Public Health England

Protecting and improving the nation's health

Harms associated with gambling

An abbreviated systematic review: appendicies

Contents

Appendix A. Search strategy

Search strategy used in Ovid Medline medical research platform.

The Medline search is presented here and was translated for other databases. The search looked for terms in the:

- title
- abstract
- author key words
- sub-headings (such as MESH)

For years 2005 to 2014, we used the review filter for all databases except for Social Index, which does not have a validated filter. For Social Index, a set of search terms were created to restrict the search to reviews.

1. gambl*.tw,kw.
2. (Iowa adj gambl*).tw,kw.
3. 1 not 2.
4. Gambling/.
5. virtual good*.tw,kw.
6. (lottery or lotteries or lotto).tw,kw.
7. (scratchcard* or scratch card*).tw,kw.
8. in-game purchase*.tw,kw.
9. game credit*.tw,kw.
10. (loot box* or loot crate*).tw,kw.
11. slot machine*.tw,kw.
12. fruit machine*.tw,kw.
13. (video lottery or VLT).tw,kw.
14. casino*.tw,kw.
15. amusement arcade*.tw,kw.
16. microtransaction*.tw,kw.
17. (bingo not gene).tw,kw.
18. ((betting or bet or bets) and (horse* or racing or dog*)).tw,kw.
19. (game or games or gaming or gamer).tw,kw.
20. Video Games/.
21. 19 or 20.
22. (money or monetization or monetisation or monetary or reward* or win or wins or winning* or loss or losses or lose).tw,kw.
23. exp Reward/.
24. 22 or 23.
25. 21 and 24.

26. 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 25.
27. harm*.tw,kw.
28. risk*.tw,kw.
29. (impact or impacts).tw,kw.
30. risk/.
31. (normalis* or normaliz*).tw,kw.
32. inequalit*.tw,kw.
33. 27 or 28 or 29 or 30 or 31 or 32.
34. debt*.tw,kw.
35. bankrupt*.tw,kw.
36. pawn*.tw,kw.
37. (loan or loans).tw,kw.
38. deprivation.tw,kw.
39. financial loss*.tw,kw.
40. (financial* adj2 difficult*).tw,kw.
41. credit*.tw,kw.
42. poverty.tw,kw.
43. homeless*.tw,kw.
44. housing instabilit*.tw,kw.
45. Bankruptcy/.
46. exp Poverty/.
47. Housing/.
48. communit*.tw,kw.
49. Residence Characteristics/.
50. Socioeconomic Factors/.
51. 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50.
52. irritabil*.tw,kw.
53. mood*.tw,kw.
54. emotional* distress*.tw,kw.
55. psychological* distress*.tw,kw.
56. (anxiety or anxious).tw,kw.
57. (depressed or depression).tw,kw.
58. (substance use* or substance abuse* or substance misuse).tw,kw.
59. shame*.tw,kw.
60. stigma.tw,kw.
61. isolation.tw,kw.
62. (loneliness or lonely).tw,kw.
63. ("quality of life" or resilien*).tw,kw.
64. exp Stress, Psychological/.
65. Irritable Mood/.
66. Anxiety/.

67. Depression/.
68. Substance Related Disorders/ or Drug Users/.
69. Social Stigma/.
70. exp Guilt/.
71. Social Isolation/.
72. Quality of Life/ or Resilience, Psychological/.
73. 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72.
74. (mortality or death or deaths).tw,kw.
75. morbidity.tw,kw.
76. (co?morbidit* or multi?morbidit*).tw,kw.
77. ill health.tw,kw.
78. insomnia*.tw,kw.
79. hypertension.tw,kw.
80. heart disease*.tw,kw.
81. cardiovascular disease*.tw,kw.
82. stomach problem*.tw,kw.
83. peptic ulcer*.tw,kw.
84. migraine*.tw,kw.
85. neglect.tw,kw.
86. poor nutrition.tw,kw.
87. ((lack adj2 exercis*) or inactivit*).tw,kw.
88. (non-complian* adj2 medic*).tw,kw.
89. self-harm*.tw,kw.
90. suicid*.tw,kw.
91. addiction.tw,kw.
92. Mortality/.
93. Morbidity/ or exp Comorbidity/.
94. "Sleep Initiation and Maintenance Disorders"/.
95. Hypertension/.
96. Heart Diseases/.
97. Cardiovascular Diseases/.
98. Peptic Ulcer/.
99. Migraine Disorders/.
100. Substance Withdrawal Syndrome/.
101. Self-Neglect/.
102. Malnutrition/.
103. Medication Adherence/.
104. Self-Injurious Behavior/.
105. Suicide/.
106. Alcoholism/.

107. 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106.
108. divorce*.tw,kw.
109. (relationship adj2 break*).tw,kw.
110. (marriage adj2 break*).tw,kw.
111. (relationship adj2 conflict*).tw,kw.
112. (child?care or child care).tw,kw.
113. (parent* or family or families or guardian* or mother or maternal or father or paternal or mum or mom or dad).tw,kw.
114. violen*.tw,kw.
115. Divorce/.
116. Family Relations/ or exp Parents/ or "Child of Impaired Parents"/.
117. Family Conflict/.
118. Child Care/.
119. exp Domestic Violence/.
120. exp Violence/.
121. 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120.
122. cultural belief*.tw,kw.
123. cultural practice*.tw,kw.
124. cultural role*.tw,kw.
125. Culture/.
126. 122 or 123 or 124 or 125.
127. (economic activit* or economic inactivit*).tw,kw.
128. absenteeism.tw,kw.
129. productivity.tw,kw.
130. presenteeism.tw,kw.
131. truancy.tw,kw.
132. (school adj2 attainment).tw,kw.
133. (loss adj2 employment).tw,kw.
134. unemploy*.tw,kw.
135. (loss adj2 wage*).tw,kw.
136. Economic Status/.
137. Absenteeism/.
138. Presenteeism/.
139. Academic Failure/.
140. Unemployment/.
141. 127 or 128 or 129 or 130 or 131 or 132 or 133 or 134 or 135 or 136 or 137 or 138 or 139 or 140
142. (crime or crimes or criminal).tw,kw.
143. fraud*.tw,kw.
144. (child neglect or child maltreatment or parental conflict*).tw,kw.

145. trafficking.tw,kw.
146. prostitution.tw,kw.
147. (theft* or robber* or burglar*).tw,kw.
148. scam*.tw,kw.
149. Crime/.
150. exp Fraud/.
151. Human Trafficking/.
152. Theft/.
153. Child Abuse/.
154. 142 or 143 or 144 or 145 or 146 or 147 or 148 or 149 or 150 or 151 or 152 or 153.
155. 33 or 51 or 73 or 107 or 121 or 126 or 141 or 154.
156. 26 and 155.
157. limit 156 to English language.

Notes:

BiNGO is a product used in analysing gene experiments. So, we have included a 'NOT gene' to exclude this.

The Iowa Gambling task appeared quite regularly, but was not relevant. So, we have excluded this by using 'NOT Iowa adj gambl*.

Appendix B. Excluded full texts

There were 10 duplicate studies excluded from the review.

Author	Title
Roberts (2018)	Gambling and violence in a nationally representative sample of UK men
Browne (2018)	Prevalence of gambling-related harm provides evidence for the prevention paradox
Loewe (2015)	The quality of sexual life and the personality of men addicted to gambling
Hing (2019)	Avoiding gambling harm: An evidence-based set of safe gambling practices for consumers
Hing (2019)	Avoiding harmful gambling: An evidence-based set of safe gambling practices for consumers
Thorne (2018)	Betting on sleep restriction: Examining the relationship between sleep and gambling using online behaviour reporting
Kraus (2019)	Clinical characteristics of veterans with gambling disorders seeking pain treatment
Kerber (2015)	The impact of pathological gambling on older adults
Binde (2016)	Gambling-related employee embezzlement: A study of Swedish newspaper reports
Weinberger (2015)	Gambling behaviors and attitudes in adolescent high-school students: Relationships with problem-gambling severity and smoking status

Note: Weinberger (2015) and Binde (2016) used the same data as in a different study.

There were 4 studies excluded from the review where the publication date was not within timescales.

Author	Title
Atherton (2018)	Is gambling an emerging public health issue for Wales, UK?
Black (2015)	Personality Disorders, Impulsiveness, and Novelty Seeking in Persons with DSM-IV Pathological Gambling and Their First-Degree Relatives
Dannon (2017)	Pathological gamblers: Comorbid psychiatric diagnoses in patients and their families. the differences between the male and female gamblers
Gainsbury (2015)	How risky is Internet gambling? A comparison of subgroups of Internet gamblers based on problem gambling status

There were 47 studies excluded from the review where the full text was not available.

Author	Title
Banks (2017)	Gambling, crime and society
Barrense-Dias (2016)	Gambling and risk behaviors: Characteristics of young problematic gamblers in Switzerland
Barrense-Dias (2018)	Gambling or not gambling: What makes the difference?
Bischof (2018)	Relatives of pathological gamblers and alcohol dependent individuals: Comparison of strain and coping behavior-Results of the BEPAS-study
Bonfils (2017)	Development of the Gambling Quality of Life Scale (GQoLS): A new patient-reported outcome measure to assess health-related quality of life in gambling disorder
Brandt (2018)	Exploring experiences of violence amongst women with gambling disorder
Darbeda (2016)	Qualitative analysis of the reasons of call to the Adalis gambling help-line
Dufour (2015)	Correlates of at-risk gambling problems among cocaine users
Eng (2019)	The impact of problem gambling on family members: Ethnic differences in effects on general family impact, family cohesion, and mental health
Estevez (2018)	Attachment, coping and self-esteem in gamblers' relatives
Ha (2015)	Psychological factors associated with gambling severity among Internet gamblers in Korea
Hashimoto (2015)	The association between clinical characteristics of pathological gamblers and suicidality: Findings from 330 treatment-seeking pathological gamblers in Japan
Janikian (2015)	Adolescent gambling in seven European countries: Prevalence and related emotional and behavioral problems
Janikian (2016)	Adolescent Internet gambling and related internalizing and externalizing symptoms
Kim (2015)	A psychosociocultural model for understanding gambling problems in Korean society
Mathieu (2018)	Gambling motives, cognitive distortions and emotional states: A comparison between strategic and mixed gamblers
Matsuzaki (2018)	Clinical characteristics of treatment seeking individuals with gambling disorder in Japan: A systematic comparison of diagnostic criteria in ICD-11 and DSM-5

Author	Title
Moghaddam (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": Erratum
Morita (2018)	Difficulties and supports for family members of people with gambling disorder
No (2018)	5th International Conference on Behavioral Addictions April 23-25, 2018 Cologne, Germany
Pascucci (2015)	Age in pathological gambling: Correlations with personality and psychiatric comorbidity
Prever (2017)	Women & problem gambling in Italy; Still a hidden addiction?
Reid (2016)	Prevalence of exercise dependence in a sample of patients with gambling disorder and hypersexual behavior
Rogier (2018)	The subjective experience of gambling addiction: A thematic analysis of interviews with addicted gamblers
Sagoe (2018)	Mental health symptoms and gambling behaviour: A longitudinal study from adolescence to emerging adulthood
Sampaio (2017)	Gender differences in recreational, at-risk and disordered gambling: An analysis of a non-treatment seeking sample
Smith (2016)	Increases in alcohol-related motor vehicle crashes after the opening of a casino with 24 hour liquor sales
Tremblay (2016)	Pathological Gambling: Couple and personal adaptation
Gibson (2008)	Casinos and Crime: The Complete Story
Arai (2019)	The process of gambling problem getting serious
Greer (2019)	Problem gambling and gambling-related harms amongst esports bettors and skin gamblers
Grubbs (2019)	Network models of gambling symptoms: New statistical applications and clinical implications
Hing (2019)	Individual characteristics and coping mechanisms associated with the self-stigma of problem gambling
Joe (2019)	Current trends of online gambling disorder and clinical experiences in Korea
Kovacs (2019)	P.135 Impulsivity as risk factor for comorbid problem gambling in chronic alcohol use disorder patients: a clinical exploratory study

Author	Title
Lam (2019)	Emergency admissions and bad news disclosure as precipitators of suicide: A territory-wide cohort analysis of 458 oncology patients who completed suicides
Lee (2019)	Behavioral and substance addictions: Co-occurrence and association
Matsuzaki (2019)	Clinical characteristics of treatment seeking individuals with Gambling Disorder in Japan: A systematic comparison of diagnostic criteria in ICD-11 and DSM-5
Morita (2019)	Difficulties and supports for family members of people with gambling disorder in Japan
Park (2019)	The factors influencing the problem gambling of the suspended people of prosecution on gambling crime
Suda (2018)	Patterns of gambling and drinking behaviors among treatment-seeking disordered gamblers
Tanaka (2019)	The characteristics of patients with both gambling disorder and neurodevelopmental disorders in a clinical setting
Tsuneoka (2019)	The role of general psychiatric hospitals in gambling disorder
Underwood (2017)	Working with women's groups for problem gambling: treating gambling addiction through relationship, by L. Karter
Varescon (2019)	Anxiety and depressive symptomatology depending on type of games played
Yamada (2019)	Clinical characteristics of psychiatric comorbidity in gambling disorder in Japan
Yokotani (2019)	Prevalence of pathological gamblers and pathological internet users in a Japanese prison. Complete survey

There were 101 studies excluded from the review where the outcomes were not suitable (for example, not harms).

Author	Title
Abbott (2016)	Gambling and Problem Gambling in Victoria, Australia: Changes over 5 years
Abbott (2017)	Gambling and gambling harm in New Zealand: A 28-year case study
Armstrong (2018)	Gambling Participation, Expenditure and Risk of Harm in Australia, 1997-1998 and 2010-2011

Author	Title
Baggio (2017)	Is gambling involvement a confounding variable for the relationship between internet gambling and gambling problem severity?
Barnes (2017)	Gambling involvement among Native Americans, Blacks, and Whites in the United States
Bestman (2018)	Exploring children's experiences in community gambling venues: A qualitative study with children aged 6-16 in regional New South Wales
Bhatti (2019)	Gambling and Subsequent Road Traffic Injuries: A Longitudinal Cohort Analysis
Black (2015)	The relationship of DSM-IV pathological gambling to compulsive buying and other possible spectrum disorders: results from the Iowa PG family study
Bowden-Jones (2017)	Pathological gambling
Bramley (2019)	Gambling Risks: Exploring Social Work Practitioners' Experiences of Clients Presenting with Risks of Gambling-Related Harm
Brown (2015)	Bingo does not cause heart disease
Browne (2019)	A Multivariate Evaluation of 25 Proximal and Distal Risk-Factors for Gambling-Related Harm
Casey (2017)	'Getting your money for nothing': Narratives of self and value in women's 'at-home' gambling practices
Conner (2019)	20 Years of Indian Gaming: Reassessing and Still Winning
Connolly 2018	Gambling Behaviour in Great Britain in 2016: Evidence from England, Scotland and Wales
Costes (2016)	Gambling Patterns and Problems of Gamblers on Licensed and Unlicensed Sites in France
Costes (2018)	Where Lies the Harm in Lottery Gambling? A Portrait of Gambling Practices and Associated Problems
Cowlishaw (2017)	Gambling problems among patients in primary care: a cross-sectional study of general practices
Cowlishaw (2019)	Locating gambling problems across a continuum of severity: Rasch analysis of the Quinte Longitudinal Study (QLS)
Dalinghaus (2016)	Gambling Debt: Iceland's Rise and Fall in the Global Economy
De Luigi (2018)	Patterns of Gambling Activities and Gambling Problems Among Italian High School Students: Results from a Latent Class Analysis

Author	Title
Dixon (2016)	The relationship between gambling attitudes, involvement, and problems in adolescence: Examining the moderating role of coping strategies and parenting styles
Dufour (2019)	Gambling Problem Trajectories and Associated Individuals Risk Factors: A Three-Year Follow-Up Study Among Poker Players
Gainsbury (2015)	The interaction between gambling activities and modes of access: a comparison of Internet-only, land-based only, and mixed-mode gamblers
Gallimberti (2016)	Experience with Gambling in Late Childhood and Early Adolescence: Implications for Substance Experimentation Behavior
GambleAware 2017	Remote Gambling Research: Interim report on Phase 2
NHS Digital and the Scottish Government (2016)	Gambling behaviour in England & Scotland: Headline findings on gambling from the Health Survey for England 2012 and Scottish Health Survey 2012
Gambling Commission (2019)	Gambling participation in 2018: behaviour, awareness and attitudes
Gavriel-Fried (2019)	Recovery capital and symptom improvement in gambling disorder: correlations with spirituality and stressful life events in younger but not older adults
Giralt (2018)	Prevalence, risk factors, and psychosocial adjustment of problematic gambling in adolescents: Results from two representative German samples
Granero (2016)	Compulsive Buying Behavior: Characteristics of Comorbidity with Gambling Disorder
Guilcher (2016)	"Talk with me": perspectives on services for men with problem gambling and housing instability
Hamilton-Wright (2016)	Gambling in the Landscape of Adversity in Youth: Reflections from Men Who Live with Poverty and Homelessness
Harries (2018)	An Analysis of Treatment-Seeking Behavior in Individuals with Gambling Disorder
Hart (2016)	The anthropology of debt Gambling debt: Iceland's rise and fall in the global economy Debt: the first 5,000 years Money from nothing: indebtedness and aspiration in South Africa
Hing (2017)	How Anticipated and Experienced Stigma Can Contribute to Self-Stigma: The Case of Problem Gambling
Jang (2018)	Do addictive behaviors matter for college students' depression and suicidal ideation?

Author	Title
Jenkinson (2019)	Weighing up the odds: Sports betting and young men
Jimenez-Murcia (2015)	Gambling disorder and substance use disorders: Effect of early age and personality
Jimenez-Murcia (2017)	Food Addiction in Gambling Disorder: Frequency and Clinical Outcomes
Johansen (2019)	Exploring online problem gamblers' motivation to change
Kim (2018)	Comorbid addictive behaviors in disordered gamblers with psychosis
Lam (2017)	Exploring the relationship between body mass index, obesity, and gambling level across different gambling types
Maltzahn (2019)	Pleasures and Risks Associated with Bingo Playing in an Australian Aboriginal Community: Lessons for Policy and Intervention
Markham (2016)	The relationship between player losses and gambling-related harm: evidence from nationally representative cross-sectional surveys in four countries
McCarthy (2018)	Women's gambling behaviour, product preferences, and perceptions of product harm: differences by age and gambling risk status
Molinaro (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
Montes (2019)	Does Gambling Identity Predict Unique Variance in Negative Gambling-Related Outcomes: An Examination of Direct and Interactive Associations
Morrison (2015)	A family affair: Indigenous women's gambling journey
Myrseth (2016)	Psychopathology and personality characteristics in pathological gamblers: Identifying subgroups of gamblers
Nekich (2016)	Bread, milk and a Tattslotto ticket: the interpretive repertoires of young adult gambling in Australia
Orford (2017)	Stress, strain, coping and social support for affected family members attending the National Problem Gambling Clinic, London
Pfund (2017)	Psychological Distress as an Indicator of Co-Occurring Psychopathology among Treatment-Seeking Disordered Gamblers
Philander (2019)	Regional impacts of casino availability on gambling problems: Evidence from the Canadian Community Health Survey
Piscitelli (2017)	Older Adults' Casino Gambling Behavior and Their Attitudes Toward New Casino Development

Author	Title
Pontieri (2015)	Sociodemographic, neuropsychiatric and cognitive characteristics of pathological gambling and impulse control disorders NOS in Parkinson's disease
Rasanen (2016)	The role of social support in the association between gambling, poor health and health risk-taking
Rockloff (2019)	A Quantification of the Net Consumer Surplus from Gambling Participation
Ronzitti (2015)	Smoking and Gambling Disorder: Does Tobacco Use Influence Treatment Outcome?
Ronzitti (2018)	Problem-gambling severity, suicidality and DSM-IV Axis II personality disorders
Russell, (2018)	Social influences on gamblers by risk group: An egocentric social network analysis
Salonen (2017)	Attitudes towards gambling, gambling participation, and gambling-related harm: cross-sectional Finnish population studies in 2011 and 2015
Salonen (2018)	Gambling expenditure by game type among weekly gamblers in Finland
Sanscartier (2018)	A Latent Class Analysis of Gambling Activity Patterns in a Canadian University Sample of Emerging Adults: Socio-demographic, Motivational, and Mental Health Correlates
Sherba (2015)	Overall gambling behaviors and gambling treatment needs among a statewide sample of drug treatment clients in Ohio
Gambling Commission (2018)	Young people and gambling 2018: a research study among 11-16 year olds in Great Britain
Cowlishaw (2014)	Comorbid problem gambling in substance users seeking treatment
Devlin (2012)	The prevalence of problem gambling in New Zealand as measured by the PGSI: Adjusting prevalence estimates using meta-analysis
Moscrop (2011)	Medicalisation, morality, and addiction: Why we should be wary of problem gamblers in primary care
Moubarac (2010)	Bingo playing and problem gambling: A review of our current knowledge
Rockloff (2013)	The impact of jackpots on EGM gambling behavior: a review
Rodda (2012)	Problem gambling - aetiology, identification and management
Suurvali (2010)	Motivators for resolving or seeking help for gambling problems: a review of the empirical literature

Author	Title
Thomas (2014)	Problem gambling
Bestman (2019)	'Everyone knows grandma'. Pathways to gambling venues in regional Australia
Brakoulias (2020)	The rates of co-occurring behavioural addictions in treatment-seeking individuals with obsessive-compulsive disorder: a preliminary report
Browne (2019)	Measuring Behavioural Dependence in Gambling: A Case for Removing Harmful Consequences from the Assessment of Problem Gambling Pathology
Casey (2020)	Gambling, Status Anxiety and Inter-Generational Social Mobility: Findings from the Mass Observation Archive
Choi (2019)	Adult ADHD is related to gambling severity and psychopathology in treatment-seeking problem gamblers
Currie (2020)	Use of Self-control Strategies for Managing Gambling Habits Leads to Less Harm in Regular Gamblers
Day (2020)	Evaluating for Differences by Race/Ethnicity in the Association Between Income and Gambling Disorder
Heiskanen (2020)	Baby boomers as gamblers: recognizing and preventing gambling harm with intersectional approach
King (2020)	Gambling problems, risk factors, community knowledge, and impact in a US Lao immigrant and refugee community sample
Kovacs (2020)	Different aspects of impulsivity in chronic alcohol use disorder with and without comorbid problem gambling
Kristiansen (2020)	Loot box engagement and problem gambling among adolescent gamers: Findings from a national survey
Orlowski (2020)	The association of cognitive distortions and the type of gambling in problematic and disordered gambling
Raia (2019)	Internet addiction, alcohol risky consumption, and gambling disorder among Palermo University hospital: A cross-sectional study
Sleczka (2020)	On the stability and the progression of gambling problems: longitudinal relations between different problems related to gambling
Stewart (2016)	Editorial: Announcing the Winner of the Inaugural JGI Scholar's Award for Research Excellence (Category A: Clinical, Social, and/or Policy Research)
Takeuchi (2020)	Framing effects on financial and health problems in gambling disorder

Author	Title
Tomei (2019)	Social Representations of People with Gambling Problems: The Influence of Prevention Classes on Non-gamblers
Currie (2017)	Deriving low-risk gambling limits from longitudinal data collected in two independent Canadian studies
Awaworyi (2019)	Social Capital and Gambling: Evidence from Australia
Carbonneau (2018)	The Intergenerational Association Between Parents' Problem Gambling and Impulsivity-Hyperactivity/Inattention Behaviors in Children
Polat (2020)	The Effect of Gambling Motivation of Sport Spectators on Propensity for Violence in Sport
Booth (2020)	Gambling-related harms attributable to lotteries products
Campbell (2020)	Multiple risk behaviour in adolescence is associated with substantial adverse health and social outcomes in early adulthood: Findings from a prospective birth cohort study
Gomez (2019)	Minors and online gambling: Prevalence and related variables
Van de MASS 2016	An exploration of gender differences in the relationship between work family conflict and gambling problems
Jacob (2018)	The association between problem gambling and psychotic experiences
Engel and Rosen (2015)	Pathological Gambling and Treatment Outcomes for Adults Age 50 or Older in Methadone Maintenance Treatment

There were 63 studies excluded from the review where the study type was inappropriate. This means the studies were not systematic reviews (according to the Database of Abstracts of Reviews of Effects (DARE)) between 2005 and 2014 and not primary studies between 2015 and 2020.

Author	Title
Anonymous (2015)	Erratum: Suicidal ideation and suicide attempts in five groups with different severities of gambling: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions by Jacquelene F. Moghaddam, Gihyun Yoon, Daniel L. Dickerson, Suck Won Kim, and Joseph Westermeyer
Anonymous (2016)	Gambling on treatment is not an option
Anonymous (2018)	Abstract Book - 2nd World Congress of World Association on Dual Disorder, WADD
Anonymous (2018)	Abstracts of the 5th International Conference on Behavioral Addictions, ICBA 2018

Author	Title
Beynon (2018)	Is gambling an emerging public health issue in Wales, UK? An assimilation of literature and data
Bohane (2015)	The relationship between alcohol and gambling behaviours
Bramley (2019)	Gambling related harm: we lack longitudinal data
Derevensky (2015)	Adolescent gambling: Twenty-five years of research
Dixon (2019)	Mindfulness problems and depression symptoms in everyday life predict dark flow during slots play: Implications for gambling as a form of escape
Evren (2018)	Severity of Internet gaming disorder symptoms might be related with the body mass index
Ferrara (2019)	The Risk of Gambling Disorders in Children and Adolescents
Fiori (2015)	Gambling and suicide: The socio-anthropological perspective
Gonzalez-Ortega (2015)	Pathological gambling: Clinical gender differences
Greenfield (2015)	Introduction
Horton (2016)	Offline: Japan's daring gamble in an age of apprehension
Langham (2016)	Understanding gambling related harm: a proposed definition, conceptual framework, and taxonomy of harms
Latvala (2019)	Public health effects of gambling - debate on a conceptual model
Mayor (2017)	One in 20 patients has gambling problems, UK study finds
O'Dowd (2019)	Gambling: health experts investigate scale of harm
Raisamo (2018)	Harm caused by gambling among non-problem gamblers: Is a whole-of-population approach undervalued?
Reith (2019)	Gambling harm: a global problem requiring global solutions
Swindon Health and Wellbeing Board 2018	Gambling harms in Swindon - Rapid health needs assessment
Local Government Association (2018)	Tackling gambling related harm: a whole council approach
Velleman (2015)	Effects of gambling on the family
Afifi (2006)	Gambling-related problems are chronic and persist for the majority of individuals with a lifetime diagnosis of pathological gambling
Ariyabuddhiphongs (2012)	Older adults and gambling: A review

Author	Title
Black (2006)	Pathological gambling in Missouri
Bowden-Jones (2011)	Gambling addiction
Brezing (2010)	Non-substance-addictive behaviors in youth: pathological gambling and problematic Internet use
Clarke (2005)	Factors Leading to Substance Abuse, and Implications for Gambling in New Zealand
Crozier (2013)	Codependence with hypersexual and gambling disorder
Faregh (2013)	Epidemiology of problem gambling in a Canadian community
Ferentzy (2013)	Illicit drug use and problem gambling
Folino (2009)	Pathological gambling and criminality
French (2008)	Drinkers and bettors: investigating the complementarity of alcohol consumption and problem gambling
George (2011)	Gambling addiction: what the non-specialist needs to know
Griffiths (2009)	Internet gambling in the workplace
Kalischuk (2006)	Problem gambling and its impact on families: A literature review
Kerber (2011)	Does your older adult client have a gambling problem?
Kim (2006)	Pathological gambling and mood disorders: clinical associations and treatment implications
Liu (2013)	Gambling problems in young people: experience from the Asian region
Marshall (2009)	Gambling and organized crime -- A review of the literature
McComb (2009)	Conceptualizing and treating problem gambling as a family issue
O'Brien (2011)	Depression, cause or consequence of pathological gambling and its implications for treatment
Petry (2005)	Comorbidity of disordered gambling and other psychiatric disorders
Petry (2007)	Gambling and substance use disorders: current status and future directions
Prelipceanu (2005)	Pathological gambling - A modern approach
Shaw (2007)	The effect of pathological gambling on families, marriages, and children
Thomas (2008)	Problem gambling: What do general practitioners need to know and do about it?
Tse (2014)	Fortune or foe: the fatal harm caused by a gambling disorder

Author	Title
Turchi (2006)	Youth gambling: not a safe bet
Williams (2005)	Gambling and Problem Gambling Within Forensic Populations: A Review of the Literature
Anonymous (2019)	Abstracts of the 6th International Conference on Behavioral Addictions, ICBA 2019
Benchebra (2019)	Gambling and Gaming disorders and physical health of players: A critical review of the literature
Brown (2020)	What Can be Done to Reduce the Public Stigma of Gambling Disorder? Lessons from Other Stigmatised Conditions
Doroghazi (2020)	"Gambling: Part I of II"
Dreier (2019)	In-Game-Purchases and Internet Gaming Disorder. A proposal for a Maximal Revenue per Paying User per month (MIRPPU). Why regulation in adolescents is needed?
Goyder (2020)	Tackling gambling related harms as a public health issue
Hilbrecht (2020)	The Conceptual Framework of Harmful Gambling: A revised framework for understanding gambling harm
Horton (2019)	Offline: Gambling-"We are everywhere, we see everything"
Loo (2019)	A systematic review of gambling-related findings from the National Epidemiologic Survey on Alcohol and Related Conditions
Niemczewska (2020)	Gambling related harms - intensive mentoring from mentors with lived experience
Weinstock (2015)	The Wiley-Blackwell handbook of disordered gambling

There were 25 studies excluded from the review where the focus of study was incorrect.

Author	Title
Ahuja (2018)	Risk Factors Associated with Gambling Involvement among a National Sample of African American and European American Young Adults
Bellringer (2017)	Family violence in a sample of treatment-seeking gamblers: the effect of having dependent children
Boothby (2017)	Assessing the role of impulsivity in smoking & non-smoking disordered gamblers
Bruneau (2017)	Gambling problems in women: French specificities
Dighton (2018)	Gambling problems and the impact of family in UK armed forces veterans

Author	Title
Lim (2017)	The experience of gambling problems in British professional footballers: A preliminary qualitative study
Luczak (2016)	Gambling problems and comorbidity with alcohol use disorders in Chinese-, Korean-, and White-American college students
Okunna (2016)	Gambling involvement indicative of underlying behavioral and mental health disorders
Petra (2015)	Coping with intimate partners' substance use and gambling problems: The role of intimate partner violence (ipv)
Quigley (2015)	Comorbid Problem Gambling and Major Depression in a Community Sample
Quilty (2015)	CPGI-population harm: A supplement to the Canadian problem gambling index
Rawat (2018)	A tale of two countries: comparing disability weights for gambling problems in New Zealand and Australia
Silbernagl (2019)	Comorbidity Patterns Among Patients With Opioid Use Disorder and Problem Gambling: ADHD Status Predicts Class Membership
Children's Commissioner (2019)	Gaming the system
Ledgerwood (2020)	Gambling-Related Cognitive Distortions in Residential Treatment for Gambling Disorder
Weinstein (2015)	A Comparison of the Status, Legal, Economic, and Psychological Characteristics of Types of Adult Male Gamblers
Wieczorek (2020)	Difficulties in treatment of people with comorbid gambling and substance use disorders
Hollen (2020)	Gambling in Young Adults Aged 17-24 Years: A Population-Based Study
Granero (2015)	Subtypes of Pathological Gambling with Concurrent Illegal Behaviors
Aloi (2019)	The potential role of the early maladaptive schema in behavioural addictions among late adolescence and young adults
Kildahl (2020)	Individual differences in learning during decision-making may predict specific harms associated with gambling
Hamilton (2019)	Reflections on Poverty, Homelessness, and Problem Gambling: Discoveries from a World Café
Khundadze (2017)	Impact of Internet Gambling on Mental and Psychological Health of Children of Various Ages

Author	Title
Smith (2016)	Office based sports gambling and pooling: ethical dilemmas and worker productivity issues from fan and gender perspectives
Tackett 2020	Comorbidity of Alcohol and Gambling Problems in Emerging Adults: A Bifactor Model Conceptualization

There were 6 studies excluded from the review where the setting was incorrect (for example, not in the Organisation for Economic Co-operation and Development).

Author	Title
Akbieva (2016)	Interaction of the loneliness phenomenon and gambling addiction
Cassetta (2018)	Disordered gambling and psychosis: Prevalence and clinical correlates
Hu (2017)	Is lottery playing always harmful? Development of the Lottery Playing Health Scale
Ricijas (2015)	Relationship between youth problem gambling and other risk behaviors among Croatian adolescents
Subramaniam (2017)	Gambling and family: A two-way relationship
Livazovic and Bojcic (2019)	Problem gambling in adolescents: what are the psychological, social and financial consequences?

Appendix C. Included longitudinal and case control studies

There were 15 longitudinal and case control studies included in the review.

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Afifi, 2016 [1]	Adults aged 18-20 years N=679 Canada 5 years	Prospective cohort	At-risk/PG CPGI	Non-gambler or non-PG	Logistic regression	Mental disorders Alcohol and drug use CIDI-SF Drug dependence scale	At-risk/PG at baseline was significantly associated with incident major depressive disorder (AOR=1.98, 95% CI=1.14, 3.44), any mental disorder (AOR=3.84, 95% CI=1.89, 7.79), and alcohol dependence (AOR=2.20, 95%	Moderate	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							CI=1.17, 4.13) at cycle 2 through 4 PP: Results are for younger adults		
Badji, 2020 [2]	Adults experiencing personal insolvency Mean number of personal insolvencies N=105 (total number not reported) Australian 7 years	Retrospective cohort	Number of gambling premises (excl. casinos) Venue-level administrative data	Same areas over time	Multivariate linear regression	Financial insolvency Registry data	One additional venue increased the number of insolvencies by 1.80 per year (95% CI=0.39, 3.21). This relationship was largely driven by non-business personal insolvencies, e.g. one additional venue was estimated to increase the	Low	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							number of non-personal insolvencies by 1.44 per year (95% CI=0.24, 2.65)		
Chinneck, 2016 [3]	Adults aged 18-20 years N=530 Canada 5 years	Prospective cohort	PG PGSI	Same participants over time	Univariate and bivariate latent growth curves	Depression CIDI-SF	PG and major depressive disorder were positively correlated: at wave one respondents with greater levels of PG exhibited greater levels of major depressive disorder. The intercept of problem gambling and the slope of	Low	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							major depressive disorder were uncorrelated meaning that PG involvement at wave one was unrelated to changes in major depressive disorder symptomology over time PP: Results are for younger adults		
Dennison, 2020 [4]	School children aged 11-18 years N=12,227	Prospective cohort	PG defined as being behind ≥$500 in the last year due to gambling	Non-gamblers and non-gamblers	Logistic regression	Crime Self-reported	After accounting for background differences between PG and non-gamblers, PG was not	Low	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	USA 15 years						associated with criminal behaviour however it was measured PP: Results were for children		
Dowling, 2019 [5]	Adults (eligibility not reported, mean age=59.1 years) N=1,109 Australia 2 years	Prospective cohort	Past year at-risk gambling PGSI	Non-gamblers and not at-risk gamblers	Cross-lagged logistic regression	Alcohol, drug and tobacco use Mental disorders PHQ-2 GAD2 AUDIT Self-report	There were no significant cross-lagged relationships between any-risk gambling at start and hazardous alcohol use (OR=0.66, 95% CI=0.3, 1.45), daily tobacco use (OR = 0.84, 95% CI=0.25, 2.85), or drug use	Moderate	Not industry funded No CoI declared

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Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							(OR=1.09, 95% CI=0.27, 4.4) at follow-up. There was no evidence of a cross-lagged association between any-risk gambling at start and depression (OR=1.33, 95% CI=0.55, 3.17) or generalised anxiety (OR=1.15, 95% CI=0.54, 2.45) at follow-up PP: No interaction effects were identified for age or gender		

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Emond, 2019 [6]	Adolescents aged 17 years N=3,757 England 10 years	Prospective cohort	Past 12-month gambling participation Researcher designed questions	Occasional gamblers and non-gamblers	Logistic regression	Alcohol, drug and tobacco use Mental disorders Crime CIS-R DSM-5 Self-report	Moderate/problem risk gambling at age 17 was associated with a range of harms at 24 years including: hard drug use OR=1.95 (95% CI=1.06, 3.61), and mild AUD (but not moderate/severe) OR=2.44 (95% CI=1.27, 4.66). Moderate/problem risk gambling at age 20 was significantly associated with a range of harms at aged 24 years	Moderate	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							including: depression OR=2.29 (95% CI=1.28, 4.12), weekly smoking OR=1.84 (95% CI=1.24, 2.73), hard drug use OR=1.79 (95% CI=1.16, 2.75) and moderate/severe AUD OR=3.70 (95% CI=1.98, 6.91) PP: Results are for younger adults		
Karlsson, 2018 [7]	Adults with gambling disorder aged 18+ years	Retrospective cohort	Gambling disorder	General pop-ulation	SMR	All-cause mortality Suicide	Overall mortality: SMR 20-74 years=1.8 (95% CI=1.4, 2.2);	Low	Not industry funded

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=2,172 Sweden 11 years		ICD-10 classification			National death registry	SMR 20-49 years=6.2 (95% CI=4.1, 8.4) Suicide mortality: SMR 20-74 years=15.1 (95% CI=8.7, 21.6); SMR 20-49 years=19.3 (95% CI=9.8, 28.7); SMR 50-74 years=9.6 (95% CI=1.2, 18.0) PP: Women had larger SMRs compared to men for overall mortality, but not for suicide. SMRs		No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							were larger for younger age groups compared to older age groups		
Pavarin, 2018 [8]	Adolescents/ adults aged 17+ years N=680 Italy 16 years	Retrospective cohort	Gambling disorder ICD-9/ICD-10 classification	Same participants over time	Univariate analysis	Mental disorders Alcohol and drug use Electronic clinical databases	After first contact for pathological gambling, 6.3% of subjects were diagnosed with mental disorders, 2.8% with substance dependence, and 1.5% with alcohol dependence. On average, 3 years had passed from the first admission for pathological gambling to the	Moderate	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							subsequent contact for substance dependence, 2 years for alcohol dependence, and one year for mental disorders PP: Results are for younger adolescents and younger adults		
Roberts, 2018 [9]	Adults aged 18+ years N=43,093 USA 5 years	Prospective cohort	Pathological gambling AUDADIS-4 assessment	Non-gamblers	Binary logistic regression	IPV CTSF-R	Fully adjusted models showed no significant associations between gambling problems and physical IPV	Moderate	Funding not listed No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							perpetration for males or females. PP: Results are presented by sex		
Scholes-Balog, 2015 [10]	Young adults aged 17-24 years N=2,884 Australia 2 years	Prospective cohort	Past year PG Affirmative response to either: "hiding gambling from friends/family" and "ever thought you had a gambling problem"	Non-gamblers	Ordinary least squares regression	Mental disorders K-10 Kessler psychological distress scale	No significant relationships between gambling and internalising symptoms. PP: Results are for younger adults	Moderate	Not industry funded No CoI declared
Scholes-Balog, 2016 [11]	Young adults aged 17-24 years N=2,261	Prospective cohort	Past year PG Affirmative response to either: "hiding	Same participants over time	Multi-nomial logistic regression	Mental disorders Crime	After full adjustment, there were no significant relationships.	Moderate	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Australia 2 years		gambling from friends/family" and "ever thought you had a gambling problem"			K-10 Kessler psychological distress scale Self-report	PP: Results are for younger adults		
Sundqvist, 2019 [12]	Adults aged 18+ years N=2,991 Sweden 6 years	Retrospective case-control	PG PGSI/ SOGS-Revised Lifetime measure	Non-gamblers	Univariate analysis	Mental disorders Suicide MINI	For female cases, all conditions except suicidal events evolved before gambling onset and PG was the last condition to evolve at a mean age of 22.6 years (SD=8.6 years) For male cases, PG was initiated about one year	Moderate	Not industry funded No CoI declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							earlier than any of the comorbid conditions evolved, compared to controls: mean case age of onset=16.0 years SD=5.3 years, mean control age of onset=16.9 years SD=6.1 years. Male cases were significantly older than controls when they first experienced suicidal events: mean age=23.2 years (SD=13.7 years) and mean		

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							age=19.1 years (SD=7.2 years) respectively PP: Results are presented by sex		
Vitaro, 2018 [13]	Female twins age 14 years N=766 Canada 3 years	Prospective cohort	Gambling participation SOGS-RA	Same participants over time	Structural equation modelling and cross-lagged model	Academic performance Drug use Parental report and PESQ	In adjusted models, there was no significant relationship between gambling participation at age 14 and academic performance at age 17. Gambling involvement at age 14 contributed to the escalation of drug use from	Moderate	Not industry funded CoI not stated

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							age 14 to 17 years. PP: Results are for adolescents		
Vitaro, 2019 [14]	Twins age 17 years N=1,300 Canada 2 years	Prospective cohort	Gambling participation SOGS-RA	Same participants over time	Cross-lagged model	Alcohol and drug use PESQ	In adjusted models, there was no significant relationship between gambling participation at age 14 and substance use at age 17. PP: Results are for adolescents	Moderate	Not industry funded CoI not stated
Werner 2020 [15]	Young people and adolescents	Prospective cohort	Ever gambled or bet more than 5 times in lifetime	Same participants over time	Cox prop-ortional hazards regression	Alcohol, tobacco and drug use	Gambling was associated with alcohol use prior to age 15:	Moderate	Funding not stated

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	aged 13-19 years N=1,349 USA 2-4 years		Gambling Assessment Module IV S				HR=2.48 (95% CI=1.22, 5.02) but not thereafter for white males Gambling was associated with an increased hazard of alcohol initiation HR=1.71 (95% CI=1.30, 2.23) across the entire risk period for African American males Gambling was not associated with increased hazard of alcohol for white females		CoI not declared

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							Gambling was associated with an increased hazard of alcohol initiation HR=1.61 (95% CI=1.14, 2.28) and was the same across the entire risk period African American females No association between gambling and starting to use tobacco in any group Gambling increased the hazard for		

Author, year [ref]	Study population N Country Length of follow-up	Study type	Exposure (including measure-ment)	Comparator	Analysis method	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							cannabis initiation in African American males HR=1.90 (95% CI=1.38, 2.62) but not in any other group PP: Results presented by sex, ethnicity and are for adolescents and younger adults		

Notes:
AOR = adjusted odds ratio; AUDADIS-4 = Alcohol Use Disorders and Associated Disabilities Interview Schedule; AUDIT = Alcohol Use Disorder Identification Test; CI = confidence interval; CIDI-SF = Composite International Diagnostic Interview – Short Form; CIS-R = Clinical Interview Schedule Revised; CoI = conflicts of interest; CPGI = Canadian Problem Gambling Index; CTSF-R = Conflict Tactics Scale Revised; ICD-9 and ICD-10 = International Classification of Disease 9 and 10; GAD2 = Generalised Anxiety Disorder Scale 2; HR = Hazard Ratio; MINI = Mini International Neuropsychiatric Interview; NR = not reported; OR = odds ratio; PESQ = Personal Experience Screening Questionnaire; PG = problem gambling; PGSI = Problem Gambling Severity Index; PHQ-2 = Patient Health Questionnaire-2; SOGS = South Oaks Gambling Screen Revised for Adolescents; SMR = standardised mortality ratio

Appendix D. Included latent class analysis papers

There were 6 latent class analysis papers included in the review.

Author, year [ref]	Study population, N, country and time frame	Study type	Exposure (including measurement)	Comparator	Analysis	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Chamberlain, and others. 2020 [16]	Non-treatment seeking adults aged 18-29 years who gambled at least 5 times in the past 12 months N=573 USA 3 years	Latent trajectory study	Gambling symptoms SCI-GD	Between classes	Latent trajectory modelling	BMI (experimenter measured) Alcohol and tobacco use (number of drinking days/week) Mental disorders (MINI) QoL (QOLI)	Three classes were identified: 'high harm group' who had moderate-severe gambling disorder at baseline and remained symptomatic at follow-up (5.5% of the sample); 'intermediate harm group' who had problem gambling reducing over time (19.5%); and 'low harm group' who were asymptomatic (75.0%). Compared to the 'low harm' group, the 'intermediate' and 'high harm' groups had worse baseline QoL, higher occurrence	High	Not industry funded No CoI

Author, year [ref]	Study population, N, country and time frame	Study type	Exposure (including measurement)	Comparator	Analysis	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
							of mental disorders and substance use, and higher BMI PP: Results are for younger adults		
Cowlishaw, and others. 2016 [17]	Adults aged 18+ years N=3,798 Canada 5 years	Latent trajectory study	Moderate/PG PGSI	At-risk gamblers	Latent trajectory modelling	Family functioning ("How would you rate your overall family functioning in the past 12 months?" from "very poor" to "excellent") Social support (non-support scale of the PSI)	Moderate-risk/PG had significant time-lagged effects and predicted lower levels of family functioning and social support. All relationships were independent of major depression, generalised anxiety and substance use problems	Moderate	Not Industry funded No CoI
Dussault, 2016, and others. [18]	Males aged 17 years	Latent trajectory study	PG	Between classes	Latent trajectory modelling	Depression (Child Depression	Six classes emerged: 'low gambling problems and low depression symptoms' (76.9% of	Moderate	Not industry funded

Author, year [ref]	Study population, N, country and time frame	Study type	Exposure (including measurement)	Comparator	Analysis	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=888 Canada 11 years		SOGS-RA and SOGS			Inventory and DSM-4)	sample); 'high gambling problems and low depressive symptoms' (0.07%); 'low gambling problems and moderate depression symptoms' (7.9%); 'high gambling problems and moderate depression symptoms' (0.03%); 'low gambling problems and high depressive symptoms' (12.39%); 'high gambling problems and high depressive symptoms' (1.8%) PP: Results are for males only		No CoI
Egerton, 2018, and others. [19]	Adults aged 18-20 years N=517	Latent trajectory study	PG PGSI	Between classes	Latent trajectory modelling	Depression (CIDI-SF)	Five classes emerged: 'low stable gambling, moderate decreasing depression' (5.15% of sample); 'low decreasing gambling, low increasing depression' (80.86%); 'moderate	Moderate	Not industry funded No CoI

Author, year [ref]	Study population, N, country and time frame	Study type	Exposure (including measurement)	Comparator	Analysis	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Canada 5 years						stable problem gambling, no depression' (2.06%); 'low stable gambling, moderate stable depression' (2.8%); 'low stable gambling, high decreasing depression (9.13%)' PP: Results are for younger adults		
Mutti-Packer, 2017, and others. , [20]	Children aged 13-16 years N=436 Canada 5 years	Latent trajectory study	PG DSM-IV-MR-J	Between classes	Latent trajectory modelling	Binge drinking ("How often in the past 12 months have you had 5 or more drinks on one occasion?" 'Never', 'less than once a month', 'once a month', '2 to 3 times a month', 'once a week', and 'more	The best-fitting growth models indicate that baseline levels of problem gambling symptoms were not associated with change in alcohol misuse over time PP: Results are for children	Moderate	Not industry funded CoI not stated

Author, year [ref]	Study population, N, country and time frame	Study type	Exposure (including measurement)	Comparator	Analysis	Outcome (including measurement)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
						than once a week')			
Studer, 2016, and others. , [21]	Male army conscripts aged 20 years N=4,989 Switzerland 3 years	Latent class analysis	Gambling frequency on seven different activities; experience of gambling problems; self-reported DSM5 symptoms Self-report	Between classes	Latent class analysis	Alcohol, drug and tobacco use (self-report)	Six classes emerged. 'Extensive gamblers' were a small group but had the highest rates of risky cannabis use and the second highest prevalence of at least monthly RSOD and daily cigarette use. Extensive gamblers differed significantly from 'non-gamblers' (the normative group) in all substance use outcomes PP: Results are for young male army conscripts	High	Not industry funded No CoI

Notes:
BMI = body mass index; CAD$ = Canadian dollars; CIDI-SF = Composite International Diagnostic Interview; CoI = conflicts of interest; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders; MINI = Mini International Neuropsychiatric Interview; PGSI = Problem Gambling Severity Index; PSI = Personality Assessment Inventory; QoL = quality of life; QOLI = Quality of Life Inventory; SCI-GD = Structured Clinical Interview for Gambling Disorder; RSOD = risky single occasion drinking; SOGS = South Oaks Gambling Screen; SOGS-RA = South Oaks Gambling Screen Revised for Adolescents; USA = United States of America

Appendix E. Included qualitative studies

There were 32 qualitative studies included in the review.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Anderson, and others. , 2017 [22]	Older adults gambled in the past year or were active in a gambling recovery program within the past year. N=34 N=13 males N= 21 females Aged 62-88 years (average age 72) N=28 individuals from senior centres (Delaware) and N=6 from Gamblers Anonymous meetings in New Castle	Casino gambling Self-reported	In-depth interviews Grounded theory (coding and identification of themes and sub themes)	Harms were to the gambler and close associates Financial harms: debt, hardship, exhausted pension/savings/inheritance, no money to pass to children, spent children's trust funds, reduced money for family expenditure, loans from family, lost a house. Relationship harms: arguments/conflict, estranged/broken relationships with family and friends, including divorce.	High	Can't tell CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	County (one of Delaware's 3 counties) Delaware, USA			Health/emotional harms: anxiety (e.g. debts, stress (e.g. relationship), shame (e.g. spent children's trust fund). Cultural/societal harms: Exposure to gambling by family members normalises the behaviour Co-dependency was highlighted. Debts of the gambler caused family worry. Winnings were expected to be shared out which resulted in family tension. Others shouldered the stress of the gambler. PP: Study participants are all older adults.		
Banks, and others. 2018 [23]	Family members including partners of problem gamblers (both family members where there has been a successful outcome	Problem gambling (not defined). Self-reported	Qualitative questions (in a survey) and also semi-structured interviews	Harms were to close associates Financial harms: debt, used pension/savings to pay debts, took money from those who were financially	High	Indirect industry funded.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	in terms of their loved one's problem gambling and where there is ongoing problem gambling). Online survey: N=222 N=35 males N=186 females N=1 other Aged 18-74 years (mean age 43 years) Interviews (participants selected from the survey): N=33 Age/sex not reported		Thematic analysis	dependent without their consent ('stole' money), borrowed money. There was reduced money for family expenditure and curtailed discretionary spending. Family members had to take additional employment to cover living costs. Friends and family were affected. Financial problems were chronic and reoccurring; significant legacy financial effects even once gambling had stopped. Relationship harms: family members reported arguments due to distrusting the gambler (lies and dishonesty), arguments between them and their family about best way to help the gambler, isolation, separation/relationships ending, experiencing violence, the gambler neglecting family duties (leaving children hungry).		CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	United Kingdom			Health/emotional harms: family members reported frustration, resentment, anger, stress and anxiety related to the financial impact of gambling. They also reported being nervous/fearful around the gambler, feeling like a failure (unable to stop the gambler), self-blame, hopelessness, reduced self-worth, insecure and vulnerable, shame, and self-isolation (not want to talk to others about the problem), insomnia, increased alcohol and tobacco use, stopped exercising, depression, high blood pressure, migraines (due to stress), reduced self-care, termination of a pregnancy, attempted suicide. Work harms: family members reported being 'mentally absent' at work and a		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				reduced desire/ability to work all due to stress, leaving work when the gambler needed help. Ill health resulted in poor work performance and disciplinary proceedings. Harms had a 'ripple effect' and affected many close associat2016es. Cultural harms: Shame felt most acutely by family members from certain cultural groups. PP: None identified.		
Baxter, and others. , 2016 [24]	People who engaged in gambling as a leisure activity and those for whom gambling was problematic, family members of people experiencing gambling	Definition of gambling was generated during brainstorming:	Brainstorming (4 groups: males, females, family, staff); sorting phase (3 groups: males, females, family), mapping of clusters and	Harms were to the gambler, close associates and wider society. Themes identified by men: 1. Destruction of family and relationships (e.g. hide problem from family, use	Moderate	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	problems, and health care providers who deliver gambling treatment aged over 18. Brainstorming: N=28 N=10 no gambling problems N=9 at risk of problem gambling N=9 at risk of problem/pathological gambling N=10 males N=18 females Mean age 53 years. 2nd sorting phase:	Gambling can be described as betting money or something of material value on an event with an uncertain outcome, in hopes to win more money or material goods, like trips. There are a variety of activities that may be considered gambling such as, playing	cluster solution selection. Concept mapping	money meant for family, destroy marriages, anger from families etc). 2. Negative outcomes (e.g. job loss, feeling isolated, feel sick/physical pain when lose, sense of failure etc). 3. Rock bottom final outcomes (e.g. shame, gambling can lead to suicide etc). Themes identified by women: 1. Destroy relationships (e.g. use money meant for family, creates rifts/conflicts) 2. Addictive (e.g. can't stop even if you want to, don't want to admit you are addicted etc). 3. Negative effects on physical/mental health (e.g. gambling increases alcohol and drug use, suicide, physical pain/feel sick when lose etc)		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=19 (gamblers and family only) Age/sex not reported. Toronto, Canada	card games like blackjack or playing the slot machines at casinos, placing bets on horses/dogs at a race track. There are less obvious forms of gambling such as playing the lottery, betting money at a bingo hall, placing money in the stock market, online betting and		4. Psychological consequences (e.g. Casino tricks you into thinking you can win) 5. Financial consequences (e.g. stealing, continue to gamble to cover losses). Themes generated by the researchers: 1. Financial consequences (e.g. debt/financial losses/bankruptcy, embezzle money from your employer, stealing, gamble to cover losses, job loss) 2. Destruction of family and relationships (e.g. use money meant for family, loss of trust of family members, dishonesty such as lies to family or at work, lose friendships etc.) 3. Addiction.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
		playing cards with friends.		4. Emotional responses (e.g. Gambling increases alcohol and drug use, anxiety, feeling isolated etc.) PP: Results are presented by sex.		
Binde 2016 [25]	N=18 N= 5 problem gambling therapists N= 5 semi-professional peer counsellors from mutual support societies for problem gamblers N= 5* recovered problem gamblers who had embezzled money in the workplace N= 3 informants (1 professional specialising in preventing/detecting economic crime, 2	Gambling (not defined) In newspapers/ magazines Self-reported	Semi-structured interviews Notes and transcripts merged and coded using key words	Harms were to the gambler, close associates and wider society. Financial harms: debts, loses job/reassigned work. Relationship harms: relationship breakdown including divorce. Health/emotional harms: stress, shame, distress, guilt from lying, insomnia, suicidal thoughts. Work harms: embezzled, lack of focus on work, quit/sacked to avoid detection.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	professionals in preventing drug and gambling harm at work). Age/sex not reported N=55 cases of gambling-related embezzlement reported in national, regional and local newspapers and weekly magazines. *One of the 5 gamblers was also reported as a case in the newspapers. Sweden			Resulted in a financial impact on the company, reputational impact on the company, emotional impact on colleagues. Crime: the focus of the study is embezzlement. Typically, a person loses a lot of money, uses up all available money, might get a loan, 'borrows' (i.e. steals) money from family bank accounts, needs money for bills etc., starts to 'borrow' money from the company, then embezzling becomes routine, a substantial amount is stolen, the gambler gets a criminal record and may go to prison. PP: None identified.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Bonfils, and others. , 2019 [26]	Current or remitted problem gamblers. Problem Gambling Severity Index of the Canadian Problem Gambling Index (CPGI-PGSI) 9-item score above 3 during the past 12 months or in the lifetime. N=25 N=17 males N=8 females Mean age 49.5 years 2 addiction treatment services in Villejuif and Nantes	Problem gambling (not defined). Self-reported	Focus group (semi-structured group interview) Content analysis (facilitated by the textual statistic software Alceste)	Harms were to the gambler, close associates and wider society. Financial harms: debts and credits, borrow money from children, lost a house. Relationship harms: relationship disruption/divorce, loss of trust, reduced time with relatives, neglect relatives' needs, children take over parental type role (borrowed money from their children), forgetting to pick children up from school. Health/emotional harms: guilt, shame, loss of self-esteem, loneliness. Outcomes were anxiety (related to financial situation) and depression.	Moderate	Can't tell CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Gamblers Anonymous meetings in Paris France			Work harms: preoccupation with gambling affected work. Crime: due to financial situation the gambler committed embezzlement, robbery, sex work. PP: none identified.		
Bramley, and others. , 2020 [27]	Recent migrants who arrived in the UK within the past 5 years and representatives from organisations supporting migrants. London: N=16 N=12 males N=4 females Age not reported.	Gambling (not defined) Self-reported	Focus groups - 1 Leeds, 1 London (each group discussed the same set topics) Thematic analysis	Harms were to gambler, close associates and wider society. Financial harms: financial difficulties, selling possessions to fund gambling, homelessness, not able to send money home to family (results in family hardship). Relationship harms: relationship breakdown, domestic violence.	High	Not industry funded. CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Leeds: N=16 N=6 males N=10 females Age not reported. N=20 first or second generation migrants (who were from or worked with a wide variety of migrant communities) N=12 frontline workers (who provide support to migrants and migrant communities) London and Leeds, England.			Health/emotional harms: mental health problems, shame, stigma, suicide. Crime: selling drugs, sex work. Cultural/societal harms: for men from sub-Saharan Africa, financial losses had an impact on the community through loss of status. For those of the Islamic religion, which forbids gambling, the whole family would become tarnished. For those in the Kurdish, Turkish community, gambling is stigmatised and the community will isolate a gamblers. So in some communities, the stigma associated with gambling resulted in isolation.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				Migrants found it easier to gamble in the UK because of the social acceptance of gambling. PP: Study is about migrants. Authors suggested that the harms were the same as experienced by the general population but were exacerbated because no 'safety net' of friends and family.		
Bramley, and others. , 2019 [28]	Key informants involved in the care and support of adults with health and social care needs (medical and care professionals) from National Health Service (NHS), local government, charities or third sector organisations and gambling experts)	Gambling (not defined) Self-reported	Semi-structured interviews Thematic analysis	Harms were to gambler. Financial harms: financial difficulties, gambled benefit payments. Health/emotional harms: anxiety, depression, shame, embarrassment. Gambling started as a distraction but became an addiction.	High	Indirect industry funded. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=23 N=14 males N=9 females Age not reported. England.			Says that gambling also impacts on relationships and housing but no information on this is provided. PP: Study is about people with health and social care needs. Participants listed the 'sort of people' most at risk of harm from gambling (e.g. including those with learning difficulties, substance misusers, the homeless, those taking certain prescribed medications etc).		
Browne, and others. , 2016 [29]	Professionals involved in the provision of problem gambling treatment, ancillary counselling services (finance, relationship, or mediation), community education, primary health care, public policy, research, and the	Gambling (not defined) Self-reported	Three stages: 1. focus group or interviews (with professionals; all participants were asked about their experience with gambling-related harm to establish context); 2. Semi-	Harms were to the gambler, close associates and wider society. This study provides a comprehensive description of general, crisis and legacy harms to the gambler, affected others and communities, under each of the 7 pillars of harm (this is to detailed to be summarised here).	Moderate	Can't tell. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	provision or promotion of responsible gambling within venues) N=35 N=18 provision of gambling treatment/community welfare N=4 financial counsellors N=5 community education roles N=4 primary health care N=4 public policy or gambling research. Age/sex not reported. Individuals who identified that they had experienced harm from either their own, or someone else's gambling		structured interviews (with gamblers/affected others); 3 validation with online gambling help/support forum posts. First and second cycle coding.	In addition, staff working in gambling venues experienced a dissonance between choice of job in hospitality and reality of working around people experiencing gambling problems. Staff were worried they would lose their job if they spoke up about harms people were experiencing from gambling. Staff in health and community sector who provided assistance/treatment to people exhibiting gambling-related problems experienced the sort of harms they would experience when helping others with problems (e.g. the emotional impact of supporting people who were suicidal).		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=25 N=11 gamblers N=9 affected others N=5 both N= 30% male N= 70% female N=45% 18-29 years N=40% 30-55 years N=14% 56-70 years Victoria and Melbourne, Australia			Gambling at harmful levels often occurred in conjunction with other morbidities that contribute to the harm, and other detrimental health behaviours (e.g. intimate partner violence, use of methamphetamine, crime). Gambling was identified as a 'gateway' to other harmful behaviours such as alcohol and tobacco use. Cultural/societal harms: gambling harms transferred into future generations. PP: None identified.		
Crentsil 2015 [30]	Not clear who was eligible/what population was included. N=30	Gambling (not defined) Self-reported	Ethnographic methods (including observation, semi- structured interviews and conversations) and also questionnaires	Harms were to the (female) gambler, close associates and wider society. Financial harms: financial problems/huge losses, borrow/beg money from friends and family, lost a business.	High	Directly industry funded. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	(includes N=9 active gamblers) Interviews/conversations: N=2 non gambling migrant males N=2 migrant female gamblers N=1 non gambler Questionnaires: N=4 males N=21 females (10 of which are migrant gamblers) Ages unclear (but authors note the active female gamblers were mostly aged between 29 and 50 years		Method of analysis not described.	Relationship harms: relationship break up/divorce (often related to financial problems). Health/emotional harms: emotional breakdown. Crime: sex work. PP: Study is about migrant women's gambling.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	and only 3 respondents were aged 18-28 years). Helsinki, Finland					
Dowling, and others. , 2016 [31]	Problem gamblers attending face-to-face gambling services N=212 N=107 males N=105 females Mean age males: 39.1 years, SD 11.4, range 19–67 Mean age females: 47.2 years, SD 13.2, range 22–79 years	Gambling (not defined) Self-reported	In-depth interviews and open-ended responses to a survey Content analysis (of open-ended responses)	Harms were to the gambler and close associates. Financial harms: the gambler and their family experienced debts, financial deprivation, reduced financial security in older age, children having to do without items. Relationship harms: family conflict about money, need to seek financial support from family, lost or damaged relationships with a range of people including partners, children and parents, loss of trust by others due to lies and stealing.	High	Co-funded. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Victoria, South Australia and Tasmania, Australia			Health/emotional: guilt and sadness of the gambler and depression, sadness, stress, distress, anxiety and guilt of the family. Crime: stealing PP: None identified.		
Eby, and others. , 2015 [32]	Frequent (i.e. at least weekly) gamblers who were not in treatment N=161 N=130 males N=31 females Mean age 26.81 (SD 11.36, range 19–62 years).	Gambling (not defined) Self-reported	Semi-structured interviews Content analysis (coding conducted using ATLAS)	Harms were to the gambler, close associates and wider society. Financial harms: financial loss, not having enough money to live on. Relationship harms: discord, separation and divorce from a partner, estrangement from family, friends, boss/co-workers and others, 'problems' with friends, children, siblings, parents, withdrawal from normal	High	Indirectly industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Mid-sized city in Georgia, USA			life (e.g. family, work, study, social activities/past-times). Health/emotional harms: damage to psychological wellbeing, loss of identity, shame, low self-esteem, depression, decrements to physical wellbeing. Work/study harms: skipping work, showing up to work late, reduced work performance, lack of concentration at work, withdrawal from work, loss of employment, difficulty in school, lack of concentration in school, withdrawal from school. PP: None identified.		
Heiskanen 2017 [33]	Treatment-seeking problem gamblers who had	Gambling (not defined)	Interviews (loosely structured by topic	Harms were to the gambler, close associates and wider society.	High	Not industry funded.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	themselves described their gambling as problematic. N=17 N=12 males N=5 females Average age 42 years (range 24-70 years). Finland	Self-reported	guide but mostly drew on narrative approach) Qualitative, thematic content analysis.	Financial harms (this paper specifically about money): debts (credit cards, payday loans and consumer credit), borrowed money from friends, family, relatives, co-workers, sold possessions including a home, spent money on gambling rather than on bills, food, clothing etc. Relationship harms: relationship problems due to debts and lying. Health/emotional harms: low self-esteem, hopelessness. Crime: tax fraud, stole from work and family, begged, sex work. Work harms: gambling was an obstacle to employment (felt there was no point in		No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				working if they would just spend all the money on gambling. PP: None identified.		
Hing, and others. , 2016 [34]	People who experienced a gambling problem in past 3 years. N=44 N=28 males N=16 females N=6 aged 18-24 N=13 aged 25-34 N=7 aged 35-44 N=8 aged 45-54 N= 7 aged 55-64 N=3 aged 65 or over	Gambling (broadly defined as gaming machines, horse betting and online sports betting). Self-reported	Semi-structured interviews Interpretive phenomenology	Harms were to the gambler and close associates. Financial harms: spent money on gambling instead of family. Relationship harms: family/friends react angrily, gamblers hide gambling due to fear of others' reactions, partners of gamblers purposefully ignore the gambling due to their own embarrassment and shame, secrecy within relationships. Health/emotional harms: perceived public stigma/judgement (gambling is not an	Moderate	Not industry funded. CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	It was not clear that 'in the past 3 years' was applicable to all participants. Australia			addiction and gamblers are liars, weak, have no self-control), stigma is internalised, social isolation (people distance themselves from gamblers), stress, low self-esteem, depression and feeling sick. PP: None identified.		
Hing, and others. 2015 [35]	Indigenous people most of whom who had grown up in families/communities who gambled: N=169 N=74 males N=95 females Most aged over 18 years. Key informants: N= 31	Gambling (not defined) Self-reported	Semi-structured interviews Thematic analysis	Harms were to the gambler, close associates and wider society. Financial harms: debts, financial distress, using 1 credit card to pay off another (so pay off very little and the amount owed grows due to the interest), utilities cut off, money spent on gambling rather than necessities, reliance on friends and family for money to buy essentials, eviction, homelessness, having no food or means of support.	Moderate	Not industry funded. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=21 non-Indigenous gaming venue managers N=10 non-Indigenous gambling counsellors Age/sex not reported. North New South Wales, Australia			Relationship harms: family and relationship difficulties, neglect family/miss key occasions, lying and hiding debt, child neglect, isolation, family break up, violence. Health/emotional harms: personal distress, shame, stigma, guilt, loss of self-esteem, lack of confidence, mental health issues, alcohol use, depression, suicide. Work harms: loss of employment. Cultural harms: loss of community cohesion, exploited elderly relatives who found it hard to refuse on cultural grounds, downgrading of positive role models, isolation.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				Crime harms: crime. PP: Study is about Indigenous Australians.		
Jarvinen-Tassopoulos 2020 [36]	N=40 partners of gamblers N= 2 males N=38 females Age not reported. Finland	Gambling (not defined) Online messages in discussion forums	Messages/short written narratives (posted to Finnish-speaking online forum between 2007 and 2016) Content analysis	Harms were to the gambler and close associates. Financial harms: debt, lost used up/savings, not enough money to buy food/pay rent, taking out instant loans/other credit in partner's name, withdrawing money from partner's/child's bank account, partner having to lend money to the gambler. Relationship harms: gambler hides behaviour and lies to partner which causes loss of trust, partner of gambler also has to lie to their family, arguments,	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				threats of divorce and divorce, but some partners felt it was difficult to leave the gambler due to love or uncertainty about being able to cope financially alone (with children). Health/emotional harms: shock and upset about their partners' gambling-related debts, emotional burden (e.g. hopelessness, anxiety, anger), fear of stigmatisation, shame which leads to secrecy, fear of becoming a single parent/homeless, guilt about providing financial support to the gambling partner. Crime: gambler committed credit card fraud or took out loans in another person's name. PP: None identified.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Jarvinen-Tassopoulos 2016 [37]	Women gamblers. N=51 N=33 from online discussion forums for problem gamblers (Finnish speaking). N=18 from women in contact with an online addictions service (Finnish and Swedish speaking) Age not reported. Finland	Gambling (not defined) Online messages in discussion forums	Two sets of data/written narratives (compiled by researcher): 1. 2 Finnish-speaking online discussion forums for problem gamblers in 2008 2. > 500 messages on different types of addictions sent to a Finnish and Swedish speaking online counselling services Content analysis	Harms were to the gambler, close associates (partners, children) and wider society. Financial harms: debts, gambled away salary and savings, lose credit status, late paying rent, less money for living expenses and leisure activities like holidays. Relationship harms: hiding money from partner, being verbally abused by partner (e.g. name calling after he'd been gambling and drinking), fails to spend time with children – i.e. struggles to balance gambling and parenting, loss of children (taken into care), relationship breakup, children have to take on parental roles (e.g. lending parent	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				money), loss of trust in gambler by family. Health/emotional harms: loss of control of gambling and life, fear (e.g. of being exposed as a problem gambler), guilt, drinking alcohol (gambling and alcohol are intertwined – drinking while gambling results in poor choices such as chasing losses), suicidal thoughts due to debts. PP: Study is about women.		
Kenyon, and others. 2016 [38]	Gamblers: N=15 N=11 recruited from gambling venues (deemed no risk, low risk and high risk on their self-reported behaviour) N=4 in gambling treatment.	Gambling (venue and online based). Self-reported	Structured (in-depth) interviews with gamblers and semi-structured interviews (with local agencies). Framework analysis	Harms were to the gambler, close associates and wider society. Financial harms: debts (chasing losses resulted in spiral of debts), taking out loans, borrowing money of 'loan sharks' which could not be repaid, asking family for loans, informal borrowing (e.g. from	High	Can't tell CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N= 8 males N=7 females N=4 aged 18-24 years N=2 aged 25-34 N=1 aged 35-44 N=2 aged 45-54 N=3 aged 55-64 N=3 aged 65+ Stakeholders: N=not reported Includes 17 multi-agency organisations in total (including statutory, charitable and voluntary orgs) some of whom had direct experience helping individuals with gambling problems. Author notes some agencies included			pension, joint overdraft), spending money of gambling instead of essentials like food, mortgage repossession, eviction, homelessness, rent arrears, financial ruin. Relationship harms: hiding/lying about gambling to family, loses friends and family, arguments, withdraw from social groups, relationship difficulties/breakdown with friends and family. Health/emotional harms: guilt, shame, fear for their own safety and that of their families (due to debts to 'loan sharks'), feeling worthless, anxiety, low-self-esteem (e.g. from being homeless/low income), stigma (e.g. gambling a weakness not an addiction), lack of		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	more than one individual stakeholder. It is not clear exactly which/how many people/organisations participated in the discussion of harms as this was part of a larger piece of work. Leeds, England			personal care (e.g. going without food and losing weight and poor hygiene). Cultural/societal harms: Exposure to family gambling helps normalise the behaviour (noted particularly for children of gamblers) Crime: stealing to fund gambling. PP: None identified.		
Kim, and others. 2016 [39]	Self-identified problem gambling women who were 'long term visitors' in casino area (meaning they had 'lost everything' to gambling) and who were involved in gambling addiction centre support programme.	Casino gambling (majority slot machines) Self-reported	In-depth interviews Hermeneutic phenomenology approach	Harms were to the gambler and close associates. Financial harms: lost money. Relationship harms: lying to friends, hurt others, lose friends and family, owing	Low	Can't tell. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=16 N=9 current gamblers N=5 quit for <3 months N=2 not gambled >year Average age 59 years, range 47-67 years. Southern Kangwon province, South Korea			money to friends and family resulted in relationship problems, feel disconnected. Health/emotional harms: loss of hope resulted in depression and suicide ideation, self-harm, fear about the future (not being able to stop gambling), stigma, not eating to gamble, sleep problems (due to staying up late in the casino to gamble), drinking alcohol to help reduce the stress and help sleep, dental problems, nerve problems and headaches (due to losing money), smoked while gambling, general unhealthy lifestyle. PP: Study is specifically about women		
Klevan, and others. 2019 [40]	Participants either were, or had been, responsible for children when living with a	Gambling (not defined)	Semi-structured, in-depth interviews.	Harms were to the gamblers and close associates.	High	Not industry funded.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	partner with gambling problems. It was not a criterion that the partner or family had received treatment for the gambling problems, or that the partner had been diagnosed with gambling disorder. N=9 female partners of problem (male) gamblers. Age not reported. Norway	Self-reported	Thematic analysis using a hermeneutic stance	Financial harms: gambling partner lost money/incurred debts so families had to economise, gambler misused credit cards so their partner had to take control of family finances, family had to forsake material possessions/holidays which meant children missed out, lost homes (e.g. long term, intergenerational impact). Relationship harms: partner felt alone in parenting and had to take on parenting role of the gambler too, parenting becomes a challenging and lonely task, partner has to take on greater responsibility for overseeing daily chores, family activities and finances meaning there is no longer equity in the relationship, the gambler's lying results in lack of trust, damaged and at-risk relationships, partner experiences lack of		No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				support from the gambler but does not turn to friends and family because of shame which results in isolation, arguments between the partner and their family about the gambler. Health/emotional harms: shame (by association with the gambler), loneliness (due to not talking about their partner's gambling problems and having to pick up the practical/emotional aspects of everyday life, parenting alone and not wanting to further burden the gambler), embarrassment (e.g. in relation to the gambler having lost money, especially when they have stayed in a relationship with the gambler), anger and disappointment, insomnia, children's struggles with their gambling parent manifest as stomach pains, trouble		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				sleeping/being left alone, signs of anger and frustration. PP: Participants were all females (by chance, not design).		
Kolandai-Matchett, and others. 2017 [41]	Professionals (e.g. academics, public health workers, staff at problem gambling treatment services) that included Pacific people and others knowledgeable about Pacific people gambling problems. N=34 Age/sex not reported. New Zealand	Gambling (not defined) Self-reported	Focus group (semi-structured) Thematic analysis and intersectionality framework.	Harms were to the gambler, close associates and wider society. Financial harms: unable to fulfil obligations to the community (e.g. gift giving), sold family possessions to fund gambling (e.g. child's PlayStation). Relationship harms: men hiding gambling problem results in relationship breakdown, children taken into care, family of the gambler has to take on communal (financial) responsibilities to the Pacific community, arguments.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				Health/emotional harms: loss of belonging, loss of respect in the community which leads to feeling of isolation and exclusion and shame, suicide ideation. Cultural/societal harms: unable to maintain gift giving culture of Pacific people (especially men) due to having no money for gifts shows they are unable to provide for their family which results in shame and fear, loss of respect for the gambler but also the family, loss of social cohesion of the society. Gambling is normalised as community fundraising. Such cultures expose children to gambling as normal early in life (e.g. Casinos seen a day out) which		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				could become a 'pathway' into further gambling later on. Collectivism culture means that harms caused by gambling permeate from individual to the family and the community (harm is far reaching). PP: Study is specifically about the pacific people of New Zealand.		
Lastra, and others. 2018 [42]	Participants currently or previously involved in sports (rugby league, swimming and water polo) at the elite level. Some non-athletes were former athletes. N=22 N=6 athletes N=16 non-athletes (including coaches, support staff,	Sports betting Self-reported	Semi-structured interviews Thematic analysis	This study was on sports betting related corruption. Participants said that betting motivated crime did not occur in their 3 sports (rugby league, swimming and water polo) but did suggest that transnational organised crime relating to sports betting was possible. Cultural/societal harms: Gambling an acceptable part of culture	High	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	administrators and referees). N=16 males N=6 females Age not reported. Australia			PP: None identified.		
Le and Gilding, 2016 [43]	Vietnamese-Australian women prisoners who found their way into the drug trade through gambling (e.g. to resolve debts). N=18 Mean age 44 years. 2 women's prisons	Casino gambling Self-reported	In-depth interviews and direct observations Narrative analysis	Harms were to the gambler, close associates and wider society. Financial harms: debts, chasing loses, borrowing money and taking out loans (loans often have very high interest), selling house to pay for groceries/bills/petrol. Health/emotional harms: fear due to lenders making threats (against grandparents/children) or come to the	Moderate	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Victoria, Australia			gamblers house to force them to make payments, fear and stress when undertaking criminal activity (e.g. taking drugs onto a plane) to pay off their debts. Crime: gamblers became involved in drugs crimes to pay off their debts. Some continued to participate in crime even when debts were paid off because it was an easy way to make money. PP: Study is specifically about women.		
Lind, and others. 2015 [44]	Alleged suspects. N=57 N=47 males N=10 females N=12 aged 15-24 N=45 aged 25+ years	Gambling (not defined) Reported by the police in crime records which included information	Interrogation of police records which included information from the suspect and witnesses. Grounded theory approach using 3 stages: open coding,	Harms were to the gambler, close associates and wider society. Financial harms: debt/financial difficulties, poor credit rating, no money to pay bills/living expenses.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Finland	from suspect and witness.	axial coding and selective coding.	Relationship harms: financial difficulties resulted in arguments, lying to partner (e.g. hiding bills or pay day loans), relationship breakdown (due to financial hardship). Health/emotional harms: guilt, shame. Outcomes included loss of control of life, depression, heavy alcohol use, suicide attempts. Crime (crime is the focus of this study): property crimes at home (e.g. identity theft), property crimes committed at work (e.g. embezzlement from employer) and other crimes (e.g. assault). Gambling caused financial hardship which caused crime. PP: None identified.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
MacLean, and others. 2019 [45]	N=50 N=16 Aboriginal community members (with personal experience of gambling or affected by another person's gambling) N=26 workers (professional experience working with gamblers) All adults (age not reported) N=8 young Aboriginal people Aged 16-25 years (from one community only)	Gambling refers to a range of activities including playing electronic poker machines (pokies), TAB betting (which facilitates racing and sports wagering), online sports betting, and cards and bingo where	Semi-structured interviews Social Practice Theory used to frame responses in terms of: meaning, materials, competence and temporality	Harms were to gambler and close associates. Financial harms: big losses, spending whole pension, poverty from losses (gambler and others), others lose money to the gambler, wasted money means nothing to share with family (e.g. grandson). Relationship harms: family conflict and violence, child neglect (no money for food), eroded relationships. Health/emotional harms: worry about not being able to pay for things, shame, self-disgust, alcohol and drug use to numb the negative feelings linked to gambling.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Sex unclear but authors reported overall 22 participants were male. Two regional Aboriginal communities, Victoria, Australia.	money is won and lost. Self-reported		Cultural harms: gambling replaces time spent enjoying Aboriginal cultural practices, in a culture where resources are shared the gambler feels shame due to letting people down. PP: None identified.		
McGee, 2020 [46]	Men (evenly split across the 2 study sites) who were active (self-identified) users of online sports gambling (defined as one bet per week) but not currently under clinical treatment for addiction, anxiety or depression N=32 males Aged 18-35 years.	Online sports gambling Self-reported	Multi-phased qualitative research design: 1. focus groups (purposively informal and included the use of audio-visual material on gambling advertising and statistics on gambling sponsorship in sport) 2. month long gambling diaries and	Harms were to gambler, close associates and society. Financial harms: chasing loses results in social and financial precarity, dependency on overdrafts, credit cards, payday loans, default on mortgage. Relationship harms: strained personal and family relationships which stem from a cycle of indebtedness.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	All 32 did focus groups and diaries and 8 did interviews (the 8 were those that best engaged in the first 2 stages). Derry, Northern Ireland and Bristol, England.		3. semi-structured interviews. Thematic analysis	Health/emotional harms: mental health struggles (due to debt), suicide. Work harms: conflict with employer due to debt, loss of employment. Cultural/societal harms: Gambling is a normalised aspect of 'sports fandom' for young people and a way to fit in with family and friends PP: Focus of study is males.		
Nash, and others. 2018 [47]	Problem gamblers and affected others. N=35 N=25 problem gamblers N=54% male Aged 25 years and over.	Gambling (not defined) Self-reported	In-depth interviews. Method of analysis not described.	Harms were to the gambler, close associates and wider society. Financial harms: debts which reduced money to pay bills/living expenses, poor credit rating, homelessness. Others had to cover the gamblers debts, buy things for the family that the gambler could not	High	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	N=10 affected others Sex not reported Young people/adults aged 17 years and over Great Britain			afford, lend money to the gambler, took out credit on behalf of the gambler, felt manipulated in providing financial support, had their house repossessed. Relationship harms: strain and breakdown (family and friends), domestic abuse. Health/emotional harms: guilt, shame, anxiety, low self-esteem, emotional distress, suicidal throughs. Others felt stressed, depressed, lived in chaos and reported long term emotional impacts. Work/educational harms: left a job because they knew they would spend their wages on gambling (no point 'working for nothing'). Work colleagues were affected by the gambler being away		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				from work or lacking focus. Children had to drop out of education due to gambling-related family chaos. Crime: embezzled from employer. PP: None identified.		
O'Brien 2015 [48]	Women in recovery who self-identified as having a gambling compulsion, gambling addiction or being a problem gambler. All had been in treatment for their addiction or were members of Gamblers Anonymous. Two continued to gamble in their recovery. N=8 females	Gambling (not defined) Self-reported	Semi-structured interview Elements of the Consensual, Qualitative Research guided data analysis	Harms were to the gambler, close associates and wider society. Financial harms: debts, no money for food, could not pay bills, lost inheritance, lost possibility of buying a home, excessive use of credit cards. Relationship harms: lost friends/family/children, relationship breakdown and divorce, neglect of children and pets.	Moderate	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	Aged between 33 and 64 years. Greater Minneapolis/St. Paul metropolitan area, USA.			Health/emotional harms: guilt, shame, anxiety, depression, insomnia, suicidal thoughts, refused to go to hospital when haemorrhaging during labour because wanted to continue gambling. Work harms: lost jobs, demotion, went to work after no sleep. Cultural/societal harms: gambling an accepted and encouraged part of socialising with one's family, gambling parents teach their children to gamble. Crime: stole from friends and family, shoplifted, embezzled from family, stole from employer. PP: Study is specifically about women.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Palmer du Preez, and others. 2019 [49]	N=165 1. Gambling Harms Dataset 3 focus groups: Professionals involved in provision of problem gambling treatment and allied support services (budget advice, social support), consumer reps regulators and academics N=26 Age or sex not reported. 8 focus groups plus 6 individual interviews: Community members and treatment seeking individuals who identified	Gambling (not defined) Self-reported	Secondary analysis of 2 existing qualitative datasets (that involved a mix of interviews and focus groups) documenting New Zealanders' experiences of gambling and harm Thematic analysis	Harms were to the gambler, close associates and wider society, Financial harms: debt, money for children's toys/food/clothing diverted to gambling. Relationship harms: children witnessing family arguments and threats (e.g. from 'loan sharks'). Women feared losing children if it was known that gambling problems were in the family. Women were intimidated and threatened with violence to provide funds for others to gamble. Women in relationships with gamblers felt a lack of personal autonomy which resulted in a feeling of isolation and shame because they felt they could not care for their family properly. Men's inability to control their	Moderate	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	that they had experienced harm from either their own, or someone else's gambling, and staff working in problem gambling treatment services N=51 N=26 males N=25 females Age not reported. 2. Pacific Impacts dataset 12 focus groups: Key Pacific stakeholders including gambling treatment providers, gambling venue staff, general community gamblers and non-gamblers, current/ex-problem			partner's gambling resulted in frustration, verbal abuse, intimidation, threats and violence. Health/emotional: children were asked to keep family secrets (gambling), witnessing arguments and violence, experienced mental health impacts such as lack of confidence and low mood. Women felt shame about not fulfilling gender role (carer), terminated a pregnancy to help support gambling partner. Men felt shame at not being able to fulfil gender role (provider for the family). Crime: men convicted/imprisoned for violence against women.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	gamblers, significant others of problem gamblers and church leaders. N=88 Age/sex not reported. New Zealand			Cultural/Societal harms: cultural stigma – e.g. in the Asian community, parents would not want their children to marry the child of a gambler. Gambling was normalised in communities and children grow up surrounded by parental gambling making them particularly vulnerable to any associated harms e.g. - 'ripple effects' PP: Study is about women. Authors suggested that women shoulder the burden of dealing with family problems related to gambling. Women have less decision-making powers around family consumption of gambling. For women, gambling was felt to be a less harmful way to deal with stress than alcohol. Women experience continuous worry and concern supporting friends/family		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				members who gamble. Women felt unable to help their loved ones which caused stomach ulcers, insomnia, migraine, exhaustion. Women experienced self-blame, shame, embarrassment when they were unable to address gambling harm through their caring roles.		
Rogers 2019 [50]	People attending Gamblers Anonymous meetings. Observations: N=278 attendances over 20 meetings (mean N=14 at a single meeting). N=28 attendances were by females (mostly partners/family members of problem gamblers, only 4 females actually identified	Gambling (not defined) Self-reported	Observations and semi-structured interviews Thematic analysis	Harms were to the gambler and wider society. Financial harms: debt and money problems, chasing loses. Health/emotional harms: depression, thoughts of self-harm/suicide. Crime: prison and crime were mentioned in meetings. Theft of money was used to fund gambling, embezzlement from	High	Can't tell. CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	themselves as problem gamblers) Age not reported (Gamblers Anonymous do not keep such records). 1-1 interviews: N=8 N=6 males N=2 females Aged 19 to 64 years. A single Gamblers Anonymous meeting identified as 'open' that already welcomed non gambling guests on a regular basis; usually a			employer. Chair of Gamblers Anonymous meetings noted that crime was an increasingly common key theme of meetings. PP: None identified.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	spouse or concerned family member. One city in the North of England, UK.					
The Royal Society Public Health 2019 [51]	Children and young people Aged 11 to 24 years N=79 N=44 males N=35 females	Gambling (not defined). Self-reported.	Focus groups Analysis method not specified	Harms were to the gambler and close associates (e.g. peers). Financial harms: games design made it difficult to enjoy or complete games without buying loot boxes. Spending excessive amounts (e.g. use of parent's bank cards for gaming). Health harms: Gaming a risk to health and wellbeing. Effects of gaming were similar to those from drugs or drinking. Gambling-like activities in gaming (e.g. loot boxes and skins better) were addictive.	High	Indirect industry funded CoI not reported.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				Cultural / societal harms: Normalisation of gambling and gambling-like activity. Close relationship between gambling and sports which helped normalise gambling at individual and social activity. Game designs encouraged people to take part in gambling-like activities progress through the game (e.g. having to buy loot boxes to reach a certain level) PP: Gambling like issues seen as more of an issue for males than females (e.g. they play video games more like to feature items like loot boxes etc). Younger gamers less well equipped to manage risks associated with loot boxes.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
Samuelsson, and others. 2018 [52]	Problem gamblers who had participated in at least 3 SWELOGS epidemiological studies, with a minimum of 3-point difference in PGSI scores between 2 data collections and have gambled at least monthly during the past 12 months. N=40 total N= 21 males N=19 females Mean age 37 (SD 13). Sweden	Gambling (not defined) Self-reported	Semi-structured interviews Thematic analysis	Harms were to the gambler and close associates. The study identified 4 configurations of gambling trajectories and their associated levels of harm. 1. Stable, low-frequency gambling with no or minor harm: no significant harms. 2. High-frequency gambling with occasional harm, decreasing: some substantial economic losses (when aged 18-25 years), also significant others could have objected to the time and money spent on gambling. Losses had caused frustration and irritation but no substantial psychological harm.	High	Not industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				3. Periodic gambling with moderate harm, fluctuating: periodic negative consequences of varying degrees were economic (losses, debts and loans), psychological (self-reproach, anxiety, depression and insomnia), and social (isolation, strained or broken relationships with partners or friends). Shame and guilt occur. 4. High-frequency gambling with substantial harm, increasing: characterised by an overall increase in gambling participation of a period of years. Economic, psychological, relational and social harms all appeared to varying extent. Having friends or colleagues gambling could normalise gambling.		

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
				PP: None identified.		
Wieczorek and Dabrowska, 2018 [53]	N= 90 respondents total N=30 patients with gambling disorder according to ICD 10 diagnosis and confirmed by a psychiatrist (treated in outpatient clinics dedicated to alcohol and drug abuse dependency) and Gamblers Anonymous meetings N=27 males N=3 females Average age 38.3 years N=60 professionals (15 from each of the following groups: social workers (from social	Gambling (not defined). Self-reported	Semi-structured interviews Based on methodologies described by Miles and Huberman (2000), distinguishing between 2 levels of coding.	Harms were to the gambler, close associates and wider society. Financial harms: spiralling debts, rent arrears, lost homes, selling household items, use of 'loan sharks', bother from creditors, bankruptcy. Relationship harms: relationship problems, hiding gambling, inability to fulfil social roles (e.g. parenting) and provide a sense of security for their families, lose contact with family, violence, theft of the family budget, partners of gamblers threaten separation/divorce.	Moderate	Indirect industry funded. No CoI declared.

Author, year [ref]	Study population, N, setting	Exposure	Type of data collection Analysis method (for example content analysis, grounded theory, phenomenological)	Main findings PROGRESS Plus (PP)	Risk of bias rating	Funding source Conflict of interest declaration (CoI)
	welfare centres, therapists (employed in outpatient clinics), General Practitioners (GP) and psychiatrists) N=18 males N=42 females Average age was 42.9 years Various facilities, Warsaw, Poland.			Health/emotional harms: guilt (from not providing security for family), stress, anxiety, fear, depression, suicide attempts, comorbidity alcohol dependence, loneliness, shame, headaches, backaches, abdominal pain, sleep disorders, chest palpitations/tightness. Work harms: lost jobs. Crime: robbed people, defrauded public spending or business income. PP: None identified.		

Appendix F. Included systematic reviews

There were 8 systematic reviews included in the review.

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
Cowlishaw, and others. 2014 [54]	Adult (aged >18 years) Pathological and problem gamblers (identified using recognised measures) who were seeking substance use treatment (NB patients for whom gambling was the primary presenting problem were excluded). N=15 (US), 2 (France), 2(Canada), 2 (Brazil), 1 (Israel), 1 (Iceland), 1 (Italy), 1 (New Zealand), 1 (Netherlands)	Unspecified (NB likely cross-sectional/ descriptive given focus on prevalence)	Problem or Pathological gambling: Current, 3 months, 12 months, lifetime, not reported. SOGS, DIS, MIDI, DEBA-game, NODS,	Substance of addiction: Alcohol and illicit drugs, opiates, alcohol, not reported.	Meta-analysis: Weighted mean estimates of rates of pathological and problem gambling in substance use treatment from meta-analysis showed: 13.7% of patients demonstrate comorbid pathological gambling (95%CI = 10.8-17.3%) 22.8% of patients suffer conditions along the broader spectrum of problem gambling (95% CI=19.5-26.4%) PP: Further analyses (not shown) examined variability according to sample gender distribution (i.e. percent male) with no evidence of meaningful differences according to these characteristics.
Dowling, and others. 2014 [55]	Adults Adolescents Children	All cross sectional	Problem gambling:	Physical IPV violence:	Narrative review: Some findings were unclear, but most included studies showed:

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
	(all reporting on the problem gambling and/or family violence of themselves or family members; defined as people in a close relationship with a problem gambler, such as partners, parents, children etc) All populations (e.g. community, emergency department, problem gamblers, substance use, cohort etc) N= 8 (US), 2 (Canada), 2 (New Zealand), 1 (Australia),1 Spain		Current, 3 months, 12 months, lifetime, not reported. SOGS, DIS, MIDI, DEBA-game, NODS.	Conflict Tactics Scale (CTS) Physical Assault subscale, CTS-2, SOGS, Item adapted from BR FSS survey, Interview self-developed items.	a) considerably high rates of IPV victimisation in problem gamblers or b) problem gambling was significantly associated with IPV victimisation. The relationship between problem gambling and perpetration of IPV was found to be consistent and all included studies showed: a) IPV perpetration was over-represented in problem gamblers b) problem gambling was over-represented in IPV perpetrators or c) problem gambling and IPV perpetration were significantly related Meta-analysis: Weighted mean effect size: 38.1% (95% CIs = 28.6-48.5) for physical IPV victimization in problem gambling samples (e.g. over one third of problem gamblers report being victims of physical IPV) 36.5% (95% CIs =25.8-43.4) for physical IPV perpetration in problem gambling samples

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
					11.3% (95% CIs = 2.2 - 41.6) for problem gambling in IPV perpetration samples The authors concluded the exact details of the relationship between problem gambling and IPV victimization, or between problem gambling and the perpetration of IPV, are not fully understood and are probably multi-faceted. PP: Studies suggested the relationship between problem gambling and IPV victimization could be heightened by less than full employment status, marital status or socioeconomic level. The relationship between problem gambling and IPV perpetration was found to be linked with: younger age, below full employment, although not race or education. The findings in terms of gender were inconsistent showing that further research is needed to further our understanding of the relationship between gambling problems and the perpetration of IPV.
Hickey, and others. 2014 [56]	Adults (aged 18-49 years)	Not applicable as no relevant studies	Not applicable as no relevant studies	Not applicable as no relevant studies	No relevant studies were found that measured the relationship between perceived health and gambling behaviour in inmates.

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
	Incarcerated populations (in samples that included a quantitative measure of perceived/self-rated health or level of inmate gambling) Country unspecified				The author noted that the only paper found examining the relationships between perceived health and gambling behaviour in the incarcerated population related to adults aged >50 years and therefore had to be excluded. The authors suggested the lack of studies found was surprising given the increased rates of pathological gambling in this population and that further research is needed on the relationships between perceived health and gambling. PP: N/A
Lorains, and others. 2011 [57]	Adults (age unspecified) Population-representative samples of problem and pathological gamblers assessed by a validated screening tool (e.g. excluded treatment seeking population) N = 6 (US), 2 (Switzerland), 2 (Canada), 1 (Korea)	Unspecified (NB likely cross-sectional/ descriptive given focus on prevalence)	Pathological and problem gambling: Past year and lifetime PGSI, SOGS, DSM-III, DSM-IV	Comorbidity (one or more conditions): CIDI (DSM-IV), CAGE, Inventory of substance use patterns, AUDASIS, DIS (DSM-IV), DIS (DSM-III)	Meta-analysis: Results from across the studies showed that problem and pathological gamblers had high prevalence rates of other comorbid disorders Weighted mean effect size (summary effect) among pathological and problem gamblers (combined) (NB no confidence intervals given): 60.1% for nicotine dependence 57.5% for any substance use disorder (includes alcohol abuse/dependence and/or drug abuse/dependence and/or nicotine dependence)

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
					37.9% for any mood disorder (includes major depressive disorder, dysthymia and bipolar disorder/manic episodes) 37.4% for any anxiety disorder (includes panic disorder (with and without agoraphobia), phobia (social and specific) and generalized anxiety disorder) 28.1% for alcohol use disorder 23.1% major depression 17.2% for illicit drug abuse/dependence 11.1% for generalized anxiety disorder 9.8% bipolar disorder/manic episodes PP: N/A
MacGrath and Barrett 2009 [58]	Population and age unclear Setting somewhat unclear but looks to include pathological and problems gamblers in treatment or other settings. N= 1 (US), 12 (unspecified)	Described as 'epidemiological surveys' (NB specific study designs unreported)	Pathological gambling, problem gamblers, urges to gambler, cravings to gambler: Timeframes unclear	Substance use: Nicotine dependence (lifetime), regular tobacco dependence, regular tobacco use, smoke daily, never daily smokers	Tobacco dependence rates are considerably higher among individuals with gambling problems compared with among the general population. The authors noted insufficient evidence exists that attempts to understand the nature of such relationships. PP: One study is included that shows tobacco dependent women were 14 times more likely to be PGs than non-smoking women, whereas tobacco dependent males were 5 times more likely to be PGs than non-smoking men.

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
			Measurements unclear NB ALL taken from text as no included studies table	Measurements unclear	
Scholes-Balog and Hemphill 2012 [59]	Adults (any age) Students Online gamblers N=12 (Country unspecified/unclear)	All cross sectional	Infrequent and frequent gamblers, probable pathological gamblers, problem online gamblers, social online gamblers: Timeframes unclear SOGS, measurement unspecified in text.	Mental health and substance use: Poor physical and mental health, negative mood states General health questionnaire, Depression Anxiety Scales, positive and negative affect scale, measurement unspecified in text	Difficult review to summarise as all findings in narrative form with no included studies table. However, overall there were more studies included that examined relationships between mental health and online gambling than for substance use. Author concludes that the included studies suggest relationships between problem online gambling, mental health and substance use do exist but are somewhat inconsistent. Therefore, further investigation is needed. The author notes that the lack of any longitudinal studies is a prominent limitation meaning that the issue of causality cannot be addressed. PP: N/A

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
			NB ALL taken from text as no included studies table		
Tse, and others. 2012 [60]	Older adults (>50 years) N= 5 (US), 2 (unspecified) NB these are only the studies from the 'negative outcomes' section of the review.	Quantitative (NB unclear from text what quantitative means and some studies missing from tables)	History of regular gambling, disordered gambling, PG, recreational and disordered gamblers: Regular, lifetime, past year. SOGS, DSM, measurement unspecified in text	Health outcomes: Various in text including alcohol, nicotine, illegal drug use, mood, anxiety, psychiatric problems, depression, physical health problems etc Measurements unclear	Author states in their narrative that 'negative psychological and health outcomes from gambling are well documented in many studies' and then presents results from the 7 studies narratively but with limited/insufficient detail about analyses undertaken/study designs etc. The author concludes by summarising limitations of existing literature, including that most studies on older adults gambling are primarily quantitative and use survey methodology etc. PP: N/A
Williams, and others. 2011 [61]	All populations/ ages All settings (any study that examined the direct/indirect impacts of any form of gambling:	Mix of studies (NB study types unclear from main text and appendix	Any form of gambling: Too many details to include here /	Too many outcomes to include here given exhaustive nature of review - see paper	This is a large document (492 studies overall and 70+pages) which outlines principles for undertaking socio-economic impact analyses of gambling (e.g. need to measure impacts not just cost-benefits, use longitudinal designs where possible etc).

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
	only prevalence studies were excluded) N= 60 (US), 10 (Canada), 2 (Australia), 1 (New Zealand /Australia), 2 (New Zealand), 1 (Malaysia), 2 (unspecified) NB these are just those studies in the review relevant to our research question/s.	summary tables)	details unclear - see paper		The exhaustive review part, in light of these principles founded one of the main negative impacts of gambling introduction is an increase in problem gambling (PG) - which we are not specifically interested in - and its related indices (e.g. we are interested in these including bankruptcy, divorce etc - see below). The author notes that problem gambling explains only some of these 'serious consequences' (e.g. comorbidities of problem gamblers such as mental health and substance abuse problems are further influential factors) and that controlled before/after studies are needed. Finance Bankruptcy was the most studied of any problem gambling index. Most studies found this increased after casinos were introduced (12 studies, while 3 studies found it did not) and similarly for multiple forms of gambling (3 studies, although 1 study found no increase). Studies also showed increased bankruptcy associated with horse racing (1 study) but with mixed impacts for lotteries (1 study). Relationship

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
					Divorce - mixed results (1 study - multiple types of gambling) or no impact (1 study - casinos) Decrements to Health Suicides - the opening of multiple forms of gambling was associated with increased suicides (3 studies), while other studies showed no influence on suicide rates (3 studies). Quality of life – was noted as difficult to quantify but increases were found for multiple types of gambling (2 studies) decreases (3 studies), increases for casino gambling (7 studies), changes but no net increase/decrease (4 studies), no impact (5 studies) or a decrease (2 studies) Crime Impacts here are particularly complex and mixed but evidence points towards increased crime 'to a small extent'. For example, the evidence showed increases in crime for multiple forms of gambling (10 studies) for example, alcohol related road traffic accidents after casino opens or fraud/other crimes, changes - but with no net increase or decrease (in 2 studies), no impact (5

Author, Year [ref]	Study population/s, setting/s, county (N = studies)	Study type/s	Exposure	Outcome	Main findings PROGRESS Plus (PP)
					studies) or decreases (1 study). Authors noted that casinos are the most likely to increase crime. The impact in terms of 'Employment' is explored in the review but the focus is upon gains in employment associated with gambling and the benefits. PP: Evidence of increased socioeconomic inequality (to a small extent: 6 studies showed an increase for multiple types of gambling, while only 1 study showed no impact) meaning that gambling is a type of 'regressive taxation' as the people with less money contribute comparatively more to gambling profits than people with greater incomes.

Appendix G. Included descriptive studies

There were 93 descriptive studies included in the review.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Afifi, and others. 2019 [62]	Gamblers aged 12 years and over N=not reported Canada	Respondents scoring 3 or more Problem Gambling Severity Index	Life interference	43.2% of respondents experienced any life interference due to gambling 12.5% experienced any severe life interference due to gambling
Algren, and others. 2015 [63]	Gamblers aged 16 years or older N=164 problem gamblers N=not reported for non-problem gamblers Denmark	Problem gamblers and non-problem gamblers Lie/bet questionnaire	Alcohol, drug and tobacco use Diet and physical activity	All harms: 17.5% of current problem gamblers had at least three harms compared to 2.6% of non-problem gamblers Alcohol, drug and tobacco use: Daily smoking (<15 cigarettes/day): problem gamblers=45.8%, non-problem gamblers =21.8%; Heavy smoker (>=15 cigarettes/day): Problem gamblers =28.0%, non-problem gamblers=10.7%; Exceeds sensible drinking (>14/21 units/week for females/males): problem gamblers=35.3%, non-problem gamblers =11.9%; Binge drinking (>6 units/drinking occasion): problem gamblers=30.3%, non-problem gamblers=19.4%; Problem drinking (CAGE-C test): PG=31.0%, non-problem gamblers=16.8%;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Cannabis use within the last year: problem gamblers=22.1%, non-problem gamblers=4.1%; Other illicit drugs (excl. cannabis): problem gamblers=8.4%, non-problem gamblers=1.1% Diet and physical activity: Sedentary leisure activity (in past 12 months): problem gamblers=20.6%, non-problem gamblers=11.0%; Unhealthy dietary pattern (fruit, vegetables, fish and fat consumption): problem gamblers=21.8%, non-problem gamblers=11.7%; Obesity (BMI of 30 or over): problem gamblers=15.2%, non-problem gamblers=12.6%
Andronicos, and others. 2015 [64]	Gamblers from general population and in treatment aged 20-79 years N=86 Switzerland	At risk/ problem gambling South Oaks Gambling Screen	Mental disorders	Last 6 months Mood disorders: 23.3% (N=20) Alcohol/substance use disorders: 10.5% (N=9) Anxiety disorders: 11.6% (N=10) Life course: Mood disorders: 69.8% (N=60) Alcohol/substance use disorders: 48.8% (N=42) Anxiety disorders: 26.7% (N=23) Total with 2 medical diagnoses (including PG): 80.2% (N=69)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Total with one medical diagnoses: 17.4%(N=15) PP: women more likely to experience lifetime anxiety disorders than men (37.8% and 14.6% respectively)
Andronicos, and others. 2016 [65]	Male gamblers aged 20-79 years who met the threshold for at risk/problem gambling or who were pathological gamblers at post-mortem N=90 (N=41 living participants and N=49 suicide decedents) Canada	Pathological gambling post-mortem and at-risk problem gambling Psychological autopsy methodology and Module K of the Structured Clinical Interview and South Oaks Gambling Screen	Suicide Mental disorders Alcohol and drug use	Last 6 months mood disorders: Suicide victims: 65.3% (N=32; living controls 26.8% (N=11) Alcohol use and/or substance use disorders: Suicide victims: 46.9% (N=23); living controls 14.6% (N=6) Anxiety disorders: Suicide victims: 16.3% (N=8) v living controls 12.2% (N=5)
Angus, and others. 2020 [66]	Gamblers aged 18-79 years from the community or treatment N=429 (N=330 community gamblers and N=99 treatment-seeking gamblers) Australia	Problem gambling, moderate risk problem gambler, low risk problem gambler, non-problem gambler Problem Gambling Severity Index	Financial harm Mental wellbeing and emotional health Employment / education harm	Presence of psychological harm: Clinical sample=100% (N=99), community sample=14.85% (N=49) Presence of financial harm (e.g. decreased savings): Clinical sample=97.98% (N=97), community sample=23.33% (N=77) Presence of Employment/ Education harm (e.g. missing classes/work)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
			Relationship harm - divorce	Clinical sample=34.34% (N=34), community sample=1.82% (N=6)
			Health – sleep harm	Presence of social harms (e.g. spending less time with family) Clinical sample=74.75% (N=74), community sample=8.79% (N=29)
				Presence of Leisure (e.g. less money for travel/entertainment) Clinical sample=71.72% (N=71), community sample=12.42% (N=41)
				Presence of Health (e.g. reduced sleep, increased smoking/alcohol/drug use) Clinical sample=69.70% (N=69), community sample=14.85% (N=49)
				Presence of critical harms (e.g. divorce, bankruptcy) Clinical sample=31.31% (N=31), community sample=4.24% (N=14)
				Note the clinical sample report significantly greater Problem Gambling Severity Index PGSI scores than community sample.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Armstrong and Carroll, 2017 [67]	Gamblers aged 15 years or over N=Not reported Australia	Problem Gambling/Moderate risk gambling, Low risk gambling, Non- problem gamblers and Regular gamblers Problem Gambling Severity Index	Financial harm	Experienced any stressful financial event: Problem gambler = 60.9% Moderate risk gambler =44.8% Low risk gambler =37.2% Non-problem gambler = 27.2% Regular gamblers =29.8% Experienced 2 of more stressful financial events Problem gamblers =44.2% Moderate risk gamblers =29.1% Low risk gamblers = 23.3%% Non-problem gamblers =16.4% g, Regular gamblers =18.3% PP: Problem Gamblers is in the lowest income quintile spent an average of 27% of their household's disposable income on gambling compared to 4% of problem gamblers in the highest income quintile
Banks, and others. 2018 [23]	Family members of problem gamblers aged 18-74 years N=222	Affected other Researcher designed survey	Health harm Relationship harm Financial harm	Health harm: 99% reported that their family members' problem gambling had harmed their health (46% reported this impact was significant); 95% reported loss of sleep due to stress/worry; 77% reported depression; 77% reported stress-related health problems; 64% reported reduced physical activity;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	UK		Mental wellbeing and emotional health Employment/education harm Other harm (including crime and cultural harm)	56% reported eating too much; 44% reported eating too little; 36% experienced increase use of health services; 35% reported alcohol problems; 33% reported increased tobacco consumption; 30% reported increased alcohol consumption; 29% report neglecting their medical needs; 21% required emergency treatment for health issues caused/exacerbated by a loved one's gambling; 21% reported using illegal drugs; 16% reported committing acts of self-harm; 8% had attempted suicide; 5% reported using prescription drugs; 3.2% used 'legal highs' Relationship harm: 96% reported that their loved one's problem gambling had harmed their relationships (67% stated this had a significant impact); 89% report greater tension; 82% reported conflict; 77% reported spending less time at social events; 74% reported less enjoyment from time spent with people they care about; 72% reported spending less time with people they cared about; 71% reported feeling excluded from others;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				68% reported threatening separation/ending the relationship with the problem gambler; 33% had separated/ended the relationship with the problem gamblers 21% said they experienced violence Financial harms: 93% of affected others reported that their loved one's problem gambling had harmed their financial security (64% stated this impact was significant); 89% reported a reduction in available spending money; 88% reported a reduction in savings; 58% reported increased credit card debt; 56% reported late payment on bills; 44% had taken on additional employment; 41% reported having to sell/pawn items; 23% reported losing a major asset such as a car, home or business; 23% reported needing assistance with bill payments or food from welfare organisations; 16% had lost supply of utilities; 12% had become bankrupt Work/education harms: 82% of affected others reported that their loved one's problem gambling had impacted their work/education (37% stated this impact was significant);

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				76% reported reduced performance due to tiredness/distraction; 58% used work/study time to assist with matter's arising from their loved one's PG; 55% reported being late from work/education; 50% reported absence from work/education; 37% used work/study resources to assist with matters arising from their loved one's problem gambling; 29% reported a lack of progression in their job/education; 18% reported coming into conflict with colleagues; 10% reported losing their job Emotional and psychological harm: Author states almost all experienced this form of harm but no % given (83% stated this impact was significant) 99% experienced distress; 96% experienced anger; 96% experienced hopelessness; 85% experienced shame; 83% experienced insecurity/vulnerability 21% felt shame within their religious or cultural community Crime harms: 7% reported engaging in petty theft or dishonesty because of their family member's problem gambler

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Barnes, and others. 2015 [68]	Problem gamblers aged 18 years and older N=Not reported USA	Problem gambling DSM-IV diagnostic criteria	Alcohol, drug and tobacco use	Among those with cannabis abuse/dependence 33% were problem gamblers; among those with alcohol abuse/dependence 17% were problem gamblers; and among those with tobacco dependence 14% were problem gamblers
Barrault, and others. 2017 [69]	Regular online poker players aged 18-55 years N=416 (N=47 problem gamblers, N=201 moderate risk, N= 119 low risk and N=49 non problem gambler). France	Problem gambling, moderate risk problem gambling, low risk problem gambling and non-problem gambling Canadian Problem Gambling Index	Mental disorders	Anxiety disorder: Severe problem gambling=59% (N=28) Moderate problem gambling=42% (N=86) Low risk problem gambling =27% (N=33) Non-problem gambling 34% (N=17); Depressive disorder: Severe problem gamblers =44% (N=21) Moderate problem gamblers=24% (N=50); Low risk problem gamblers 17%(N=21) Non-problem gamblers =18% (N=9);
Bellringer at al., 2016 [70]	Gamblers and affected others seeking problem gambling treatment aged 20 years and over N=454 (N=370 gamblers and N=84 affected others)	Problem gambling, moderate risk gambling, low risk gambling and non-problem gambling Problem gambling severity Index	Family violence Alcohol and tobacco use Psychological distress	50% were victims of physical/psychological/emotional/verbal/sexual family violence or abuse and 44% perpetrated f family violence or abuse in the last 12 months. The most common abuse was verbal including 'screamed or cursed at' (37% were perpetrators and 41% victims) 43% of gamblers and 21% of affected others were daily tobacco smokers;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	New Zealand			32% of gamblers and 24% of affected others were 'risky alcohol drinkers (AUDIT SCORE); 21% of gamblers and 29% of affected others reported a high-level psychological distress PP: higher proportions of Maori's were victims of violence (16%) than other ethnic groups (range 6% to 8%) ; slightly higher proportions of Maori and Pacific participants were perpetrators of violence (10%)compared with Asian or European/Other (both 6 %)
Bischof, and others. 2016 [71]	Adult pathological gamblers from the general population and treatment settings aged 14-64 years N=442 Germany	Pathological gambling Composite International Diagnostic Interview	Suicide	48.6% (N=215) had one of more suicidal events (during lifetime), of whom 30.1% (N=133) had lifetime suicidal ideation with no suicide attempt, and 18.6% (N=82) had at least one lifetime suicide attempt. PP: a greater proportion of females had a suicidal event (20.5%, N=44) than didn't (11.9%, N=27)
Black, and others. 2015 [72]	Non-treatment-seeking pathological gamblers mean age 44.2 years (SD=17.1) N=255	Pathological gambling South Oaks Gambling Screen and National Opinion Research Center DSM screen	Mental disorders Alcohol and drug use Suicide	62% (N=159) had a diagnosis of any substance use disorder; 54% (N=138) had any mood disorder; 37% (N=95) had any anxiety disorder; 21% (N=55) had experienced psychiatric hospitalisation; and 20% (N=52) had previously attempted suicide.

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Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	USA			
Black, and others. 2015 [73]	Pathological gambling probands aged 18 years or older and affected others (age not specified) N=632 (N=95 pathological gambling probands and N=537 first-degree relatives (103 of which were offspring). USA	Pathological gambling Gamblers: South Oaks Gambling Screen, National Opinion Research Center screen for gambling problems and DSM-IV diagnostic criteria	Suicide	Pathological gamblers: 37% (N=35) had no history of suicide ideation or attempts; 36%(N=34) had a history of past suicide attempts; and 27% (N=26) had a history of only suicide ideations. Affected others/first degree relatives: 4.7% (N=25) attempted suicide 1.3% (N=7) had suicide ideations only Affected offspring of pathological gamblers (N=103): 8.7% (N=9) attempted suicide 1.0% (N=1) had suicide ideations only
Black, and others. 2017 [74]	Pathological gamblers from general population and some Gambler Anonymous attendees N=175 (n=53 pathological gamblers aged 60 years or over, N=72 pathological gambler controls aged 18-40 years)	Pathological gambling South Oaks Gambling Screen and DSM-IV diagnostic criteria Controls: South Oaks Gambling Screen and National Opinion Research Center DSM Screen for Gambling Problems	Mental disorders Divorce Alcohol and drug use Suicide	Pathological gamblers 58% (N=31) had any mood disorder 57% (N=30) had ever been divorced 55% (N=29) had any substance use disorder 42% (N=22) had any anxiety disorder 28% (N=15) had mental health treatment (past year 25% (N=13) had prior psychiatric hospitalisation 19% (N=10) previously attempted suicide PP: There were some differences in %'s by age: Among younger pathological gamblers aged 18-40 years 56% (N=40) had any mood disorder;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	USA			11% (N=8) had ever been divorced 65% (N=47) had any substance use disorder; 50% (N=36) had any anxiety disorder; 30% (N=18) had mental health treatment (past year); 20% (N=12) had psychiatric hospitalisation; 17% (N=12) previously attempted suicide;
Blaszczynski, and others. 2016 [75]	Gamblers (online, land-based and mixed) aged 18 years and older N=4,594 (N=608 online, N=1,416 land based and N=2,570 mixed) Australia	Problem gambling low risk gambling, moderate risk gambling and non-problem gambling Problem Gambling Severity Index	Psychological distress Alcohol and drug use	For each gambling type, the proportions who reported 'high psychological distress' (%s) were (NB we are not concerned with differences by type of gambling in this review): Online gamblers: 3.9% (N=24) Mixed gamblers: 5.8% (N=150) Land-based gamblers: 8.2% (N=116) Online gamblers and land-based gamblers were most likely to say they never drank alcohol while gambling (60.9%/N=370 and 45.8%/N=648 respectively), while the majority of mixed gamblers said they sometimes did (51.8%/N=1,330). Among all gambling types, the majority of gamblers 'never' did drugs while gambling (online: 96.9%/N=589, mixed: 92.5%/N=2,376 and land based 96.0%/N=1,359)
Bonnaire, and others. 2016 [76]	Problem gamblers aged 15-75 years	Problem gambling	Alcohol, drug and tobacco use	NB Given the number of harms data relevant to PP (by sex) are presented alongside the particular harm.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=332 France	Canadian Problem Gambling Index	Psychological distress Financial harm Violence	Health harms: Tobacco use: problem gamblers 56.5% (N=188), Male problem gamblers (55.5%, N=142) Female problem gamblers (59.7%, N=46) Hazardous/harmful alcohol use: problem gamblers=22.7% (N=75) Male problem gamblers 24.0%(N=61) Female problem gamblers 18.4%(N=14) Heavy alcohol use/dependence: problem gamblers=15.8% (N=52), % Male problem gamblers 17.7%(N=45) Female problem gamblers 9.2%(N=7) Cannabis use (past 12 months): problem gamblers=21.0% (N=64), Male problem gamblers 24.7%(N=58) Female problem gamblers 8.6%(N=6) Regular cannabis use (>10x/month): problem gamblers=6.2% (N=19), Male PGs 8.1%(N=19) Female PGs 0%(N=0) Cocaine use (lifetime): problem gamblers 8.6% (N=26),

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Male problem gamblers 10.6% (N=25) Female problem gamblers 2.9%(N=2) Heroin use (lifetime): problem gamblers 3.0% (N=9), Male problem gamblers 3.0% (N=7) Female problem gamblers 2.9% (N=2) Fagerstrom dependence (Moderate): problem gamblers =47.2 % (N=83) Male problem gamblers 53.0% (N=70) Female problem gamblers 27.3% (N=12) Fagerstrom dependence (High): problem gamblers =27.8% (N=49) Male problem gamblers 22.0% (N=29) Female problem gamblers 47.7% (N=21) Psychological distress: problem gamblers =30.6% (N=102), Male problem gamblers 26.8%(N=69) Female problem gamblers 43.4%(N=33) Financial harms: Financial situation perceived as difficult: problem gamblers 59.5% (N=198) Male problem gamblers 53.2% (N=138) Female problem gamblers 78.9% (N=60)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Severe money problems (lifetime): problem gamblers =37.0% (N=123) Male problem gamblers 34.2% (N=88) Female problem gamblers 46.8% (N=36) Relationship harms (all past 12 months): Verbal violence: problem gamblers=30.6%(N=102), Male problem gamblers 30.9% (N=79) Female problem gamblers 30.3% (N=23) Physical violence: problem gamblers=4.2%(N=14), Male problem gamblers 2.3% (N=6) Female problem gamblers 9.2% (N=7) Sexual violence: problem gamblers1.8%(N=6), Male problem gamblers 1.9% (N=5) Female problem gamblers 2.6% (N=2) Crime harms: Robbery: problem gamblers 8.4%(N=28), Male problem gamblers 8.2% (N=21) Female problem gamblers 7.9% (N=6)
Bonnaire, and others. 2017 [77]	Problem gamblers aged 15-85 years	Problem gambling	Health harm	Health harms: BMI (obese): problem gamblers =18.3%(N=61) Male problem gamblers 16.3% (N=42)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=332(N=256 males an N=76 females) France	Canadian Problem Gambling Index		Female problem gamblers 25.0% (N=19) BMI (overweight): problem gamblers27.9% (N=93), Male problem gamblers 28.8% (N=74) Female problem gamblers 25.0% (N=19) Chronic disease (i.e. that's lasts longer than 6 months and may require regular care): problem gamblers25% (N=83) Male problem gamblers 24.2% (N=62) Female problem gamblers27.6% (N=21) Lack of sleep (<90 min): problem gamblers22% (N=71), Male problem gamblers 22.2% (N=55) Female problem gamblers 22.4%(N=17)
Browne, and others. 2017 [78]	Gamblers aged 18 years and over N=Not specified Australia	Low risk gambling, moderate risk gambling and problem gambling Problem Gambling Severity Index	Healthy life	15.24% (N=15,494 years) of healthy life lost due to one's own gambling for problem gamblers 34.52% (N=35,099 years) of healthy life lost due to one's own gambling for moderate risk gamblers 50.24% (N=51,082 years) of healthy life lost due to one's own gambling for low risk gamblers
Browne, and others. 2017 [79]	Gamblers and affected others aged 18 years and over N=733	Problem gambling, moderate risk and low risk gambling Problem Gambling Severity Index	Health related quality of life	4.4 years reduction in quality of life over a 10 year lifespan period for problem gamblers 2.9 years reduction in quality of life over a 10 year lifespan period for moderate-risk gamblers 1.3 years reduction in quality of life over a 10 year lifespan period for low-risk gamblers

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	Australia			
Bussu and Detotto, 2015 [80]	Gamblers, aged 14-79 years N=709 Italy	Social and pathological gambling South Oaks Gambling Screen	Alcohol, drug and tobacco use	45.4% were regular smokers 25.4% smoked when gambling 11.0% consume alcohol while gambling 20% used alcohol regularly 3.7% consume drugs while gambling 8.9% used illicit drugs regularly
Butler, and others. 2020 [81]	Gamblers aged 18 years and over N= 122 (N=89 low severity gamblers and N=33 moderate/high severity gamblers) Isle of Man	Low risk and moderate/high risk gambling Problem Gambling Severity Index	Health harm	19.3% (N=17) of low-risk gamblers and 31.3% of moderate/high-risk gamblers (N=10) had at least 2 health risk behaviours (including smoking, binge drinking, higher risk drinking, poor diet, low physical activity, low mental wellbeing, and poor general health) Significantly more moderate/high severity gamblers smoke daily than low severity gamblers: 24.2%(N=8) v 16.9% (N=15). Significantly more low severity gamblers binge drink than high/moderate risk gamblers: 38.3% (N=31) v 34.5% (N=10). More mod/high severity gamblers are high risk drinkers: 48.0% (N=12) compared with low severity gamblers:45.1% (N=32).

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Caler, and others. 2017 [82]	Individuals who participated in at least one gambling activity (e.g. lottery, gaming machines etc) in the past year, aged over 18 years N=663 at risk problem gamblers (N=277 low risk, N=189 moderate risk and N=196 high risk) USA	Low risk problem gambling, moderate risk or problem gambling Problem Gambling Severity Index	Emotional health	Poor health (in the past year) 16.2% (N=45) of low risk problem gamblers 17.9% (N=34) of moderate risk problem gamblers 13.3% (N=26) of high risk problem gamblers High overall stress level (past year): 7.6% (N=21) of low risk problem gamblers 8.4% (N=16) of moderate risk problem gamblers 23.0% (N=45) of high risk problem gamblers
Canale, and others. 2016 [83]	Gamblers aged 16 years and over N=625 (N=430 low-risk gamblers; N=138 moderate risk gamblers; and N=57 problem gamblers) Great Britain	Low risk gamblers, moderate risk gamblers and problem gambling Problem Gambling Severity Index	Gambling harms Social harms	Gambling dependence harms e.g. chasing losses (past year): Low risk gambler=62.1% (N=295); moderate-risk gambler=26.3% (N=125); problem gambler=11.6%(N=55) Social harms (past year) (e.g. work-related problems, financial problems, problems with spouse and/or other people etc): Low-risk gambler=25.5%(N=35); moderate-risk gambler=38.0%;(N=52) problem gambler =36.5%(N=50)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Carr, and others. 2018 [84]	Problem gamblers using a 24-hour helpline mean age 48.6 years (SD= 11.98) N=202 USA	Pathological gambling National Opinion Research Center DSM Screen for Gambling Problems	Emotional health Crime Suicide	92.04% (N=185) reported lifetime gambling related depression and/or anxiety 6.44% (N=13) reported any legal consequence 5.9% reported a suicide attempt in the last year and 27.7% reported ideation within the past year PP: a greater proportion of women reported suicidal ideation and/or attempts compared to men (no figures provided by author)
Columb and O'Gara, 2018 [85]	Online gamblers mean age 38.9 years (SD= 12.9) N=208 Ireland	Online gambling Any self-reported gamblers online	Financial harm Mental wellbeing and emotional health	75.0% (N=156) had to borrow money or sell to fund their gambling; 74.5% (N=155) had experienced financial problems in their household; 67.3% (N=140) reported health problems (including stress and anxiety); 62.0% (N=129) reported betting more money than they could afford to lose; 59.1% (N=123) reported feeling guilty about gambling
Crusco, and others. 2016 [86]	Patients diagnosed with gambling disorder aged 24-72 years N= 41 Italy	Gambling disorder South Oaks Gambling Screen and DSM-IV diagnostic criteria	Relationship harm Financial harm Health harm Crime	Relationship harms: 83% reported lying to their families; 51% had strained their relationship to the point of risking divorce Financial harms: 61% (N=25) had borrowed money from family, banks or stolen to fund their gambling;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				17% (N=7) had used loan sharks Health harms: 41% (N=17) reported their gambling addiction had put them at risk of suicide; Not presented % (N=34) of respondents used alcohol; 29% (N=12) had been treater for a psychological disorder (e.g. anxiety, depression, panic disorder, etc); 17% (N not presented) used drugs Crime harms: 30% (N=12) had committed a crime (theft or fraud) to fund gambling;
Cunha and Relvas, 2015 [87]	Pathological gamblers and (average age 40.39 years) (SD=10.70) and spouses of pathological gamblers mean age 43.46 (SD=10.41) N=31 (N=19 pathological gamblers and N=13 spouses) Portugal	Pathological gambling South Oaks Gambling Screen	Financial harm Relationship harm	Pathological gamblers (gambling spouses): 47.37% (N=9) reported financial problems (38.46%, N=5); 26.32% (N=5) reported various problems (e.g. health, excessive domestic responsibilities) (46.15%, N=6); 15.79%(N=3) considered themselves as the primary family problem (15.38% N=2)
Davis, and others. 2017	Veterans who gambled at least once in the past 30	Gambling	General harm measure	27% (N=79) reported problems (e.g. health, social, relationship, legal or financial) due to gambling

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
[88]	days, mean age 49.5 years (SD=13.2) N= 288 USA	Researcher designed survey	Health – self harm	21% (N=60) said they failed to meet responsibilities due to gambling 49% (N=140) had generalised anxiety disorder 24.3% (N=70) had recent ideation of self-harm
			Alcohol, tobacco and drug use	Recent self-harm ideation: 24.3% (N=70) Past 30-day substance use: Mean (SD): Average number of recent days drinking alcohol: 14.0 (SD =12.1) Average number of binge days (5+ drinks/day) 11.2 (SD =11.8) Average number of recent days using marijuana 5.1 (SD=9.9) Cocaine days: 1.9 (SD=5.8) Heroin days: 1.2 (5.0) Tobacco use days: 19.5 (SD=13.8)
Deleuze, and others. 2015 [89]	Gamblers aged 18-72 years N= 230 Switzerland and Belgium	Gambling less than once a month, a few times a month, a few times a week, every/almost every day Comprehensive Inventory of Substance and Behavioural Addictions	Life interference Mental wellbeing and emotional health	2.6% reported negative consequences in everyday life, and 6.1% reported negative emotional consequences

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Delfabbro, and others. 2020 [90]	An online panel of gamblers aged at least 18 years N=554 (N=109 recreational gamblers, N=119 low risk gamblers, N=198 moderate risk gamblers and N=128 problem gamblers) North America, the UK Australia and a variety of other countries	Recreational gambling, low risk gambling, moderate risk gambling and problems gambling Problem Gambling Severity Index	Drug and tobacco use Financial Work/study Health Psychological Social 'Other' harms	Smoking (weekly): Recreational gamblers 15.6% (N=17), low risk gamblers 20.2% (N=24), moderate risk gamblers 23.8% (N=37), problem gamblers 37.4%(N=35) Vapes (weekly): Recreational gamblers 6.4% (N=7), low risk gamblers 13.5% (N=16), moderate risk gamblers 12.7% (N=25), =problem gamblers 16.4% (N=21) Recreation drugs (weekly): Recreational gamblers 4.6% (N=5), low risk gamblers 9.2% (N=11), moderate risk gamblers 11.2% (N=22), =problem gamblers 16.5% (N=21) Harms associated with gambling: Financial: Low risk gamblers 30.6%; Moderate risk gamblers 32.8%; Problem gamblers 36.5% Work/Study: Low risk gamblers 14.4%; Moderate risk gamblers 39.9%; Problem gamblers 45.7% Health:

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
;				Low risk gamblers 11.9%; Moderate risk gamblers 23.7%; Problem gamblers 64.4% Psychological: Low risk gamblers 26.0%; Moderate risk gamblers 31.9%; Problem gamblers 42.05% Social: Low risk gamblers 15.5%; Moderate risk gamblers 38.7%; Problem gamblers 45.8% Other: Low risk gamblers 10.2%; Moderate risk gamblers 46.1%; Problem gamblers 43.7%
Dino, and others. 2020 [91]	Gamblers from the general population and treatment seekers, plus affected others (who know someone with a gambling problem now or in the past) aged 18 years and over N=Unreported	Low risk gamblers, moderate risk gambling and problem gambling Problem Gambling Severity Index	Mental wellbeing and emotional health Relationship harm Financial harm	Gamblers reporting harm: Experiencing shame/stigma: Problem gamblers=27%, moderate risk gamblers=12%, low risk gamblers=4% Affected others reporting harm: Relationship harm=82%; Negative emotions=75%; Financial harm=60%; 20% of affected others also reported experiencing gambling harms themselves (problem gambling severity index score of 1+);

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	Great Britain			48% of those negatively affected by the gambling of a spouse or partner described the impact as "severe", 41% when gambler was a parent, 38% when gambler was a child of an affected other PP: affected others were more likely to be women than men (57% vs 43%); from Black and Ethnic Minority (BAME) communities than non-BAME (16% vs 12%); and from lower socioeconomic backgrounds than high socioeconomic backgrounds (51% vs 46%)
Dowling, and others. 2016 [31]	Treatment-seeking problem gamblers aged 19-67 years N=212 Australia	Problem gambling Problem Gambling Severity Index	Financial harm Mental wellbeing and emotional health Relationship harm	54.7% (N=116) reported financial harms (e.g. substantial unpaid debts, financial deprivation, reduced financial security in older age, family conflicts about money, and the need to seek financial support from other family members and support agencies) 45.3% (N=96) reported emotional impacts (e.g. feelings of depression, sadness, stress, distress, anxiety, and guilt) 18.4% (N=39) reported loss or damage to relationships with a range of family members (e.g. with intimate partners, children and parents) 15.6%(N=33) reported trust issues as a family impact (e.g. caused by lying or stealing)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Dowling, and others. 2019 [92]	Gamblers (mostly problem gamblers) new to treatment- aged 21-74 years N=141 Australia	Gambling Problem Gambling Severity Index	Family violence	25.5% reported some form of family violence: (18.4% reported victimisation and 19.1% reported perpetration)
Ellis, and others. 2018 [93]	Problem gamblers aged 22-76 years N=83 USA	Problem gambling National Opinion Research Center DSM Screen for Gambling Problems	Alcohol and drug use Crime	Alcohol and drug use (lifetime history): 33.3% (N=29) reported alcohol problems; 18.6% (N=16) reported drug problems Crime (lifetime engagement): 57.3% (N=51) reported gambling-related illegal behaviours: 23.9% (N=21) had been arrested, and 14.8% (N=13) reported serving time in jail or prison for a gambling-related offence
Ethier, and others. 2020 [94]	Community problem gamblers (who had gambled in the past 12 months), mean age 36.10 years (SD= 11.25) N=562 Canada	Problem gambling Problem Gambling Severity Index	Drug use	18.2% (N=102) had used cocaine but their use was not problematic; and 9.3% (N=51) had problem cocaine use

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Foster, and others. 2015 [95]	Students in grades 9 to 12 (who gambled in the last year) N=1,988 USA	At risk problem gambling recreational gambling DSM-IV criteria	Substance use	Smoke regularly: At risk problem gamblers: N=148 Recreational gamblers: N=197 Ever used marijuana: At risk problem gamblers: N=345 Recreational gamblers: N= 527 Heavy alcohol users: At risk problem gamblers: N= 79 Recreational gamblers: N= 111 NB: Review authors summed population data in Table 3a to obtain above numbers.
Goodwin, and others. 2017 [96]	Gambling adults or affected others, aged 18-89 years N=5,205 (N=3,076 with gambling problems and N=2,129 affected others) Australia	Problem gambling, moderate risk gambling and low risk gambling Problem Gambling Severity Index	Number of others negatively affected others per problem gambler	Problem gamblers self-reported the highest number of total affected others (mean=3.65), followed by moderate-risk gamblers (mean=0.73), and low-risk gamblers (mean=0.03) Estimates based on reports from the point of views of affected others suggested the number of affected others was higher still: problem gamblers (mean=5.88), moderate-risk gamblers (mean=3.20), low-risk gamblers (mean=1.51)
Granero, and others. 2019 [97]	Older gamblers, aged 50-90 years	Low risk of gambling problems and higher risk of gambling problems	Alcohol, drug and tobacco use	20.8% (N=20) of individuals with higher risk of gambling problems use tobacco while 4.2% (N=11) did so among those with low risk of gambling.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=361(N=265 with low risk of gambling problems and N=96 with higher risk of gambling problems) Spain	DSM-V diagnostic criteria and South Oaks Gambling Screen		76.0% (N=73) of individuals with higher risk of gambling problems used tobacco while 3.8% (N=10) of individuals with lower risk of gambling did so. 17.7% (N=17) of individuals with higher risk of gambling problems used other drugs compared with 7.9% (N=21) among those with lower risk of gambling problems.
Granero, and others. 2020 [98]	Gamblers whose main reason for seeking treatment seeking was online sports betting mean age 32.2. years (SD= 9.7) N=323 (N=247: higher betting severity and N=76: lower betting severity) Spain	Gambling disorder DSM-V diagnostic criteria	Drug and tobacco use Financial harm	53.8% (N=133) of those with higher gambling severity used tobacco compared with 17.1% (N=13) among those with lower gambling severity 11.7% (N=29) of those with higher gambling severity used alcohol compared with 1.3% (N=1) among those with lower gambling severity. 14.6% (N=36) among those with higher gambling severity used other drugs compared with 0% among those with lower gambling severity. Cumulated debts due to online betting; Median (interquartile range): Higher severity online gamblers = 6500 (SD=20250) Lower severity online gamblers = 2300 (SD=14000)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Granero, and others. 2020 [99]	Treatment-seeking gamblers reporting online sports betting as the main reason for seeking help, mean age 49.5 years (SD=14.3) N=342 (N=108: severely impaired young men (cluster 1); N=120: moderate severity and highly functional (cluster 2); and N=114: older, moderately impaired patients (cluster 3) Spain	Gambling disorder DSM-V diagnostic criteria	Financial harm Alcohol, drug and tobacco use	67.6% (N=73) of those with high gambling severity group (cluster 1) used tobacco compared with 46.7% (N=56) and 51.8% (N=59) among those in clusters 2 and 3 respectively. 16.7% (N=18) of those in high gambling severity group (cluster 1) used alcohol compared with 14.2%% (N=17) and 12.3% (N=14) among those in clusters 2 and 3 respectively. 10.2% (N=11) of those in the high gambling severity group (cluster one used other illegal drugs compared with 9.2% (N=11) and 0.9% (N=1) among those in clusters 2 and 3 respectively. Debts (in Euros) cumulated due to gambling disorder; means (SD): Cluster 1/those with higher gambling severity = 3559.6 (SD=7234.9) Cluster 2= 8398.2 (SD=12,003.0) Cluster 3 = 6001.4 (SD=9740.1)
Guillou-Landreat, and others. 2016 [100]	Treatment-seeking problem gamblers, mean age 41.77 years (SD =13.33) N=194	Problem gambling DSM-IV diagnostic criteria	Suicide Mental disorders Alcohol, drug and tobacco use	Mental disorders and suicide (lifetime prevalence): Risk of suicide: 40.21%; attempted suicide during their lifetime: 21.65% Anxiety disorder: 43.81%; major depression: 52.58%; other mood disorder: 8.76% Substance use (lifetime prevalence):

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	France		Financial harm Relationship harm Health harm Employment harm	Nicotine dependence: 56.19%; alcohol use disorder: 41.75%; substance use disorder (excluding alcohol or nicotine): 20.62% Negative consequences (lifetime prevalence): Financial damages (a lot/ extremely) =72.68%; Family damages (a lot/ extremely) =58.24%; Social damages (a lot/ extremely) =23.71%; Health damages (a lot/extremely) =39.69%; Professional damages (a lot/ extremely) =10.82%
Håkansson, and others. 2018 [101]	Treatment-seeking pathological gamblers aged 18 -83 years N=2,099 (N=1,784 in out-patient care and 629 patients in in-patients care) Sweden	Pathological gambling ICD-10 classification	Mental disorders	73% (N=1,531) had another psychiatric diagnosis and/or self-inflicted injury/poisoning concurrent with the pathological gambling diagnosis PP: psychiatric comorbidity was significantly more common in females compared to males (79% vs 71%)
Håkansson and Widinghoff, 2020 [102]	Gamblers who had placed an online bet on at least 10 occasions in the last 12 months, aged 18 years and over	Problem gambling, moderate risk gambling, low risk gambling and no gambling problem	Financial harm	12% had a history of past-year or previous over-indebtedness (e.g. recurring problems paying bills); Lifetime over-indebtedness increased from 3% in no-risk gamblers to 9% in low-risk gamblers, to 13% in moderate-risk gamblers, to 46% of problem gamblers

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=1,004 Sweden	Problem Gambling Severity Index		9% (N=87) of the sample had a lifetime history of gambling-related borrowing (76% of whom were problem gambling and a further 14% were moderate-risk gamblers)
Håkansson, 2020 [103]	Residents aged above 18 years of age receiving a loan N=20,750 individuals (N=48,197 loans) Sweden	Any financial transaction on gambling expenditure Financial institute/s anonymised data	Financial harm	44% of all loans (N=27,218) were associated with any gambling expenditure during the past 180 days. The risk of loans being defaulted or defaulted/recovered was unrelated to any gambling expenditure during the past 180-days
Haw and Holdsworth, 2016 [104]	Problem gamblers in treatment, aged 18-82 years N=267 Australia	Problem Gambling Problem Gambling Severity Index	Mental disorders Alcohol, drug and tobacco use	Out of those who experienced anxiety (N=211), 41%(N=87) experienced problem gambling before anxiety (Males=49% (N=55), females=33% (N=32)) Out of those who experienced depression (N=245), 36%(N=87) experienced problem gambling before depression (Males=48% (N=63), females=21% (N=24)) Out of those who experienced anxiety (N=211), 41%(N=87) experienced problem gambling before anxiety (Males=49% (N=55), females=33% (N=32))

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Out of those who experienced alcohol abuse (N=95), 31%(N=29) experienced problem gambling before alcohol abuse (Males=38% (N=23), females=18% (N=6)) Out of those who experienced drug abuse (N=72), 29%(N=21) experienced problem gambling before drug abuse (Males=33% (N=15), females=22% (N=6)) Out of those who experienced nicotine dependence (N=130), 15%(N=21) experienced problem gambling before nicotine dependence (Males=23% (N=17), females=6% (N=4)).
Jenkinson, and others. 2019 [105]	Gamblers who wagered online in the past 12 months, mean age 47.7 years (SD= 14.49) N= 5,076 (N=431 problem gamblers, 944 moderate risk gamblers, 1,254 low risk gamblers and 2,447 non problem gamblers) Australia	Problem gambling, moderate risk gambling, low risk gambling and non- problem gambling. Problem Gambling Severity Index	Life satisfaction Financial harm Health harm Relationship harm Employment/ education harm Drugs and alcohol	Among the total sample of gamblers (NB no data available broken down by gambling severity): Life satisfaction (0= 'no satisfaction at all' up to 10= 'completely satisfied') Scored '0'=1.1%; scored '1-4'=7.3%; scored '5-8'=60.3%; scored '9'=14.2%; scored '10'=17.8% Financial harms: 23.5% (N=1,195) experienced a reduction in available spending money; 21.5% (N=1,091) experienced a reduction in savings; 15.0% (N=763) had less to spend on recreational expenses, e.g. eating out; 7.7% (N=393) had increased credit card debt;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				6.6% (N=335) had less money to spend on essential expenses, e.g. medications, health care and food; 6.4% (N=326) had late payment on bills, e.g. utilities, rates; 3.7% (N=189) had sold personal items Health harms: 11.7% (N=594) felt ashamed of their gambling; 11.3% (N=576) felt like a failure; 10.5% (N=531) felt distressed about their gambling; 7.3% (N=372) had loss of sleep due to stress or worry about gambling or gambling-related problems; 6.3% (N=321) increased their consumption of alcohol Relationship harms: 9.3% (N=473) spent less time with people they cared about; 7.4% (N=378) experienced greater conflict in my relationships, e.g. arguing, fighting, ultimatums; 6.9% (N=350) neglected their relationship responsibilities Employment/education harms: 6.4% (N=326) had reduced performance at work or study due to tiredness or distraction
Kerber, and others. 2015 [106]	Recovering pathological gamblers, aged 55-83 years	Pathological gambling South Oaks Gambling Screen	Mental disorders Relationship harm	Over half of the sample (62.5%, N=25) reported depression caused by gambling; 40% (N=16) reported being married more than once; 32.5% (N=13) reported alcohol dependence

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=40 USA		Alcohol and drug use Financial harm	20% (N=8) reported treatment for a substance abuse problem 57.5%(N=23) said they had gambling debt, of whom 45% (N=18) reported that "approximately one half" to "approximately all" of their debt was due to gambling
Kim, and others. 2018 [107]	Treatment-seeking primary diagnosis of gambling disorder, aged over 18 years N=349 Brazil	Gambling disorder DSM-IV diagnostic criteria/ Gambling Symptom Assessment Scale	Mental disorders Alcohol and drug use	N=175 participants had a major depressive episode N=139 had risk of suicidality N=124 had generalised anxiety disorder N=71 had alcohol abuse N=43 had panic disorder N=32 had substance abuse
Lavis, and others. 2015 [108]	Treatment-seeking problem gamblers, mean age 38.25 years (SD =13.11) N=81 Australia	Problem gambling Victorian Gambling Screen	Family violence	33% (N=27) reported both victimisation and perpetration of family violence; 20% (N=16) reported victimisation 16% (N=13) reported perpetration of violence against a family member. PP: 27% (N=11) of male problem gamblers reported experiencing both victimisation and perpetration of violence compared with half (N=18) of female problem gamblers. 10% (N=4) of male problem gamblers had perpetrated violence (compared with 3%, N=1 among female problem

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				gamblers) and 5% (N=2) of males had been victims of violence (compared with 17% (N=6) among females).
Lelonek-Kuleta and Bartczuk, 2020 [109]	Male prisoners who had symptoms of pathological gambling at some point in their lives, mean age 30.55 years (SD=8.046) N=262 Poland	Pathological gambling South Oaks Gambling Screen	Mental wellbeing and emotional health Financial harm Crime Relationship	Harms due to gambling: 74.81% (N=196) had a sense of guilt; 65.27% (N=171) had borrowed money from relatives, friends, girlfriend, in-laws; 58.02% (N=152) had argued over the financial consequences of gambling; 53.44% (N=140) had sold personal or family property; 53.05% (N=139) had borrowed from the household money; 47.71% (N=125) hiding gambling 41.60% (N=109) lying about winning 45.04% (N=118) had borrowed money from banks, credit unions or loan companies (shadow-banking institutions); 41.22% (N=108) had borrowed from loan sharks (e.g. in pawnshops); 39.31% (N=103) had not paid back money borrowed for gambling; 38.55% (N=101) had borrowed money from a spouse or a partner; 32.44% (N=85) had borrowed from credit or debit cards; 26.72% (N=70) had gone overdrawn; 16.03% (N=42) had cashed in stocks, bonds or other securities; 10.69% (N=28) had gambled using money from theft;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				3.82% (N=10) had used other illegal sources of income (drug trafficking, people trafficking, fraud); 1.91% (N=5) had borrowed from illegal sources (gangsters, the Mob, dealers)
Lind, and others. 2015 [44]	Problem gambling related reports of crime among suspects, aged 15 years and over N=57 suspect reports Finland	Problem gambling Self identified by gamblers	Crime	In suspect reports of crimes related to gambling: 78.9% (N=45) had committed a property crime 15.8% (N=9) had committed a violence crime 5.3% (N=3) were categorised as other crime. PP: 82.5% (N=47) of suspects detailed in police reports were male.
Lind and Kaariainen, 2018 [110]	Treatment-seeking problem gamblers, mean age 34.83 years (SD=11.64) N=1,573 Finland	Problem gambling National Opinion Research Center DSM IV Screen for Gambling Problems	Financial harm Crime	Perception of financial situation: Bad but under control=37.8% (N=586); Bad and not under control=57.1% (N=885). 37.6% of respondents during the previous year, had stolen money or cheated to finance their gambling.
Lind, and others. 2019 [111]	Prisoners with gambling one year pre conviction/ in past year aged 18 years and over	Gambling problems Brief Biosocial Gambling Screen	Alcohol, drug and tobacco use Crime	14.3% (N=6) of those with risky alcohol consumption, had gambling problems; 20% (N=7) of those with a history of drug use had gambling problems;

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=not reported Finland			17.5% (N=14) Of those who smoked, had gambling problems. 33.3% (N=7) of those who had committed a property crime, financial crime or robbery had gambling problems; 10.0% (N=7) of those who had committed a violent crime, drug offense or other crime had gambling problems; 83.3% (N=5) of those had a prison sentence related to gambling had gambling problems; One-third of those who had been sentenced for an income-generating crime had gambling problems.
Lister, and others. 2015 [112]	Current/lifetime problem pathological gamblers, aged 18 - 80 years N=150 Canada	Problem and pathological gambling National Opinion Research Center DSM Screen for Gambling Problems	Mental disorders Alcohol and drug use	19% of participants were diagnosed with a current anxiety disorder; 19% of participants met the criteria for a current co-occurring mood disorder (major depression and/or dysthymia); 13% met the criteria for current major depression; 13% met the criteria for dysthymia (persistent depressive disorder), 7% were diagnosed with double depression (current major depression and dysthymia) 71% of participants had a history of substance use 25% of participants met criteria for a current substance use disorder 60% had a history of alcohol use disorder 19% had a current alcohol use disorder

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Lloyd, and others. 2016 [113]	Online gamblers, mean age 35.5 years (SD =11.8) N=4,125 Mixed countries (including mostly UK)	Gambling problems Researcher designed survey including self-report criteria for DSM-IV	Self-harm	7.3% (N=300) said they had thought about harming themselves because of their gambling problems. Of those who had thought about it, 28.0% - e.g. 2.0%/N=84 of the total sample- reported that they had actually self-harmed because of gambling problems).
Machart, and others. 2020 [114]	Homeless problem gamblers attending psychiatric clinics at homeless hostels, age unspecified N=289 Australia	Problem gambling Patients were classified as problem gamblers if they gave gambling as the reason for becoming homeless	Homelessness Alcohol and drug use Mental disorders Crime Financial harm	68.9% (N=199) had a current substance use disorder 65.1% (N=188) had anxiety/depression 33.2% (N=96) had spent time in prison 11.4% (N=33) were subject to a financial management order
Melendez-Torres, and others. 2020 [115]	School children who gambled in the last 12 months, aged 11-16 years N=13,086	Any gambling Self-reported last 12-month participation in gambling	Mental wellbeing and emotional health	N= 369 reported feeling bad about their gambling often/all of the time PP: Girls were less likely to feel bad about their gambling (0.59%, N=88) compared with boys (2.04%, N=281 males) Increasing school year was associated with increasing socioemotional harms of gambling

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	Wales			More of those from white other and black/ethnic minority groups reported feeling bad about their gambling often/all of the time than those from the White British group.
Miguez and Becona 2015 [116]	School children, aged 11-16

N=213 (N=147 at risk gamblers and N=66 problem gamblers)

Spain | Problem gambling and at-risk gambling

South Oaks Gambling Screen Revisited for Adolescents | Tobacco use

Alcohol use | 9.5% of at-risk gamblers smoked compared to 22.7% of problem gamblers

13.6% of at-risk gamblers ever used beer compared to 27.3% of problem gamblers

5.4% of at-risk gamblers ever drank wine compared to 15.2% of problem gamblers

6.8% of at-risk gamblers ever drank spirits compared to18.2% of problem gamblers |
| Moghaddam, and others. 2015 [117] | Treatment-seeking gamblers, mean age 48.2 years (SD=14.8)

N=44

USA | Pathological gambling

National Opinion Research Center DSM Screen for Gambling Problems | Mental disorders

Debt | N=19 participants were mild/moderately depressed and N=9 were severely depressed

Gambling debt (mean):
$119,400 (SD=352,732) to family/friends;
$13,850 (SD=24,118) on credit cards;
$7,186 (SD=22,081) other debt'
$945 (SD = 4,259) to casinos |

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Nash, and others. 2018 [47]	Gamblers and affected others, age 17 years and over N=1,537 (N=849 self-identified problem gamblers and N=688 affected others) Great Britain	Problem Gambling Self-identified as being a Problem Gambler	Financial harm Homelessness Mental wellbeing and emotional health Relationship harm	Financial harm 79% used more than one means to fund their betting (e.g. use of savings or theft) 78% of the gamblers used their wages to fund gambling, using money intended for essential household costs for themselves/their family 76% of gamblers had gambling-related debt 44% affected others report debt 65% of gamblers had lost £10,000 or more, with several saying that they had losses in the millions 49% used credit cards to fund gambling, which brought the risk of spending beyond their means 40% of gamblers had been overdrawn 36% of families with children could not afford essential expenditure because of the family members' gambling 27% of gamblers had taken out payday loans 20% had took debt relief measures (e.g. bankruptcy) 19% report not being able to pay utility bills 18% report not being able to afford food 15% reported not being able to pay their rent 6% of families with children were made homeless Mental Health Two-thirds of gamblers said that their mental health suffered as a result of their gambling 91% of affected others had experienced emotional distress

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				57% of affected others experienced some kind of mental ill-health Relationship harms 62% of all those surveyed reported that they experienced relationship problems as a result of gambling 62% of affected others surveyed said that the gambler either denied having a problem or became angry when confronted
Palmer du Preez, and others. 2018 [118]	Treatment-seeking problem gamblers and affected others, aged 18 years or older N=454 (N=370 treatment-seeking problems gamblers and N=84 affected others) New Zealand	Gambling risk Problem Gambling Severity Index	Family violence Intimate partner violence	Family Violence 46.8% of the gamblers and 65.5% of affected others reported being a victim of family violence in the past 12 months; 41.2% of gamblers and 57.1% of affected others reported perpetrating violence in the past 12 months Intimate Partner Violence 34% of the gamblers and 54% of affected others reported being a victim of intimate partner violence. 31% of the gamblers and 49% of affected others reported being a perpetrator of intimate partner violence. PP: Among gamblers, a larger proportion of females than males reported intimate partner victimization (42% v 28%) whereas the proportions of each gender reporting intimate partner violence perpetration were more similar (35% of women v 28% of men).

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Papineau, and others. 2018 [119]	Regular gamblers, aged 18 years and older N=810 (N=542 offline gamblers, N=143 pure online gamblers and mixed online N=125) Canada	Gambling risk Canadian Problem Gambling Index	Work Relationship harms (including wellbeing of affected others, impacts on children) Health harms Alcohol and drug use Tobacco use Mental disorders and mental wellbeing Suicide Crime Financial	Note data presented in paper split by online or offline: Work Work disruptions: online=7.9% (N=178); offline 1.0% (N=301) Loss of productivity: online=5.1% (N=175); offline=0.7% (N=300) Absenteeism: online=2.8% (N=178); offline=0.3% (N=301) Relationships Well-being, health, or finances of spouse or loved ones affected: online=17.4% (N=281); offline=6.1% (N=540) Relationships with spouse, family, and friends disrupted: online=9.3% (N=279); offline=1.5% (N=539) Negative impacts on children: online=6.0% (N=217); offline=1.6% (N=433) Health harms Excessive drinking: online=25.7% (N=253); offline=17.9% (N=491) Sleep problems: online=25.0% (N=284); offline=9.8% (N=540) Use of cannabis: online=10.7% (N=281); offline=6.0% (N=534) Physical health affected (general health, eating, sleeping, physical activity): online=9.9% (N=283); offline=2.0% (N=540)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Less time devoted to physical activities: online=5.4% (N=278); offline=1.1% (N=529)
				Increase (from before matching as used a propensity score matching) in smoking: online=4.1% (N=121); offline=0.5% (N=215)
				Medical consultation due to gambling: online=1.4% (N=284); offline=0.2% (N=539)
				Mental health and wellbeing
				Mental health affected (mood, level of stress or anxiety, etc.): online=13.4% (N=284); offline=4.1% (N=542)
				Quality of life affected by gambling: online=13.0% (N=284); offline=3.3% (N=542)
				Purchase of antidepressants: online=3.5% (N=284); offline=1.3% (N=541)
				Presence of suicidal thoughts: online=2.5% (N=284); offline=0.7% (N=541)
				Financial harm
				Too much time and money spent gambling: online=21.0% (N=276); offline=6.9% (N=539)
				Financial situation shaken by gambling: online=10.2% (N=284); offline=3.3% (N=542)
				Inability to pay rent, bills, etc: online=4.2% (N=284); offline=1.1% (N=541)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Gambling debts: online=13.2% (N=280); offline=3.0% (N=536) Crime Illegal activities linked to gambling: Online 2.5% (283) and Offline 0.6% (542)
Patterson, and others. 2020 [120]	Gamblers, aged 15 years and over N=1,137 (N=603 low risk gamblers, N=375 moderate risk gamblers, N=159 problem gamblers) Australia	Problem, moderate risk and low risk gambling Problem Gambling Severity Index	Financial harm Psychological distress Alcohol use Life satisfaction	27.7% of problem gamblers reported experiencing three or more hardships related to a lack of money, compared to 15.3% of moderate-risk gamblers and 11.0% of low-risk gamblers. 26.0% of problem gamblers reported overdue household bills (10.8 of moderate-risk gamblers, and 10.3%of low-risk gamblers). 12.7% of problem gamblers had overdue personal bills (6.8% of moderate risk gamblers, 6.2% of low risk gamblers) 53.8% of problem gamblers reported high/very high psychological distress (27.0% of moderate-risk gamblers, and 23.5% of low-risk gamblers). 41.8% of problem gamblers had 5 or more standard drinks (35.7% of moderate-risk gamblers, and 31.2% of low-risk gamblers).

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Life satisfaction scores (ranging from 0-10 highest) were: 7.0 for problem gamblers (7.6 for moderate risk gamblers, 7.8 for low risk gamblers)
Raisamo, and others. 2020 [121]	Adolescent gamblers, aged 12-16 years andthose aged 18 years who gambled in the last 6 months N=2,879 Finland	Any gambling Self-reported	Financial (weekly gambling expenditure and difficulty paying debts) Relationship harms School/education harms Crime (stealing)	The percentage of gamblers aged 12-16 reporting having experienced at least one harm due to gambling decreased from 13.5% in 2011 to 7.4% in 2017.Among 18 years olds the percentages stayed the same: 11.5.% to 11.1% Experience of harms (2017) 12-16-year olds (n=419): one harm - 4.3% and more than one harm - 3.1%. 18-year olds (n=476): one harm - 8.6% and more than one harm - 2.5%. Weekly expenditure on gambling (2017) 12-16-year olds (N=423): 14.8% - €0.01–4.99. 11.2% - €5–19.99. 1.4% - € > 20. 18-year olds (n=477): 30.3% - €0.01–4.99. 19.3% - €5–19.99. 4.6% - € > 20 Type of gambling harm (2017) Conflicts with parents: 12-16-year olds 1.0% and 18-year olds 1.3% Conflicts with friends: 12-16-year olds 2.1% and 18-year olds 1.1%

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Disruptions of daily rhythm: 12-16 years old 1.9% and 18-year olds 1.3%
				Disruptions in school/work: 12-16-year olds 1.2% and 18-year olds 1.1%
				Feeling guilty or ashamed: 12-16-year olds 3.8 and 18-year olds 9.2%
				Skipping school/work: 12-16-year olds 1.4% and 18-year olds 0.6%
				Unable to pay debts: 12-16-year olds 0.7% and 18-year olds 0.4%
				Stealing money for gambling: 12-16-year olds 0.5% and 18-year olds 0.2%
				PP: Males (2017) 12-16-year olds (n=296): 4.7% one harm and 4.1% more than one harm 18-year olds (n=246): 11.4% one harm and 4.1% more than one harm
				Females (2017) 12-16-year olds (n=123): 3.3% one harm and 0.8% more than one harm 18-year olds (n=230): 5.7% one harm and 0.9% more than one harm

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Raisamo, and others. 2015 [122]	Individuals who gambled in the last 12 months, aged 15-74 years N=3,451 Finland	Non problem gambling, low risk gambling, moderate risk gambling and problem gambling Problem Gambling Severity Index	Unspecified gambling-related harms Financial harms Emotional and health harms Relationship harms	During the previous year, 15% (N=519) experienced at least one gambling-related harm. PP: More males (18.1%) compared to females (7.2%) experienced at least one gambling harm. Self-reported gambling harms included the following: N=349 Chasing losses N=124 Need to gamble with more money to maintain excitement N=110 Betting more than able to afford to lose N=102) Feeling guilty about gambling N=86) Feeling may have a problem with gambling N=78) Criticism by others N=41) Health problems N=28) Financial problems N=18) Borrowed money/ sold something to gamble (Note paper also includes numbers reporting each type of harm by gambling risk levels: low risk gambler, moderate risk gambler and problem gambler)
Redden, and others. 2015 [123]	Young at-risk gamblers, aged 18-29 years N=215	At-risk gambling Yale-Brown Obsessive-Compulsive Scale	Depression	37.7% (N=81) qualified as having lifetime major depressive disorder. PP: Of this group:

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	USA	adapted for Pathological Gambling		58.0% (N=47) were female 75.9% (N=60) were White; 8.9% (N=7) African American; 7.6% (N=6) Hispanic/Latino; and 7.6% (N=6) Asian
Richard, and others. 2019 [124]	School children, aged 12-19 years who had gambled within the past year N=1,939 USA	At-risk/problem and frequent gambling National Opinion Research Centre DSM-IV Screening for Gambling Problems-Loss of Control, Lying and Preoccupation	Stimulant use	N=157 reported past-year stimulant use. Of all those who gambled in the past year who were identified as having a gambling problem (at-risk/problem) (subgroup N=440): N=50 reported past-year stimulant use. Of all those who gambled in the past year who were identified as frequent gamblers (subgroup N=852): N=111 reported past-year stimulant use.
Riley and Oakes, 2015 [125]	Male prisoner gamblers, age unspecified N=84 (N= 41 pathological gamblers, 32 at risk gamblers, N= 11 problem gamblers) Australia	Pathological, problem and at-risk gambling Early Intervention Gambling Health Test screen questionnaire	Imprisonment	39% of pathological gamblers reported their current conviction was related to gambling.
Riley, and others. 2018 [126]	Male prisoner gamblers, Mean age: pathological gamblers: 37.04 years (SD= 9.74);	Pathological, problem and at-risk gambling	Imprisonment Criminal conviction	18% (N=53) reported they were incarcerated due to offending relating to their gambling problem.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	problem gamblers: 34 years (SD=9.78) at risk gamblers: 39.47 years (SD=10.25) N=Not reported Australia	Early Intervention Gambling Health Test screen questionnaire		Of the self-reported pathological gamblers, 40% reported their current term of imprisonment was related to gambling.
Roberts, and others. 2016 [127]	Male gamblers, aged 18-64 years N=2,418 (N=2,077 non problem gamblers; N=144 problem gamblers and N =197 probable pathological gamblers) UK	Non problem gambling, problem gambling and probable pathological gambling. South Oaks Gambling Screen	Violence towards others Intimate partner violence Crime	27.9% (N=55) of probable pathological gamblers and 18.1% (N=26) problem gamblers and 6.7% (N=140) non-problem gamblers reported using a weapon. 43.7% (N=86) of probable pathological gamblers and 25.7% (N=37) problem gamblers and 15.7% (N=327) non-problem gamblers reported fighting while intoxicated. 9.6% (N=19) probable pathological gamblers and 6.3% (N=9) problem gamblers and 2.6% (N=53) non-problem gamblers reported hitting a child. 9.1% (N=18) probable pathological gamblers and 4.1% (N=6) problem gamblers and 1.6% (N=33) non-problem gamblers reported hitting a partner.
Roberts, and others. 2020 [128]	Treatment-seeking problem gamblers mean age 35.6 (SD=10.9)	Problem gambling	Intimate partner violence	20.1% (N= 41) reported any intimate partner violence (as a perpetrator or victim) in the past year.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	N=204 UK	Problem Gambling Severity Index		
Rockloff, and others. 2020 [129]	Those who gambled in the last 12 months and affected others, aged 18 years and over N= 7,631 (Non-problem gamblers 6,655; Low risk gamblers N=683; Moderate risk gamblers N=223. Problem gamblers N=70) Significant others: N=193 Australia	Non problem, low risk, moderate risk and problem gambling Nine item Problem Gambling Severity Index	Life satisfaction Distress Alcohol use Tobacco use Relationship harms (including impact on affected others and family/intimate partner violence) Financial harms Work/education harms Crime	Impact on gamblers: 9.6% of all gamblers who gambled in the last 12 months (N=7,587) endorsed at least one items on the Short Harms Gambling Scale (Non-problem gamblers=4.3%; Low-risk gamblers=29.2%; Moderate-risk gamblers=59.4%; Problem gamblers=100%). Life satisfaction (Scores out of 10 - higher scores indicate higher satisfaction) (sub sample N=2,679): Non-problem gamblers=8.21; Low-risk gamblers=7.73; Moderate-risk gamblers=7.18; Problem gamblers=5.32 High distress (sub sample N=2,637): Non-problem gamblers=3.7%; Low-risk gamblers=8.7%; Moderate-risk gamblers=11.2%; Problem gamblers=39.0% Alcohol consumption (at risk of harm) (sub sample N=2,674):Non-problem gamblers=53.8%; Low-risk gamblers=55.1%; Moderate-risk gamblers=61.1%; Problem gamblers=64.8%

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Smoking (Daily) (sub sample N=2,699): Non-problem gamblers=10.0%; Low-risk gamblers=18.1%; Moderate-risk gamblers=30.2%; Problem gamblers=39.4%
				Impact on Significant Others (N =193):
				80.0% had feelings of distress about the other person's gambling
				64.3% experienced increased tension in relationships
				63.3% reported feeling angry at the person for not controlling their gambling
				58.1% reported less enjoyment from time spend with people they cared about
				46.2% report a reduction in available spending money
				45.7% had feelings of hopelessness about gambling
				38.7% experienced a reduction in savings
				26.2% spent less time attending social events
				25.2% used work or study time to attend to issues caused by their gambling
				23.5% experienced petty theft, including having money taken from them without asking
				15.7% report being a victim of family/domestic abuse
				PP: 6.8% of male gamblers said their available spending money had been reduced (compared with 3.4% of women), 5.0% said their savings were reduced (compared with 2.8%

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				of women), and 4.4% had regrets and felt sorry about their gambling (compared with 2.4% of women).
Rodda, and others. 2017 [130]	Affected others seeking help online, aged 18 years and over N=62 Australia	Problem gambling Measure not provided	Mental wellbeing (emotional distress) Relationship and family harms Family violence Financial harm Social life Physical health Employment	Participants (N=57) reported 'often' being impacted by a family members problem gambling through: Emotional distress (e.g. feelings of sadness, anxiety, stress or anger): 77.2% (N=44) Relationship quality issues: 66.7% (N=38) Financial problems: 50.9% (N=29) Social life affected: 40.4% (N=23) Physical health affected: 40.4% (N=23) Ability to work or study: 33.3% (N=19) Regarding interpersonal relationships (in the past 3 months), family members (N=58) reported 'often' experiencing the following as a result of the family members gambling: An inability to trust the gambler: 67.2% (N=39) Feelings of anxiety: 63.8% (N=37) Anger towards the gambler: 62.1% (N=36) Feelings of depression or sadness: 56.9% (N=33) Less quality time with family member: 56.9% (N=33) A lack of money for family projects: 56.9% (N=33) Had to take over financial responsibility in the home: 53.4% (N=31) Increased arguments: 53.4% (N=31)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Had to take over decision-making in the home: 50.0% (N=29) A breakdown in communication: 48.3% (N=28) Distress or upset due to family member not being around because of gambling: 43.1% (N=25) Reduced income for household running costs: 39.7% (N=23) Financial hardship: 36.2% (N=21) Experienced family violence or conflict: 19.0% (N=11)
Rodriguez-Monguio, and others. 2017 [131]	Pathological gamblers seeking treatment with pathological gambling as a principle diagnosis, aged 18 years or over

N=447

USA | Pathological gambling

ICD-9-CM classification | Mental disorders

Alcohol and drug use | The most prevalent conditions included: Anxiety, dissociative and somatoform disorders: 27.8% Episodic mood disorders: 25.6% Depressive disorders: 13.3% Alcohol dependence: 8.3% Drug dependence: 4.4% Nondependent abuse of drugs: 5.0% |
| Rodriguez-Monguio, and others. 2018 [132] | Pathological gamblers, aged 18 years or over

N=599

USA | Pathological gamblers

ICD-9-CM classification | Mental disorders

Alcohol and drug use

Economic burden of patients with pathological gambling and co-occurring | Principal diagnosis (2009-2012) N=597: Episodic mood disorders: 31% Anxiety disorders: 14% Psychoactive substances (including alcohol dependence, drug dependence and non-dependent abuse of drugs): 9% Depressive disorders: 5% Adjustment reaction: 4%

Mean annual total expenditures on health care per patient (bias-corrected SD): |

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
			psychiatric problems	2009: $7993 (± $11,847) 2010: $10,05 (± $14,555) 2011: $9093 (± $13,422) 2012: $9523 (± $14,505) Mean annual expenditures on medical care per patient: 2009: $5497 (± $8376) 2010: $7320 (± $10,950) 2011: $6537 (± $9929) 2012: $7702 (± $13,323) The average amount that each patient spent out of pocket on medical care: 2009: $430 (± $588) 2010: $518 (± $697) 2011: $498 (± $654) 2012: $530 (± $697)
Ronzitti, and others. 2017 [133]	Treatment-seeking problem/ pathological gamblers, mean age 35.76 (SD= 11.04) years N=903 UK	Problem/ pathological gamblers Problem Gambling Severity Index	Relationship problems Alcohol and drug use Work/education harms	Loss of relationship as a consequence of gambling 38.75%(N=255) Loss of job as a consequence of gambling 18.76% (N=124) Lifetime use of drugs 49.51% (N=303) Past-year use of drugs 25.98% (N=159) 46.77% (N=412) individuals reported current suicidal ideation during the assessment.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
			Self-harm Suicide	62.18% (N=480) individuals reported to have had suicidal ideation at least once in their life. Of those: 23.27% attempted suicide; 64.36% reported to have had only suicidal ideas/thoughts; 9.22% reported a suicide plan; and 3.15% reported only a history of self-harm. PP: Current suicidal ideation of problem/pathological gambler (N=882): More common in women than men (64.47% N=49 vs 45.09% N=363). More likely to be widowed, divorced, and separated (66.25% N=53) or never married (49.88% N=211). More likely to be not employed (57.31%)
Ronzitti, and others. 2019 [134]	Veterans with gambling disorder seeking pain treatment, mean age 54.98 (SD=0.618) years N=294 USA	Gambling disorder ICD-9 classification	Suicide Mental disorders Tobacco use Alcohol and drug use Health harms (sleep disorder)	In the year prior their initial appointment: 79.59% (N=234) had depression 56.46% (N=166) had tobacco use disorder 54.42% (N=160) had alcohol use disorder 49.98% (N=144) had drug use disorder 34.69% (N=102) had anxiety 15.99% (N=47) had sleep disorder

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Ryde, and others. 2017 [135]	Adult female bingo players, aged 18-91 years N=151 Scotland	Participation in bingo at a bingo hall	Health harms (health status, chronic conditions) Physical activity and sedentary behaviour	Self-reported health status (N=143): Poor: 9% (N=14) Self-reported ill health (N=135): Yes: 39% (N=53) Reported specific health conditions (N=47): Arthritis and joint problems: (N=20) Heart and respiratory conditions: (N=12) Diabetes: (N= 9) Self-reported physical activity (N =139) 52% (N=37) did not meeting physical activity guidelines (150 min of moderate to vigorous physical activity per week)
Salonen, and others. 2016 [136]	Affected others, aged 15-74 years N=847 Finland	Problem gambling Researcher designed survey	Gambling-related harms to others (unspecified) Mental wellbeing (including emotional distress, worry) Relationship problems	64.8% (N=549) had a close friend who was a problem gambler 48.5% (N=411) had a family member who was a problem gambler 59.5% had experienced harm caused by the problem gambling of someone close to them. 29.6% had experienced relationship problems 44.3%had experienced worry about the health/ well-being of their child or a close relative 34.6% had experienced emotional distress

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Salonen, and others. 2018 [137]	Help-seeking gamblers and affected others, aged 18 years or over N= 119 treatment seeking gamblers N=not reported Finland	Gambling, problem gambling, at risk gambling, recreational gambling, gambled less than monthly/no recent gambling Frequency of gambling (last 12 months) and Problem and Pathological Gambling Measure	Financial harms Mental wellbeing (emotional/psychological harms) Health harms Relationship harms Work/education harms Gambling-related harms unspecified	Treatment-seeking gamblers most commonly reported gambling related emotional/psychological harms (88%); followed by financial harms (87%) and health harms (87%); relationship harms (81%); work or study harms (54%); and other harms (58%). Note: full breakdowns for each harm category above are available in the full paper (e.g. proportions who experienced bankruptcy or sold personal items within financial harms etc) The most common gambling-related harms for the concerned significant others were emotional distress (20%); health harm, such as sleep problems, headaches, backache, or stomach aches (14%); and financial harm, such as payment issues, loans related to gambling, or loss of credibility (13%) Males experienced more gambling-related harm than women regardless of harm type. Gambling-related financial harm was most common among the youngest age groups
Samuelsson, and others. 2018 [52]	Gamblers, aged 23-75 years N=40 Sweden	Problem gambling Problem Gambling Severity Index	Gambling-related harm (unspecified)	Level of harm % (N): No harm: 25.0% (N=10) Low harm: 35.0% (N=14) Harm: 12.5% (N=5) Substantial harm: 27.5% (N=11)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Sharman, and others. 2019 [138]	Treatment-seeking male gamblers, aged 17 to 70 years N=768 UK	Problem gambling South Oaks Gambling Screen and/or Problem Gambling Severity Index	Mental disorders Alcohol and drug use Tobacco use Homelessness	31.1% had mental ill health issues, with depression the most common (22.6%) 61.6% were current smokers 33.6% drank at levels which exceeded recommended low risk alcohol consumption (>14 units per week) 23.6% declared habitual or recreational use of non-prescription drugs 10.7% were rough sleeping prior to treatment
Shen, and others. 2015 [139]	Undergraduate student gamblers, age not reported N=79 (problem gamblers N=21; moderate risk gamblers N=58) Canada	Moderate-risk and problem gambling Problem Gambling Severity Index	Alcohol and drug use Tobacco use Mental wellbeing (psychological distress)	Daily smoking: problem gamblers 40%; moderate-risk gamblers:10.3% Weekly use of cannabis: problem gamblers 35%; moderate-risk gamblers 15.5% Harmful and hazardous alcohol use: problem gamblers 44.4%; moderate-risk gamblers 37.5% Possible alcohol dependence: problem gamblers 38.9%; moderate-risk gamblers 19.6% Psychological distress: problem gamblers 50%; moderate-risk gamblers 22.4%

Shirk, and others. 2018 [140]	Veterans with gambling disorders, mean age 50.8 (SD=9.25) years
	
	N=61
	
	USA
		Gambling disorder
		
		South Oaks Gambling Screen
			Alcohol and drug use
			
			Tobacco use
			Mental disorders
			
			Suicide
				Any lifetime:
				substance use N=47 (77.0%);
				tobacco use N=46 (76.6%);
				alcohol use N=42 (68.9%);
				cocaine use N=26 (42.6%);
				opioid use N=14 (23.0%);
				cannabis use N=10 (16.4%)
				mood disorder N=25 (41.0%);

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				anxiety disorder N=34 (55.7%); major depressive disorder N=23 (37.7%); suicidal ideation N=8 (13.6%)
Shultz, and others. 2016 [141]	Pathological gamblers, aged 18 years or over N=94 problem gamblers (who have experienced child mistreatment N=57 and not experienced maltreatment; N=37) USA	Pathological gambling South Oaks Gambling Screen; National Opinion Research Center DSM Screen for Gambling Problems; DSM-IV Problem Gambling criteria	Suicide Relationship harms (family dysfunction, divorce) Mental disorders Alcohol and drug use	Results presented as pathological gamblers who have experienced childhood maltreatment (PG w/M), and pathological gamblers without maltreatment (PG) Suicide attempt (in lifetime) PG w/M: 42% (N=24); PG: 24% (N=9) Family dysfunction PG w/M: 63% (N=34); PG: 41% (N=13) Ever divorced PG w/M: 63% (N=27); PG: 65% (N=17) Mood disorder PG w/M: 81% (N=46); PG: 57% (N=21) Anxiety disorder PG w/M: 58% (N=33); PG: 32% (N=12) Substance use disorder PG w/M: 72% (N=41); PG: 62% (N=23)

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Suomi, and others. 2019 [142]	New treatment-seeking problem gamblers mean age 43.6 years (SD = 13.0) years N=212 Australia	Any gambling The Brief Bio-Social Gambling Screen	Intimate partner violence Family violence	Family Violence (FV) 33.5% (N=71) had experience of FV (any form). 5.1% (N=11) reported being a perpetrator only of FV. 11.3% (N=24) reported being a victim only of FV. 17.0% (N=36) reported being a victim and a perpetrator of FV. Intimate Partner Violence (IPV) 37.7% (N=80) had experience of IPV (any form). 1.9% (N=4) were perpetrators only of IPV. 3.3% (N=7) were victims of IPV. 32.6% (N=69) were perpetrators and victims of IPV. PP: Females (50.5% of sample): 50.7% reported any form of family violence. 45.5% reported being perpetrators of family violence only. 50.0% reported being a victim of family violence only. 52.8% reported being a victim and perpetrator of family violence. 56.2% reported any form of IPV. 100% reported being a perpetrator of IPV* only. 42.9% reported being a victim of IPV only. 55.1% reported being a victim and perpetrator of IPV. *Note: everyone who reported IPV 'perpetration only' (N=4) were females. There were more females who reported bidirectional IPV than males in the sample.

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Toneatto and Pillai, 2016 [143]	Pathological and untreated (but recovered) gamblers, mean age 42.5 years (SD =12.5) N=76 (pathological gamblers N=51; recovered gamblers N=25) Canada	Pathological gambling and recovered gambling (ex-pathological) DSM-IV and South Oaks Gambling Screen	Mental disorders	Major depressive disorder: Lifetime: Pathological gamblers =36% (N=18); recovered gamblers= 36% (N=9); Current: pathological gamblers =10% (N=5); recovered gamblers= 24% (N=6) Generalised anxiety disorder: Lifetime: pathological gamblers =2% (N=1); recovered gamblers= 0%(N=0) Current: pathological gamblers =8% (N=4); recovered gamblers= 12%(N=3) Lifetime adjustment disorder: problem gamblers =34% (N=17); recovered gamblers= 24% (N=6)
Wardle, and others. 2019 [144]	Problem gamblers and at-risk gamblers aged 16 years and over N=213 (problem gamblers N=41; at-risk gamblers N=172) England	Problem gambling and at-risk gambling DSM-IV diagnostic criteria	Suicide Mental disorders Alcohol and drug use	Thought about suicide, last year: problem gamblers =19.2%; at-risk gamblers =4.9% Felt that life not worth living, past year: problem gamblers =20.9%; at-risk gamblers =8.1% Wished was dead, past year: problem gamblers =17.1%; at-risk gamblers =5.1% Suicide attempt, past year: problem gamblers =4.7%; at-risk gamblers =1.2%

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
			Tobacco use	Experienced Common Mental Disorder: problem gamblers =45.4%; at-risk gamblers =24.0%
			Relationship harms (intimate partner violence) Work harms (physical violence at work)	Harmful/hazardous alcohol use; problem gamblers =49.1%; at-risk gamblers =42.8%
				Regular smoker: problem gamblers =37.6%; at-risk gamblers =35.3%
			Financial harms (loss of money for essential goods, debt, homelessness)	Drug dependence: problem gamblers =19.0%; at-risk gamblers =8.2%
				Violence from a partner or sexual abuse in adulthood: problem gamblers =32.3%; at-risk gamblers =25.1% Violence at work: problem gamblers =11.0%; at-risk gamblers =5.3%
			Social harms	Used less fuel than needed due to worry about cost: problem gamblers =33.9%; at-risk gamblers =21.6%
				In debt arrears or disconnected (in past year): problem gamblers =33.1%; at-risk gamblers =13.6%
				Ever been homeless: problem gamblers =16.2%; at-risk gamblers =5.0%

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
				Feel socially isolated (very/sometimes): problem gamblers =53.7%; at-risk gamblers =32.4%
Weinberger, and others. 2015 [145]	Students aged 14-18 years who reported past-year gambling N=1,591 (at risk/problem gamblers N=538; low risk gamblers N=1,053) USA	Low risk gambling and at risk/problem gambling Massachusetts Gambling Screen and DSM-IV diagnostic criteria	Tobacco use	Current smoking: At risk/problem gamblers=20.1% Low-risk gamblers = 12.1%
Widinghoff, and others. 2019 [146]	Male offenders with gambling disorder serving sentences for violent crimes aged 18-25 years N=43 Sweden	Gambling disorder DSM-IV diagnostic criteria	Mental disorders Substance use	Substance use (any)=93.0% (N=40) Affective disorder=65.1% (N=28) Anxiety disorder=62.8% (N=27)
Wieczorek, and others. 2019 [147]	Homeless problem gamblers aged 18 years and over N= 208	Low risk, moderate risk and problem gambling Problem Gambling Severity Index	Homelessness	The mean time remaining in homelessness: 5.9 years for problem gamblers (SD=8.21). 5.8 (SD =7.39) for low risk gamblers 5.5 (SD=7.30) for moderate risk gamblers

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
	Poland			
Winkler, and others. 2017 [148]	Estimates are based on various populations N= includes an estimated population of between 123,000 and 170,000 problem gamblers (including 40,000–80,000 pathological gamblers) ages 15- 64 years. Czech Republic	Problem and pathological gambling Measures not reported.	Financial harms (cost to society)	The overall social costs of gambling in the Czech Republic in 2012 ranged between 541,619,000€ and 619,608,000€. Family harms accounted for 63% of all social costs. Treatment of patients diagnosed with pathological gambling: 1,508,000€ Bankruptcy: between 3,512,000€ and 4,854,000€ Reduced work performance: between 19,933,000€ and 47,120,000€ Unemployment: between 5,406,000€ and 7,472,000€ Costs to judiciary connected to gambling: 2,051,000€ Family and social costs (total estimated costs): Emotional costs for the family: 67,873,000€ Relationship breakdowns: 35,746,000€ Separation and divorce: 34,442,000€ Violence: 14,298,000€ Depression: between 1,431,000€ and 5,035,000€ Suicidal ideation: between 15,597,000€ and 44,580,000€ Suicide attempts: 92,603,000€ Suicide attempts to gamblers families: 72,232,000€ Suicide attempts to parents: 16,670,000€

Author, Year [ref]	N, study population, country	Gambling	Outcome	Main findings PROGRESS Plus (PP)
Zhai, and others. 2020 [149]	Student gamblers aged 12-18 yearswho reported past-12-months gambling N=388 USA	Gambling Youth Risk Behavior Survey	Alcohol and drug use Tobacco use Crime (violence)	PP: male gamblers Any drug use: 52.4% (N=128) Current (past 30 days) Alcohol use: 41.0% (N=102) Current (past 30 days) Heavy alcohol use: 24.3% (N=64) Current (past 30 days) Cigarettes use: 15.2% (N=42) Violence-related measures ranged from: 7.3-33.0% (N=20-N=87) PP: female gamblers Any drug use: 63.7% (N=61) Current (past 30 days) Alcohol use: gamblers=55.1% (N=53) Current (in past 30 days) Heavy alcohol use: 32.4% (N=32) Current (in past 30 days) Cigarettes: gamblers=12.9% (N=14) Violence-related measures ranged from: 6.9-27.0% (N=7-N=27)

Appendix H. Included cross-sectional studies

There were 138 cross-sectional studies included in the review.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Afifi, and others. 2016 [1]	Young adults, aged 18-20 N=679 Canada	Mental health, alcohol dependence, drug use	Problem gambling (at-risk/problem gambling versus non-gambling or non-problem gambling) Canadian Problem Gambling Index	In a multivariate model, adjusting for sociodemographic and other assessed mental disorders: Major depressive disorder, alcohol dependence, and any mental disorder was significantly more likely in at-risk/problem gamblers compared to non-gamblers/non-problem gamblers Any drug use, anxiety disorder was not significantly associated with at-risk/problem gambling PROGRESS Plus: Results are for younger adults
Algren, and others. 2015 [63]	General population aged 16 years or over N=19,673 Denmark	Smoking, alcohol consumption, illicit drug use, physical activity, dietary habits and weight	Problem gambling (yes versus no) Lie/Bet questionnaire	In a multivariate model, adjusting for covariates: Compared to non-problem gamblers, problem gamblers were significantly more likely (past year) to be a daily smoker, be a heavy smoker, exceed drinking limits, be a problem drinker, use cannabis, use other illicit drugs, be sedentary No association with binge drinking (weekly), unhealthy diet and obesity
Andrie, and others. 2019 [150]	School children, aged 14-18 N=13,284	Academic grades, problematic internet use	Problem gambling (at-risk/problem gambling versus non-problem gambling)	In a multivariate model, adjusting for covariates: Compared to non-problem gamblers, at-risk/problem gamblers were significantly more likely to have lower grades and problematic internet use.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Germany, Greece, Iceland, The Netherlands, Poland, Romania and Spain		South Oaks Gambling Screen-Revised for Adolescents	PROGRESS Plus: Results are for school children
Andronicos, and others. 2016 [65]	Male suicide victims who were pathological gamblers (N=49) and living male at-risk/problem gamblers (N=41), aged 20-79 Canada	Gambling South Oaks Gambling Screen DSM-V	Suicide Data from informants (suicide victims) and living controls	Over the life span: Suicide victims met significantly more diagnostic criteria for pathological gambling compared to living gamblers Living gamblers faced more difficulties across their lifespan compared to the suicide victims Last 6 months: Suicide victims had significantly higher pathological gambling compared to living controls PROGRESS Plus: Results are for males
Angus, and others. 2020 [66]	Gamblers, aged 18-79 N=330 Australia	Psychological, financial, employment and education, social, critical, leisure, physical health	Gambling severity (non-problem, low-risk, moderate-risk, problem) Problem Gambling Severity Index	Presence versus not for each harm (bivariate results): Significant differences across gambling severity categories for: psychological, financial, employment and education, social harms (e.g. spending less time with family), critical (e.g. divorce and bankruptcy), leisure (e.g. less money for travel), health.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
April and Weinstock, 2018 [151]	Ex-offenders, aged 18+ N=100 USA	Crime, mental health, physical health .	Lifetime gambling severity (disordered gamblers versus non disordered gamblers) Problem Gambling Severity Index	Significant differences (bivariate analyses): disordered gamblers significantly more likely to perceive gambling linked to crime No significant differences (bivariate analyses): times in jail, times in prison, age at first incarceration, length of longest prison sentence, types of crimes, recidivism, mental or physical health, past 30-day gambling behaviour, money gambled in pat 30 days Lifetime (18%) and past-year (8%) rates of disordered gambling were significantly higher than the general population PROGRESS Plus: Results are for ex-offenders
Barnes, and others. 2015 [68]	General population, aged 18+ N=2,963 USA	Alcohol, tobacco and cannabis use	Any form of gambling in past year (yes versus no) Frequent gambler in past year (yes versus no) Problem gambling (yes versus no) (DSM-IV)	In multivariate models, adjusted for covariates: Past year gambling Significantly associated with past year alcohol use, tobacco use and cannabis use Frequent gambling: Significantly associated with frequent alcohol use, tobacco use and cannabis use Problem gambling: Significantly. associated with alcohol abuse/dependence, tobacco abuse/dependence and cannabis use/dependence

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Barrault, and others. 2017 [69]	Regular online poker players, aged 18-55 N=416 France	Mental health	Gambling (non-problem, low risk, moderate risk, problem) Canadian Problem Gambling Index (French version)	Significant associations between gambling and both anxiety and depression in multivariate analysis
Bischof, and others. 2015 [152]	Pathological gamblers, aged 14-64 N=442 Germany	Number of lifetime DSM-IV gambling criteria, age at onset of first gambling symptom, duration of gambling disorder, recovered from gambling (yes/no)	Suicide (no, ideation, attempt)	In multivariate models, adjusted for covariates: Compared to no events, suicide ideation was significantly associated with (early) age of first gambling symptom but not the other three independent variables Compared to no events, none of the 4 gambling independent variables were associated with suicide attempts Compared to suicide ideation, suicide attempts were significantly associated with the number of lifetime gambling criteria
Bischof, and others. 2016 [71]	Pathological gamblers, aged 14-64 N=442 Germany	Number of lifetime DSM-IV gambling criteria, lifetime amount of money lost to gambling (above/below 100,000 euros)	Suicidal events (ideation and/or attempt [yes versus no])	In multivariate model, adjusted for covariates: Number of lifetime DSM-IV gambling criteria not associated with suicide Suicide was significantly associated with losing more than 100,000 euro to gambling over a lifetime
Black, and others. 2015	Pathological gamblers (N=95),	Pathological gambling	Suicide (none, ideation, attempt)	In multivariate model, adjusting for covariates:

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
[73]	controls (N=91) and first-degree relatives (of gamblers and controls; N=1,075), aged 18+ USA	South Oaks Gambling Scores National Opinion Research Centre DSM Screen for Gambling Problems, DSM-IV, the Family History Research Diagnostic Criteria adapted to include criteria for problem gambling		Suicide attempts were not associated with problem gambling in first-degree relatives Suicide attempts were significantly more likely in off-spring of problem gamblers Suicide attempts/completions were not associated with problem gambling in first-degree relatives Suicide attempts/completions were significantly more likely in off-spring of problem gamblers Suicidality in pathological gamblers is a marker of pathological severity
Black, and others. 2017 [74]	Problem gamblers (N=53), and non-problem gambling controls (N=50), aged 60+ USA	Mental health, alcohol use, drug use, suicide	Problem gambling status (yes versus no)	Bivariate results were: Mental health treatment, psychiatric hospitalisation, depression, any substance use, alcohol use disorder, anxiety, major depression and suicide attempt were significantly more likely among problem gamblers compared to non-problem gamblers No difference between problem gamblers and non-problem gamblers for any drug use and generalised anxiety disorder PROGRESS Plus: Results are for older adults
Blackman, and others. 2019 [153]	Study 1: adults who had gambled in past 6 months, aged 18-101	Wellbeing	Gambling consumption (high versus low)	Study 1: modelled the joint effects of consumption and gambling severity, adjusted for covariates: Personal wellbeing was significantly higher for higher gambling consumption

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	N=1,524 Study 2: general population, aged 18-50 N=1,619 Australia		Problem gambling (no, low-risk, medium-risk, problem) Consumption Screen for Problem Gambling, Problem Gambling Severity Scale	Personal wellbeing declined significantly with increasing gambling problems Therefore: accounting for gambling problems, higher consumption was associated with higher wellbeing Study 2: compared non-problem gamblers with none-gamblers, adjusted for covariates: Wellbeing significantly lower for problem gamblers Wellbeing was significantly lower for non-problem gamblers than low consumption problem gamblers Wellbeing was significantly lower for non-problem gamblers than high consumption problem gamblers The deleterious effect of gambling problems on wellbeing was larger than the effect of consumption
Bonnaire, and others. 2017 [77]	General population, aged 15-85 N=27,653 France	Alcohol use, tobacco use, drug use, physical and mental health, financial harm	Past year problem gambling (yes versus no) Canadian Problem Gambling Index	In multivariate model, adjusting for covariates: For women, problem gambling was: Significantly associated with alcohol use (problem gambling higher in those with alcohol dependence and harmful/hazardous drinkers compared to non-hazardous drinking) Significantly associated with tobacco use (problem gamblers more likely to smoke) Significantly associated with psychological distress (problem gambling higher in those with psychological distress compared to those without)

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Significantly associated with body mass index (problem gambling higher in obese compared to normal weight) Significantly associated with financial difficulties (problem gambling more likely in those with financial difficulties than not) Not associated with cannabis use, lack of sleep (and cocaine use was not entered into the model) For men, problem gambling was: Significantly associated with alcohol use (problem gambling higher in those with alcohol dependence compared to non-hazardous drinking) Significantly associated with tobacco use (problem gamblers more likely to smoke) Significantly associated with psychological distress (problem gambling higher in those with psychological distress compared to those without) Significantly associated with body mass index (problem gambling higher in obese compared to normal weight) Significantly associated with lack of sleep (problem gamblers more likely to experience lack of sleep) Not associated with cannabis use, cocaine use, financial difficulties PROGRESS Plus: Results presented by sex

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Brown, and others. 2016 [154]	Treatment seeking problem gamblers aged 21-74 N=168 Australia	Alcohol use, drug use, psychological distress, work and social adjustment impairment	Problem gambling severity (score) Problem Gambling Severity Index	Problem gamblers without a personality disorder (multivariate model), problem gambling severity was significantly associated with: Drug use Not significantly associated with alcohol use, psychological distress or work and social adjustment impairments Problem gamblers with a personality disorder (multivariate model), problem gambling severity was significantly associated with: Psychological distress Work and social adjustment impairment Not significantly associated with alcohol use or drug use PROGRESS Plus: Results presented by whether or not the gambler had a personality disorder
Browne, and others. 2016 [29]	Problem gamblers (N=3,076) and affected others (N=2,129), aged 18+ Australia	Problem gambling in the 12-month period of their life when the gambling was causing the most problems Problem Gambling Severity Index -	The following harms: financial, work/study, mental health, relationship, other (which included cultural and criminal)	Item response theoretic (IRT) was used to indicate how well an item discriminates between low and high level of harmfulness (values in brackets are the IRT scores): For gamblers; 'bankruptcy' (4.10), 'excluded study' (2.27), 'emergency treatment' (3.63), 'escape' (1.10), 'actual ending' (2.49), and 'children unsupervised' (2.36) were the most severe harms within the financial, work/study, health, emotional/ psychological, relationship, and other domain, respectively

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
		modified for retrospective reporting		For affected others: 'bankruptcy' (3.09), 'lost job' (2.78), 'suicide' (2.83), 'felt like a failure' (1.50), 'neglected responsibilities' (1.72), and 'shame culture' (2.94) were the most severe harms within each of the 6 corresponding domains Hence, 'bankruptcy' was the most severe financial harm for both gamblers and affected others
Buja, and others. 2017 [155]	School students, aged 15-19 N=34,746 Italy	Alcohol use, smoking, cannabis use	Past year problem gambling (score) South Oaks Gambling Screen Revised for Adolescents	In bivariate analyses, problem gambling (by categories) was significantly associated with alcohol, tobacco and cannabis use Multivariate correspondence analysis was used to summarise the relationship between gambling and substance use. Adolescents with no experience of substance use also had no experience of gambling. The SOGS score was closely linked to the risk of substance use PROGRESS Plus: Results are for school children
Buja, and others. 2019 [156]	School students, aged 14-17 N=15,602 Italy	Alcohol use, smoking, cannabis use	Gambling severity (non-gamblers/non-problem versus at-risk/problem)	Bivariate results were: At-risk/problem gambling was significantly positively associated with alcohol use, smoking and cannabis use the in the past year

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
			South Oaks Gambling Screen Revised for Adolescents	Pathway analysis showed that gambling was positively associated with alcohol and cannabis use, irrespective of socioeconomic and demographic characteristics PROGRESS Plus: Results are for school children
Butler, and others. 2020 [81]	General population, aged 18+ N=2,303 Isle of Man	Smoking, alcohol use, diet, physical activity, mental wellbeing, general health	Gambling severity (non-problem, low severity, moderate/high) Problem Gambling Severity Index	In a multivariate model, adjusting for covariates, compared to non-problem gamblers: Low severity gamblers were significantly more likely to be daily smokers, binge drinkers, be a higher risk drinker, report 2 or more health risk behaviours, have poor low mental wellbeing No association with poor diet, physical activity, general health In a multivariate model, adjusting for covariates, compared to non-problem gamblers: Moderate/high severity gamblers were significantly more likely to daily smokers, have poor diet, have low physical activity, report 2 or more health risk behaviours, have low mental wellbeing, report poor general health No association with binge drinking, higher risk drinking
Castrén, and others. 2015 [157]	School children, aged 12-15 N=988 Finland	Alcohol use, smoking, gaming frequency,	Past year problem gambling (at-risk/problem versus not) DSM-IV-Multiple Response-Juvenile	In a multivariate model adjusting for covariates, at-risk/problem gambling was: Not significantly associated with drinking or smoking. Significantly associated with playing video games PROGRESS Plus: Results are for school children

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Castrén et al. 2018 [158]	Gamblers, aged 15-74 N=3,251 Finland	General health, mental health, alcohol use, smoking	Past year gambling expenditure and monthly gambling expenditure as a percentage of net income	In multivariate models, adjusting for covariates: Past year gambling expenditure and monthly expenditure on gambling as a percentage of net income were both: Significantly associated with general health (expenditure was higher in those with poorer health) Significantly associated with risky alcohol consumption (expenditure higher in risky drinkers) Significantly associated with daily smoking (expenditure higher in daily smokers) Not associated with mental health
Chamberlain, and others. 2017 [159]	Gamblers, aged 18-29 N=581 USA	Mental disorders, quality of life	Gambling symptoms Structured Clinical Interview for Gambling Disorder Gambling frequency in last year, money lost on gambling in last year	Three class latent model represented the best fit to the data: recreational gambler, problem gambler and pathological gambler Problem and pathological gamblers showed significantly more occurrence of mainstream mental disorders than recreational gamblers but did not differ significantly from each other on these measures Pathological gamblers lost more money to gambling than both other groups, who did not differ significantly from each other Quality of life was impaired in problem and pathological gamblers versus recreational gamblers Problem gamblers did not differ significantly from pathological gamblers on quality of life

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for younger adults
Ciccarelli, and others. 2016 [160]	Male school students, aged 16-19 Italy	Problem gambler (yes versus no) South Oaks Gambling Screen Revised for Adolescents	Alcohol use	In multivariate models, adjusting for covariates problem alcohol use was significantly higher in problem gamblers PROGRESS Plus: Results are for men PROGRESS Plus: Results are for school children and younger adults
Cicolini, and others. 2018 [161]	Nursing students, mean age 22.6 (SD=7.5) N=1,083 Italy	Depression, anxiety, smoking, alcohol and/or illicit drug use, psychiatric disorders	Problem Gambling (no problems, some problems, pathological gambler) South Oaks Gambling Screen	In multivariate models, adjusting for covariates, only internet addiction was significantly positively associated with problem gambling. In multivariate models, adjusting for covariates, depression, anxiety, psychiatric disorders, smoking, and alcohol and/or illicit drug use were not significantly associated with problem gambling. PROGRESS Plus: Results are younger adults PROGRESS Plus: Results are for nursing students
Cook, and others. 2015 [162]	Students, mean age 14.6 years N=4,851	Alcohol use, cannabis use, psychological distress, suicide attempts, delinquent behaviour	Problem gambling (yes versus no)	In a multivariate model, adjusting for covariates: Cannabis dependency, psychological distress, suicide attempts and delinquent behaviours (e.g. stealing a car, selling drugs etc) were all significantly more likely among problem gamblers Problem gambling was not associated with hazardous alcohol use

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Canada		South Oaks Gambling Screen Revised for Adolescents.	PROGRESS Plus: Results are for school children
Cortina, and others. 2015 [163]	People who completed a survey (population poorly described), aged 18-59 N=769 From the total population, those who received disability benefits were extracted, age not reported N=39 Canada	Drug problems, general health, physical limitations	Problem gambling (non-gambler/non-disordered gambler versus disordered gambler) Canadian Problem Gambling Index	In a multivariate model, adjusting for covariates, for the whole sample, problem gambling was: Significantly associated with having a drug problem in the last 12 months In a multivariate model, adjusting for covariates, for those receiving disability benefits, problem gambling was: Significantly associated with self-rated general health (problem gamblers more likely to rate as fair/poor) and having a physical limitation but not drug problems PROGRESS-Plus: Results are for people receiving disability benefits
Cowlishaw and Kessler, 2016	General population, aged 16+	Alcohol use, drug use, smoking, mental health, physical health, sleep	Problem gambling (no, at-risk, problem)	In a multivariate model, adjusting for covariates, at-risk gambling compared to no problem gambling was:

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
[164]	N=7,043 England	problems, suicide ideation, suicide attempts, financial harms, weight	DSM-IV	Significantly associated with alcohol use problems, being a current smoker, anxiety, panic disorders, fatigue, concentration/memory difficulties, irritability and had to borrow money in the past year, and not all other variables (drug use, depressive episodes, sleep problems, suicidal ideation/attempt and financial difficulties) In a multivariate model, adjusting for covariates, problem gambling compared to no problem gambling was: Significantly associated with illicit drug use problems, anxiety, panic disorders, somatic symptoms, fatigue, concentration/memory difficulties, sleep problems, irritability, suicide ideation in past year, suicide attempts in lifetime, financial difficulties in the past year, and not all other variables (alcohol use, smoking, depressive episodes and borrowing money)
Cowlishaw, and others. 2020 [165]	Firefighters, aged 18+ N=566 Australia	Mental health, alcohol use, drug use, financial harm, , relationship problems, workplace	Gambling problems (no problems versus any problems) Problem Gambling Severity Index	In multivariate models, adjusting for covariates, problem gambling was: Significantly more likely to have depression, anxiety, alcohol problems, be illicit drug users, have high psychological distress and poorer quality of life No association with non-medical use of prescribed drugs, financial circumstances, problem paying money owed, relationship problems, relationship breakdown, low workplace morale

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for firefighters
Cronce, and others. 2017 [166]	Students who had gambled in the past 6 months, aged 17-24 N=1,834 USA	Alcohol use and cannabis use occurring with gambling (i.e. 2 hours preceding or during gambling), financial harms	Gambling quantity (losses) A single item from the Gambling Quantity and Perceived Norms Scale Gambling frequency Single item from the Gambling Quantity and Perceived Norms Scale Problem gambling severity South Oaks Gambling Screen Gambling consequences Gambling Problem Index	In multivariate models, adjusting for confounders: Compared to those who reported using neither substance before or while gambling, those in the alcohol-only, cannabis-only, and alcohol and cannabis groups reported: Greater gambling losses More gambling occasions per month More gambling-related consequences Greater gambling problem severity . Compared to those in the alcohol-only group, those in the alcohol and cannabis group reported: Greater gambling losses More gambling occasions per month More gambling-related consequences No difference in gambling problems Individuals reporting cannabis only before or while gambling were not significantly different to those in the alcohol and cannabis group on any outcome Individuals in the alcohol only before or while gambling were not significantly different to those in the cannabis use only group on any outcome

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for younger adults
Cunha, and others. 2016 [167]	Non-problem gamblers (N=162), some-problem gamblers (N=117), problem gamblers (N=52), mean age 33.58 (SD=10.90) N=331 Portugal	Relationship, mental health	Gambling severity (no problems, some problems, problem gamblers) South Oaks Gambling Screen	Bivariate results were: Significant differences between the three gambling groups for: total scores of family functioning, marital/co-habiting (dyadic) functioning, depression and anxiety No significant difference in total scores for quality of life There were significant differences between some of the individual variable within the overall measures. The pathological gamblers exhibited a greater number of family, marital, and individual difficulties compared to the other 2 groups.
Cunha and Revas, 2015 [87]	Pathological gamblers with a life partner (N=19) and partners of pathological gamblers (N=13), mean age gamblers 40.39 (SD=10.70) and	Relationship, quality of life, mental health	Problem gambler versus partner of a problem gambler	Bivariate results were: Significant differences between problem gamblers and partners of problem gamblers for total scores for relationship (dyadic) functioning and marital satisfaction No significant differences for total scores for family functioning, quality of life, psychopathology

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	partners 43.46 (SD=10.41) Portugal			
Delfabbro, and others. 2020 [90]	Gamblers, aged 18+ N=554 North America (40.4%); the UK (16.1%); Australia (7%) and a variety of other countries (36.5%)	Financial, work/study, mental health, social and other harms: rated in relation to being 'any harm' and 'moderate harm'	Gambling severity (recreational, low-risk, moderate-risk, problem) Problem Gambling Severity Index	Bivariate results were, for both 'any harm' and 'moderate harm: Problem gamblers and moderate-risk gamblers scored significantly higher than the other 2 groups and problem gamblers scored higher than the moderate risk group
Dowling, and others. 2016 [31]	Treatment-seeking gamblers, aged 19+ N=212 Australia	Problem gambling (score) Problem Gambling Severity Index Weekly gambling expenditure, weekly gambling duration,	Financial, psychosocial impacts	Bivariate correlations showed: Financial impacts (e.g. less money for costs of running household) were significantly correlated with problem gambling severity score Increased responsibility impacts (e.g. taking over financial responsibility in the home) were significantly correlated with problem gambling severity score, shorter problem gambling duration, Psychosocial impacts (e.g. feelings of depression,

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
		problem gambling duration		increased arguments etc) were significantly correlated with problem gambling severity score
Dowling, and others. 2018 [168]	General population, aged 18-29 N=4,153 Australia	Problem gambling (non-problem, low risk, moderate risk/problem) Problem Gambling Severity Index	Family violence victimisation and perpetration	In a multivariate model, adjusting for covariates: Family violence victimisation was significantly higher in low risk and moderate risk/problem gamblers than for non-problem gambling Family violence perpetration was significantly higher in low risk and moderate risk/problem gamblers than for non-problem gambling
Dowling, and others. 2019 [92]	Treatment-seeking gamblers, aged 21-74 N=141 Australia	Gambling severity (score) Problem Gambling Severity Index Time spent gambling, gambling frequency, gambling expenditure, gambling-related legal consequences	Family violence victimisation and perpetration	Family violence victimisation (bivariate analyses) was: Significantly associated with gambling-related legal consequences Was not associated with gambling severity score, time spent gambling, gambling frequency and gambling expenditure Family violence perpetration (bivariate analyses) was: Significantly associated gambling severity score and gambling-related legal consequences Was not associated with time spent gambling, gambling frequency and gambling expenditure
Dowling, and others. 2020 [169]	University students, mean age 22.5 (SD=5.5)	Depression, anxiety, loneliness	Problem gambling severity (score)	Bivariate analyses showed (domestic students) Problem gambling score was significantly associated with anxiety Not associated with depression, loneliness

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	N=173 Australia		Gambling severity-Problem Gambling Severity Index	Bivariate analyses showed (international students) Problem gambling score was not associated with anxiety, depression, loneliness PROGRESS Plus: Results are for younger adults
Drummond, and others. 2020 [170]	General population with experience of playing video games, mean age 40 (SD=15.4) N=1,049 Australia, New Zealand and USA	Excessive gaming, mental health risky loot box index, past month spending on loot boxes, past month spending on non-randomised virtual rewards	Problem gambling (score) Problem Gambling Severity Index Loot Box Spending Risky Loot Box Index	Controlling for age and gender: Problem gambling severity was significantly positively correlated with loot box spending Controlling for age and gender: Loot box spending was significantly positively correlated with risky loot box index, negative mood and psychological distress Bivariate analysis: Problem gambling severity was significantly positively associated with spending on non-randomised virtual rewards There was a significant interaction between internet gaming disorder and problem gambling severity index score on loot box spending
Dufour, and others. 2016 [171]	Cocaine users, mean age 40.46 (SD=10.70) N=424	Mental health, alcohol use, drug use	Problem gambling (non-problem versus at-risk) Problem Gambling Severity Index	Bivariate results were: Compared to non-problem gamblers, at-risk gamblers were significantly more likely to have problematic alcohol use and phobic disorder

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Canada			No association between gambling and any affective disorder, generalised anxiety disorder or problem drug use
Eby, and others. 2020 [172]	Working adults who gamble at least weekly, mean age 31.63 (SD=9.85) N=259 USA	Gambling behaviour (score) South Oaks Gambling Scale	Work	Bivariate results were: Gambling behaviour score was significantly positively correlated with strain-based gambling interference with work and strain-based gambling interference with nonwork
Edgren, and others. 2016 [173]	General population, aged 15-28 N=822 Finland	Alcohol use, tobacco use, mental health, loneliness	Past year problem gambling (at-risk/problem gambling versus not) Problem Gambling Severity Index	In a multivariate model, adjusting for covariates for women: At-risk/problem gambling was significantly associated with past year smoking At-risk/problem gambling was not associated with past year risky alcohol use, mental health, or feeling lonely In a multivariate model, adjusting for covariates for men: At-risk/problem gambling was significantly associated with past year risky alcohol consumption At-risk/problem gambling was not associated mental health, past year smoking and loneliness PROGRESS Plus: Results presented by sex

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for younger adults
Ekholm, and others. 2018 [174]	General population, aged 16+ N=14,924 Denmark	Physical and mental health, quality of life, current pain/complaints, stress, weight	Past year problem gambling (current, past, never) Lie/Bet Questionnaire	In a multivariate model, adjusting for covariates compared to never problem gamblers: Current and previous problem gamblers had significantly worse general health, worse mental health and more stress, but no significant difference in physical health A higher proportion of current and previous problem gamblers stated they had a range of health outcomes pain in various areas of the body, headaches, fatigue, sleeping problems, unhappiness, nervousness/apprehension
Ellis, and others. 2018 [93]	Treatment-seeking gamblers, aged 22+ N=88 USA	Gambling disorder (score) DSM-V Problems, minus the questions on illegal behaviour	Self-reported history of illegal behaviour and arrests	In bivariate analyses gamblers' self-reported illegal behaviour and arrests were not significantly associated with mean gambling disorder scores
Ethier et al. 2020 [94]	Gamblers, mean age 36.10 (SD=11.25) years N=562	Gambling severity (score) Gambling severity (no problem versus problem)	Cocaine use (never user, recreational user and problem user)	Bivariate results were: There was a significant positive association between cocaine use and gambling severity (both score and problem versus not problem gambler) The associations between gambling severity (both score and problem versus not problem gambler) and both money and time

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Canada	Problem Gambling Severity Index Past month money spent on gambling, past month time spent on gambling		spent gambling were significant (p<0.05) but not deemed so after Bonferroni correction
Farhat, and others. 2020 [175]	School students aged 14-18 N=2,234 USA	Self-injurious behaviour (self-harm) Problem gambling severity (at-risk/problem versus low-risk) Massachusetts Gambling Screen	Average time gambler per week (1 hour versus more than 1 hour)	In a multivariate model, adjusting for covariates (those who did not engage with self-injurious behaviours): Compared to low risk gamblers, at-risk/problem gamblers were significantly more likely to spend more than 1 hour per week gambling Compared to non-gamblers, at-risk/problem gamblers were significantly more likely to be occasional and regular smokers (compared to never smokers), be moderate and heavy drinkers (but not light drinkers) compared to never drinkers, have ever used drugs (compared to never use drugs), and have dysphoria/depression In a multivariate model, adjusting for covariates (those who engaged with self-injurious behaviours): Compared to low risk gamblers, at-risk/problem gamblers were significantly more likely to spend more than 1 hour per week gambling

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Compared to non-gamblers, at-risk/problem gamblers were significantly more likely to be regular smokers, but not occasional smokers (compared to non-smokers). There was no significant relationship for alcohol use PROGRESS Plus: Results are for school children
Farrell, 2018 [176]	General population, aged 16+ N=6,624 Great Britain	Gambling disorder: (abstainer, social, at risk and pathological; and non-problem, low, moderate or problem gambler [PGSI and score]) Problem Gambling Severity Index and DSM-IV	Wellbeing (happiness; score)	DSM-IV: No significant difference in subjective wellbeing and happiness between abstainers and social gamblers At-risk and pathological gamblers had significantly lower levels of happiness than abstainers DSM-IV score was negatively associated with wellbeing score PGSI: Low-risk, moderate-risk and problem gamblers all had significantly lower levels of wellbeing that non-problem gamblers PGSI score was negatively associated with wellbeing score
Fielder, and others. 2019 [177]	General population, aged 15-75 (France), over 18+ (Canada) and 14-64 years (Germany)	Problem gambling (non-problem, problem and pathological) Problem Gambling Severity Index and DSM-IV	Amount spent on gambling	Spending increases strongly with the severity of gambling problems Problem and pathological gamblers are low in prevalence but account for most of the total spending on gambling (i.e. they account for more of the revenue than their headcount would imply)

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	France N=15,635 Canada N=12,008 Germany N=15,023			
Ford and Håkansson, 2020 [178]	General population, aged 16+ N=2,038 Sweden	Drug use, tobacco use, alcohol use, physical and mental health, weight	Lifetime problem gambling (yes versus no) NORC DSM-IV Screen for Gambling Problems	In a multivariate model, adjusting for covariates: Problem gamblers were more likely to be daily tobacco users, report moderate psychological distress (compared to no distress [but no significant difference between no and high distress]), be problematic shoppers and problematic gamers No association with general physical health, physical activity, body mass index, drug use, mental health, hazardous alcohol use or problematic internet use
Forrest and McHale, 2018 [179]	General population, aged 20+ N=2,125 UK	Smoking, alcohol use, cannabis use, drug use	Gambling regularity (weekly versus less than weekly) Gambling severity (moderate/problem gambler versus not)	In a multivariate model, adjusting for covariates (women): Weekly gamblers were significantly more likely to be daily smokers No association with alcohol, cannabis and illegal drug use In a multivariate model, adjusting for covariates (men): Weekly gamblers were significantly more likely to be daily smokers and risky drinkers

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
			Problem Gambling Severity Index	No association with cannabis use PROGRESS Plus: Results presented by sex
Foster, and others. 2015 [95]	Students in grades 9 to 12 who had gambled in the past year, N=1,988 USA	Alcohol use, cannabis use, smoking and 'other drugs'	Gambling severity (recreational versus at-risk/problem) DSM-IV	Gambling (separately for on and off school grounds), bivariate analyses showed: At-risk/problem gamblers were significantly more likely to have used an 'other drug' compared to recreational gamblers Gambling severity was not associated with alcohol or cannabis use or smoking PROGRESS Plus: Results are for school children
Gainsbury, and others. 2019 [180]	Online gamblers, aged 18-35 N=998 Australia	Problem gambling severity (score) Problem Gambling Severity Index	Psychological distress Gambling frequency (not in the last 4 weeks, at least once in the last 4 weeks, at least once per week, at least once per day) Note; here we have used gambling frequency as both a harm and an outcome (the study	Bivariate results were: Problem gambling severity scores were significantly positively correlated with the online gambling frequency Frequency of participation in each gambling activity and modality was associated with greater problem psychological distress. PROGRESS Plus: Results are for younger adults

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
			considers multiple associations)	
Gallaway, and others. 2019 [181]	Members of the Army National Guard, aged 18+ N=1,543 USA	Depression, smoking, alcohol use, legal problems, financial problems, general health, body pain	Potential problematic gambling (yes versus no) National Opinion Research Centre Diagnostic Screen	In a multivariate model, adjusted for covariates: A significantly higher proportion of potentially problematic gamblers had minor depression (compared to minimal symptoms). There was no significant differences for moderate or severe depression (compared to minimal symptoms) A significantly higher proportion of potentially problematic gamblers had alcohol dependence (compared to none/normal alcohol use) A significantly higher proportion of potentially problematic gamblers had past year legal problems (compared to none) Potentially problematic gamblers had significantly higher scores for general health and bodily pain No difference for current smoking, alcohol abuse, or past year financial problems PROGRESS Plus: Results are for military personnel
Gill, and others. 2016 [182]	Cree communities (Quebec), mean age 44 (SD=0.7) years N=455	Mental disorders, relationship harms, violence, smoking, alcohol dependence, substance abuse/dependence,	Gambling severity (non-gamblers, no/low-risk-moderate/high-risk) Canadian Problem Gambling Index	Bivariate results comparing the three gambling groups were: Gambling severity was significantly associated with depression, relationship problems with spouse, problems with others, controlling violent behaviour, serious anxiety, any mood disorder, current smoking, alcohol dependence, any substance abuse/dependence, amount of money spent on alcohol and amount of money spent on drugs, ever received treatment for

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Canada	employment harms, legal harms		drug abuse, and the following addiction severity index scores: alcohol, drug, psychiatric Gambling severity was not associated with relationship problems with family, any anxiety disorder, and the following addiction severity index scores: medical, employment, legal, social Multivariate models for the association between gambling severity and substance use and psychopathology in the past 30 days: Moderate/high risk gambling was significantly associated with alcohol problems, depressive symptoms and severity of psychiatric problems Multivariate models for the association between gambling severity and substance use and psychopathology ever: Moderate/high risk gambling was associated with alcohol/drug abuse but not psychopathology PROGRESS Plus: Results are for an indigenous group
Giotakos, and others. 2016 [183]	Military personnel, mean age 32.3 (SD=8.33) N=789	Alcohol use, cannabis use, substance use, heroin or cocaine use, suicide ideation, suicide attempt, internet	Internet gambling (yes versus no)	In a multivariate model, adjusting for covariates: Internet gambling was significantly more likely in those who reported general substance use, cocaine or heroin use, suicide attempts and cyber-sexual engagement Internet gambling was not associated with alcohol or cannabis use and suicide ideation

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Greece	addiction, cyber-sexual engagement		PROGRESS Plus: Results are for military personnel
Gonzalez-Cabrera, and others. 2020 [184]	School students aged 11-19 years N=883 Spain	Internet gaming disorder, internet use, nomophobia, depression, anxiety and stress	Online gambling disorder (score) Online Gambling Diagnostic Questionnaire	Bivariate results were: Online gambling disorder was significantly positively correlated with internet gaming disorder, problematic internet use, depression, anxiety and stress PROGRESS Plus: Results are for school children
Gori, and others. 2015 [185]	School children who reported past year gambling, aged 15-19 N=5,920 Italy	Substance use, drinking, breaking rules, school grades, self esteem	Gambling problems (no problems, at-risk, problem) South Oaks Gambling Scale- Revised for Adolescents	In multivariate models, adjusting for covariates; Girls: compared to no problem gambling: At-risk gamblers were significantly more likely to have lower school grades, higher episodic drinking and more likely to break rules. No difference between at-risk and no problem gamblers for substance use and self esteem Girls: compared to no problem gambling: Problem gamblers were significantly more likely to break the rules. No difference between problem and no problem gamblers for school grades, drinking, self-esteem Boys: compared to no problem gambling: At-risk gamblers were significantly more likely to have higher episodic drinking, break the rules and lower grades. No significant

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				difference between at-risk and no problem gamblers for substance use and self-esteem Boys: compared to no problem gambling: Problem gamblers were significantly more likely to have higher episodic drinking and break the rules. No difference between problem and no problem gamblers for school grades and self-esteem PROGRESS Plus: Results are presented by sex PROGRESS Plus: Results are for school children
Gorsane, and others. 2017 [186]	Problem gamblers, aged 18-65 N=372 France	Gambling problems (score) South Oaks Gambling Scale	Gambling disorder-related illegal acts	In a multivariate model, adjusting for covariates: Gamblers with higher problem gambling scores were significantly more likely to commit gambling-disorder-related illegal acts
Granero, and others. 2018 [187]	Treatment seeking women, mean age 49.64 (SD=12.37) N=280	Psychopathology	Gambling disorder DSM-IV and the South Oaks Gambling Screen	Clustering component analysis identified 3 clusters: Highly dysfunctional: N=82 (29.3%) endorsed the highest levels in gambling severity and comorbid psychopathology. Dysfunctional: N=142 (50.7%) achieved medium mean scores in gambling severity and psychopathological symptoms

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Spain			Functional: N=56 (20.0%) obtained the lowest mean scores in gambling severity and in psychopathology PROGRESS Plus: Results are for women
Granero, and others. 2020 [188]	General population (N=361) and treatment-seeking gamblers (N=47), aged 50+ Spain	Psychological state, debts due to gambling activity	Problematic and disordered gambling (score) South Oaks Gambling Screen	Bivariate results (adjusted for sex and age) were: Problem gambling score was significantly positively correlated with higher gambling debts and worse psychological state PROGRESS Plus: Results are for older adults
Grant, and others. 2017 [189]	People with gambling disorder, mean age 44.4 (SD=13.3) N=574 USA	Depression, anxiety, quality of life, smoking	Gambling disorder (mild, moderate and severe) Structured Clinical Interview for Gambling Disorder	Bivariate results showed that depression, anxiety, quality of life and tobacco use varied significantly according to gambling disorder classification. Post hoc tests showed these differences were mainly between mild and moderate and mild and severe and not between moderate and severe.
Grant, and others. 2019 [190]	University students, age not reported	Drug and alcohol use, physical and mental health	Gambling disorder (disorder, subsyndromal and no problems)	Bivariate results showed that: Illicit drug use (lifetime), past month cocaine, heroin, hallucinogen, prescription pain medication, nicotine (lifetime), e-

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	N=3,421 USA		DSM-IV	cigarettes (lifetime), problematic alcohol use, problematic drug use, and anxiety were all significantly associated with level of gambling disorder Past month amphetamine and cannabis use, health rating, and self-esteem were not associated with level of gambling disorder PROGRESS Plus: Results are for younger adults
Håkansson, 2020 [191]	General population, aged 18+ N=1,986 Sweden	Psychological distress, alcohol use	Change in gambling during the coronavirus (COVID-19) pandemic (increase, no change, decrease)	Bivariate results were: Increase in gambling was significantly associated with higher alcohol use and psychological distress
Håkansson et al. 2020 [192]	People who engage in exercise as least three times per week, aged 15+ N=3,088 Sweden	Mental health, drug use, smoking	Lifetime problem gambling (yes versus no) Problem gamblers vs remaining respondents Lie/Bet questionnaire	In a multivariate model, adjusting for covariates: Problem gambling was significantly more likely in those who were hazardous drinkers No significant association with depression, anxiety, treatment for phycological distress, use of cannabis, cocaine, amphetamine, opioids, stimulant medications, or anabolic androgenic steroids, smoking

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Håkansson, 2020 [103]	General population, aged 18+ N=20,750 Sweden	Extent and frequency of gambling involvement, intensity of gambling involvement per occasion	Loans (defaulted versus paid pack) Loans (defaulted/defaulted and paid pack versus not defaulted/not defaulted and paid back)	Bivariate results showed that in general, sums and frequency of gambling deposits or withdrawals did not predict failure to pay back loans
Håkansson and Widinghoff, 2020 [102]	Online gamblers, aged 18+ N=1,004 Sweden	Financial harm, mental health, alcohol problems, drug problems Problem gambling severity (yes versus no and score)	Problem gambling severity (yes versus no and score) Problem Gambling Severity Index Over-indebtedness	1. In a multivariate model, adjusting for covariates: Problem gambling was significantly more likely for those experiencing psychological distress and those who lost more money due to gambling No association with drug and alcohol use 2. In a multivariate model, adjusting for covariates: Over-indebtedness was significantly more likely for those with higher problem gambling scores
Hammond, and others. 2019 [193]	General population, aged 18+ N=43,093 USA	Alcohol use/abuse/dependence, drug use/disorders, nicotine abuse/dependence, mental health	Problem gambling severity (non-gambling/low frequency, low-risk, at-risk, problem) DSM-IV	In multivariate models, adjusting for covariates: Cannabis users, compared to non-gambling/low risk: Low-risk gamblers significantly more likely to experience anxiety, any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				At-risk gamblers significantly more likely to experience anxiety, any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence Problem gamblers significantly more likely to experience anxiety, any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence Non cannabis users, compared to non-gambling/low risk: Low-risk gamblers significantly more likely to experience any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence At-risk gamblers significantly more likely to experience depression, any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence Problem gamblers significantly more likely to experience depression, anxiety, any substance use disorder, alcohol abuse/dependence, nicotine abuse/dependence Interactions between gambling severity and cannabis use were tested, compared to non-gambling/low risk: Low-risk gamblers: interactions were observed for alcohol At-risk gamblers: interactions were observed for any substance use disorder and nicotine abuse/dependence Problem gamblers: interactions were observed for major depression

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Harris, and others. 2017 [194]	Army veterans, aged 18+ N=1,356 USA	Gambling Single question: have you gambled with money you could not afford to lose?	Homelessness in the past year (no homelessness, less than 1 month, 2-6 months, 6-12 months)	In multivariate models, adjusting for covariates, gambling was significantly higher in all homelessness groups compared to no homelessness PROGRESS Plus: Results are for army veterans PROGRESS Plus: The study is about homelessness
Haydock, and others. 2015 [195]	People attending mental health services, aged 18-64 N=442 Australia	Alcohol, smoking, drug use, education/work, physical health, financial harm, homelessness, crime, weight, suicide	Past year problem gambling (no problems, low-risk, moderate-risk/problem gambling) Canadian Problem Gambling Index	In a number of multivariate models, adjusting for covariates: Gambling severity was significantly positively associated with past year median number of drinks, cannabis and other drug use, lifetime alcohol use and having pawned or sold something Gambling severity was not associated with lifetime cannabis, other drugs and nicotine dependence, lifetime major depression, suicide, physical health, body mass index, having difficulties paying bills, going without meals, seeking financial assistance, homelessness, arrests, social functioning (e.g. reduced contact with family) PROGRESS PLUS: The results are for people attending mental health services
Hing, and others. 2016 [196]	Professional gamblers (N=57), semi-professional gamblers (N=311), amateur	Relationship harms, work and study harms, financial harms, crime	Gambling status (problem professional/semi-professional gamblers	In bivariate results showed all harms were significantly related to gambling status. Compared to amateur gamblers, professional/semi-professional problem gamblers were significantly more likely to say that gambling had: Caused arguments in the family

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	gamblers (N=4,226), aged 18+ Australia		versus problem amateur gamblers) Self-reported status	Led to incidents of domestic abuse within the household Led to other incidents of abuse involving family, friends or others Led to the breakup of an important relationship in my life, or separation or divorce Caused lost time from work or study Resulted in borrowing from someone and not paid it back Resulted in having no money to pay rent or mortgage Caused me to be declared bankrupt Led to the sale, repossession or eviction from home Led do the loss of superannuation, investments or savings Led to being in trouble with the police Led to having appeared in court for gambling-related charges
Hodgins, and others. 2016 [197]	University students, aged 17-49 N=301 Canada	Alcohol use	Gambling involvement (score) Summation of number of times/a range of gambling activities	Canonical correlation analysis showed that drinking and gambling were linked through a factor of general problematic involvement: students who drank more, experienced more negative consequences PROGRESS Plus: The results are for younger to middle aged adults
Husky, and others. 2015 [198]	General population, aged 15-85 N=27,653	Suicide, mental health	Past year problem gambling (no risk, moderate-risk and problem gambling)	For women, in a multivariate model, adjusting for covariates, compared to 'other' gamblers, moderate-risk gambling was: Significantly associated with suicide plan and suicide attempt Not associated with psychological distress or suicide ideation For women, in a multivariate model, adjusting for covariates, compared to 'other' gamblers, problem gambling was:

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	France		Canadian Problem Gambling Index Problem Gambling Severity Index	Significantly associated with psychological distress and suicide ideation Not associated with suicide plan or attempt For men, in a multivariate model, adjusting for covariates, compared to 'other' gamblers, moderate-risk gambling was: Significantly associated with psychological distress Not associated with suicide ideation, plan or attempt For men, in a multivariate model, adjusting for covariates, compared to 'other' gamblers, problem gambling was: Significantly associated with psychological distress and suicide ideation Not associated with suicide plan or attempt PROGRESS Plus: Results are presented by sex
Jauregui, and others. 2020 [199]	School and college students, aged 12-30 N=1,099 Spain	Wellbeing, drug use, alcohol use, excessive spending, video-game addiction	Problem gambling (non-problem, at-risk, problem) South Oaks Gambling Screen-Revised for Adolescents	Bivariate results were: Problem gambling status was significantly positively associated with negative mood (current), drug addiction, alcohol addiction, excessive spending and video game addiction. Problem gambling status was not associated with positive mood or negative mood in the past 2 weeks and positive mood (current) PROGRESS Plus: Results are for younger adults

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Jeffrey, and others. 2019 [200]	Gamblers and spouses, aged 18-89 N=5,036 Australia and New Zealand	Financial, work/study, mental and physical health, relationship, social	Gambler versus spouse	In bivariate analyses (controlling for gender and level of gambling problems), spouses were significantly more likely than gamblers to report the following harms: Late payment of bills Reduced performance at work or study (i.e. due to tiredness or distraction) Loss of sleep due to stress or worry about gambling or gambling-related problems Stress related health problems (e.g. high blood pressure, headaches) Felt distressed about [their] gambling Thoughts of running away or escape Feelings of hopelessness about [their] gambling Felt insecure or vulnerable Feelings of extreme distress While gamblers were significantly more likely than spouses to report the following harms: Increased credit card debt Reduction of savings Reduction available spending money Late for work or study Excluded from study Used my work or study time to attend issues caused by [my] gambling

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Loss of sleep Increased consumption of alcohol Reduced physical activity Attempted suicide Neglected hygiene and self-care Felt worthless Felt shame Felt like a failure Note: harms where there was no significant difference between spouses and gamblers are not reported due to the number
John, and others. 2019 [201]	General population, aged 16+ N=6,941 England	Problem gambling (non-gamblers, at-risk gamblers and problem gamblers) DSM-IV	Suicidal thoughts, self-harm, non-suicidal self-harm, suicide attempts	In multivariate models, adjusted for covariates, compared to non-gamblers: At-risk gambling was not associated with lifetime suicidal thoughts, lifetime self-harm, lifetime non-suicidal self-harm or suicide attempts Problem gambling was associated with increased likelihood of suicide attempts Problem gambling was not associated with lifetime suicidal thoughts, lifetime self-harm, lifetime non-suicidal self-harm
Kairouz, and others. 2018 [202]	University students, aged 17-51 N=2,139	Alcohol and drug use, smoking, wellbeing	Problem gambling (non-problem, low-risk, moderate-risk, problem) Canadian Problem Gambling Index	Latent class analysis identified 4 classes: Class 1 (30.1% of the sample) included non-gamblers with low probabilities of substance use

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Canada			Class 2 (11.2% of the sample) grouped non-gamblers with high-risk patterns of alcohol consumption (increased volume and/or frequency) Class 3 (36.4% of the sample) included gamblers who are low-risk substance users Class 4 (22.3% of the sample) reported risky patterns of gambling and substance-using behaviours
Kalkan, 2017 [203]	University students, aged 18-69 N=222 USA	Online gambling (score) Adapted version of the Gambling Symptom Assessment Scale	Depression, quality of life	In a multivariate model, adjusting for covariates: Online gambling score did not predict depression Online gambling score did not predict quality of life
Kerber, and others. 2015 [106]	Recovering pathological gamblers, aged 55-83 N=40 USA	Physical and mental health, alcohol dependence, drug use disorder work, relationship, financial	Gambling problems (score) South Oaks Gambling Screen	Bivariate results showed that problem gambling scores were: Significantly higher for those who said gambling caused depression, had been fired from a job due to gambling and had gambling debt Not different for general health, alcohol dependence, treated for substance disorder, gambling bothered others, missed work to gamble, divorced due to gambling, still owe debt, amount of money lost in single day

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Khazaal, and others. 2017 [204]	Internet gamblers, aged 18+ N=372 Switzerland	Mental health and wellbeing	Problem gambling (score) Problem Gambling Severity Index	Latent class analysis identified three clusters: Cluster 1: lonely indebted gamblers (6.5%), Cluster 2: not lonely not indebted gamblers (75.4%), Cluster 3: not lonely indebted gamblers (18.0%) Participants in clusters 1 and 3 were at highest risk of problem gambling
Kim, and others. 2016 [205]	General population, aged 15+ N=1,546 Canada	Problem gambling severity Problem Gambling Severity Index Weekly alcohol consumption (as a mediator)	Past 12-month suicide ideation	Adjusted bivariate analyses: Problem gambling severity was significantly positively associated with suicide ideation (and also after controlling for alcohol consumption) There was a significant interaction between gambling severity and alcohol consumption on suicide ideation: the odds of suicidal ideation were greatest among problem gamblers who frequently consumed alcohol
Kong, and others. 2016 [206]	General population, aged 18+ N=43,093 USA	Mental health, alcohol and drug use disorders, smoking	Problem gambling (non-gambling/low frequency gambling, low-risk gambling, at-risk/problem/pathological) DSM-IV	In a multivariate model adjusting for covariates, for American Indian/Alaskan Native, compared to no-gambling/low frequency: Axis I disorder, any mood disorder, major depression, generalised anxiety disorder, substance abuse/dependence, alcohol abuse/dependence and nicotine dependence were significantly higher among low-risk gamblers, while dysthymia was significantly lower among low-risk gamblers

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				In a multivariate model adjusting for covariates, for American Indian/Alaskan Native, compared to none-gambling/low frequency: Axis I disorder, hypomania, generalised anxiety disorder, substance abuse/dependence, alcohol abuse/dependence, drug abuse/dependence and nicotine dependence were significantly higher among at-risk/problem/pathological gamblers In a multivariate model adjusting for covariates, for Caucasian/white, compared to none-gambling/low frequency: Axis I disorder, any mood disorder, dysthymia, mania, hypomania, generalised anxiety disorder, substance abuse/dependence, alcohol abuse/dependence, drug abuse/dependence and nicotine dependence were significantly higher among low-risk gamblers Axis I disorder, any mood disorder, major depression, dysthymia, mania, hypomania, generalised anxiety disorder, substance abuse/dependence, alcohol abuse/dependence, drug abuse/dependence and nicotine dependence were significantly higher among at-risk/problem/pathological gamblers Comparing low-risk to no-gambling, there were significant interactions between race and gambling severity for any Axis I disorder, major depression, hypomania, generalised anxiety disorder, substance abuse/dependence and nicotine dependence

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Comparing risk/problem/pathological gamblers there were significant interactions between race and gambling severity for any Axis I disorder PROGRESS Plus: Results are presented by ethnicity
Latvala, and others. 2018 [207]	General population, aged 18-29 N=831 Finland	School grade, alcohol use, smoking, mental health	Gambling frequency (weekly, less than weekly) Problem gambling severity (at-risk/problem gambles versus not) Problem Gambling Severity Index	In a multivariate model, adjusting for covariates, for women, weekly gambling was: Significantly more likely among those who smoked Was not associated with school grade, risky alcohol use or mental health In a multivariate model, adjusting for covariates, for women, at-risk/problem gambling was: Significantly more likely among those with low/average school grades (compared to high grades) and those with moderate or poor mental health (compared to good) Was not associated with smoking or risky alcohol use In a multivariate model, adjusting for covariates, for men, weekly gambling was: Significantly more likely among those with low/average school grades (compared to high grades), those who smoked and those with risk alcohol use Was not associated with mental health

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				In a multivariate model, adjusting for covariates, for men, at-risk/problem gambling was: Significantly more likely among those with risky alcohol use and those with moderate or poor mental health (compared to good) Was not associated with school grade or smoking PROGRESS Plus: Results are presented by sex
Laursen, and others. 2016 [208]	General population, aged 16+ N=18,625 Denmark	Crime	Problem gambler (yes versus no) Lie/Bet Questionnaire	In a multivariate model, adjusting for covariates; Problem gamblers were significantly more likely to be charged for all individual crimes, any crime and the subset of crimes (drugs, violent/sexual, weapon-related and economic)
Lehmann, and others. 2015 [209]	School students, aged 15-18 N=3,134 Switzerland	Alcohol, tobacco and cannabis use hypomania, internet addiction	Problem gambling (non-gamblers, non-problem, problem) South Oaks Gambling Screen Revised for Adolescents	In a multivariate model, adjusting for confounders, compared to non-gamblers: Non-problem gamblers were significantly more likely to be alcohol misusers Non-problem gamblers were significantly less likely to have problematic internet use No association with tobacco and cannabis use In a multivariate model, adjusting for confounders, compared to non-gamblers:

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Problem gamblers were significantly more likely to be alcohol misusers, use cannabis and have problematic internet use No association with tobacco use PROGRESS Plus: Results are for younger adults
Li, and others. 2017 [210]	Gamblers who had experienced harm (N=3,076) and affected others who had experienced harm (N=2,129), mean ages 46.0 (SD not reported) (gamblers) and 45.8 (affected others) (SD not reported) Country not reported	Problem gambling (score) Problem Gambling Severity Index	Financial, work/study, mental and physical health, emotional/psychological, relationship, other (included crime and cultural)	The relationship between PGSI scores of gamblers about their own gambling and about affected others about others gambling showed (harms are for the 12 months of life when the gambler had caused the most problems): Financial harms: bankruptcy was the most severe financial harm for both gamblers and affected others Work/study harms: being excluded from study, losing one's job, and conflict at work were the most severe work/study harms for both gamblers and affected others Health harms: attempted suicide, requiring emergency treatment, and self-harm were the most severe health harms among both gamblers and affected others Emotional/psychological harms: feelings of failure, worthlessness, escaping, extreme distress and vulnerability were the most extreme emotional/psychological harms for both gamblers and affected others Relationship harms: experiencing greater relationship conflict was the most severe relationship harm for both gamblers and affected others

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Other harms: feeling compelled to commit a crime, not intending to pay back money, and taking money without asking first were most reliably associated with the PGSI among gamblers. This was also the case for affected others, among whom having experiences with violence and neglecting the needs of children were also more strongly associated with the PGSI score
Lind, and others. 2018 [110]	Treatment-seeking problem gamblers, mean age 34.83 (SD=11.64) N=1,573 Finland	Years suffered from gambling problems, perception of financial situation (as proxies for gambling severity) Questions included in diagnostic tool	Past year self-reported stealing or cheating to finance gambling (yes versus no	In a multivariate model, adjusting for covariates: Stealing and cheating was significantly less likely in those who had a good or bad but under control financial situation compared to those with a bad and not under control financial situation Stealing and cheating was significantly less likely for those who had been problem gamblers for less than 3 years compared to those who had been problem gamblers for more than 10 years (there was no difference between 3-5 and 6-10 compared to more than 10)
Lind, and others. 2019 [111]	Prisoners, aged 18+ N=96 Finland	Alcohol use, smoking, drug use, crime	Pre-conviction gambling problem (yes versus no) Brief Biosocial Gambling Screen	Bivariate results were: Pre-conviction problem gambling was significantly more likely among those with a previous sentence and those whose sentence related to gambling Pre-conviction problem gambling was no associated with alcohol use, smoking or drug use PROGRESS Plus: Results are for prisoners

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Lister, and others. 2015 [112]	Problem and pathological gamblers, aged 18-80 N=150 Canada	Lifetime gambling severity (score), past year gambling severity (score) National Opinion Research Centre DSM Screen for Gambling Problems	Current mood disorder (yes versus no)	Bivariate results were: Mean scores for lifetime and past year gambling severity were both significantly higher among those with mood disorders compared to those without mood disorder In a multivariate model, adjusting for covariates: Mean past year gambling severity score was not associated with mood disorder (lifetime gambling severity was not entered into the model)
Lloyd, and others. 2016 [113]	Online gamblers, mean age 35.5 (SD=11.8) N=4,125 Multiple countries	Problem gambling DSM-IV	Thoughts of self-harm related to gambling (yes versus no) Acts of self-harm related to gambling (yes versus no)	In a multivariate model, adjusting for covariates: Thoughts of self-harm related to gambling were significantly more likely among problem gamblers Acts of self-harm related to gambling were significantly more likely among problem gamblers
Loo, and others. 2016 [211]	Students aged 18-35 N=86 Australia	Physical health, psychological health social relationships	Problem gambling (no pathological gambling, at-risk gambling, pathological gambling South Oaks Gambling Screen Gambling urges	In path analysis: problem gambling status was a significant predictor of quality of life In bivariate analysis for Australia: There were no significant differences in mean scores for physical health, psychological health and social relationships according to gambling category PROGRESS Plus: Results are for younger adults

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Machart, and others. 2020 [114]	Patients at psychiatric clinics at homeless hostels, age not reported N=2,388 Australia	Anxiety/depression, substance use disorder, financial management order	Homelessness (associated with gambling versus not associated with gambling)	In a multivariate model, adjusting for covariates: A significant relationship between problem gambling and financial management orders No significant association between problem gambling and anxiety/depression and substance use disorder. PROGRESS Plus: Results are for patients at psychiatric clinics PROGRESS Plus: The study is about homelessness
Mallorqui-Bague, and others. 2018 [212]	Patients with gambling disorder, age not reported N=249 Spain	Gambling severity DSM-IV	Suicide ideation	Pathway analysis showed that worse gambling disorder severity indirectly increased the risk for suicidal ideation through the psychopathological state
Mann, and others. 2017 [213]	Treatment-seeking male pathological gamblers (N=515) and healthy controls (N=269), mean age gamblers 38	Negative consequences; separation, loss of friends, financial problems/debts, unemployment, psychosomatic problems,	Gambling severity (score) South Oaks Gambling Screen	Bivariate correlations showed: Gambling severity was significantly positively associated with separation, loss of friends, financial problems/debts, unemployment, psychosomatic problems Gambling severity was not associated with guilt/depression, criminal case, social withdrawal, suicide attempts PROGRESS Plus: Results are for men

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	(SD=10), controls 35 (SD=9) Germany	guilt/depression, criminal case, social withdrawal, suicide attempts		
Manning, and others. 2017 [214]	Patients from outpatient mental health services, aged 18+ N=837 Australia	Anxiety, depression, alcohol use disorder, drug use disorder, tobacco use	Gambling severity (non-problem, low-risk, moderate-risk, problem) Problem Gambling Severity Index	In bivariate analyses (controlling for gender), compared to non-problem gambler: Low-risk gamblers were not significantly different for anxiety, depression, alcohol use disorder or drug use disorder (tobacco use not tested) Moderate-risk gamblers were not significantly different for anxiety, depression, alcohol use disorder or drug use disorder (tobacco use not tested) Problem gamblers were significantly more likely to have drug use disorder Problem gamblers were not different for alcohol use disorder, anxiety, depression (tobacco use not tested) In bivariate analyses comparing the 4 levels of gambling severity (but non-problem group also includes non-gambler): Significant difference for nicotine dependence and drug dependence (both more likely with increasing gambling severity) No significant difference for hazardous drinking PROGRESS Plus: Results are for outpatients at mental health clinics

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
May-Chalal, and others. 2017 [215]	Prisoners, aged 18+ N=1,057 England and Scotland	Substance use, offending behaviour	Gambling behaviour (non-gambler, non-problem gambler, low threshold, medium threshold, problem threshold) Problem Gambling Severity Index	Latent class analysis results: Cluster 1: abstainers/non-problem gamblers (71.0%): did not gamble, did not experience adverse consequences or health problems. Most common types of crimes leading to conviction: 1) violence/firearms/weapons, 2) possession/supply/importation of drugs, 3) theft. Last year drug use was 43.5%. Cluster 2: occasional excitement chasers, claiming to be rarely affected (10.5%): occasionally spent more than they could afford, did not borrow money to gamble, and not affected by adverse consequences. Would score low or medium risk on the PGSI. Most common types of crimes leading to conviction: 1) violence/firearms/weapons, 2) possession/supply/importation of drugs, 3) theft. Last year drug use was 59.5%. Cluster 3: occasional loss chaser agreeing they were sometimes affected by adverse consequences (9.3%): gambled when could not afford to on more frequent basis, not likely to borrow money to gamble, occasionally affected by adverse consequences of gambling. Medium or problem gamble on PGSI. Most common types of crimes leading to conviction: 1) violence/firearms/weapons, 2) other/public order, 3) theft. Last year drug use was 54.1%.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Cluster 4: occasional loss chasers, more seriously affected by adverse consequences (5.0%): all were classified as problem gamblers, and all were likely to be affected at least sometimes by adverse consequences of gambling. Most common types of crimes leading to conviction:1) violence/firearms/weapons, 2) theft, 3) possession/supply/importation of drugs. Last year drug use was 61.5%.
				Cluster 5: unassertive gamblers (2.2%): gambled with few problems but occasionally felt guilty about their gambling behaviour. Most common types of crimes leading to conviction:1) theft, 2) violence/firearms/weapons, 2) theft, 3) burglary. Last year drug use was 25.0%.
				Cluster 6: frequent loss chasers seriously affected by adverse consequences (2.0%): likely to experience adverse consequences of gambling; all met the threshold for problem gambling. Most common types of crimes leading to conviction:1) possession/supply/importation of drugs, 2) theft, 3) fraud and forgery. Last year drug use was 38.1%.
				Gambling behaviour and crime may be indirectly connected through impulse control
				PROGRESS Plus: Results are for prisoners

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Medeiros, and others. 2016 [216]	Gamblers, aged 18-29 N=143 USA	Number of DSM-V gambling disorder criteria Gambling severity (score) Pathological Gambling Yale-Brown Obsessive-Compulsive Scale Money lost gambling, average gambling frequency	Anxiety	In multivariate model, adjusting for covariates Anxiety was significantly positively correlated with number of DSM-V criteria and gambling severity Anxiety was not associated with money lost gambling, average gambling frequency
Miguez and Becona, 2015 [116]	School children aged 11-16 N=1,447 Spain	Tobacco, alcohol use, cannabis use	Problem gambling (score) South Oaks Gambling Screen Revised for Adolescents	In a multivariate model: Problem gambling was significantly positively associated with weekly beer consumption, weekly wine consumption and number of daily cigarettes PROGRESS Plus: Results are for school children
Moghaddam, and others. 2015 [217]	General population, aged 18+	Shoplifting, stealing, failure to pay debt, scamming for money, homelessness, quitting	Lifetime pathological gambling (non-gambler, low-risk, at-risk, problem, pathological)	In a multivariate model, adjusting for covariates: Compared to non-gamblers, shoplifting, stealing, not paying off debts, scamming for money, homelessness, quitting a job, fighting, arrest and vehicular endangerment were more likely

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	N=42,038 USA	a job, sexual coercion, fighting, arrest possibility, vehicular endangerment	Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version	among low-risk, at-risk, problem and pathological gamblers (in general adjusted odds ratios increased with increasing gambling severity) There was no association between sexual coercion and gambling.
Moghaddam, and others. 2015 [218]	General population, aged 18+ N=13,578 USA	Lifetime gambling severity (non-gambler, low-risk, at-risk, problem and pathological) Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version	Suicide ideation, suicide attempts	In a multivariate model, adjusting for covariates: Compared to non-gamblers, suicide ideation was significantly more likely among problem and pathological gamblers The prevalence of suicide ideation was the same for non-gamblers, low-risk and at-risk gamblers. Compared to non-gamblers, suicide attempts was significantly more likely among problem and pathological gamblers The prevalence of suicide attempts was the same for non-gamblers, low-risk and at-risk gamblers
Mondolfi, 2018 [219]	Current gamblers, aged 21-65 years N=214 USA	Gambling severity (non-gambler, at-risk, problem, pathological) South Oaks Gambling Screen	Shame	Bivariate results were: Shame is significantly positively correlated with gambling severity

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Nower, and others. 2014 [220]	Homeless people, mean age 41.3 (SD=10.4) years N=275 USA	Mental health, alcohol use, drug use, nicotine use, any substance use	Gambling severity (non-gambler, non-problem, problem) South Oaks Gambling Screen	In a multivariate model, adjusting for covariates: Compared to non-gamblers, non-problem gamblers were significantly more likely to report major depression and generalised anxiety disorder. No significant differences in any substance use There were no significant differences for depression, anxiety and suicidal ideation. Compared to non-gamblers, problem gamblers were significantly more likely to report nicotine abuse/dependency, alcohol abuse/dependency, any use of drugs, drug abuse/dependency. There were no significant differences for depression, anxiety and suicidal ideation. Compared to non-problem gamblers, problem gamblers were significantly more likely to report nicotine abuse/dependence. There were no significant differences for major depression, generalised anxiety disorder and suicidal ideation. PROGRESS plus: The study is about homelessness
Oksanen, and others. 2018 [221]	1. General population, aged 18-25 N=985 Finland	Problem gambling South Oaks Gambling Screen (and a modified version which did not include the questions on loans: SOGS-M)	Psychological distress, mediated by consumer debt and debt problems	In all 3 studies, problem gambling was significantly associated with consumer debt and debt problems. In studies 1 and 2, problem gambling was directly significantly associated with psychological distress In studies 1 and 2, consumer debt mediated the association between gambling and distress In study 3, debt problems (not consumer debt) mediated the association between gambling and distress

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	2. General population, aged18-29 N=205 Finland 3. General population, aged 18-25 N=883 USA			PROGRESS Plus: Results are for younger adults
Okunna, and others. 2016 [222]	General population, aged 18+ N=6,062 USA	General health, mental health, anxiety, depression, drug use, prescription drug use, smoking, drinking, body mass index	Gambling in past 12 months (yes versus no) Survey question asking about gambling in past 12 months	In a multivariate model, adjusted for covariates: Gamblers were significantly more likely to report good general health (compared to excellent), report 14 days or less in past 30 with not good mental health (compared to no days), ever prescribed tranquilizers, pain killers, stimulants or sedatives, be heavy smokers, drink at least one alcoholic drink in the previous 30 days, be obese (compared to normal weight) No difference between gambles and non-gamblers in relation to ratings of very good, fair and poor general health (compared to excellent), more than 14 days in past 30 of not good mental

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				health (compared to no days), anxiety, depression, prescription for drug misuse, illicit drug use, history and current smoker, binge drinking, heavy drinking, be overweight (compared to normal weight)
Palmer du Preez, and others. 2018 [118]	Treatment seeking gamblers (N=370) and affected others (N=84), aged 18+ New Zealand	Gambling status (gambler versus affected other)	Violence perpetration and victimisation	Bivariate results were: Affected others were significantly more likely than gamblers to report family violence victimisation, perpetration, any family violence and both victimisation and perpetration Among gamblers, compared to males, females were significantly more likely than men to report family violence victimisation, perpetration and any family violence PROGRESS Plus: Results are presented by sex
Patterson, and others. 2020 [120]	General population, aged 15+ N=15,349 Australia	Gambling severity (no, low-risk, moderate-risk, problem) Problem Gambling Severity Index	Overdue household bills, overdue personal bills, paid of credit card on time, taking financial risks, psychological distress, alcohol use, life satisfaction	Bivariate results were: Compared to no problem gambling: Low-risk gamblers were significantly more likely to report taking financial risk, psychological distress, a higher level of drinking, 3 or more hardships Low-risk gamblers were significantly less likely to report paying off their credit card on time and life satisfaction No association with overdue household bills, overdue personal bills

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
			Note: these 'outcome measures' were measured in earlier time periods than gambling but the study is not a longitudinal cohort study so it is included here as a study from which associations can be derived	Compared to no problem gambling: Moderate-risk gamblers were significantly more likely to report taking financial risk, psychological distress, a higher level of drinking, 3 or more hardships Moderate-risk gamblers were significantly less likely to report paying off their credit card on time and life satisfaction No association with overdue household bills, overdue personal bills Compared to no problem gambling: Problem gamblers were significantly more likely to report taking financial risk, psychological distress, a higher level of drinking, overdue household bills, overdue personal bills, 3 or more hardships Problem gamblers were significantly less likely to report paying off their credit card on time and life satisfaction
Provenzano, 2020 [223]	Nursing students, mean age 22.0 (SD=4.3) N=413 Italy	Economic status, health, alcohol use	Gambling status (non-problem versus at-risk/ moderate-risk/problem) Canadian Problem Gambling Index	In a multivariate model, adjusting for covariates: Compared to non-problem gamblers, at-risk/ moderate-risk/problem were significantly more likely to have low health status (compared to medium/high) and be risky drinkers. No difference between non-problem gamblers and at-risk/ moderate-risk/problem for economic status PROGRESS Plus: Results are for nursing students

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Raisamo, and others. 2015 [122]	General population, aged 15-74 N=4,484 Finland	Gambling frequency, gambling expenditure, frequency + expenditure Problem Gambling Severity Index	Betting more than could be afforded, chasing losses, feeling guilty Feeling guilty	In a multivariate model, adjusting for covariates: Chasing losses was significantly more likely for monthly and weekly gamblers (compared to less than monthly/not gambled in the past year) Chasing losses was significantly more likely for those who spent more than euros 11.00 per week (compared to less than this each week) No significant difference in chasing losses between those spending at lower levels Chasing losses were significantly more likely among occasional gambler with low/medium/high expenditure, frequent gambler with low/medium expenditure and frequent gambler with high expenditure (compared to no spending in the last week/not gambled in the past year) Betting more than could be afforded was significantly more likely for monthly and weekly gamblers (compared to less than monthly/not gambled in the past year) Betting more than could be afforded was significantly more likely for those who spent more than euros 21.00 per week (compared to less than this each week). No significant difference in betting more than could be afforded and lower levels of spending Betting more than could be afforded was significantly more likely for those who were frequent gambler with low/medium

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				expenditure and frequent gambler with high expenditure (compared to no spending in the last week/not gambled in the past year) No significant difference for betting more than could be afforded between no spending in the last week/not gambled in the past year and occasional gambler with low/medium/high expenditure Feeling guilty was significantly more likely for monthly and weekly gamblers (compared to less than monthly/not gambled in the past year) Feeling guilty was significantly more likely for those who spent more than euros 21.00 per week (compared to less than this each week) No significant difference between feeling guilty and lower levels of spending Feeling guilty was significantly more likely for those who were frequent gambler with low/medium expenditure and frequent gambler with high expenditure (compared to no spending in the last week/not gambled in the past year) No significant difference in feeling guilty between no spending in the last week/not gambled in the past year and occasional gambler with low/medium/high expenditure
Rasanen, and others. 2015 [224]	School children, aged 14-16	Poor physical health, 2 or more daily symptoms (from neck, shoulder or	Gambling frequency (6-7 days per week, 3-5 days per week, 1-2 days per	In a multivariate model, adjusting for covariates, for girls: Poor physical health: those who gambled 6-7 days per week were significantly more likely to report poor physical health than non-

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	N=101,167 Finland	back problems, stomach pains, tension, irritability, sleep difficulties, headache, tiredness), overweight, depression	week, less than once per week, less than once per month, not gambled during the past 12 months) Single survey question	gamblers. There was no clear pattern across other gambling frequency categories 2 or more symptoms: compared to non-gamblers, all other gambling frequency categories were significantly more likely to report 2 or more symptoms Overweight: those who gambled 6-7 days per week were significantly more likely to report being overweight. There was no clear pattern across other gambling frequency categories Depression: compared to non-gamblers, all other gambling frequency categories were significantly more likely to report depression In a multivariate model, adjusting for covariates, for boys: Poor physical health: those who gambled 6-7 days per week were significantly more likely to report poor physical health than non-gamblers. In general, other gambling frequencies were significantly less likely to report poor physical health compared to non-gamblers 2 or more symptoms: compared to non-gamblers, all but the less than monthly gambling frequency category were significantly more likely to report 2 or more symptoms. Overweight: there was no clear pattern for gambling frequency and overweight Depression: compared to non-gamblers, those who gambled 6-7 days per week were significantly more likely to report depression

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				while those in the other gambling frequency categories were significantly less likely to report depression PROGRESS Plus: Results are presented by sex PROGRESS Plus: Results are for school children
Rasanen, and others. 2015 [225]	School children, aged 14-16 N=101,167 Finland	Bullying, truancy, delinquency and substance use	Gambling frequency (3-7 days per week, 1-2 days per week, less than once per week, less than once per month, not gambled during the past 12 months) Single survey question	In a multivariate model, adjusting for covariates: Compared to non-gamblers, those who gambled 1-2 days per week and 3-7 days per week were, in general, significantly more likely to be truant Compared to non-gamblers, bullying was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, delinquency was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, smoking was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, using snuff was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, alcohol use was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, drunkenness was significantly more likely among gamblers in all gambling frequency categories Compared to non-gamblers, glue sniffing was significantly more likely among those who gambled 3-7 days per week Drug use and gambling frequency was not associated

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for school children
Rasanen et al. 2015 [226]	General population, aged 14-16 N=2,812 Finland	Carrying a weapon, taking part in a fight, beating someone up	Gambling frequency (no, daily/almost daily, a couple of times per week, a couple of times per month, less often) Single survey question	In a multivariate model, adjusting for covariates Compared to less often than monthly, those who gambled daily were significantly more likely to carry a weapon. No difference for the other gambling frequency categories. Compared to less often, non-gamblers were significantly less likely to take part in a fight. There was no clear pattern for those in the higher gambling frequency categories compared to less often. Compared to less often, those who gambled daily/almost daily were significantly more likely to beat someone up. No difference for the other gambling frequency categories. PROGRESS Plus: results are for young people.
Richard, and others. 2019 [124]	Students, aged 12-19 N=6,542 USA	Stimulant use	Problem gambling severity (low-risk versus at-risk/problem) NORC DSM-IV Screening for Gambling Problems-Loss of Control, Lying and Preoccupation	Bivariate results were, overall and men: Compared to low-risk gamblers, at-risk/problem gamblers were significantly more likely to use any stimulant, powdered cocaine, crack cocaine, methamphetamine, a prescribed stimulant, MDMA Bivariate results, women: Compared to low-risk gamblers, at-risk/problem gamblers were significantly more likely to use any stimulant, powdered cocaine, crack cocaine, methamphetamine, but not a prescribed stimulant or MDMA

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
			Gambling frequency (not frequent versus frequent)	Bivariate results, overall, women and men: Compared to non-frequent gamblers, frequent gamblers were significantly more likely to use any stimulant, powdered cocaine, crack cocaine, methamphetamine, a prescribed stimulant, MDMA PROGRESS Plus: Results are presented by sex PROGRESS Plus: Results are for school children
Riley, and others. 2017 [227]	Female prisoners, mean age 38.54 (SD=9.86) N=74 Australia	Criminal convictions	Problem gambling (no problem, possible-risk, problem, pathological) EIGHT Gambling Screen (Early Intervention Gambling Health Test)	Bivariate results were: Pathological gamblers were significantly more likely than problem gamblers to say their current conviction was related to gambling PROGRESS Plus: Results are for women PROGRESS Plus: Results are for prisoners
Riley, and others. 2018 [126]	Male prisoners, mean age 37.70 (SD=11.08) N=296 Australia	Criminal convictions	Problem gambling (score and no problem, possible-risk, problem, pathological) EIGHT Gambling Screen (Early Intervention Gambling Health Test)	Bivariate results were: Pathological gamblers were significantly more likely than problem and possible-risk gamblers to say their current conviction was related to gambling. Mean EIGHT scores were significantly higher among gambling-related offending pathological gamblers than non-gambling related offending pathological gamblers

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for men PROGRESS Plus: Results are for prisoners
Roberts, and others. 2016 [127]	General population, men, aged 18-64 N=3,025 United Kingdom	Violence	Problem gambling (non-problem, problem, pathological) South Oaks Gambling Screen	In a fully adjusted multivariate model, adjusting for different covariates: Compared to non-gambling, non-problem gambling, problem gambling and pathological gambling were significantly associated with having a physical fight in the past 5 years Compared to non-gambling, problem and pathological gambling was significantly associated with using a weapon. No difference for non-problem gambling. Compared to non-gambling, non-problem gambling and pathological gambling was significantly associated with fighting while intoxicated. PROGRESS Plus: Results are for men
Roberts, and others. 2017 [228]	General population, men, aged 18-64 N=3,025 United Kingdom	Injured in a physical attack, domestic violence in home from partner, violence in the workplace, marriage difficulties/separation, job loss, homelessness, serious money problems, convictions	Problem gambling (non-gambler/non-problem, borderline problem, problem, probable pathological) South Oaks Gambling Screen	In a fully adjusted multivariate models, adjusting for different covariates: Compared to non-gamblers/non-problem gamblers, borderline problem gamblers were significantly more likely to: be injured as a result of a physical attack, experience marital difficulties/relationship separation. There was no significant difference for experiencing: domestic violence in the home by a partner, workplace violence, job loss, homelessness, serious money problems or be convicted of a criminal offence

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				Compared to non-gambler/non-problem gamblers, problem gamblers were significantly more likely to: experience domestic violence from a partner at home, experience violence in the workplace, and be convicted of a criminal offence. There was no significant difference for experiencing: injury as a result of a physical attack, marital difficulties/relationship separation, job loss, homeless, serious money problems. Compared to non-gamblers/non-problem gamblers, probably pathological gamblers were more likely to experience: marital difficulties/relationship separation, job loss or serious money problems. There was no significant difference for experiencing: injury as a result of a physical attack, violence in the workplace, homelessness, or be convicted of a criminal offence. PROGRESS Plus: Results are for men
Roberts, and others. 2017 [229]	Treatment-seeking gamblers, mean age 35.5 (SD=11.40) N=122 United Kingdom	Problem gambling (score) Problem Gambling Severity Index Number of DSM criteria met, current level of	Suicide (current thoughts and plans, yes versus no)	Bivariate results were: Suicide was significantly negatively associated with total lifetime monetary losses Suicide was not associated with PGSI score, number of DSM criteria met, current level of debt, gambling frequency or monetary losses in past 30 days.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
		debt, total lifetime monetary losses, gambling frequency, monetary losses in past 30 days		
Roberts, and others. 2020 [128]	Treatment-seeking gamblers, mean age 35.6 (SD=10.9) N=204 United Kingdom	Problem gambling severity (score) Problem Gambling Severity Index	Intimate partner violence victimisation and perpetration	Bivariate results were: Median PGSI scores were significantly higher among those who were victims of intimate partner violence There was no correlation between PGSI scores and intimate partner violence perpetration
Ronzitti, and others. 2017 [133]	Treatment seeking gamblers, mean age 35.76 (SD=11.04) N=903 United Kingdom	Problem gambling severity (score) Problem Gambling Severity Index	Suicidality (ideation and attempts, yes versus no)	In a multivariate model, adjusting for covariates: PGSI score was not associated with suicidality.

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Ronzitti, and others. 2019 [134]	Army veterans using pain services, age not reported N=221,817 USA	Anxiety, depression, alcohol use disorder, drug use disorder, tobacco use, sleep disorder, suicide attempt	Gambling disorder (yes versus no) International Classification of Disease, Ninth Revision, Clinical Modification	Bivariate results were: Compared to those with no gambling disorder, those with gambling disorder were significantly more likely to report depression, anxiety, alcohol use disorder, drug use disorder, tobacco use disorder and sleep disorder, but not opioid analgesic use In a multivariate model, adjusting for covariates: Compared to those without gambling disorder, suicide attempts were significantly more likely among those with gambling disorder PROGRESS PLUS: The results are for army veterans
Rudd and Thomas, 2016 [230]	Patients in a residential substance use service, aged 16-64 N=266 Australia	Substance use, convictions, self-harm, suicide, domestic violence	Problem gambling (potential problem versus non-problem) Screening questions	Bivariate results were: Alcohol was significantly more likely to be the main substance of abuse for non-problem gamblers compared to potential problem gamblers There was no association between gambling severity and self-harm, suicide, history of domestic violence In a multivariate model, adjusting for covariates: Potentially problem gamblers were significantly more likely to have committed more property crimes There was no difference in the number of offences against the person and offences against organisations, government and community by gambling severity

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Sanacora, and others. 2016 [231]	General population, aged 18+ N=43,093 USA	Depression, anxiety, alcohol abuse/dependence, nicotine dependence, drug abuse/dependence, Axis I disorder, mood disorder	Problem gambling (non-gambler/low frequency, low-risk, at-risk, problem/pathological) DSM-IV	In a multivariate model, adjusting for covariates (lower income): Compared to non/low-frequency gamblers, low-risk gamblers were significantly more likely to have any Axis I disorder, any mood disorder, any anxiety disorder, generalised anxiety, any substance use disorder, alcohol abuse/dependence, nicotine dependence, drug abuse/dependence No association for major depression Compared to non-low-risk frequency gamblers, at-risk gamblers were significantly more likely to have any Axis I disorder, any mood disorder, major depression, any anxiety disorder, any substance use disorder, alcohol abuse/dependence, nicotine dependence, drug abuse/dependence No association with generalised anxiety. Compared to non-low-frequency gamblers, problem/pathological gamblers were significantly more likely to have any Axis I disorder, any mood disorder, major depression, any anxiety disorder, generalised anxiety, any substance use disorder, alcohol abuse/dependence, nicotine dependence, drug abuse/dependence In a multivariate model, adjusting for covariates (middle/high income): Compared to non/low-frequency gamblers, low-risk gamblers, at-risk gamblers and problem/pathological gamblers were significantly more likely to have any Axis I disorder, any mood

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				disorder, major depression, any anxiety disorder, generalised anxiety, any substance use disorder, alcohol abuse/dependence, nicotine dependence, drug abuse/dependence PROGRESS Plus: Results are presented by income level
Sanscartier, and others. 2019 [232]	General population, aged 18-20 N=624 Canada	Alcohol use, drug use, depression/anxiety	Gambling severity (no risk, low-risk, moderate/high-risk) Problem Gambling Severity Index	In a multivariate model, adjusting for covariates: Compared to no-risk gamblers, low-risk gamblers were significantly more likely to use drugs and alcohol No association for depression/anxiety Compared to no-risk gamblers, moderate/high gamblers were significantly more likely to use drugs No association for alcohol use, depression/anxiety Compared to low risk gamblers, moderate/high risk gamblers were significantly more likely to have depression/anxiety No association for alcohol use and drug use PROGRESS Plus: Results are for younger adults
Shannon, and others. 2017 [233]	Treatment-seeking problem gamblers (N=391), gamblers in the community (N=151), aged 18+	Financial, psychological, health, relationship harms	Gambling severity (in treatment versus not in treatment)	Bivariate results were: Gamblers in treatment were significantly more likely to have higher mean scores for reduced savings, doing without, worry, frustration, debt, decreased happiness, decreased self-respect, decreased pride, hopelessness, constraints, problems with partner, going out less, sleep problems, reduced home maintenance

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Australia			
Shen, and others. 2015 [139]	Student gamblers age not reported N=79 Canada	Spending, debt, psychological distress, smoking, cannabis use, harmful/hazardous alcohol use, alcohol dependence	Gambling severity (moderate-risk versus problem) Problem Gambling Severity Index	Bivariate results were: Problem gamblers had significantly higher mean monthly spending on gambling and mean annual debt from gambling In a multivariate model, adjusting for covariates: Compared to moderate-risk gamblers, problem gamblers were significantly more likely to report psychological distress, daily smoking and possible alcohol dependence. No difference for weekly cannabis use and harmful/hazardous drinking PROGRESS PLUS: Results are for young adults
Shiue, 2015 [234]	General population, aged 20-89 N=5,003 Japan	Self-rated health, happiness, mental illness, physical health	Gambling addiction (yes versus no) Method not specified	In a multivariate model, adjusted for covariates: Compared to those with no gambling addiction, gamblers were significantly more likely to rate their health as fair, compared to good (no difference for poor compared to good) Compared to those with gambling addiction, gamblers were no more likely to say they had a self-rated mental illness or headache Compared to those with no gambling addiction, gamblers were significantly more likely to rate their happiness as poor or fair, compared to good

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Spangberg and Svensson, 2020 [235]	Students, aged 16+ N=8,108 Denmark, Finland and Sweden	School truancy, alcohol use, binge drinking, inhalant use, cannabis use, tranquilizers/sedatives	Past year gambling (yes versus no) Problem gambling (yes versus no) Lie/Bet questionnaire	Bivariate results (all 3 countries combined) showed the following were not associated with problem gambling status (so were not entered into the multivariate model): School truancy, alcohol use with the last month In a multivariate model, adjusting for covariates: Compared to those who were not problem gamblers, problem gamblers were significantly more likely to use inhalants (lifetime) No association with binge drinking within last month and cannabis use (lifetime) PROGRESS Plus: Results are for children
Stefanovics, and others. 2017 [236]	Army veterans, aged 21-96 N=3,157 USA	Quality of sleep, suicide attempt, suicide ideation, depression, anxiety, alcohol use and dependency, drug use and abuse, nicotine dependence	Gambling level and characteristics (non-gambler, recreational, at risk/problem) Brief Biosocial Gambling Screen	Bivariate results were: Quality of sleep, suicide attempt, suicide ideation, depression, anxiety, alcohol use and dependency, drug use, drug abuse, nicotine dependence were significantly associate with gambling level No association for drug dependence In a multivariate model, adjusting for covariates (with drug use disorder and alcohol use disorder the only harms entered into the model): Compared to non-gamblers, recreational gamblers were significantly more likely to report drug use disorder and alcohol use disorder

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				No association for drug and alcohol disorders comparing at-risk/problem gamblers with non-gamblers. PROGRESS Plus: Results are for army veterans
Stone, and others. 2016 [237]	Gamblers, aged 18+ N=4,677 Australia	Smoking, alcohol use, health status, obesity, mental health status, depression, anxiety	Problem gambling (score) Problem Gambling Severity Index – Queensland modified version	Bivariate results were: PSGI was significantly positively related to past year smoking, number of cigarettes, alcohol use and alcohol dependence, self-reported physical health, obesity, mental health, depression and anxiety
Sundqvist, and others. 2015 [238]	General population, aged 16-82 N=19,530 Sweden	Past year binge drinking	Gambling risk severity (at-risk versus not at-risk) Lie/Bet questionnaire	In a multivariate model, adjusted for covariates: Gambling severity was not associated with past year binge drinking for either men or women. PROGRESS Plus: Results are presented by sex
Thorne, and others. 2019 [239]	People who regularly gambled and drank alcohol, aged 18+ N=132	Alcohol and sleep	Gambling	Between subject correlations showed: People who gambled more slept significantly less overnight People who gambled more, drank significantly more Within subject correlations showed:

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	Australia			Time spent gambling was significantly correlated with higher drinking No correlation between time spent gambling and sleep
Tomasz, and others. 2018 [240]	Males addicted to gambling (N=50), non-gambling addicted controls (N=45), aged 19-65 Poland	Sexual quality of life, sexual functioning	Gambling addiction (score) South Oaks Gambling Screen	Bivariate results were: SOGS score was significantly negatively correlated with sexual quality of life and sexual functioning scores. PROGRESS Plus: Results are for men
Toneatto and Pillai, 2016 [143]	Current and recovered problem gamblers, mean age 42.5 (SD=12.5) N=76 Canada	Anxiety, depression	Problem gambling (pathological versus recovered) The South Oaks Gambling Screen	Bivariate results were: Gambling status was not associated with depression (current or lifetime), anxiety (current)
Van der Maas, 2016 [241]	People who gambled at least once in past 12	Mood disorder, anxiety disorder	Problem gambling (score)	In a multivariate model, adjusting for covariates: Mood disorders and anxiety disorders were significantly positively associated with PGSI score

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
	months, aged 18+ N=28,271 Canada		Problem Gambling Severity Index	
Van Patten, and others. 2018 [242]	General population, mean age 53.6 (SD=18.7) N= 7,289 USA	Physical health, mental health, exercise, sleep, depression, smoking, alcohol use	Gambling risk (low-risk versus problem/pathological) Three-item NODS-CLiP	Bivariate results were: Compared to low-risk gamblers, problem/pathological gamblers were significantly more likely to smoke, have higher average alcoholic drinks in the past month, have more binge drinking episodes in the past month, drink more drinks on a single occasion in the past month No difference for physical health, mental health, exercise participation, amount of sleep, depression and (not good) mental health
Wardle, and others. 2020 [243]	General population, aged 16+ N=7,403 England	Problem gambling (non-problem versus problem) DSM-IV	Suicidal thoughts/attempts	In a multivariate model, adjusting for covariates: Compared to non-problem gamblers, problem gamblers were significantly more likely to have suicidal thoughts/attempts in the past year

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
Weinberger, and others. 2015 [145]	Students, aged 14-18 N=1,591 USA	Smoking	Gambling severity (low-risk, at-risk/problem) DSM-IV	The study considered different types/location of gambling and the association with smoking rather than gambler per se: Smoking was significantly associated with more extensive gambling; this was true for both low-risk and at-risk/problem gamblers. PROGRESS Plus: Results are for young adults
Widinghoff, and others. 2019 [146]	Male prisoners serving sentences for violent crimes, aged 18-25 N=264 Sweden	Mental health, substance use	Gambling disorder (yes versus no) DSM-IV	Bivariate results were: Compared to those without gambling disorder, those with gambling disorder were significantly more likely to use cannabis, cocaine and anabolic steroids No association for alcohol. sedatives, stimulants, hallucinogens, inhalants, GHB, heroin opioid analgesics, methadone/buprenorphine, anxiety, affective disorders, anxiety disorders The significant variables from the bivariate analyses were entered into a multivariate model, adjusting for covariates: Compared to those without gambling disorder, those with gambling disorder were more likely to use cocaine No association with cannabis use and anabolic steroid use PROGRESS Plus: Results are for men PROGRESS Plus: Results are for younger adults

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Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				PROGRESS Plus: Results are for prisoners
Yokotani, and others. 2019 [244]	Male prisoners, mean age 51.34 (SD=12.82) years N=332 Japan	Alcohol use, internet addiction, types of crime	Gambling (non-probable problem gambling versus probable problem) South Oaks Gambling Screen	Bivariate results were: Mean scores for problematic alcohol use and internet addiction were significantly higher among probable problem gamblers No difference in the proportion of probable problem gamblers and non-probable problem gamblers for income-generating offences, drug-related offences and violent offences PROGRESS Plus: Results are for men PROGRESS Plus: Results are for prisoners
Zavala, and others. 2018 [245]	Police officers, age not reported N=1,018 USA	Gambling to deal with work-stress (score) Single survey question	Alcohol use	In a multivariate model, adjusting for covariates: Gambling related to work stress was significantly positively associated with problematic alcohol use PROGRESS Plus: Results are for police officers
Zhai, and others. 2020 [149]	Students, grades 9 to 12 N=2,425 USA	Drug use, cigarettes, alcohol, violence	Gambling status (non-gambler versus gambler) Single survey question from Youth Risk Behavior Survey	In a multivariate model, adjusting for covariates (females): Compared to non-gamblers, gamblers were significantly more likely to use any drug, cannabis, cocaine, inhalants, heroin, methamphetamine use, ecstasy use, synthetic cannabis use, non-medical pain relievers in their lifetime

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				In a multivariate model, adjusting for covariates (males): Compared to non-gamblers, gamblers were significantly more likely to use any drug, cannabis, cocaine, inhalants, heroin, methamphetamine use, ecstasy use, synthetic cannabis use, non-medical pain relievers in their lifetime In a multivariate model, adjusting for covariates (females): Compared to non-gamblers, gamblers were significantly more likely to use cigarettes, alcohol, be heavy alcohol users and cannabis in the past 30 days In a multivariate model, adjusting for covariates (males): Compared to non-gamblers, gamblers were significantly more likely to use cigarettes, alcohol, be heavy alcohol users and cannabis in the past 30 days In a multivariate model, adjusting for covariates (females): Compared to non-gamblers, gamblers had significantly more physical fighting, sexual dating violence and physical dating violence In a multivariate model, adjusting for covariates (males): Compared to non-gamblers, gamblers had significantly more weapon carrying at school, being threatened at school, physical

Author, year [ref]	Study population, N, country	Independent variables (1)	Dependent variables	Main findings (2) PROGRESS-Plus
				fighting, forced sexual intercourse, sexual dating violence and bullying in school PROGRESS Plus: Results are presented by sex PROGRESS Plus: Results are for children

Notes:
(1) In some studies, identifying variables as independent/dependent was not possible. Only outcomes which have been conceptualised as harms are reported.
When gambling or gambling severity is the independent variable, no other independent variables are reported.
(2) Significance refers to $p < 0.05$.

Appendix I. Summary risk of bias for longitudinal Newcastle Ottawa Scale studies (14 studies)

Questions		Badji, and others. 2020 [2]	Chinneck, and others. 2016 [3]	Dennison, and others. 2020 [4]	Karlsson and Hakansson, 2018 [7]	Afifi, and others. 2016 [1]	Dowling, and others. 2019 [5]	Emond, and others. 2019 [6]	Pavarin, and others. 2018 [8]	Roberts, and others. 2018 [9]	Scholes-Balog, and others. 2015 [10]	Scholes-Balog, and others. 2016 [11]	Vitaro, and others. 2018 [13]	Vitaro, and others. 2019 [14]	Werner, and others. 2020 [15]
1. Representativeness of the exposed cohort	a	High	High	High	Low	High	High	High	High	Low	Low	Low	High	High	High
	b	Low	Low	Low	High	Low	Low	High	Low	High	High	High	Low	Low	High
	c	High	High	High	High	High	High	High	High	High	High	High	High	High	High
	d	High	High	High	High	High	High	Low	High	High	High	High	High	High	High
2. Selection of the non-exposed cohort	a	High	High	High	High	High	High	High	High	High	High	High	High	High	Low
	b	High	High	High	High	High	High	High	High	High	High	High	High	High	High
	c	High	High	High	High	High	High	High	High	High	High	High	High	High	High
3. Ascertainment of exposure	a	Low	High	High	Low	High	High	High	Low	High	High	High	High	High	High
	b	High	Low	Low	High	High	High	High	High	High	High	High	High	High	Low
	c	High	High	High	High	Low	Low	Low	High	Low	Low	Low	Low	Low	High
	d	High	High	High	High	High	High	High	High	High	High	High	High	High	High

Questions		Badji, and others. 2020 [2]	Chinneck, and others. 2016 [3]	Dennison, and others. 2020 [4]	Karlsson and Hakansson, 2018 [7]	Afifi, and others. 2016 [1]	Dowling, and others. 2019 [5]	Emond, and others. 2019 [6]	Pavarin, and others. 2018 [8]	Roberts, and others. 2018 [9]	Scholes-Balog, and others. 2015 [10]	Scholes-Balog, and others. 2016 [11]	Vitaro, and others. 2018 [13]	Vitaro, and others. 2019 [14]	Werner, and others. 2020 [15]
4. Demonstration that outcome of interest was not present at start of study	a	High	Low	Low	Low	Low	High	High	Low	High	Low	Low	Low	Low	Low
	b	Low	High	High	High	High	Low	Low	High	Low	High	High	High	High	High
5. Comparability of cohorts on the basis of design or analysis	a	Low	Low	Low	Low	Low	Low	Low	High	Low	Low	Low	Low	Low	Low
	b	Low	Low	Low	Low	Low	Low	Low	High	Low	Low	Low	Low	Low	High
6. Assessment of outcome	a	Low	High	High	High	High	High	High	High	High	High	High	High	High	High
	b	High	High	High	Low	High	High	High	Low	High	High	High	High	High	High
	c	High	Low	Low	High	Low	Low	Low	High	Low	Low	Low	Low	Low	High
	d	High	High	High	High	High	High	High	High	High	High	High	High	High	High
7. Was follow-up long	a	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Questions		Badji, and others. 2020 [2]	Chinneck, and others. 2016 [3]	Dennison, and others. 2020 [4]	Karlsson and Hakansson, 2018 [7]	Afifi, and others. 2016 [1]	Dowling, and others. 2019 [5]	Emond, and others. 2019 [6]	Pavarin, and others. 2018 [8]	Roberts, and others. 2018 [9]	Scholes-Balog, and others. 2015 [10]	Scholes-Balog, and others. 2016 [11]	Vitaro, and others. 2018 [13]	Vitaro, and others. 2019 [14]	Werner, and others. 2020 [15]
enough for outcomes to occur	b	High	High	High	High	High	High	High	High	High	High	High	High	High	High
8. Adequacy of follow-up of cohorts	a	High	High	High	High	High	High	High	High	High	High	High	High	High	Low
	b	Low	Low	Low	Low	Low	Low	Low	Low	High	Low	Low	Low	Low	High
	c	High	High	High	High	High	High	High	High	Low	High	High	High	High	High
	d	Low	High	High	High	High	High	High	High	High	High	High	High	High	High
Risk of bias rating:		Low	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

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Appendix J. Newcastle Ottawa Scale questions for longitudinal studies

NOS Questions	Points to consider
1. Representativeness of the exposed cohort	a. truly representative of the average ___ (describe) in the community (1 point)
	b. somewhat representative of the average ___ (describe) in the community (1 point, if not already awarded)
	c. selected group of users e.g. nurses, volunteers
	d. no description of derivation of cohort
2. Selection of the non-exposed cohort	a. drawn from the same community as the exposed cohort (1 point)
	b. drawn from a different source
	c. no description of the derivation of the non-exposed cohort
3. Ascertainment of exposure	a. secure record (e.g. surgical records) (1 point)
	b. structured interview (1 point, if not already awarded)
	c. written self-report
	d. no description
4. Demonstration that outcome of interest was not present at start of study	a. yes (1 point)
	b. no
5. Comparability of cohorts on the basis of design or analysis	a. study controls for ___ (select the most important factor) (1 point)
	b. study controls for any additional factor (1 point)

NOS Questions	Points to consider
6. Assessment of outcome	a. independent blind assessment (1 point)
	b. record linkage (1 point, if not already awarded)
	c. self report
	d. no description
7. Was follow-up long enough for outcomes to occur	a. yes (select an adequate follow-up time for outcome of interest) (1 point)
	b. no
8. Adequacy of follow-up of cohorts	a. complete follow-up - all subjects accounted for (1 point)
	b. subjects lost to follow-up unlikely to introduce bias - small number lost (select adequate rate), or description provided of those lost (1 point, if not already awarded)
	c. follow-up rate_% (select adequate rate) and no description of those lost
	d. no statement

Appendix K. Summary risk of bias for case control Newcastle Ottawa Scale paper (1 study)

Newcastle Ottawa Scale responses (Overall RoB rating)

NOS Questions		Sundqvist, and others. 2019 [12]
1. Is the case definition adequate?	a.	High
	b.	Low
	c.	High
2. Representativeness of the cases	a.	Low
	b.	High
3. Selection of controls	a.	Low
	b.	High
	c.	High
4. Definition of controls	a.	Low
	b.	High
5. Comparability of cases and controls on the basis of the design or analysis	a.	Low
	b.	Low
6. Ascertainment of exposure	a.	High

NOS Questions		Sundqvist, and others. 2019 [12]
	b.	High
	c.	Low
	d.	High
	e.	High
7. Same method of ascertainment for cases and controls	a.	Low
	b.	High
8. Non-response rate	a.	High
	b.	Low
	c.	High
Risk of bias rating:		Moderate

Appendix L. Newcastle Ottawa Scale questions for case control studies

NOS Questions	Points to consider
1. Is the case definition adequate?	a. Yes, with independent validation (1 point)
	b. Yes, e.g. record linkage or based on self reports
	c. No description
2. Representativeness of the cases	a. consecutive or obviously representative series of cases (1 point)
	b. potential for selection biases or not stated
3. Selection of controls	a. community controls (1 point)
	b. hospital controls
	c. no description
4. Definition of controls	a. no history of outcome of interest (1 point)
	b. no description of source
5. Comparability of cases and controls on the basis of the design or analysis	a. study controls for ___ (select the most important factor) (1 point)
	b. study controls for any additional factor (1 point)
6. Ascertainment of exposure	a. secure record (e.g. surgical records) (1 point)
	b. structured interview where blind to case/control status (1 point, if not already awarded)
	c. interview not blinded to case/control status
	d. written self-report or medical record only

NOS Questions	Points to consider
	e. no description
7. Same method of ascertainment for cases and controls	a. yes (1 point)
	b. no
8. Non-response rate	a. same rate for both groups (1 point)
	b. non-respondents described
	c. rate different and no designation
Risk of bias assessment:	

Appendix M. Summary risk of bias for latent class analysis Newcastle Ottawa Scale studies (6 studies)

Newcastle Ottawa Scale responses (Overall RoB rating)

Questions		Cowlishaw, and others. 2016 [17]	Dussault, and others. 2016 [18]	Edgerton, and others. 2018 [19]	Mutti-Packer, and others. 2017 [20]	Chamberlain, and others. 2020 [16]	Studer, and others. 2016 [21]
1. Representativeness of the exposed cohort	a.	High	High	High	High	High	High
	b.	Low	Low	Low	Low	High	Low
	c.	High	High	High	High	Low	High
	d.	High	High	High	High	High	High
2. Selection of the non-exposed cohort	a.	Low	Low	Low	Low	Low	Low
	b.	High	High	High	High	High	High
	c.	High	High	High	High	High	High
3. Ascertainment of exposure	a.	High	High	High	High	High	High
	b.	High	High	High	Low	Low	High
	c.	Low	Low	Low	High	High	Low
	d.	High	High	High	High	High	High

Questions		Cowlishaw, and others. 2016 [17]	Dussault, and others. 2016 [18]	Edgerton, and others. 2018 [19]	Mutti-Packer, and others. 2017 [20]	Chamberlain, and others. 2020 [16]	Studer, and others. 2016 [21]
4. Demonstration that outcome of interest was not present at start of study	a.	Low	Low	Low	Low	High	Low
	b.	High	High	High	High	Low	High
5. Comparability of cohorts on the basis of design or analysis	a.	High	Low	Low	Low	High	High
	b.	High	Low	High	High	Low	High
6. Assessment of outcome	a.	High	High	High	High	High	High
	b.	High	High	High	High	High	High
	c.	Low	Low	Low	Low	Low	Low
	d.	High	High	High	High	High	High
7. Was follow-up long enough for outcomes to occur	a.	Low	Low	Low	Low	Low	Low
	b.	High	High	High	High	High	High
8. Adequacy of follow-up of cohorts	a.	High	High	High	High	High	High
	b.	Low	High	Low	Low	High	High
	c.	High	Low	High	High	High	Low
	d.	High	High	High	High	Low	High
Risk of bas rating		Moderate	Moderate	Moderate	Moderate	High	High

Appendix N. Newcastle Ottawa Scale questions for latent class analysis studies

NOS Questions	Points to consider
1. Representativeness of the exposed cohort	a. truly representative of the average ___ (describe) in the community (1 point)
	b. somewhat representative of the average ___ (describe) in the community (1 point, if not already awarded)
	c. selected group of users e.g. nurses, volunteers
	d. no description of derivation of cohort
2. Selection of the non-exposed cohort	a. drawn from the same community as the exposed cohort (1 point)
	b. drawn from a different source
	c. no description of the derivation of the non-exposed cohort
3. Ascertainment of exposure	a. secure record (e.g. surgical records) (1 point)
	b. structured interview (1 point, if not already awarded)
	c. written self-report
	d. no description

NOS Questions	Points to consider
4. Demonstration that outcome of interest was not present at start of study	a. yes (1 point)
	b. no
5. Comparability of cohorts on the basis of design or analysis	a. study controls for ___ (select the most important factor) (1 point)
	b. study controls for any additional factor (1 point)
6. Assessment of outcome	a. independent blind assessment (1 point)
	b. record linkage (1 point, if not already awarded)
	c. self-report
	d. no description
7. Was follow-up long enough for outcomes to occur	a. yes (select an adequate follow-up time for outcome of interest) (1 point)
	b. no
8. Adequacy of follow-up of cohorts	a. complete follow-up - all subjects accounted for (1 point)
	b. subjects lost to follow-up unlikely to introduce bias - small number lost (select adequate rate), or description provided of those lost (1 point, if not already awarded)
	c. follow-up rate __% (select adequate rate) and no description of those lost
	d. no statement

Appendix O. Summary risk of bias for qualitative Critical Skills Appraisal Programme studies (32 studies)

CASP question response (Overall RoB Rating)

Author, year [ref]	1 Aim	2 Qual method	3 Qual justified	4 Recruit ment	5 Data collection	6 Positionality data collection	7 Ethics	8 Analysis	9 Findings	Overall RoB Rating
Kim, and others. 2016 [39]	Low	Low	Low	Low	Low	Moderate	Low	Low	Moderate	Low
Baxter, and others. 2016 [24]	Low	Low	Moderate	Low	Low	High	Low	High	Moderate	Moderate
Bonfils, and others. 2019 [26]	Low	Low	Low	Low	Low	High	Low	High	Moderate	Moderate
Browne, and others. 2016 [29]	Low	Low	Moderate	Low	Low	High	Low	High	Moderate	Moderate
Hing, and others. 2015 [35]	Low	Low	Low	Low	Low	Low	Low	High	High	Moderate
Hing, and others. 2016 [34]	Low	Low	Low	Low	Moderate	High	Low	High	Low	Moderate
Le, and others. 2016 [43]	Low	Low	High	Low	Moderate	Low	Moder ate	High	High	Moderate

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Author, year [ref]	1 Aim	2 Qual method	3 Qual justified	4 Recruit ment	5 Data collection	6 Positionality data collection	7 Ethics	8 Analysis	9 Findings	Overall RoB Rating
O'Brien, and others. 2015 [48]	Low	Low	Low	Low	Low	High	Low	High	Moderate	Moderate
Palmer du Preez, and others. 2019 [49]	Low	Low	Low	Moderate	Moderate	Not applicable	Low	High	Low	Moderate
Wierczorek, and others. 2018 [53]	Low	Low	Low	Low	Low	Moderate	Low	High	Moderate	Moderate
Bramley, and others. 2019 [28]	Low	Low	High	High	Moderate	High	Low	High	High	High
Bramley, and others. 2020 [27]	Low	Low	High	High	Moderate	High	Low	High	High	High
Jarvinen-Tassopoulos, 2020 [36]	Low	Low	High	Moderate	Moderate	Not applicable	Low	High	High	High
Klevan, and others. 2019 [40]	Low	Low	Low	High	Moderate	High	Low	High	Moderate	High
McGee, 2020 [46]	Low	Low	Low	Low	Moderate	Moderate	Low	Moderate	High	High
Samuelsson, and others. 2018 [52]	Low	Low	Low	Low	Moderate	High	Low	High	Moderate	High

Author, year [ref]	1 Aim	2 Qual method	3 Qual justified	4 Recruitment	5 Data collection	6 Positionality data collection	7 Ethics	8 Analysis	9 Findings	Overall RoB Rating
Anderson, and others. 2017 [22]	Low	Low	Low	Low	Moderate	High	Low	High	Moderate	High
Banks, and others. 2018 [23]	Low	Low	Low	Low	Moderate	High	High	High	Moderate	High
Binde, 2016 [25]	Low	Low	Low	High	Moderate	High	Low	High	Moderate	High
Crentsil 2015 [30]	High	Low	High	High	High	Moderate	High	High	High	High
Dowling, and others. 2016 [31]	Low	Low	Low	Low	Moderate	High	Low	High	Low	High
Eby, and others. 2015 [32]	Low	Low	Low	Low	Moderate	High	Low	High	Moderate	High
Heiskanen, and others. 2017 [33]	Low	Low	Low	Low	Moderate	High	Low	High	High	High
Jarvinen-Tassopoulos, and others. 2016 [37]	Low	Low	Low	Moderate	High	Not applicable	Low	High	High	High
Kenyon 2016 [38]	Low	Low	Low	Low	High	High	Low	High	High	High
Kolandai-Matchett, and others. 2017 [41]	Low	Low	High	Moderate	Moderate	High	Low	High	High	High

Author, year [ref]	1 Aim	2 Qual method	3 Qual justified	4 Recruit ment	5 Data collection	6 Positionality data collection	7 Ethics	8 Analysis	9 Findings	Overall RoB Rating
Lastra, and others. 2018 [42]	Low	Low	Low	Low	Low	High	Moderate	High	High	High
Lind, and others. 2015 [44]	Low	Low	Low	Low	Moderate	Not applicable	High	High	High	High
MacLean, and others. 2019 [45]	Low	Low	High	Low	Moderate	High	Low	Moderate	Moderate	High
Nash, and others. 2018 [47]	Low	Low	High	Low	High	High	High	High	High	High
The Royal Society for Public Health 2019 [51]	Low	Low	High	High	High	High	High	High	High	High
Rogers, and others. 2019 [50]	Low	Low	Low	High	Moderate	Moderate	Low	High	Moderate	High

Appendix P. Critical Skills Appraisal Programme checklist and questions for appraisal of qualitative studies

CASP Question	Points to consider
1. Was there a clear statement of the aims of the research?	What was the goal of the research? Why it was thought important? Its relevance.
2. Is a qualitative methodology appropriate?	Yes if they want to measure perspectives, experiences etc.
3. Was the research design appropriate to address the aims of the research?	Yes: if justified the qualitive approach. No: if they did not. Note: this is not a 'critical domain' when providing an overall assessment of each paper. If the aim is about perspectives/experiences etc. then qualitative is appropriate.
4. Was the recruitment strategy appropriate to the aims of the research?	Yes: 1. Must be clear exactly how participants were recruited. 2. Must be clear that the participants were appropriate (e.g. gamblers or gamblers' families). No: If 1 or 2 not clear. Can't tell: if there is a group and some members did/did not take part but it's not clear how individual members of the group were recruited.

CASP Question	Points to consider
5. Was the data collected in a way that addressed the research issue?	Yes: 1. Setting must be described but not necessarily justified. 2. Data collection method must be clear (e.g. interview, self completed) but not necessarily justified. 3. Must be clear how the data were collected – e.g. was there a topic guide? If it says 'structured' or 'semi-structured' this suggests they had predetermined questions (i.e. a guide). The key thing here is they aren't just making up questions as they go along. 4. Must be clear how the data were recorded (e.g. notes, recorded/transcribed). 5. Must describe achieving data saturation, or 'no new themes were identified'. Can't tell: put this if 1 – 4 are ok but if they don't mention saturation.
6. Has the relationship between researcher and participants been adequately considered? (only relevant if there is interaction between researcher and participant)	Yes: 1. Must describe their role and any relationship. 2. Must consider the impact of this role/relationship (e.g. if researcher knew the participants, if there was a power differential [e.g. patient and researcher was their doctor]). Note: this could be addressed in the limitations. Can't tell: describes the relationship but can't tell if this would have an impact.
7. Have ethical issues been taken into consideration? (ethics committee, power differential, coercion, confidentiality)	Yes: 1. If ethics committee approved the study. 2. If no ethical committee but detailed consideration of ethical issues (participant must know what the study involves before agreeing, must provide consent [preferably written]), data must be provided anonymously [e.g. use of codes not names]. Can't tell: if no ethical approval and ethical information is very brief.

CASP Question	Points to consider
8. Was the data analysis sufficiently rigorous?	Yes: 1. Must have detailed description of the analysis process – i.e. must describe what processes they went through; transcribing, reading, coding, re-organising the coding etc. This must be a structured process. 2. If it was thematic analysis the process for generating these themes/categories must be described. 3. Must have a list of the themes (this could be presented in the results). 4. Must have quotes which support the findings. Note: do not need a quote for every single point but overarching findings must be supported by quotes. 5. Should be clear or implied that contradictory views were considered (e.g. that they included quotes which showed different perspectives such as gambling is not harmful, gambling is harmful). 6. Must examine their own role and potential biases. E.g. would is a middle class 25 year old able to express the views of an older, working class male, especially on a stigmatising topic such as gambling? Would the participant speak honestly in this situation? Would the researchers' views on gambling affect their interpretation? Can't tell: 1. if they say 'thematic analysis' but no more detail on how the themes/categories were generated. 2. Not clear that different perspectives were presented.

CASP Question	Points to consider
9. Is there a clear statement of findings?	Yes: 1. Findings must be clear/explicit. 2. Findings should fit into what we know of the topic and if not, has the researcher commented on this – i.e. their assertions should make sense. 3. Must include some assessment of credibility/dependability – for example did they use more than 1 person for the coding, did they ask participants to validate findings/interpretation, did they use more than 1 approach to collect data. How does this strengthen the credibility? 4. Findings must fulfil the RQ. Can't tell: Method describes methods to enhance the credibility but the impact is not discussed.

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