





Global prevalence of help-seeking for problem gambling: A systematic review and meta-analysis

Rimke Bijker¹  | Natalia Booth¹ | Stephanie S. Merkouris²  |
Nicki A. Dowling^{2,3}  | Simone N. Rodda^{1,2} 

¹School of Population Health, University of Auckland, Auckland, New Zealand

²School of Psychology, Deakin University, Geelong, Australia

³Melbourne Graduate School of Education, University of Melbourne, Parkville, Australia

Correspondence

Simone Rodda, School of Population Health, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand.
Email: s.rodde@auckland.ac.nz

Funding information

None.

Abstract

Background and Aims: Multiple studies have examined barriers and facilitators to help-seeking, but the prevalence of help-seeking for problem gambling (PG) is not well established. We aimed to estimate the international prevalence of help-seeking for PG among the general population and among subgroups of people at risk for PG (i.e. low-risk, moderate-risk and PG).

Methods: Systematic search of grey literature (through gambling repositories, gambling research institutes and Google) and peer-reviewed literature (through ProQuest, PsycINFO, PubMed and Scopus) for gambling prevalence studies that reported on help-seeking for PG. This review adhered to the Preferred Reporting Items for Systematic Review and Meta-Analyses. Studies used representative sampling methods to determine the prevalence of gambling participation and data collection 2010 onward. Twenty-four studies met the inclusion criteria. The main outcome was population prevalence of help-seeking for PG. Help-seeking was defined as any intentional action to change gambling behaviours, including professional services (inclusive of in-person or distance help), non-professional help (e.g. from family and friends) and self-help. Subgroup analyses were conducted to explain variability in help-seeking prevalence estimates.

Results: Measurement of help-seeking was inconsistent across included studies and, overall, there was high risk of bias. We estimated a general population help-seeking prevalence for PG of 0.23% (95% CI, 0.16–0.33). Prevalence estimates were significantly higher in studies assessing lifetime (0.50%; 95% CI, 0.35–0.71) compared with current help-seeking (0.14%; 95% CI, 0.10–0.20, $P < 0.001$), but there was no evidence of difference in prevalence estimates by gambling participation, region, type of help-seeking, or year of data collection. Compared with people with low-risk gambling (0.27%; 95% CI, 0.07%–1.04%), prevalence estimates were significantly higher in those with moderate-risk (3.73%; 95% CI, 2.07%–6.63%) and problem gambling (20.63%; 95% CI, 12.89%–31.35%, $P < 0.001$).

Conclusions: One in 25 moderate-risk gamblers and 1 in 5 people with problem gambling have sought help for problems related to their gambling.

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KEYWORDS

Gambling, help-seeking, meta-analysis, prevalence, systematic review, treatment

INTRODUCTION

Gambling can be harmful to the overall health and wellbeing of people who gamble, others and society [1]. Evidence shows that although most harm is experienced by people with problem gambling (PG), the cumulative burden of harm is greatest for the larger group of people at lower risk of PG [2, 3]. In line with this, gambling is increasingly recognised as a public health issue that is to be addressed by preventing harm and supporting harm minimisation in people at all levels of the gambling risk spectrum [4].

In many countries, a variety of options are available that may help people recover from PG, including professional treatment, non-professional help and self-help. Evidence indicates the effectiveness of in-person interventions such as cognitive-behavioural therapy (CBT) and motivational interviewing [5] and the benefits of single-session brief interventions [6]. Commonly, in-person treatment is delivered in clinics that specialise in PG [7]. As well as in-person interventions, most countries with regulated gambling provide help by phone or online at low cost or for free [8]. Technological advances have improved access to helplines and internet-delivered options, such as i-CBT, chat, email and video counselling [9]. According to the World Health Organisation, help-seeking can include any action or activity undertaken to resolve or improve psychological health including formal and informal supports [10]. People with gambling problems also use a range of self-management strategies, such as seeking support from family, friends, or peers, limit setting, behavioural substitution and avoidance [11, 12]. Technology-based options can be used to support such self-management through self-help materials, screening and assessment and information on strategies for gambling reduction [9].

Despite widespread availability, there is infrequent use of evidence-based treatment and other options to recover from PG. Multiple studies have examined issues associated with help-seeking, including barriers and facilitators [13–15], motivations for seeking help [16, 17] and service awareness [14]. According to these studies, the main barriers to treatment are personal barriers (e.g. preference for self-management, acceptance that there is a problem and shame or stigma), although systematic barriers, such as service accessibility, have also been reported. The studies also suggest that motivation for help-seeking is related to the severity of PG, such as financial and relational issues, as well as a desire to regain control over gambling.

The actual prevalence of help-seeking for PG (inclusive of varying levels of severity), however, is not well-established. Help-seeking prevalence estimates reported in the literature range from <1% to 34% [13, 17]. The large variation in prevalence is likely attributable to methodological differences such as the populations who were asked about help-seeking (e.g. total population being surveyed, regular gamblers, or only people with PG), the types of help-seeking assessed (e.g. any help-seeking or professional help-seeking excluding help

from self-help groups or self-management techniques), the timeframe indicated for PG and help-seeking (e.g. lifetime or current) and geographical differences. In addition, rates have been reported based on convenience samples, which may over-estimate the rate of help-seeking [18]. We, therefore, aimed to: (i) estimate the international prevalence of help-seeking for PG among the general population by pooling data from representative gambling prevalence studies; (ii) identify factors that explain the variability in estimates of help-seeking prevalence; and (iii) estimate the prevalence of help-seeking among subgroups of people at risk for PG (i.e. low-risk, moderate-risk and PG).

METHODS

The methodology in this review is consistent with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) [19] and was registered a priori with PROSPERO (CRD42020198026). Deviations from the PROSPERO protocol are described in Appendix S1.

Eligibility criteria

Studies were included if they: (i) published in English since 2010 and to capture current evidence described data collected after 1 January 2010; (ii) used representative sampling methods to determine the prevalence of gambling participation or PG; (iii) included over half of study participants aged 18 years or over; (iv) used a standardised measure to assess PG; (v) provided an estimate of the prevalence of lifetime or current help-seeking for PG in the study population or a subgroup of gamblers; and (vi) provided sufficient data to calculate the prevalence of help-seeking at the population level or by subgroups of gamblers. Studies were excluded if the: (i) primary aim of data collection was not related to the prevalence of gambling participation or PG; (ii) study population consisted of a help-seeking sample (e.g. face-to-face treatment seekers) or specific populations (e.g. university students, prisoners, migrants, casino or gaming patrons, specific age groups or those attending mental health services); (iii) sample was based on panel data; (iv) publication was a book, conference paper or presentation; (v) help-seeking for self could not be separated from help-seeking for others (e.g. combined help-seeking item that asks about help for self or others); or (vi) data were presented in another included source, which provided more detailed data. Help-seeking was defined as any intentional action to change gambling behaviours, including professional services (inclusive of in-person or distance help), non-professional help (e.g. from family and friends) and self-help [20]. The measure of help-seeking did not need to be a validated screen as none currently exists.

Search strategy

The systematic search was conducted in September and October 2021 to identify all relevant prevalence studies that included an estimate of help-seeking for PG. A detailed overview of the search strategy is provided in Appendix S2. The primary target was grey literature (i.e. reports and government publications). Grey literature was prioritised as our pilot search identified that it was more likely to contain the administered survey and information on help-seeking (i.e. the help-seeking question). In March 2020, a preliminary Google search was conducted on country-specific Google domains using the search terms *gambling* and *prevalence* in combination with *country*, or *state* to search for additional region-specific publications (e.g. gambling, prevalence, Sweden). We searched the first 100 citations from 2010 onward. We also searched gambling research repositories identified through the Google search and previously known by the research team including the GREO Evidence Centre, Gamble Aware, United Kingdom (UK) Gambling Commission Library and gambling research institutes in each country or region (e.g. Victorian Responsible Gambling Foundation, National Council on Problem Gambling, Alberta Gambling Research Institute, Australasian Gaming Council, and University of Nevada, Las Vegas [UNLV] Center for Gaming Research). In addition to the grey literature search, we conducted an electronic database search (ProQuest, Ovid PsycINFO, PubMed and Scopus) for peer-reviewed literature, using a combination of key words and wildcards related to gambling (*gambl**) and prevalence studies (i.e. *prevalence*, *population*, *representative*, *nation**, *epidemiolog**, *cross-sectional*, *participation*) and additional limits per database where appropriate (e.g. *year restriction*, *subject area*). We also conducted a manual search of the reference lists of previous systematic reviews on gambling prevalence [21, 22] to identify further relevant studies. Finally, the Google search was updated by screening the first 50 citations from 2020 onward.

Study selection

Study selection was performed in two stages. For grey literature, the first stage entailed screening of title, table of contents and executive summary, and performing a key word search of the full-text report using the following terms: *help*, *seeking*, *sought*, *therapy*. For peer-reviewed articles, first-stage study selection was based on screening of title and abstract. Full texts were retrieved for all articles fulfilling the first two inclusion criteria, under the assumption that help-seeking may be reported as a secondary result without being mentioned in the abstracts. The second stage of study selection comprised detailed full-text screening of reports and articles to assess if studies met the full set of inclusion criteria. Where there were multiple studies presenting data from the same survey, we prioritised whichever presented the most relevant and comprehensive information. Corresponding authors were not contacted where studies were excluded because of insufficient data on help-seeking prevalence. Three reviewers (R.B., N.B. and S.R.) independently screened studies,

with double screening conducted for over three quarters of the identified studies. Discrepancies were resolved through group discussion with the research team.

Data extraction and risk of bias assessment

Data were extracted from studies using a structured Microsoft Excel data extraction form. Extracted data included descriptive characteristics (e.g. location, funding, year and mode of data collection and measure of PG), sample characteristics (e.g. sample size, rates of PG) and data on help-seeking (e.g. help-seeking item/s, timeframe of help-seeking, the subsample to which the help-seeking item/s was administered, and help-seeking prevalence estimates). The quality of the included studies was evaluated using a selection of five items from the ten-item risk of bias (ROB) tool for prevalence studies [23]. Items were selected by the research team (R.B., S.R., N.D. and S.M.) after several group discussions on whether each ROB item could be applied to assess the external and internal validity relating to the help-seeking component of the study. Specifically, our quality assessment focussed on representativeness of the target population and sampling frame, item-non-response, definition of help-seeking and mode of data collection. A description of the interpretation of the items and examples has been provided in Appendix S3. Each item could be scored as having low or high risk of bias. If information required for bias assessment was unavailable, the item was scored as not reported. Double data extraction and risk of bias assessment were done independently by two reviewers (R.B. and S.R.) for each of the included studies. Extracted data and bias assessment were compared, with any discrepancies being resolved through group discussion with the research team.

Data analysis

The metafor package [24] in R software v4.1.1 [25] was used to conduct the meta-analyses. The effect size measure of interest was the proportion of the population-representative sample that had sought help for PG. The meta-analyses were conducted using a binomial-normal model, with logit links [26]. This produces an estimate of the average log odds, which is then back-transformed to represent the median meta-analytic proportion of help-seeking. The effect sizes were weighted based on the inverse of their variance. Given the expected heterogeneity between studies, the meta-analyses used a random effects model. Heterogeneity of the meta-analytic estimates were evaluated using the I^2 statistic, for which it has been suggested that estimates of 25%, 50% and 75% could be considered to reflect low, moderate and high levels of heterogeneity [27]. Decision rules related to data extraction and analysis are shown in Appendix S4.

To assess publication bias, a funnel plot was generated for the help-seeking prevalence estimate. As recommended for meta-analyses of proportions, sample size was used as the measure of accuracy on the y-axis [28]. To correct for asymmetry, the trim-and-fill procedure

[29] was then used to provide a proportion estimate that is adjusted for publication bias [30].

Additional analyses

A series of subgroup analyses were conducted to explore factors that may explain the variability in the meta-analytic estimates. Similar to the main meta-analysis, all subgroup analyses used a random effects model. Subgroup analyses included: (i) timeframe (lifetime versus current); (ii) gambling participation (past-year gamblers versus lifetime gamblers); (iii) gambling help service awareness (awareness vs lack of awareness as subsamples administered the help-seeking item/s); (iv) region (Australasia vs North America); (v) type of help-seeking measure (single-item vs multi-item); and (vi) type of help-seeking (professional services only vs mixed options). Variables in the subgroup analyses were treated as moderators of the meta-analytic estimate, with a minimum of five estimates required per moderator category for a subgroup analysis to be conducted. A meta-regression was also conducted, with year of data collection as the moderator.

An additional subgroup analysis was conducted to estimate and compare the prevalence of help-seeking by level of gambling severity. For studies to be included in this subgroup analysis, level of gambling severity had to be defined by a standardised PG severity measure. Grouping by gambling severity was according to Problem Gambling Severity Index (PGSI) categories of low-risk, moderate-risk and PG, reflecting PGSI scores of 0–2, 3–7 and 8+, respectively [31]. Where studies stratified gambling severity according to gambling severity tools other than the PGSI, we grouped the reported data by previously proposed cut-offs [32].

Sensitivity analyses

A series of sensitivity analyses were conducted to examine whether the meta-analytic estimates were robust to methodological quality of the included studies. Specifically, studies that were rated as having a high risk of bias or provided insufficient detail to make a risk of bias judgement for each risk of bias item were excluded from the main meta-analysis.

RESULTS

Study selection

In the grey literature search, we identified 6637 records, from which we reviewed 65 full-text documents. Another 7266 records were identified in the electronic database search. After duplicate removal, we screened 3808 records, from which we reviewed 62 full-text documents. After assessing the full-text documents against the full set of eligibility criteria, 24 studies were included in the meta-analysis [33–56]. Reasons for exclusion of the 103 reviewed full-text studies

are reported in Appendix S5. Figure 1 provides a flow-diagram of the study selection process.

Characteristics of included studies

Appendix S6 provides an overview of the characteristics of included studies. The majority of studies were conducted in the Australasian region (70.8%, $k = 17$), followed by the North American region (25.0%, $k = 6$) and other regions (4.2%, $k = 1$). Most studies used one type of data collection (phone: 79.2%, $k = 19$; face-to-face interviews: 4.2%, $k = 1$), whereas other studies used a combination of methods to achieve their sample size. In all studies, targeted individuals were aged 18 years or older and the total sample sizes ranged from 1700 to 20 017 participants (mean, 7843; SD, 4879; median, 5735). Almost all studies classified PG severity with the PGSI (95.8%, $k = 23$), with the percentage of PG and moderate-risk gambling in the study populations ranging from 0.4% to 1.9% (mean, 0.8%; SD, 0.4%; median, 0.7%) and 1.1% to 5.1% (mean, 2.4%; SD, 1.0%; median, 2.4%), respectively.

Table 1 displays study data relating to the help-seeking component of the study. Help-seeking items focused on either current (54.2%, $k = 13$) or lifetime (37.5%, $k = 9$) help-seeking, although a small minority assessed both timeframes (8.3%, $k = 2$). Most studies administered the help-seeking item to a sub-sample of the total population (79.2%, $k = 19$), with samples commonly reflecting participants meeting one or more of specific conditions, such as participation in gambling over the past year (66.7%, $k = 16$), being at risk of PG according to the PGSI (54.2%, $k = 13$), self-identifying as having a gambling problem (8.3%, $k = 2$), gambling regularly (12.5%, $k = 3$), using electronic gambling machines (12.5%, $k = 3$), or reporting to have wanted help or thought about getting help (12.5%, $k = 3$). A small number of studies reporting current help-seeking limited administration of the help-seeking item to participants who reported that they had ever sought help (12.5%, $k = 3$).

Risk of bias

A summary of the risk of bias assessment of the included studies is provided in Table 2. Less than half of the included studies were classified as having low risk of bias arising from the sampling frame (41.7%, $k = 10$), whereas the remaining studies were classified as having high risk (54.2%, $k = 13$) or no data reported on the bias item (4.2%, $k = 1$). Two-thirds of the studies were classified as having a low risk of bias related to selection of respondents within the sampling frame (66.7%, $k = 16$). A small number of studies were classified as low risk of bias because of item non-response (25.0%, $k = 6$), whereas the remaining studies did not report sufficient information to classify the study as having low or high risk of bias (75.0%, $k = 18$). The majority of the studies were classified as having low risk of bias arising from the definition of help-seeking (70.8%, $k = 17$) and most studies were classified as having low risk of bias arising from the mode of data collection (83.3%, $k = 20$).

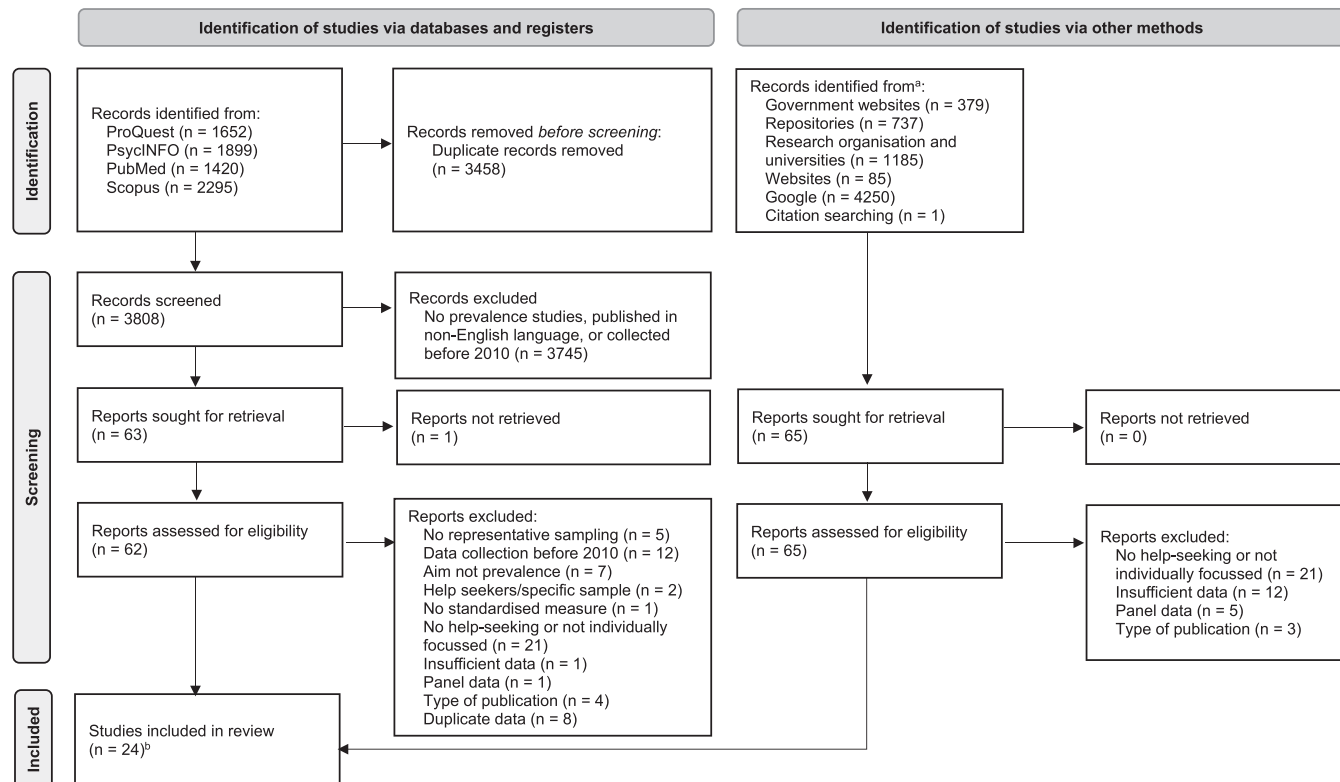


FIGURE 1 PRISMA flow diagram of study selection. See Supporting information for a complete list of identified and searched sources. ^aFor the first phase of screening we retrieved full texts of all records from grey literature to enable search of executive summary, table of contents and key words. ^bAll from grey literature

Meta-analysis

All 24 included studies provided data to calculate the general population estimate of help-seeking for PG. The median prevalence of help-seeking was 0.23% (95% CI, 0.16–0.33), with high levels between-study heterogeneity ($I^2 = 94.1\%$). Figure 2 shows the forest plot of this meta-analysis. Visual inspection of the funnel plot suggests some asymmetry (Appendix S7, Figure S1). The trim and fill procedure indicated that the adjusted proportion (0.32; 95% CI, 0.22–0.48) was slightly greater than the original proportion (0.23; 95% CI, 0.16–0.32). Six studies were imputed on the right of the plot (Appendix S7, Figure S2).

Additional analysis

Subgroup analyses were performed to identify potentially relevant sources of heterogeneity between the included studies. Findings from the subgroup analyses are provided in Table 3. Current help-seeking (0.14%; 95% CI, 0.10–0.20) yielded significantly lower prevalence estimates compared to lifetime help-seeking (0.50%; 95% CI, 0.35–0.71, $P < 0.001$). There was no evidence of systematic variation in the prevalence estimates by gambling participation (past-year gambling vs ever gambling), region (Australasia vs North America) or type of help-seeking (professional services only vs

mixed options). We were unable to conduct a subgroup analysis by gambling help-service awareness as none of the studies limited the sample asked about help-seeking by awareness of help services. Subgroup analysis by type of help-seeking measure was not conducted as there were insufficient primary studies that administered a multi-item help-seeking question. Meta-regression for the year of data collection did not yield a significant association ($P = 0.537$).

Thirteen studies reported help-seeking across levels of gambling severity, all based on PGSI scores. Pooling the data revealed substantial differences in help-seeking prevalence estimates by the subgroup of gambling severity. The prevalence of help-seeking was significantly higher in respondents in the PG (20.63%; 95% CI, 12.89–31.35) and moderate-risk (3.73%; 95% CI, 2.07–6.63) gambling categories relative to the low-risk gambling category (0.27%; 95% CI, 0.07–1.04, $P < 0.001$). There were high levels of between-study heterogeneity in each of these severity subgroups.

Sensitivity analysis

Sensitivity analyses entailed repeating the meta-analysis while retaining only studies that were scored as low risk of bias on items reflecting different sources of bias. Findings from the sensitivity analyses are provided in Table 4. When restricting the meta-analysis to

TABLE 1 Study data on help-seeking for problems related to gambling

Study ID	Year of data collection	Exact help-seeking question	Timeframe help-seeking	Sub-population asked about help-seeking	N sought help/N asked about help-seeking	Help-seeking prevalence in sub-population (%)
Abbott et al. [33]	2012	Have you tried to get help to reduce or stop gambling in the past 12 months, whether informally from a friend or more formally from a health professional? ^a	Current; lifetime	Past year gamblers who ever sought help	21/50	41.6
ACIL Allen [34]	2011	In the past 12 months, have you tried to get any sort of help, including informal help from a friend or more formally from a help professional, for problems related to your gambling?	Current	PGSI 1 + gamblers ^b ; random subsample other respondents	11/2043	0.5
ACIL Allen [35]	2013	Have you ever tried to get any sort of help from the 24-hour hotline, Gamblers Help, or Gambling Help Online for problems related to your gambling?	Lifetime	PGSI 1 + gamblers ^b ; random subsample other respondents	9/1887	0.6
ACIL Allen [36]	2017	Have you ever tried to get any sort of help from the 24-hour hotline, Gambler's Help, or Gambling Help Online for problems related to your gambling?	Lifetime	All	13/5000	0.4
Browne et al. [37]	2018	In the last 12 months, have you tried to get any sort of help for problems relating to your gambling, such as professional or personal help like talking to family or friends?	Current	Regular gamblers; PGSI 1 + gamblers; random subsample other respondents	29/4505	0.9
Davidson et al. [38]	2014	Have you ever tried to get help for problems related to your gambling? Was this in the last 12 months?	Current	PGSI 3 + gamblers who ever tried to get help	6/72	8.1
DOJAG [39]	2011	In the last 12 months, have you tried to get any sort of help for problems related to your gambling, such as professional or personal help?	Current	PGSI 1 + gamblers	22/1144	1.9 ^c
DOJAG [40]	2016	In the last 12 months, have you tried to get any sort of help for problems related to your gambling, such as professional or personal help?	Current; lifetime	PGSI 1 + gamblers	23/1412	1.6 ^c
Gonnerman et al. [41]	2011	Have you ever sought treatment for a gambling problem	Lifetime	All	10/1700	0.6
Hare [42]	2014	Have you sought any help for a gambling problem—whether informally from a friend or more formally from a help professional—in the past 12 months?	Current; lifetime	PGSI 3 + gamblers who ever sought help	4/59	6.2

(Continues)

TABLE 1 (Continued)

Study ID	Year of data collection	Exact help-seeking question	Timeframe help-seeking	Sub-population asked about help-seeking	N sought help/N asked about help-seeking	Help-seeking prevalence in sub-population (%)
Hing et al. [43]	2011	Have you ever sought help in relation to your gambling from the following sources: (i) face-to-face from a specialist gambling counsellor; (ii) face-to-face from a non-gambling specialist professional, including doctor, psychologist/psychiatrist, financial, legal or other advisor; (iii) from a gambling helpline; (iv) from online or email gambling counselling; (v) from a residential treatment program; (vi) from a face-to-face support group, such as Gamblers Anonymous or Pokies Anonymous; (vii) from an online support group or discussion board, such as an internet forum; (viii) from family or friends; (ix) by excluding yourself from a land-based gambling venue or outlet; (x) by excluding yourself from a gambling website or online gambling operator; (xi) through self-help strategies, such as by budgeting, limiting access to money for gambling, avoiding gaming venues, taking up other activities	Lifetime	PGSI 3 + gamblers ^d	97/153	63.4
Lutz and Park [44]	2013	Have you ever sought treatment for a gambling problem?	Lifetime	All	7/1826	0.4
National gambling board [45]	2017	In the past 12 months, have you attended any rehabilitation program for problem gambling? ^e	Current	PGSI 2 + gamblers	6/317	1.9
NSDHW [46]	2013	Have you sought assistance from family or friends or through more formal services for a gambling problem? ^e	NR	PGSI 1 + gamblers	38/357	10.6 ^c
O'Neil et al. [47]	2020	In the 12 months before COVID, have you tried to get any sort of help for problems relating to your gambling, such as professional or personal help like talking to family or friends?	Current	Past year gamblers	13/2390	1.0
Paterson et al. [48]	2019	Have you EVER tried to get help for problems related to your gambling? ^f	Lifetime	Past year gamblers	88/5886	1.5
Rotunda and Schell [49]	2011	Have you ever received help or treatment for gambling from self-help groups, doctors, counsellors or others?	Lifetime	Gamblers who ever considered getting help	4/7	57.1

(Continues)

TABLE 1 (Continued)

Study ID	Year of data collection	Exact help-seeking question	Timeframe help-seeking	Sub-population asked about help-seeking	N sought help/N asked about help-seeking	Help-seeking prevalence in sub-population (%)
Social Research Centre [50]	2012	In the past 12 months, have you tried to get any sort of help—including informal help from a friend, or more formally from a help professional, for problems related to your gambling?	Current	PGSI 3 + gamblers	22/286	7.6
Sproston et al. [51]	2011	In the last 12 months, have you tried to get any sort of help for problems relating to your gambling, such as professional or personal help?	Current	Past year self-identified problem gamblers ^g	7/89	8.0
Stevens [52]	2015	Did you seek help for problems related to your own gambling in the last 12 months such as help from a counsellor or a friend?	Current	PGSI 1 + gamblers ^h	6/207	4.7
Stevens et al. [53]	2018	In the last 12 months did you seek help for problems related to your own gambling? ⁱ	Current	PGSI 1+, regular and monthly EGM gamblers	11/752	1.5
Streich et al. [54]	2019	Did you get help for gambling problems in the past 12 months?	Current	Respondents who ever thought they might have a gambling problem and who wanted help or thought about getting help for gambling problems in the past 12 months	5/21	37.1
Williams and Volberg [55]	2010	Have you sought help for gambling problems in the past 12 months?	Current	PGSI 5 + gamblers who gambled at least once a month ^j who ever wanted help	3/4	63.6
Woods et al. [56]	2018	Have you ever used gambling-help services for your own or someone else's gambling issues?	Lifetime	All	200/20017	1.0

PGSI = problem gambling severity index; NR = not reported; DOJAG = Department of Justice and Attorney-General; EGM = electronic gambling machines; NSDHW = Nova Scotia Department of Health and Wellness. ^aInterviewer may prompt. ^bThis includes accessing help via websites or through self-help publications; ^cincluding all EGM gamblers; ^doverall prevalence not reported, calculated from subgroups of gambling severity; ^eexcluding <52 times per annum gambling on lottery, lotto, pool tickets or bingo; ^fexact help-seeking question not reported, based on text; ^gexact help-seeking question not reported, based on previous survey; ^hgamblers who have sometimes, often or always felt they might have a problem with gambling; ⁱsup-population reflects a subsample of past year PGSI 1 + gamblers because of an issue the authors describe as a 'filtering error'; ^jinterviewer may prompt: 'Such as help from a counsellor or a friend'; ^kexcluding lottery tickets and raffle tickets. Note: discrepancies between the column 'help-seeking percentage in sub-population' and percentage as calculated from column 'N sought help/N asked about help-seeking' are because of rounding and weighting of the data in the included studies.

TABLE 2 Risk of bias assessment of included studies

Study ID	Sampling frame	Selection	Item non-response	Help-seeking definition	Data collection mode
Abbott <i>et al.</i> (2014) [33]	LOW	HIGH	NR	LOW	LOW
ACIL Allen (2011) [34]	HIGH	LOW	NR	LOW	LOW
ACIL Allen (2014) [35]	HIGH	LOW	NR	LOW	LOW
ACIL Allen (2017) [36]	LOW	LOW	NR	LOW	LOW
Browne <i>et al.</i> (2019) [37]	HIGH	LOW	NR	LOW	LOW
Davidson <i>et al.</i> (2015) [38]	HIGH	HIGH	NR	LOW	LOW
DOJAG (2012) [39]	LOW	LOW	NR	LOW	LOW
DOJAG (2018) [40]	LOW	LOW	NR	LOW	LOW
Gonnerman <i>et al.</i> (2011) [41]	LOW	LOW	LOW	HIGH	HIGH
Hare (2015) [42]	HIGH	HIGH	LOW	LOW	LOW
Hing <i>et al.</i> (2014) [43]	HIGH	LOW	NR	LOW	LOW
Lutz and Park (2014) [44]	LOW	LOW	LOW	HIGH	LOW
National gambling board (2017) [45]	HIGH	LOW	NR	NR	HIGH
NSDHW (2013) [46]	NR	NR	NR	NR	HIGH
O'Neil <i>et al.</i> (2021) [47]	LOW	LOW	NR	LOW	LOW
Paterson <i>et al.</i> (2019) [48]	HIGH	LOW	NR	LOW	LOW
Rotunda and Schell (2012) [49]	LOW	HIGH	NR	LOW	LOW
Social Research Centre (2013) [50]	HIGH	LOW	LOW	LOW	LOW
Sproston <i>et al.</i> (2012) [51]	HIGH	LOW	NR	LOW	LOW
Stevens (2017) [52]	LOW	HIGH	NR	LOW	LOW
Stevens <i>et al.</i> (2019) [53]	HIGH	LOW	NR	LOW	LOW
Streich <i>et al.</i> (2020) [54]	HIGH	HIGH	LOW	HIGH	HIGH
Williams and Volberg (2013) [55]	HIGH	HIGH	NR	HIGH	LOW
Woods <i>et al.</i> (2018) [56]	LOW	LOW	LOW	HIGH	LOW

NR = not reported; DOJAG = Department of Justice and Attorney-General; NSDHW = Nova Scotia Department of Health and Wellness.

studies with a low risk of bias related to the sample asked about help-seeking (i.e. sampling frame and selection within sampling frame) population estimates of help-seeking were somewhat higher than results from the main analysis (0.27%; 95% CI, 0.18–0.42 and 0.28%; 95% CI, 0.20–0.40, respectively). Restricting the meta-analysis to studies with a low risk of bias on the other items we assessed yielded results similar to the main analysis.

DISCUSSION

Although PG is increasingly acknowledged as a major international public health concern, systematic investigation of help-seeking for PG has lagged behind. This meta-analysis was the first to estimate the global prevalence of help-seeking for PG. Based on data from the 24 included studies, we estimated a general population prevalence of help-seeking for PG of 0.23%. When investigating help-seeking by gambling severity, we found that help-seeking prevalence estimates increased substantially by level of gambling severity. As data on help-seeking was commonly a minor component of large surveys on gambling behaviour, we assessed the

methodological quality with various bias items, which we applied specifically to the help-seeking data. We found considerable sources of bias and demonstrated that the findings from the main analysis had limited robustness in sensitivity analyses which accounted for external validity of the included studies.

Our study estimated that, globally, around 0.23% of the general population has sought help for PG, either during the past 12 months or at some point in their lifetime. As the worldwide prevalence of people experiencing serious PG has been estimated between 0.1 and 5.8% [22], our findings suggest a considerable need for help among those experiencing problems related to their gambling. Concurrent with other evidence [57, 58], the prevalence of help-seeking was greater among people with higher gambling severity. Around 1 in 25 people with moderate-risk gambling and 1 in 5 people with PG had sought help for PG. In comparison, a United States (US) population-based study estimated severe lifetime alcohol problems (i.e. alcohol abuse or dependence), in ~28% of the general population, with around 1 in 13 of those with alcohol abuse and 1 in 4 of those with alcohol dependence ever having sought professional or informal help for their alcohol problems [59].

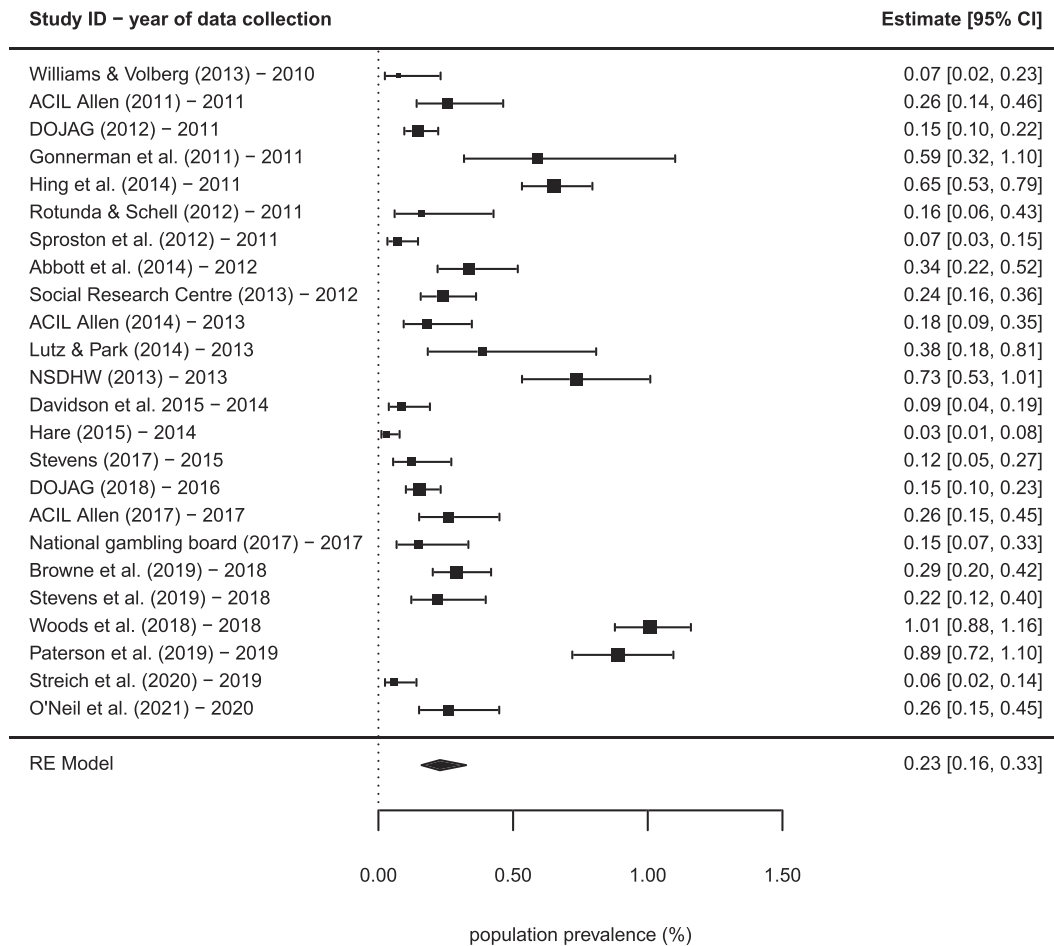


FIGURE 2 Forest plot showing meta-analytic results of the prevalence of help-seeking for gambling problems. DOJAG, Department of Justice and Attorney-General; NSDHW, Nova Scotia Department of Health and Wellness. Note: Studies have been ordered by data collection year

TABLE 3 Meta-analytic results of subgroup analyses

	<i>k</i>	<i>Pooled population (n)</i>	<i>Summary effect (%)</i>	<i>95% CI</i>	<i>I</i> ² (%)	<i>Tau</i> ²	<i>P-value</i>
Main model	24	188 234	0.23	0.16–0.33	94.29	0.64	
Timeframe							<0.001
Current	15	121 967	0.14	0.10–0.20	79.57	0.32	
Lifetime ^a	11	86 072	0.50	0.35–0.71	92.77	0.28	
Gambling participation							0.407
Past year	9	83 311	0.25	0.16–0.40	92.22	0.43	
Ever	8	50 358	0.33	0.21–0.52	85.69	0.31	
Location							0.952
Australasia	17	160 435	0.22	0.15–0.33	95.26	0.68	
North America	6	23 791	0.22	0.10–0.50	88.07	0.87	
Type of help-seeking							0.271
Professional only	7	40 051	0.31	0.18–0.54	86.07	0.43	
Mixed options	13	118 641	0.21	0.13–0.32	92.37	0.57	
Gambling severity							<0.001
Low risk	11	5031	0.27	0.07–1.04	90.50	3.21	
Moderate risk	13	2234	3.73	2.07–6.63	85.98	0.86	
PG	13	705	20.63	12.89–31.35	87.97	0.88	

^aIncludes data from two studies that reported both current and lifetime help-seeking.

TABLE 4 Meta-analytic results of sensitivity analysis

	<i>k</i>	<i>Pooled population (n)</i>	<i>Summary effect (%)</i>	<i>95% CI</i>	<i>Tau</i> ²	<i>I</i> ² (%)
Main model	24	188 234	0.23	0.16–0.33	0.64	94.29
Sampling frame	10	77 345	0.27	0.18–0.42	0.39	89.07
Selection	16	136 224	0.28	0.20–0.40	0.46	93.34
Item-non-response	6	54 855	0.21	0.08–0.58	1.46	96.08
Help-seeking definition	17	142 918	0.20	0.14–0.29	0.52	91.55
Data collection mode	20	168 796	0.21	0.15–0.31	0.64	94.32

Our findings showed high levels of heterogeneity in prevalence estimates of help-seeking. Overall, we were unable to identify consistent patterns in this variability, although we did demonstrate that lifetime help-seeking yielded significantly higher prevalence estimates than current help-seeking. This may be explained by the transitory nature of gambling and the potential recovery because of professional services, informal help or self-help strategies. In fact, it is estimated that around 40% of people with PG recover with or without professional oversight [58, 60].

A public health approach to gambling problems should be grounded in robust evidence on what people currently do to minimise and reduce their gambling harm and this should be inclusive of professional and non-professional support and self-help. Historically, the focus of initiatives to reduce gambling harm has been on promoting professional treatment to people with more severe PG. It is, however, increasingly being recognised that interventions should be targeted at people with problems across the full continuum of risk, including those experiencing less severe PG [4]. The type of help sought may vary by PG severity. For example, people with more severe PG are likely to have comorbidities [61] and may require more intensive interventions, guided by professionals such as GPs, psychiatrists or psychologists [62, 63], whereas people with less severe PG may prefer non-professional options and self-help strategies [64–67], which highlights the importance of information on such sources of help being promoted and easily accessible.

It is highly likely that our study underestimated the prevalence of help-seeking for PG in several ways. Many of the included studies administered the help-seeking question to a non-random selection of the total study population, for instance by only asking gamblers with a PGSI score of 3 or higher [38, 42, 43, 50]. By doing so, these studies were unable to capture help-seeking in those at low risk of PG. The resulting underestimation of such an approach was confirmed in a sensitivity analysis, which demonstrated a higher prevalence rate after excluding studies that limited the population asked about help-seeking. Furthermore, studies administering help-seeking questions that allude to professional services only [35, 36, 41, 44, 45, 49, 56] would have been unlikely to detect help-seeking from non-professional sources or the use of self-help strategies. Previous research clearly shows that a questionnaire that provides a comprehensive list of help options results in a higher help-seeking prevalence than a general help-seeking question without reference to non-professional and self-help options [20, 68]. Our findings did not reveal a lower estimate of

help-seeking when comparing help-seeking from professional services only with mixed options. In this review, all studies restricting their question to professional services only reported lifetime help-seeking, which may have distorted our finding in the subgroup analysis on type of help-seeking.

The current study demonstrated the urgent need for a standardized instrument and method to measure help-seeking for PG. Similar to what has been noted about research on help-seeking for mental health conditions in general [69], we observed great variability in help-seeking items and the sub-samples, to which these items were administered. The most apparent differences in items were seen in the timeframe, the type of help services covered, the specification—or lack thereof—of help and the process of help (i.e. wanting help, seeking help or receiving help) [69]. We prioritised seeking help and only extracted data on receiving help where the former was unavailable. Studies reporting on multiple stages of help-seeking, however, indicate that the difference in the subsample to whom help-seeking items are administered may lead to a vast difference in prevalence; for example, one of the included studies reported prevalence estimates of 15.8%; 9.1% and 6.8% for wanting, seeking and receiving help, respectively, in a sample of people with moderate-risk and PG [38]. Additionally, evidence suggests that more accurate help-seeking estimates are obtained when help-seeking item/s clearly specifies at least three types of help: namely, face-to-face help, distance-based help (e.g. helplines) and self-help [20]. In our study, help-seeking was considered in the broader sense, reflecting any engagement in the change process, including helplines and self-help. We were unable to discern between the different types of help-seeking as all, but one [43] of the included studies used single-item measures that fail to differentiate between the different types of help. Single-item measures could also lead to potential measurement errors in help-seeking estimates, which might be reduced by using multi-item help-seeking measures. Finally, to get a representative estimate on help-seeking, the sample asked about help-seeking needs to be appropriate and in line with the question. Specifically, when assessing current help-seeking, the sample should include a census or random selection of at least all gamblers at risk of PG, whereas for lifetime help-seeking, it should include the entire study population to prevent exclusion of those who have recovered from previous PG.

Our study had several strengths and limitations. For this study, we did a thorough systematic search of peer-reviewed literature

that yielded a large number of representative prevalence studies on gambling. Still, none of these studies were eligible for inclusion in the analysis, the majority because they did not report on help-seeking. This underscores the gap in scientific literature on the prevalence of help-seeking for PG, which we partly addressed with our systematic review and its strong focus on grey literature. Indeed, all included studies were based on governmental reports of representative surveys that provided a detailed overview of gambling-related behaviours in a geographical area. There was a high risk of bias when assessing quality of the help-seeking component of these studies. Furthermore, because we only included studies written in English, it is possible that we missed data from some geographical areas that have regulated gambling. We did, however, review full texts of a considerable number of studies that were outside of the USA, Canada, Australia, New Zealand or other countries where English is an official language, but none fulfilled all the inclusion criteria. We are, therefore, confident that our estimates would not have altered dramatically without language restrictions.

Our study highlighted the array of questions used to measure help-seeking. Regardless of variability in help-seeking questions and other differences across included studies, a need for professional and non-professional help is indicated by the pooled prevalence estimates for the general population and in people displaying different levels of gambling severity. Future research is required to develop and evaluate brief and psychometrically valid help-seeking questionnaires that adequately capture different sources of help and can consistently be implemented in national surveys on gambling behaviour and other gambling research worldwide. Moreover, more knowledge is required on the types of help sought by people who gamble so that types of help can be promoted and adapted to meet the demand of those seeking help more effectively.

ACKNOWLEDGEMENTS

We acknowledge Anna Aucamp who assisted with the pilot search. Open access publishing facilitated by The University of Auckland, as part of the Wiley - The University of Auckland agreement via the Council of Australian University Librarians.

DECLARATION OF INTERESTS

The authors have no conflicts of interest to declare in relation to this article. The 3-year declaration of interest statement of this research team is as follows: S.M., S.R. and N.D. have received funding from multiple sources, including government departments and the Victorian Responsible Gambling Foundation (through hypothecated taxes from gambling revenue). S.M., S.R. and N.D. have also received funding from the International Center for Responsible Gaming (ICRG), a charitable organisation, with funding decisions the responsibility of a scientific advisory board. S.M. is the recipient of a New South Wales Office of Responsible Gambling Postdoctoral Fellowship. None of the authors have knowingly received research funding from the gambling, tobacco or alcohol industries or any industry-sponsored organisation.

AUTHOR CONTRIBUTIONS

Rimke Bijker: Data curation; formal analysis; methodology. **Natalia Booth:** Data curation; formal analysis. **Stephanie Merkouris:** Data curation; formal analysis; methodology. **Nicki Dowling:** Conceptualization; formal analysis; methodology. **Simone Rodda:** Conceptualization; data curation; formal analysis; project administration.

ORCID

Rimke Bijker  <https://orcid.org/0000-0002-9150-2078>

Stephanie S. Merkouris  <https://orcid.org/0000-0001-9037-6121>

Nicki A. Dowling  <https://orcid.org/0000-0001-8592-2407>

Simone N. Rodda  <https://orcid.org/0000-0002-7973-1003>

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How to cite this article: Bijker R, Booth N, Merkouris SS, Dowling NA, Rodda SN. Global prevalence of help-seeking for problem gambling: A systematic review and meta-analysis. *Addiction.* 2022;117(12):2972–85. <https://doi.org/10.1111/add.15952>