (39 pages)	A scoping review on 'a public health approach for	This review provides several key messages and recommendations:	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Lack of an evidence base and conceptual clarity around which Public Health strategies</li> </ul>

		gambling related harm'	<ul style="list-style-type: none"> <li>• There are opportunities to learn from public health approaches taken to other unhealthy commodities such as alcohol and tobacco.</li> <li>• A national health needs assessment would be a useful first step toward articulating a public health approach to gambling related harm...as a useful step toward engaging key stakeholders in formulating a comprehensive, collective response to the prevention of gambling related harm.</li> </ul>	and interventions are effective for address gambling harm.
Rodgers et al. (2015)  Global	Review paper  (56 pages)	A systematic review on problem gambling: a public health perspective	<p>This report aims to understand and respond to problem gambling through the lens of a public health model; a "meta-framework". It presents a review of the literature on: problem gambling prevention; prevention approaches and frameworks developed for other related health and wellbeing problems, such as substance use and mental health; relevance of frameworks for other health and wellbeing problems for problem gambling; and health and wellbeing frameworks that have not yet been applied to problem gambling.</p> <p>Six frameworks are outlined and discussed:</p> <ol style="list-style-type: none"> <li>1. <b>Harm minimisation:</b> (i) providing information that targets the general population (or subgroups), (ii) pre-commitment schemes and altering the gambling environment (e.g. changing venue and machine characteristics) and (iii) self-exclusion programs. Universal educational approaches (such as school-based programs) have had less impact than more specific efforts to reduce harms in specific gambling settings (such as gaming machine modifications).</li> <li>2. <b>The pathways model:</b> acknowledges that problem gambling is heterogeneous, and intervention strategies might need to accommodate such diversity.</li> <li>3. <b>The Stages of Change/Trans-Theoretical Model:</b> Empirical evidence for the Stages of Change model is very weak, both for gambling specifically; widely used by clinicians in their choice of treatment options but it has little to offer in guiding preventive interventions.</li> <li>4. <b>Mental health literacy:</b> could be easily adapted to gambling and it would help integrate ideas relating to self-management and professional help-seeking.</li> </ol>	<p><b>Gaps:</b> (p.67)</p> <ul style="list-style-type: none"> <li>• "Gambling and problem gambling are not seen as issues of great importance within the current Australian health system."</li> <li>• "Even the treatment of problem gambling is largely invested in a system that has less internal co-ordination and fewer external linkages than would be hoped for in a system designed to provide integrated health care."</li> </ul> <p>"These layers will not operate in a collective and co-ordinated way unless there are specific processes put in place to achieve those ends....It is important therefore that some bottom-up strategies are applied to building these systems. This will require liaison between state and territory governments, partnerships between government, industry and service providers in the gambling field, and an extension of the concern with meeting the needs of those with gambling problems and their families into other service sectors (including but not limited to health)."</p>

			<p>5. <b>Socio-ecological models:</b> Valuable in directing attention at broader societal factors (policy, political and economic factors), and their interplay, rather than focussing on individual behaviour.</p> <p>6. <b>Social marketing:</b> The application of commercial marketing techniques to changing health and behaviour, inclusive of social marketing campaigns. Tobacco control is acknowledged to be one of the great public health achievements of recent times.</p> <p>Key components of a public health approach to problem gambling are discussed, the significance of each and any discrepancies and controversies in the literature relating to these components.</p>	
<p>South Australian Council of Social Service (2018)</p> <p>Australia</p>	<p>Discussion paper</p> <p>(20 pages)</p>	<p>South Australian state election policies on 'gambling harm prevention'</p>	<p>SACOSS argues for a public health approach to gambling harm (sees the issue as a social rather than an individual problem limited to problem gamblers), and tackled (as with smoking) through a combination of public education, cost incentives and market limitations. SACOSS argue for focusing on four key state-based gambling harm prevention issues:</p> <ul style="list-style-type: none"> <li>• Introduction of \$1 per spin bet limits on poker machines</li> <li>• Reducing the number of poker machines to the previous announced target of 12,000</li> <li>• Removal of EFTPOS machines from gaming areas</li> <li>• Funding for advocacy for consumer protection and gambling harm prevention measures.</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Resources for sector consultation, policy development and advocacy to bring the sectors together to consider the best policy and regulatory framework.</li> </ul>
<p>Van Dyke, Jenner &amp; Maddern (2016)</p> <p>Australian</p>	<p>Cross-sectional study</p> <p>Mixed methods</p> <p>PGSI used</p> <p>(395 pages)</p>	<p>Audit, literature review, analysis of online discussion boards (200 EGM gamblers over 2 weeks) and longitudinal survey (1000+ participants who play EGMs or have interest in playing EGMs)</p>	<p>Loyalty programs are usually linked with money spent on gambling activities, and money spent on other venue activities eg. food, beverages, accommodation.</p> <ul style="list-style-type: none"> <li>• Loyalty programs are most common in casinos (92%, or all but one) and venues with a large number (40+) of EGMs (62%).</li> <li>• The evidence is mixed regarding subgroups that are more/less influenced by loyalty programs. Most literature is written from a marketing perspective.</li> <li>• Discussion board participants were generally ambivalent about loyalty programs, stating they</li> </ul>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>• Lack of studies on Australian gambling loyalty programs.</li> <li>• The impact of loyalty program on various sub-groups of gamblers, and specifically on problem or high-risk gamblers, including structure of the program, types of rewards, manner in which the program is communicated.</li> </ul>

		looking at the role of loyalty programs and gambling in Australia	<p>didn't influence them to gamble more; though, their responses to questions more broadly suggested they did.</p> <ul style="list-style-type: none"> <li>Loyalty program members spent more money and time gambling, and were more likely to be problem gamblers or at moderate risk. The influence of 'High success' loyalty programs is less clear.</li> </ul>	
<p>Victorian Responsible Gambling (2015)</p> <p>Global</p>	<p>Discussion paper (23 pages)</p>	A background paper on responsible gambling	<p>This paper looks at the history of the term 'responsible gambling', practices currently associated with it and challenges involved in translating what we know about gambling harm into harm reduction. Responsible gambling strategies currently focus on: raising awareness of risk; self-control by gamblers and products/processes that support that self-control; limit-setting; and balancing gambling with other entertainment activities. However, these 'traditional' views of responsible gambling have been criticised as focusing on a dichotomy between responsible gambling and problem gambling while ignoring other gamblers who may be harmed (p.3). The authors stress that, "85 per cent of the harm from gambling arises from low and moderate-risk gamblers...responsible gambling needs to be redefined in a way that will better influence gamblers in the low and moderate-risk categories (p.3)." Messages around maintaining control, setting limits and sticking to them only confirm what people in this category already do. The focus of responsible gambling should therefore be on reducing gambling harm, rather than reducing or preventing problem gambling.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Responsible gambling needs to be redefined to better influence gamblers in the low and moderate-risk categories.</li> <li>Better understanding of how low-risk gambling actually use strategies around maintaining control, setting limits and sticking to them, that may inform better targeted messaging for gamblers, generally.</li> <li>It is unclear (for many in the low-risk, moderate-risk and problem gambling categories) which messages about risk and potential harm are getting through/having impact and which are not; there is a lack sufficient content knowledge to act as a check against behaviour that is resulting in harm.</li> </ul>
<p>Victorian Responsible Gambling (2015)</p> <p>Australia</p>	<p>Discussion paper (24 pages)</p>	A background paper on a public health approach to responsible gambling	<p>This report provides a definition of a public health approach, then puts the case for this approach. It argues that the complex interplay between the determinants of health and behaviours means a combination of strategies are needed. Prevention of harm requires a multi-level response; risk occurs along a continuum with tailored prevention strategies required at each point on the continuum; primary, secondary and tertiary prevention strategies are needed within a Public Health model.</p>	<p><b>Gaps:</b></p> <ul style="list-style-type: none"> <li>Integration of a public health approach across primary, secondary and tertiary prevention strategies.</li> </ul>

## Appendix 5: Quality Ratings

### Attitudes and behaviours towards gambling in vulnerable or target populations

**Table 1: Quality Ratings for Peer-reviewed Literature – Attitudes/Behaviours Towards Gambling in Vulnerable/Target Populations (Qualitative) (Australian studies)**

Rating Criteria	Author	Deans et al., 2017a	Deans et al. 2017b	Nekich et al., 2016	Bestman et al., 2017	Pitt et al., 2017	Pitt et al., 2017	Maltzahn et al., 2018	Radermacher et al., 2016
1. Is the qualitative approach appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y
2. Are the qualitative data collection methods adequate to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y
3. Are the findings adequately derived from the data?		Y	Y	Y	Y	Y	Y	Y	Y
4. Is the interpretation of results sufficiently substantiated by data?		Y	Y	Y	Y	Y	Y	Y	Y
5. Is there coherence between qualitative data sources, collection, analysis and interpretation?		Y	Y	Y	Y	Y	Y	Y	Y

**Table 2: Quality Ratings for Peer-reviewed Literature – Attitudes/Behaviours Towards Gambling in Vulnerable/Target Populations (Quant RCTs) (Australian studies)**

Rating Criteria	Author
	O'Loughlin et al., 2018
1. Is randomization appropriately performed?	Y
2. Are the groups comparable at baseline?	Y
3. Are there complete outcome data?	Y
4. Are outcome assessors blinded to the intervention provided?	N/A
5. Did the participants adhere to the assigned intervention?	Y

**Table 3: Quality Ratings for Peer-reviewed Literature – Attitudes/Behaviours Towards Gambling in Vulnerable/Target Populations (Quant Non-Randomised) (Australian studies)**

Rating Criteria	Author
	Li et al., 2018
1. Are the participants representative of the target population?	Y
2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?	Y
3. Are there complete outcome data?	Y
4. Are the confounders accounted for in the design and analysis?	Y
5. During the study period, is the intervention administered (or exposure occurred) as intended?	Y

**Table 4: Quality Ratings for Peer-reviewed Literature – Attitudes/Behaviours Towards Gambling in Vulnerable/Target Populations (Quant Descriptive) (Australian studies)**

Rating Criteria	Author	King et al., 2016	Dixon et al., 2016	Fan, 2017	Haydock et al., 2015	Manning et al., 2017	McCarthy, 2018	Pitt, 2017	Riley & Oakes 2015	Riley et al. 2017	Scholes-Balog et al. 2016
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		Y	Y	Y	Y	Y	Y	Y	N	N	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	N
4. Is the risk of nonresponse bias low?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y



## Emerging technologies and new trends

**Table 5. Quality Ratings for Peer-reviewed Literature – Technology and Trends (Qualitative)**

Rating Criteria	Author	Abarbanel et al., 2016	Armstrong et al., 2016	Deans (2016)	Deans (2016)	Gainsbury (2015)	Gainsbury, King (2015)	Goodwin (2017)	Hing (2015)	Hing, Sproston (2017)	Kim (2016)	Landon (2016)	Lopez-Gonzalez, Estevez, Griffiths (2018)	Stead (2016)	Talberg (2017)
1. Is the qualitative approach appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Are the qualitative data collection methods adequate to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are the findings adequately derived from the data?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the interpretation of results sufficiently substantiated by data?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is there coherence between qualitative data sources, collection, analysis and interpretation?		Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y

**Table 6: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant RCTs)**

Rating Criteria	Author	Li (2016)	Petry (2015)	Quignmo (2016)	Riva (2015)
1. Is randomization appropriately performed?		Y	Y	Y	Y
2. Are the groups comparable at baseline?		Y	Y	Y	Y
3. Are there complete outcome data?		Y	Y	Y	Y
4. Are outcome assessors blinded to the intervention provided?		N/A	?	Y	Y
5. Did the participants adhere to the assigned intervention?		Y	Y	Y	Y

**Table 7: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant Non-Randomised)**

Rating Criteria	Author	Donaldson (2016)	Frahn (2015)	Montes (2016)	Murch (2019)	Worhunsky (2018)
1. Are the participants representative of the target population?		Y	Y	Y	Y	Y
2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?		Y	Y	Y	Y	Y
3. Are there complete outcome data?		Y	Y	Y	Y	Y
4. Are the confounders accounted for in the design and analysis?		Y	Y	Y	Y	Y
5. During the study period, is the intervention administered (or exposure occurred) as intended?		Y	Y	Y	Y	Y

**Table 8: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant Descriptive)**

Rating Criteria	Author	Abarbanel (2015)	Baggio (2016)	Baggio (2017)	Baker (2016)	Baloglu (2014)	Barrault (2016)	Biolcati (2015)	Blaszczyński (2016)	Browne (2015)	Costes (2016)	Dussault (2017)	Dwyer (2018)	Dwyer (2018)
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the risk of nonresponse bias low?		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

**Table 9: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant Descriptive)**

Rating Criteria	Author	Effertz (2018)	Estevez (2017)	Forrest (2016)	Gainsbury (2015) a	Gainsbury (2015) b	Gainsbury (2015) c	Gainsbury (2015) d	Gainsbury (2015) e	Gainsbury (2016)	Gainsbury (2017)	Gainsbury (2018)	Gassman (2017)	Giotakos (2017)	Goldstein (2016)	Gray (2015)	Haefeli (2015)	Hanss (2015)
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the risk of nonresponse bias low?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

**Table 10: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant Descriptive)**

Rating Criteria	Author	Hayer (2018)	Hing (2016)	Hing, Myles (2017)	Hing, Russell (2017)	Hing, Russell (2018)	Hollingshead (2016)	Kairouz (2018)	Khazaal (2018)	Kim (2015)	Li (2015)	Lin (2015)	Lopez-Gonzalez (2018)	Macey (2018)	MacLaren (2016)	Marchia (2016)
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the risk of nonresponse bias low?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

**Table 11: Quality Ratings for Peer-reviewed Literature – Technology and Trends (Quant Descriptive)**

Rating Criteria	Author	Martin (2015)	Molde (2018)	Mulkeen (2017)	Nower (2018)	Papineau (2018)	Quilty (2016)	Redono (2015)	Remond (2018)	Sanders (2018)	Sigerson (2017)	Teichert (2017)	Wann (2015)	Wijesingha (2015)	Yoo (2016)	Yuan (2015)
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the risk of nonresponse bias low?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

## Efficacy and effectiveness of treatments

**Table 12. Quality Ratings for Peer-reviewed Literature – Treatment Studies (RCTs)**

Rating Criteria	Author	Abbott (2018)	Boudreault (2018)	Brito (2017)	Bucker (2018)	Campos (2016)	Casey (2017)	Dixon (2016)	Gay (2017)	Kovanen (2016)	Lee (2015)	Luquiens (2016)	McIntosh (2016)	Neighbors (2015)	Nilsson (2017)	Oei (2018)
1. Is randomization appropriately performed?		Y	?	?	Y	?	?	?	?	?	?	?	?	?	Y	?
2. Are the groups comparable at baseline?		Y	Y	Y	Y	Y	Y	Y	?	Y	Y	?	Y	?	N	Y
3. Are there complete outcome data?		N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N
4. Are outcome assessors blinded to the intervention provided?		Y	N	N	?	?	N	N	Y	Y	N	N	?	Y	?	N
5. Did the participants adhere to the assigned intervention?		Y	?	?	Y	?	?	Y	Y	Y	Y	?	Y	Y	?	Y

Rating Criteria	Author	Penna (2018)	Petry (2016)	Sauvaget (2018)	Smith (2015)	Toneatto (2016)	Wong (2015)
1) Is randomization appropriately performed?		?	?	?	Y	?	N
2) Are the groups comparable at baseline?		N	Y	N	Y	?	?
3) Are there complete outcome data?		N	N	N	N	N	N
4) Are outcome assessors blinded to the intervention provided?		Y	N	Y	N	N	N
5) 5. Did the participants adhere to the assigned intervention?		Y	Y	Y	Y	Y	?

## Prevention and Harm Minimisation

**Table 13: Quality Ratings for Peer-reviewed Literature – Prevention and Harm Minimisation (Qualitative)**

Rating Criteria	Author	Forsstrom (2017)	Gainsbury (2018)	Goh (2016)	Landon (2016)	Langham (2017)	Subramani am (2017)
1. Is the qualitative approach appropriate to answer the research question?		Y	Y	Y	Y	Y	Y
2. Are the qualitative data collection methods adequate to address the research question?		Y	Y	Y	Y	Y	Y
3. Are the findings adequately derived from the data?		Y	Y	Y	Y	Y	Y
4. Is the interpretation of results sufficiently substantiated by data?		Y	Y	Y	Y	Y	Y
5. Is there coherence between qualitative data sources, collection, analysis and interpretation?		Y	Y	Y	Y	Y	Y

**Table 14: Quality Ratings for Peer-reviewed Literature – Prevention and Harm Minimisation (Quant RCTs)**

Rating Criteria	Author	Biasczynski (2016)	Caillon (2018)	Canale (2016)	Martens (2015)	Rockloff (2015)	St-Pierre (2017)
1. Is randomization appropriately performed?		?	?	?	?	?	?
2. Are the groups comparable at baseline?		Y	?	Y	Y	?	?
3. Are there complete outcome data?		Y	?	Y	Y	Y	N
4. Are outcome assessors blinded to the intervention provided?		?	N	N	?	Y	N
5. Did the participants adhere to the assigned intervention?		Y	?	Y	Y	Y	Y

**Table 15: Quality Ratings for Peer-reviewed Literature – Prevention and Harm Minimisation (Quant Non-Randomised)**

Rating Criteria	Author	Auer (2015)	Auer (2015)	Auer (2016)	Dragicevic 2015	Haesler (2016)	Hing (2015)	Hing (2017)	Huic (2017)	Wood (2015)
1. Are the participants representative of the target population?		Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?		Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are there complete outcome data?		Y	Y	Y	N	Y	N	Y	N	Y
4. Are the confounders accounted for in the design and analysis?		N	Y	N	?	N	N	N	N	?
5. During the study period, is the intervention administered (or exposure occurred) as intended?		Y	Y	?	Y	Y	Y	Y	Y	Y

**Table 16: Quality Ratings for Peer-reviewed Literature – Prevention and Harm Minimisation (Quant Descriptive)**

Rating Criteria	Author	Auer (2018)	Forsstrom (2016)	Gainsbury (2015)	Gainsbury (2015)	Graydon (2017)	Harris (2016)	Kotter (2018)	McCormick (2018)	Palmer de Preez (2016)	Pickering (2018)	Quilty (2015)	Wohl (2017)	Wood (2015)	Zhang (2016)
1. Is the sampling strategy relevant to address the research question?		Y	Y	Y	Y	?	N	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?		Y	Y	Y	Y	?	?	Y	?	?	N	Y	?	Y	Y
3. Are the measurements appropriate?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?
4. Is the risk of nonresponse bias low?		N	N	N	N	?	?	?	N	?	N	?	N	?	?
5. Is the statistical analysis appropriate to answer the research question?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	Y	Y	?

## Understanding and Measuring Harm

**Table 17. Quality Ratings for Peer-reviewed literature – Measuring Harm (Qualitative)**

Rating Criteria	Author	
	Langham (2016)	Samuelson (2018)
1. Is the qualitative approach appropriate to answer the research question?	Y	Y
2. Are the qualitative data collection methods adequate to address the research question?	Y	Y
3. Are the findings adequately derived from the data?	Y	Y
4. Is the interpretation of results sufficiently substantiated by data?	Y	Y
5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	Y	Y

**Table 18: Quality Ratings for Peer-reviewed Literature – Measuring Harm (Quant Descriptive)**

Rating Criteria	Author												
	Browne (2017a)	Browne (2017b)	Browne (2018)	Browne (2018)	Canale (2016)	Castren (2018)	Currie (2017)	Gainsbury (2017)	Goodwin (2017)	Li (2017)	Rawat (2018)	Salonen (2017)	Shannon (2017)
1. Is the sampling strategy relevant to address the research question?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Is the sample representative of the target population?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Are the measurements appropriate?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Is the risk of nonresponse bias low?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Is the statistical analysis appropriate to answer the research question?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y