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Title:

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Date:

2022-06-30

Citation:

Hing, N., Russell, A. M. T., Browne, M., Rockloff, M., Tulloch, C., Rawat, V., Greer, N., Dowling, N. A., Merkouris, S. S., King, D. L., Stevens, M., Salonen, A. H., Breen, H. & Woo, L. (2022). Gambling-related harms to concerned significant others: A national Australian prevalence study. *Journal of Behavioral Addictions*, 11 (2), pp.361-372. <https://doi.org/10.1556/2006.2022.00045>.

Persistent Link:

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FULL-LENGTH REPORT



Gambling-related harms to concerned significant others: A national Australian prevalence study

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Received: March 10, 2022 • Revised manuscript received: May 8, 2022 • Accepted: May 24, 2022

Published online: June 30, 2022

ABSTRACT

Background and aims: Gambling-related harm to concerned significant others (CSOs) is an important public health issue since it reduces CSOs' health and wellbeing in numerous life domains. This study aimed to 1) estimate the first national prevalence of CSOs harmed by gambling in Australia; 2) identify the characteristics of CSOs most at risk of harm from another person's gambling; 3) compare the types and number of harms experienced by CSOs based on their relationship to the person who gambles; and 4) compare the number of harms experienced by CSOs by self-identified gender. **Methods:** Based on a national CATI survey weighted to population norms, 11,560 respondents reported whether they had been personally and negatively affected by another person's gambling in the past 12 months; and if so, answered detailed questions about the harms experienced from the person's gambling who had harmed them the most. **Results:** Past-year prevalence of gambling-related harm to adult Australian CSOs was (6.0%; 95% CI 5.6%–6.5%). CSOs most commonly reported emotional harms, followed by relationship, financial, health and vocational harms, respectively. Former partners reported the most harm, followed by current partners, other family members and non-family members, respectively. Female CSOs were more likely to report more harm and being harmed by a partner or other family member, and male CSOs from a non-family member. **Discussion and conclusions:** The findings provide new insights into the wider societal burden of gambling and inform measures aimed at reducing harm to CSOs from gambling and supporting them to seek help.

KEYWORDS

gambling disorder, problem gambling, affected others, concerned significant others, gambling harm, PGSI, burden of disease

INTRODUCTION

Gambling harm refers to the adverse consequences of gambling that lead to a decrement to the health or wellbeing of an individual, family unit, community or population (Browne et al., 2016).

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This definition reflects a public health approach recognising that harm can occur across the spectrum of gambling symptom severity and extend beyond people who gamble to impact other individuals, families and communities (Latvala, Lintonen, & Konu, 2019; Price, Hilbrecht, & Billi, 2021). Concerned significant others (CSOs) are those in the social environment of the person who gambles, such as friends, family members and co-workers, and are the group most likely to experience any harm that gamblers “export” (e.g., unpaid bailouts, missed loan payments, etc., see Li, Browne, Rawat, Langham, & Rockloff, 2017; Salonen, Castrén, Alho, & Lahti, 2014). However, gambling harm to CSOs has received less attention than harm to gamblers themselves (Riley, Harvey, Crisp, Battersby, & Lawn, 2018), especially at the population-level (Dowling, Hawker, Merkouris, Rodda, & Hodgins, 2021).

Studies estimating the population prevalence of CSOs typically measure the proportion of adults who have a close relationship to a person with gambling problems, regardless of whether the CSO reports harm from that person’s gambling. However, their comparability is hindered by variations in research methodology, including the measurement timeframe and the rigor of measurement (Dowling et al., 2021). Studies also vary in terms of the definition of CSO status employed, with some studies including only family members, while others include family members, friends and colleagues. Lifetime estimates of adults who qualify as CSOs of a person with gambling problems range from 2.0% in Norway (Wenzel, Øren, & Bakken, 2008), to 18.2% in Sweden (Svensson, Romild, & Shepherdson, 2013) and 19.3%–21.3% in Finland (Lind, Castrén, Hagfors, & Salonen, 2022; Salonen et al., 2014, 2016). Naturally, past-year estimates are lower, estimated at 14.7% in Canada (Tulloch, Hing, Browne, Rockloff, & Hilbrecht, 2021a) and 12.9% in Finland (Castrén, Lind, Hagfors, & Salonen, 2021). Friends are most often reported as the source of gambling harm, followed by partners/ex-partners (Castrén et al., 2021; Lind et al., 2022; Stevens, Gupta, & Flack, 2020). However, being close to a person with a gambling problem does not necessarily result in harm to the CSO (Castrén et al., 2021; Salonen, Alho, & Castrén, 2016). Some population studies have therefore instead measured the prevalence of CSOs reporting harm from another person’s gambling. In Australia, past-year estimates of “harmed CSOs” range from 5.1% in Tasmania (ACIL Allen et al., 2018) to 8.1% in the Northern Territory (Stevens et al., 2020). Australian research has also estimated that each person with a gambling problem negatively affects 5.9 others, 3.2 for each person with moderate risk gambling, and 1.5 for each person with low risk gambling (Goodwin, Browne, Rockloff, & Rose, 2017). Therefore, research has consistently found that one person’s gambling harms multiple CSOs, adding to the total burden of gambling harm in the population.

Types of harms to CSOs

Conceptual frameworks identify gambling harm to CSOs as most commonly extending across financial, relationship, emotional, physical health and vocational domains (Browne

et al., 2016; Dowling et al., 2014, 2021; Kourgiantakis, Saint-Jacques, & Tremblay, 2013; Riley et al., 2018). Financial harms to CSOs can range from eroded savings, to more severe and less prevalent harms such as inability to afford necessities, the sale of family assets, and bankruptcy (Browne et al., 2016; Dowling et al., 2021; Holdsworth, Nuske, Tiyce, & Hing, 2013; Li et al., 2017). CSOs may experience increased financial harm over time, since people with a gambling problem tend to fund their gambling initially from personal savings, followed by increased debt, and then via joint bank accounts and home loans (South Australian Centre for Economic Studies, 2010). Intimate partners are most likely to bear these financial harms, although other CSOs can also be affected through provision of financial support and unpaid loans (Browne et al., 2016; Patford, 2007a, 2007b). Gambling can result in the economic abuse of CSOs, including theft, financial coercion, and enduring poverty and onerous debt (Browne et al., 2016; Holdsworth et al., 2013; Hing et al., 2021a, 2021b).

Relationship harms to CSOs are apparent through disruption, arguments and breakdown (Browne et al., 2016; Dowling et al., 2021). CSOs commonly report increased conflict and reduced enjoyment with people they care about (Li et al., 2017; Rockloff et al., 2019). Gambling also disrupts family functioning by eroding the time and attention given to the partner, children and family responsibilities (Dowling, Suomi, Jackson, & Lavis, 2016, 2021; Kalischuk, Nowatzki, Cardwell, Klein, & Solowoniuk, 2006; Hing et al., 2021c). Partners may be saddled with an inequitable share of household and family responsibilities due to the absent partner who is gambling, such as childcare, housework and household management, while parent-child relationships may be damaged (Patford, 2009; Tepperman, Korn, & Reynolds, 2006). Role distortion can also occur in other CSO relationships. Adult children may provide support for a parent or vice versa, which can complicate and damage family relationships (Browne et al., 2016; Patford, 2007a, 2007b). Lies and deception about gambling lead to mistrust and blame between CSOs and gamblers, along with loss of faith in a shared commitment to the family’s wellbeing (Hing et al., 2021c; Holdsworth et al., 2013; Patford, 2007b, 2009). These tensions can give rise to conflict, including family violence, to manipulate and control others to support the gambling (Dowling et al., 2014; Hing et al., 2021a, 2021d; Palmer du Preez et al., 2018; Suomi et al., 2013). Strains from gambling can lead to relationship breakdown and estrangement between CSOs and gamblers, as well as CSOs’ social isolation from family and friends (Dickson-Swift, James, & Kippen, 2005; Patford, 2007a, 2007b).

The most common emotional harms reported by CSOs include distress, hopelessness, anger and shame (Li et al., 2017; Rockloff et al., 2019), and CSOs have poorer mental health compared to the general population (Dowling et al., 2021; Svensson et al., 2013). Research with partners attests to their anger and distress when alerted to the gambling, typically only once financial difficulties become significant (Holdsworth et al., 2013; Patford, 2009; Valentine & Hughes, 2010). Partners also experience distress about the repercussions for their



children and resentment can arise amongst CSOs if they accept ongoing responsibility to support the gambler (Kourgiantakis et al., 2013; Patford, 2007a, 2007b). Hypervigilance (Riley et al., 2018) and “fear of the future” (Nuske, Holdsworth, Tiyce, & Hing, 2012) are common responses amongst CSOs, as they worry about undiscovered debt and their longer-term security. Due to the public stigma associated with gambling problems (Hing, Russell, Gainsbury, & Nuske, 2016a), shame is often reported by CSOs, causing ongoing psychological distress and social isolation (Browne et al., 2016; Hing, Nuske, Gainsbury, Russell, & Breen, 2016b, 2017).

CSOs report a wide range of physical health problems that are linked to sustained mental distress (Dowling et al., 2021; Riley et al., 2018) and an inability to afford preventative healthcare (Dickson-Swift, 2005). These problems include insomnia, digestive problems, hypertension, migraines, respiratory problems and exhaustion (Landon, Grayson, & Roberts, 2018; Lorenz & Yaffee, 1988, 1989; Patford, 2007b, 2008, 2009). CSOs have also reported excessive consumption of alcohol, food and tobacco (Lind et al., 2022; Svensson et al., 2013; Wenzel et al., 2008). One large survey ($N = 2,129$) found that the physical harms most reported by CSOs were reduced sleep, and stress-related health problems such as high blood pressure or headaches (Li et al., 2017).

Decrements in physical and mental health, and relationship problems, can impact on CSOs’ vocational activities (Dowling et al., 2021). Their work or study might be compromised by ill health, tiredness, distraction or stress from dealing with the consequences of gambling (Browne et al., 2016; Patford, 2008). Adult children may have insufficient money to support their education due to a parent’s gambling (Browne et al., 2016; Patford, 2007a). CSOs may take on extra work to supplement income depleted by the gambling or have their retirement plans disrupted (Hing, O’Mullan, Breen, Nuske, & Mainey, 2021d; Holdsworth et al., 2013; Patford, 2007b). One study found the most common work/study harms reported by CSOs were reduced work performance and absenteeism (Li et al., 2017).

Prevalence and types of harm by CSO relationship and characteristics

Population studies indicate that emotional harm is the most common harm amongst CSOs, followed by relationship, financial, health and work/study harms, respectively (Castrén et al., 2021; Rockloff et al., 2019; Salonen et al., 2016; Stevens et al., 2020). Three Finnish studies found that the prevalence of harm varied by the type of CSO relationship. In one study (Salonen et al., 2016), 11 of the 12 harms examined were most often reported by partners, followed by other family members, and then friends. Financial and relationship harms were highest for those whose partner/ex-partner had a gambling problem (Castrén et al., 2021; Lind et al., 2022). In these three studies, emotional harm tended to increase for CSOs with a parent or child with a gambling problem, while being a non-family CSO relatively decreased emotional harm. Not surprisingly, harms tend to increase

with the severity of the other person’s gambling (Li et al., 2017; Rockloff et al., 2019).

Harms also vary by some characteristics of CSOs. While women are not more likely to be CSOs compared to men (Lind et al., 2022; Rockloff et al., 2019; Stevens et al., 2020; Svensson et al., 2013), women tend to be CSOs of a family member and experience more harm, while men tend to be CSOs of non-family members (Castrén et al., 2021; Salonen et al., 2014, 2016). CSOs, especially males, are more likely than non-CSOs to also have a gambling problem (Salonen et al., 2014; Stevens et al., 2020; Svensson et al., 2013). However, apart from being female, having a gambling problem themselves, and being of indigenous descent (Lind et al., 2022; Rockloff et al., 2019; Stevens et al., 2020), there are mixed findings that other trait characteristics of CSOs increase the risk of harm from another person’s gambling. This is particularly true in studies employing population-level data (Dowling et al., 2021).

Overall, reviews of gambling harm to CSOs have concluded that the impact of gambling on CSOs is widespread; it has severe adverse effects in multiple life domains; partners are most severely affected but also parents and children; being a CSO is associated with reduced wellbeing and quality of life; most CSOs attempt a range of coping strategies before accessing other forms of support; and their awareness and use of professional help is low (Browne et al., 2016; Kourgiantakis et al., 2013; Riley et al., 2018; Tulloch, Browne, Hing, Rockloff, & Hilbrecht, 2021b; Dowling et al., 2021).

The current study

There is consistent evidence that the population prevalence of harmed CSOs exceeds the prevalence of problem gambling. However, detailed knowledge of harms to CSOs based on population representative studies is limited since most studies have drawn on non-representative or small qualitative samples (Dowling et al., 2021). As reviewed above, numerous studies have examined the prevalence of harmed CSOs, but only a few studies have provided detailed analyses of how the types of harms might vary by the CSO’s trait characteristics and relationship to the person gambling (Castrén et al., 2021; Lind et al., 2022; Salonen et al., 2016). Further, there has previously been no Australia-wide research that captures the national prevalence and nature of gambling harm to CSOs. The current study therefore aimed to:

1. estimate the national prevalence of CSOs harmed by gambling in Australia;
2. identify the characteristics of CSOs most at risk of harm from another person’s gambling;
3. compare the types and number of harms experienced by CSOs based on their relationship to the person who gambles; and
4. compare the number of harms experienced by CSOs based on their self-identified gender.

Based on the preceding literature review, we expected to observe that 1) CSOs most often report emotional and

relationship harms from another person's gambling, compared to other types of harm; 2) the greatest degree of individual harm is reported by CSOs affected by the gambling of intimate partners, followed by other family members and non-family members, respectively; and 3) female CSOs report more harms from another person's gambling when compared to male CSOs.

METHODS

Recruitment

After receiving ethics approval from (institution blinded for review) Human Ethics Research Committee (approval # 21992), a national telephone survey was conducted in October–November 2019. Respondents were recruited via a random CATI procedure to mobile phones in Australia. Mobile telephones were deemed the most appropriate recruitment method, given high mobile phone ownership and decreasing landline ownership in Australia. This sampling frame excluded the ~2% of the adult population with only a landline (Australian Communications and Media Authority, 2020). Inclusion criteria were residing in Australia and aged 18+ years. The detailed methodology is reported elsewhere (reference blinded for review).

Sampling and subsampling

A total of 15,000 respondents completed the survey. Respondents were split into three categories based on responses to initial survey questions: people who had not gambled in the last 12 months (non-gamblers), people who had gambled in the last 12 months but not online (land-based only gamblers), and people who had gambled online in the last 12 months, even if they had also gambled in land-based venues (online gamblers). The original research project focused on online gambling, and all online gamblers ($n = 2,648$) were asked further questions. An approximately equal number of land-based only gamblers were subsampled at random ($n = 2,606$) and asked further questions, while non-gamblers ($n = 6,306$) were only asked the screening questions and questions about harm from the gambling of other people. In total, the section on harms to CSOs was answered by 11,560 respondents, which formed the sample for the following analyses.

Measures

Screening and weighting questions. All respondents were asked their gender (male, female, other), age bracket, location of their residence, and the number of mobile phones they regularly use. These variables were used for weighting purposes (described below).

Further demographics. All respondents apart from non-gamblers and non-subsampled land-based only gamblers were asked further demographic questions. These included marital status, Aboriginal or Torres Strait Islander (ATSI)

status, highest level of education, country of birth, primary language spoken at home, and personal annual pre-tax income.

Gambling behaviour. All respondents were asked whether they engaged in each of 13 forms of gambling in the previous 12 months, and whether they had gambled online on any of the forms. These questions were used for subsampling and weighting purposes.

Problem gambling severity. The Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) was administered to all subsampled land-based only gamblers and all online gamblers, except those who gambled only on lotteries and/or bingo less than weekly ($n = 1,253$), given they were unlikely to report problems. This procedure was based on best practice recommendations for gambling prevalence surveys to limit participant fatigue among low-frequency gamblers and to minimise false positives (Williams & Volberg, 2012). It was also implemented to align with a previous Australian population survey on online gambling (Hing, Gainsbury, et al., 2014) to allow for direct comparisons. The PGSI consists of nine items, with response options ranging from “never” (0) to “almost always” (3). Respondents were categorised based on the original summed cut-off scores: non-problem gambling (PGSI = 0), low-risk gambling (PGSI = 1–2), moderate-risk gambling (PGSI = 3–7) and problem gambling (PGSI 8–27). Reliability in this sample was high (Cronbach's alpha = 0.88 and McDonald's omega = 0.89).

CSOs and harms for the CSOs. All respondents, except land-based-only gamblers who were not subsampled, were asked “These next questions are about how another person's gambling can affect you in a negative way. In the past 12 months, have you been personally affected by another person's gambling?” (“no”/“yes”). Those who reported “yes” were defined as CSOs and asked their relationship to the person whose gambling affected them the most, and which of 25 harms they experienced from that person's gambling (“no”/“yes” for each harm). These 25 harms were based on previous work (Browne et al., 2016) and contained additional items to the Short Gambling Harms Screen for Affected Others (ACIL Allen et al., 2018) to include harms that ranged from mild to severe and provide greater coverage across the broad categories of harm. Table 3 lists the 25 harms and their classification into five broad categories. This classification largely aligned with Browne et al. (2016).

Weighting

Weights were used to align the sample with current population figures from the Australian Bureau of Statistics, based on age, gender and location. The number of mobile phones that respondents regularly used was also considered for weighting purposes, since people who have multiple phones were more likely to be contacted for the survey. Subsampling weights were used to account for the subsampling procedure



for land-based only gamblers. Small discrepancies may be present in the weighted results, due to rounding.

Analysis

A combination of descriptive and inferential statistics was used, with all analyses using the weighted data. The national prevalence estimate was similarly a weighted descriptive statistic. Inferential analyses employed chi-square tests of independence with post hoc tests of proportions where required, or Kruskal-Wallis nonparametric tests, with pairwise Mann-Whitney tests. Harms were reported both individually, and in the five harm categories.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of Central Queensland University approved the study. All subjects were informed about the study, and all provided consent.

RESULTS

Estimated national prevalence of gambling harm from others

Of the 11,560 respondents who were asked if they had been negatively affected by the gambling of another person in the last 12 months, 20 respondents either refused to answer or replied, “don’t know”. Of the remaining 11,540, 696 people (6.0%; 95% CI 5.6%–6.5%) reported that they had been personally and negatively affected by another person’s gambling, and were therefore classified as CSOs for this study.

Characteristics of CSOs compared to non-CSOs

CSOs were more likely to be younger, never married, living in a de facto relationship, or divorced/separated compared to non-CSOs; who in-turn were more likely to be married or widowed. CSOs were more likely to be born in Australia, and mainly speak a language other than English at home (Table 1). No statistically significant differences were found

Table 1. Demographic and gambling behaviour comparisons between people who have and have not experienced harm from another person’s gambling in the last 12 months (*n* and %, weighted)

Variable and level	No harm from others	Harm from others	Inferential statistics			
<i>n</i>	10,844	696	χ^2	<i>N</i>	<i>P</i>	Φ
Gender			1.47	11,540	0.478	-
Male	5,340 (49.2)	327 (47.0)				
Female	5,502 (50.7)	369 (53.0)				
Other	2 (0.0)	0 (0.0)				
Age			73.98	11,542	<0.001	-0.08
18–19	440 (4.1)	45 (6.5)				
20–24	952 (8.8)	76 (10.9)				
25–29	905 (8.3)	75 (10.8)				
30–34	1,047 (9.7)	78 (11.2)				
35–39	957 (8.8)	79 (11.2)				
40–44	845 (7.8)	55 (7.9)				
45–49	950 (8.8)	67 (9.6)				
50–54	794 (7.3)	41 (5.9)				
55–59	884 (8.2)	71 (10.2)				
60–64	800 (7.4)	46 (6.6)				
65 +	2,271 (20.9)	64 (9.2)				
Marital status			69.31	6,528	<0.001	-0.10
Never married	1,271 (21.1)	165 (32.5)				
Living with partner/de facto	880 (14.6)	96 (18.9)				
Married	2,842 (47.2)	157 (30.9)				
Divorced or separated	731 (12.1)	77 (15.2)				
Widowed	296 (4.9)	13 (2.6)				
Born in Australia	4,419 (73.5)	407 (79.5)	9.37	6,541	0.002	-0.04
ATSI status	88 (2.4)	50 (3.1)	1.99	5,207	1.59	-
Main language other than English	532 (14.7)	280 (17.4)	6.40	5,225	<0.001	0.04
Gamble themselves	6,056 (55.8)	515 (74.1)	88.77	11,539	<0.001	0.09
PGSI			168.32	6,533	<0.001	0.16
Non-problem	4,963 (82.4)	317 (61.9)				
Low risk	662 (11.0)	87 (17.0)				
Moderate risk	285 (4.7)	77 (15.0)				
Problem	111 (1.8)	31 (6.1)				

Notes. Non-gamblers were only asked age, gender and gambling behaviour, hence the different total *n*s for inferential statistics. Bold text indicates statistically significantly higher percentages in that row. Education $\chi^2(5, N = 6,388) = 7.58, P = 0.181$. Income Mann-Whitney $U = 1,023,922.5, Z = -1.23, P = 0.219$.

for gender, Aboriginal and Torres Strait Islander status, educational level, or income. CSOs were also significantly more likely to gamble themselves, and be classified in the low risk, moderate risk, or problem gambling categories of the PGSI.

Relationship to the person whose gambling harmed them

The most commonly reported relationship to the person whose gambling had negatively affected them was friend (33.0%), followed by spouse/partner (21.7% when combining current and former partner) (Table 2). Inter-generational harm was also observed, from both parents (11.8%) and children (6.3%). Amongst harmed CSOs, women were relatively more likely to experience harm from a current or former partner's gambling, or their child's gambling; while men were relatively more likely to experience harm from the gambling of friends and work colleagues/other.

Associations between types of harm and relationship to the person whose gambling harmed the CSO

Table 3 displays the 25 harms experienced based on the CSO's relationship with the person whose gambling harmed them (partner, other family member, or non-family member). For 22 out of the 25 harms, there was a significant difference in the proportion of harms endorsed by relationship category. These 22 harms were most frequently reported in relation to a partner's gambling. No significant differences, however, were found between the relationship categories for the following three harms: *Felt angry about them not controlling their own gambling*, *Feelings of hopelessness about their gambling*, and *Used your work or study time to attend to issues caused by their gambling*.

Table 2. Relationship to the person whose gambling most harmed them, by gender (*n* and %, weighted)

Relationship	Male	Female	Total
<i>n</i>	324	364	688
Any spouse/partner	36 (11.1)	113 (31.1)	149 (21.7)
Current spouse/partner	20 (6.2)	68 (18.7)	88 (12.8)
Former spouse/partner	16 (4.9)	45 (12.4)	61 (8.9)
Any family member	100 (31.0)	167 (46.0)	267 (38.9)
Parent	32 (9.9)	49 (13.5)	81 (11.8)
Sibling	26 (8.0)	39 (10.7)	65 (9.4)
Child	12 (3.7)	31 (8.5)	43 (6.3)
Other relative incl grandparent	31 (9.6)	49 (13.5)	80 (11.6)
Any non-family member	187 (57.9)	83 (22.9)	270 (39.4)
Friend	155 (47.8)	72 (19.8)	227 (33.0)
Work colleague/other	32 (9.9)	11 (3.0)	43 (6.3)

Notes. No respondents identifying as a gender other than male or female reported experiencing harm from another person's gambling. Bold text indicates statistically significantly higher percentages in that row. Italic text indicates subcategories.

For categories: $\chi^2(7, N = 688) = 97.19, P < 0.001, \phi = 0.38$.

For subcategories: $\chi^2(2, N = 686) = 94.63, P < 0.001, \phi = 0.37$.

Table 4 provides further insights into the associations between the categories of harm and relationship to the CSO. It includes more specific relationships, including whether the partner was a former or current partner; whether the family member was a parent, sibling, child or grandparent/other-relative; and whether non-family members were a friend or work colleague/other. Emotional harms were the most commonly reported type of harm, regardless of the relationship with the CSO. Relationship issues were the second most reported for most CSO relationship categories. The least reported category was work/study harms. Examining the columns, all five categories of harm were most commonly reported when that harm was due to a former partner's gambling. CSOs harmed by the gambling of their current or former spouse/partner or child were the most likely to report harms in most of the harm categories, although relationship harms were also commonly reported by those harmed by a parent, sibling or other relative's gambling.

Associations between the number of harms and relationship to the person whose gambling harmed them

Table 5 indicates that CSOs harmed by a partner's gambling reported more harms ($M = 10.17, SD = 7.24$) than CSOs harmed by a family member's gambling ($M = 6.81, SD = 4.43$; Mann-Whitney $U = 17,282.5, Z = -4.27, P < 0.001$). CSOs reporting harm from a non-family member's gambling reported significantly fewer harms ($M = 5.91, SD = 4.97$) than CSOs harmed by a partner's or other family member's gambling (Kruskal-Wallis $H(2) = 41.19, P < 0.001$). Overall, the highest number of harms was attributed to the gambling of a former partner, followed by a current partner, a parent, and a child, respectively. Given that women were more likely to report gambling harm from partners and family members, it is unsurprising that women reported a higher number of harms ($M = 7.74, SD = 5.75$) compared to men ($M = 6.54, SD = 5.30$; Mann-Whitney $U = 62,437, Z = -3.28, P = 0.001$).

DISCUSSION

Based on this first national population estimate for Australia, 6.0% of the adult population reported being harmed by another person's gambling in the previous 12 months. This is similar to previous past-year Australian state figures (ACIL Allen et al., 2018; Rockloff et al., 2019; Stevens et al., 2020), and overseas estimates (Castrén et al., 2021; Salonen et al., 2016). The study therefore confirms that harm from gambling is not confined to the person who gambles but can have detrimental impacts on other people across multiple life domains (Dowling et al., 2021; Li et al., 2017; Jeffrey et al., 2019). As expected, emotional harms were the most frequently reported. Over two-thirds of CSOs reported anger and distress, while half reported feeling hopeless about the person's gambling. These emotional harms to CSOs have

Table 3. Harms experienced by relationship with the gambler (*n* and % weighted)

Harm	Partner (<i>n</i> = 149)	Family (<i>n</i> = 266)	Non-family (<i>n</i> = 270)	Total (<i>n</i> = 686)	Inferential		
					χ^2	<i>P</i>	Φ
Emotional	135 _{a,b} (90.6)	250 _b (94.0)	227 _a (84.1)	612 (89.3)	14.14	0.001	0.14
Felt distressed about their gambling	107 _{a,b} (71.8)	196 _b (73.7)	169 _a (62.6)	472 (68.9)	8.45	0.015	0.11
Felt angry about them not controlling their own gambling	108 (72.5)	195 (73.3)	180 (66.7)	483 (70.5)	3.20	0.202	-
Feelings of hopelessness about their gambling	72 (48.3)	140 (52.4)	127 (47.2)	339 (49.5)	1.57	0.457	-
Felt insecure or vulnerable	64 _a (43.0)	45 _b (16.9)	43 _b (15.9)	152 (22.2)	47.62	<0.001	0.26
Thoughts of running away or escape	46 _a (30.9)	20 _b (7.5)	31 _b (11.5)	97 (14.1)	45.66	<0.001	0.26
Increased experience of depression	57 _a (38.3)	58 _b (21.8)	39 _c (14.5)	154 (22.5)	31.15	<0.001	0.21
Financial	120 _a (80.5)	120 _b (45.1)	109 _b (40.4)	349 (50.9)	67.91	<0.001	0.32
Reduction of your available spending money	100 _a (67.1)	87 _b (32.6)	82 _b (30.4)	269 (39.2)	62.44	<0.001	0.30
Reduction of your savings	77 _a (51.7)	76 _b (28.5)	63 _b (23.3)	216 (31.5)	37.61	<0.001	0.23
Late payment of bills (e.g., utilities, rates)	47 _a (31.5)	33 _b (12.4)	43 _b (16.0)	123 (18.0)	25.06	<0.001	0.19
Less spending on essential expenses such as medication, healthcare, food	51 _a (34.2)	32 _b (12.0)	39 _b (14.4)	122 (17.8)	35.76	<0.001	0.23
Petty theft, including taking money or items from friends or family without asking first	31 _a (20.8)	43 _{a,b} (16.1)	31 _b (11.5)	105 (15.3)	6.65	0.036	0.10
Health	76 _a (51.0)	122 _a (45.7)	82 _b (30.4)	280 (40.8)	21.23	<0.001	0.18
Loss of sleep due to stress or worry about their gambling or gambling-related problem	67 _a (45.0)	113 _a (42.3)	76 _b (28.1)	256 (37.3)	16.29	<0.001	0.15
Stress related health problems	46 _a (30.9)	40 _b (15.0)	32 _b (11.9)	118 (17.2)	25.82	<0.001	0.19
Relationship	125 _a (83.9)	218 _a (82.0)	178 _b (66.2)	521 (76.2)	24.62	<0.001	0.19
Experienced greater tension in your relationships (suspicion, lying, etc)	106 _a (71.1)	186 _a (69.7)	119 _b (44.1)	411 (59.9)	46.59	<0.001	0.26
Experienced greater conflict in your relationships (arguing, fighting, ultimatums)	93 _a (62.4)	133 _b (49.8)	87 _c (32.2)	313 (45.6)	38.38	<0.001	0.24
Spent less time attending social events	57 _a (38.3)	55 _b (20.6)	76 _c (28.1)	188 (27.4)	15.11	0.001	0.15
Got less enjoyment from time spent with people you care about	72 _a (48.3)	98 _b (36.7)	92 _b (34.1)	262 (38.2)	8.67	0.013	0.11
Felt belittled in your relationships	56 _a (37.6)	40 _b (15.0)	45 _b (16.7)	141 (20.6)	34.04	<0.001	0.22
Threat of separation or ending of relationship/s	69 _a (46.3)	49 _b (18.4)	43 _b (15.9)	161 (23.5)	55.72	<0.001	0.29
Experienced family/domestic violence	29 _a (19.5)	28 _b (10.5)	15 _c (5.6)	72 (10.5)	19.66	<0.001	0.17
Experienced other forms of violence	27 _a (18.1)	26 _b (9.8)	20 _b (7.4)	73 (10.7)	11.93	0.003	0.13
Didn't fully attend to the needs of children	25 _a (16.8)	26 _b (9.7)	15 _b (5.6)	66 (9.6)	13.92	0.001	0.14
Work/study	59 _a (39.6)	68 _b (25.5)	72 _b (26.8)	199 (29.1)	10.39	0.006	0.12
Reduced performance at work or study (i.e., due to tiredness or distraction)	41 _a (27.5)	33 _b (12.4)	47 _b (17.4)	121 (17.6)	15.14	0.001	0.15
Used your work or study time to attend to issues caused by their gambling	37 (24.8)	48 (18.0)	52 (19.3)	137 (20.0)	2.93	0.231	0.07
Lack of progression in your job	31 _a (20.8)	17 _b (6.4)	28 _b (10.4)	76 (11.1)	20.46	<0.001	0.17

Notes. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b vs c) differ significantly. Groups with two subscripts (a,b) do not differ from groups with either of those subscripts. Subscripts are not shown if no significant differences were observed.

been widely reported in previous quantitative (Li et al., 2017; Rockloff et al., 2019) and qualitative studies (Holdsworth et al., 2013; Patford, 2009; Valentine & Hughes, 2010). Also, consistent with previous research, this study found that relationship harms were the second most reported type of harm, particularly relationship tension and conflict (Li et al., 2017;

Rockloff et al., 2019). This was followed by financial harms such as reduced discretionary money and savings, and health harms including sleep-loss due to stress. Fewer respondents reported work/study harms. The higher prevalence of emotional and relationship harms to CSOs supports previous findings (ACIL Allen et al., 2018; Castrén et al., 2021; Lind

Table 4. Harm categories by relationship with the gambler (% who endorsed one or more harm from each category, weighted)

Harm category	Current spouse/partner	Former spouse/partner	Parent	Sibling	Child	Other relative incl. grandparent	Friend	Work colleague/other
n	88	60	80	64	42	80	227	43
Emotional	84.1	100.0	90.0	98.4	92.9	95.0	85.9	74.4
Financial	77.3	85.0	45.0	48.4	55.8	36.3	40.5	39.5
Health	35.2	73.8	47.5	41.5	71.4	32.9	30.4	30.2
Relationship	74.2	96.7	81.3	78.5	81.0	86.3	68.7	51.2
Work/study	20.2	67.2	26.3	23.1	19.0	29.1	23.3	45.2

Note: Colour scale (green to red) is indicative of proportion. Green cells indicate lower proportions, and red cells indicate higher proportions. Proportions are evaluated across the entire table, rather than per row or column.

Table 5. Mean (SD) and median number of harms experienced by relationship with the gambler (weighted)

Relationship	Mean	SD	Median
Total (n = 684)	7.18	5.59	6
Any spouse/partner (n = 149)	10.17	7.24	10
Current spouse/partner (n = 89)	7.68	6.39	5
Former spouse/partner (n = 61)	13.82	6.90	12
Any family member (n = 266)	6.81	4.43	6
Parent (n = 81)	7.55	5.33	6
Sibling (n = 65)	5.93	3.38	5
Child (n = 41)	7.38	4.54	7
Other relative incl. grandparent (n = 79)	6.47	4.02	6
Any non-family member (n = 270)	5.91	4.97	5
Friend (n = 226)	6.01	4.96	5
Work colleague/other (n = 42)	5.37	5.04	4

Note: Numbers in subcategories may not sum to numbers for the category, due to rounding from weighting.

et al., 2022; Rockloff et al., 2019; Salonen et al., 2016; Stevens et al., 2020).

On average, an affected CSO reported experiencing 7.2 of the 25 surveyed individual harms, which were identified as emanating from the person's gambling who had harmed them the most. However, the number of harms differed by the CSO's relationship to this person. As expected based on earlier research (Castrén et al., 2021; Lind et al., 2022; Salonen et al., 2016), the greatest quantity of harms was reported by CSOs affected by an intimate partner's gambling (current or former), followed by other family members and non-family members, respectively. Those harmed by a partner's gambling were significantly more likely than the other relationship groups to report nearly all types of financial, relationship and work/study harms, as well as the emotional harms of feeling insecure, vulnerable or depressed, and health problems related to stress. This increased impact from partners can be confidently attributed

to the close financial and relationship interdependence that typically exists between intimate partners, compared to the less interdependent relationships usually associated with extended family members, adult children and friends. Further, family members (including partners) were more likely than non-family members to report emotional, health and relationship harms. Again, this likely reflects the strength of the relationship in which friends may find it easier than family members to limit the support they provide or detach from a harmful relationship. The findings overall are consistent with a ripple effect of gambling harm through an individual's family and social networks (Valentine & Hughes, 2010), with more harm experienced by those closest to the individual who gambles.

The tendency of close family members to experience more harms than others was also reflected in the specific relationship categories experiencing most harm. These were former partner, followed by current partner, parent, and child, respectively. Former partners reported widespread experience of all categories of harm, with nearly all reporting emotional, relationship and financial harm, and over two-thirds reporting health and vocational harm. This finding contrasts with some previous studies that have found higher emotional distress amongst CSOs cohabiting with the person who gambles, regardless of their relationship to that person (Makarchuk, Hodgins, & Peden, 2002; Orford, Cousins, Smith, & Bowden-Jones, 2017). While most current partners also reported emotional, financial and relationship harm, only a minority reported physical health and vocational harms. This is consistent with findings from population studies that indicate that emotional harm is the most common harm amongst CSOs, followed by relationship, financial, health and work/study harms, respectively (Castrén et al., 2021; Rockloff et al., 2019; Salonen et al., 2016; Stevens et al., 2020). Differences between former and current partners may reflect a tendency for more severe harm to result in relationship breakdown. The study also confirmed

that CSOs can be negatively affected by a parent's or child's gambling. These impacts were more likely to constitute emotional and relationship harm, although harms in other domains were also reported. Previous research has examined gambling-related harm to adult children and parents (Browne et al., 2016; Castrén et al., 2021; Patford, 2007a, 2007b), but this has received far less attention than harm experienced by partners (Dowling et al., 2021). Harm from friends also warrants more research. While fewer harms from a friend's gambling were reported (mainly related to emotional and relationship harms), a friend was the most frequently reported source of gambling harm to CSOs, which may reflect that people tend to have more close friends than close family members (Russell, Langham, Hing, & Rawat, 2018b).

The findings also emphasise the gendered nature of gambling-related harm to CSOs. Consistent with earlier studies (Lind et al., 2022; Rockloff et al., 2019; Salonen et al., 2014, 2016; Stevens et al., 2020; Svensson et al., 2013), women were not more likely than men to report being harmed by another person's gambling. However, as expected based on previous research (Castrén et al., 2021; Salonen et al., 2014, 2016), female CSOs reported more harms than male CSOs. Women were nearly three times more likely to be a CSO of a former or current partner and approximately 1.7 times more likely to be a CSO of another family member. Given the elevated prevalence of gambling harm from partners and family members, women reported experiencing a higher number of harms than men. This finding reflects the higher prevalence of gambling problems in Australia amongst men (Browne et al., 2020; Hing, Russell, Tolchard, & Nower, 2016c, 2021e; Rockloff et al., 2019) and which affects their predominantly female partners, as well as the traditional emotional support roles provided by and expected of women within families (Ruiz & Nicolás, 2018; Seem & Clark, 2006). While some studies have focused on the specific nature of gambling harm to women CSOs (Hing et al., 2021a, 2021c, 2021d; Palmer du Preez, Thurlow, & Bellringer, 2021a, 2021b, 2021c), this area of research warrants further attention, given the concentration of harm to CSOs amongst women.

In contrast, men were 2.3 times more likely than women to be a CSO of a non-family member and consequently reported fewer harms. Previous research has found that CSOs, especially males, are more likely than non-CSOs to also have a gambling problem (Lind et al., 2022; Salonen et al., 2014; Svensson et al., 2013; Stevens et al., 2020). In the current study, harmed CSOs were more likely to gamble themselves and be in the higher risk PGSI categories. This is in line with research showing that people who gamble, and those who experience gambling harm, tend to associate with others who gamble and have gambling problems (Russell, Langham, & Hing, 2018a, 2018b). The tendency of men in the current study to report being harmed by a friend's gambling likely reflects their social networks with other, predominantly male, gamblers.

The study's findings provide some directions for policy and practice. The prevalence of harmed CSOs indicates the

need for support for CSOs to recognise and cope with gambling-related harm, support the person to reduce harmful gambling, and seek help for this person and themselves. The study found that harmed CSOs were more likely to be younger, never married, living in a de facto relationship, or divorced/separated, born in Australia, and to mainly speak a non-English language at home. These characteristics can inform appropriate targeting of communications and support for CSOs. Given that harmed CSOs are more likely to gamble and have gambling problems themselves, these communications could be conveyed in locations where people gamble, as well as in media used by non-gamblers. Measures to assist CSOs should also take account of gender differences, in recognition that women are most harmed by family (including partners), whereas men are most impacted by friends and work colleagues.

Like all research, this study has limitations. Prevalence surveys (even by telephone) rely on subjective self-reports, and are prone to error, such as socially desirable responding. Errors associated with self-report may have also affected the results in the current study. While the estimate of harmed CSOs was based on a large number of respondents, the results for the types and number of harms were necessarily based on the much smaller sub-sample who reported being harmed. To constrain survey length, respondents reported the types of harm experienced only from the person whose gambling had harmed them the most. Given that people with gambling problems negatively affect up to six others (Goodwin et al., 2017), the analyses may not capture the full extent and severity of harm to CSOs. Nonetheless, the prevalence of harmed CSOs was based on being harmed by any other person's gambling and does not have this limitation. It is possible, however, that asking respondents whether they had been negatively affected by another person's gambling before asking about the 25 individual harms resulted in some underreporting. Again, this procedure was used to constrain survey length. The PGSI (Ferris & Wynne, 2001) was used, which has reliable properties for detecting gambling disorder, but is less appropriate for measuring individuals who are 'at-risk' of problematic gambling. It may be that problem gambling severity is underreported in the current study. Harm to children was not captured in the survey and would undoubtedly elevate the prevalence of gambling harm to CSOs in the population. A strength of this study is the inclusion of a comprehensive set of individual harms to CSOs and in several domains of harm, to provide a detailed account of the harms they experience.

CONCLUSION

The study has contributed to the research evidence that gambling-related harm to CSOs is an important public health and policy issue since it affects a sizeable number of people, and because CSOs experience greater decrements to subjective wellbeing and quality of life than non-CSOs, in tandem with this harm (Browne et al., 2016, 2017; Tulloch et al., 2021a, 2021b, 2021c). The study has provided the first

Australian prevalence estimate of past-year gambling-related harm to adult CSOs (6.0%) and a detailed analysis of harms experienced by people other than gamblers themselves by types of harm, relationship to the person who gambles, and gender.

The study's findings can inform measures and the allocation of resources to reduce harm to CSOs from gambling, and inform the development of health promotion materials that educate the population on how a person's gambling can affect those close to them. Research is needed into effective interventions for CSOs, with systematic reviews finding relatively few studies and the need for better study designs and outcome measurements (Dowling et al., 2021; Edgren, Pörtfors, Raisamo, & Castrén, 2022; Merkouris, Rodda, & Dowling, 2022). Prevalence studies should measure gambling-related harm to CSOs using a consistent measure of current CSO status, to better understand the burden of gambling harm that extends beyond the harm experienced by gamblers themselves. Perhaps the most salient conclusion from this study, however, is that gambling harm may not mostly impact men. Although males in most studies have been found to be twice as likely to suffer gambling problems but have lower rates of help-seeking (Hing, Russell, Tolchard, & Nower, 2014; Slutske, Blaszczynski, & Martin, 2009), they also are more likely to export harm onto the intimate partners in their lives, who are most often women. Thus, this study provides hints that gambling harm is more gendered than previously known and indicates the urgency of much needed CSO services for women harmed by another person's gambling.

Funding sources: Funding for this study was provided by Gambling Research Australia, a partnership between the Commonwealth, State and Territory Governments to initiate and manage a national gambling research program.

Authors' contribution: All authors except CT and HB helped to design the overall study and the survey instrument. NH led the study on which the current paper is based. AR conducted the statistical analyses and drafted the methods and results sections. NH drafted the introduction, discussion and conclusions. All authors refined and approved the submitted version of the manuscript.

Conflicts of interest: The authors declare no conflicts of interest relating to this manuscript.

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