Title: Poker playing among women: Understanding factors associated with gambling problems

Abstract

Poker players are at high risk of experiencing gambling problems. Despite the feminization of gambling, little is known about the problems associated with poker playing among women. This cross-sectional study aims to examine relationships between gambling problems and factors generally associated with gambling problems (gambling behaviours, substance use and mental health) among women poker players. A total of 46 women were recruited through a broader prospective cohort study from the province of Québec, Canada. The outcome variable of interest was participants' scores on the Problem Gambling Severity Index (PGSI); the predictive variables were gambling behaviours, alcohol and drug misuse (DEBA-Alcohol and drugs) and mental health (Beck anxiety and depression). Multiple logistic regression analyses revealed that the factors associated with gambling problems among women poker players are distinct from those of men. For women, severity of gambling problems is positively associated with Internet poker playing, playing slot machines and smoking cigarettes ($p < .05$). However, among these women, alcohol and drug misuse and mental health are not associated with gambling problems. Therefore, it is important to understand the risks associated with women poker players to develop preventive strategies adapted for this population and to adjust interventions accordingly.

Keywords: women; gambling problems; poker; risk factors; substance use; mental health

Résumé

Les joueurs de poker sont une population à risque de présenter des problèmes de jeu. Malgré la féminisation des jeux de hasard et d'argent (JHA), les connissancess sont limitées quant aux problèmes liés au poker chez les femmes. Cette étude transversale vise à documenter le lien entre les problèmes de jeu et les facteurs généralement associés aux problèmes de jeu (comportements de jeu, consommation de substances et santé mentale) chez les joueuses de poker. Au total, 46 femmes ont été recrutées dans le cadre d'une étude de cohorte prospective plus large réalisée dans la province de Québec, au Canada. Le score à l'Indice Canadien du Jeu Excessif (ICJE) était la variable dépendante; les variables prédictives étaient les comportements de jeu, l'abus d'alcool et de drogues (DEBA-Alcool et Drogues) et la santé mentale (Inventaire d'anxiété et de dépression de Beck). Les analyses de régression logistique ont révélé que les facteurs associés aux problèmes de jeu chez les joueuses de poker sont distincts de ceux des hommes. Pour les femmes, la gravité des problèmes de jeu est positivement associée à jouer au poker sur Internet, à jouer aux machines à sous et à fumer des cigarettes ($p < 0,05$). Toutefois, chez ces femmes, ni l'abus d'alcool et de drogues, ni la santé mentale ne sont pas associés aux problèmes de jeu. Il est donc important de comprendre les risques associés aux problèmes

de jeu chez les joueuses de poker afin de développer des stratégies de prévention adaptées à cette population et d'ajuster les interventions en conséquence.

Mots-clés: femmes; problèmes de jeu; poker; facteurs de risque; consommation de substances; santé mentale

Introduction

In 1999 the feminization of gambling was already drawing the attention of the Australian Productivity Commission Report (Productivity Commission, 1999), which stated that more women gamble and develop problems related to gambling. Since then, this phenomenon has been widely reported in the scientific literature around the world (e.g., Afifi et al., 2010a; Bowden-Jones & Prever, 2017; Davis, 2009; Holdsworth et al., 2012; Merkouris et al., 2016; Nuske et al., 2016; Richmond-Rakerd et al., 2013; Volberg, 2003; Wardle, 2017). Several studies converged to highlight the links between the legalization, accessibility and normalization of electronic gaming machines in the general population (Holdsworth et al., 2012; Volberg, 2003) and women's preference for gambling activities based on chance such as with these machines (Baggio et al., 2018; Delfabbro, 2009; Hing & Breen, 2001; Nower & Blaszczynski, 2006; Potenza et al., 2006).

Despite later initiation into gambling when compared to men, women report more rapid escalation towards gambling problems. This telescopic process is not yet well understood (Grant & Kim, 2002). One way to better understand this vulnerable population is to identify factors that influence women's gambling behaviours. Countering social isolation is a key motivation to start gambling and also a trigger for worsening gambling problems, especially for women (Lloyd et al., 2010; Sacco et al., 2011). Women prefer gambling environments such as online gambling, which allows them to feel safe due to its anonymous nature (Abbott et al., 2015). Furthermore, women who gamble are more likely than men to have co-morbid mental health problems such as anxiety and depression (Andronicos et al., 2015; Desai & Potenza, 2008; Karter, 2013). Despite knowledge of these differences between women and men, there continues to be a significant gap in the understanding of women who gamble. In fact, comparing women to men is very common in research, while a specific focus on women remains scarce (e.g., Holdsworth et al., 2012; McCarthy et al., 2018; Merkouris et al., 2016). Other areas of public health, such as prevention of alcohol use disorders, have developed appropriate strategies to reduce the risks for women by focusing on this population specifically (Wilsnack et al., 2013). This approach highlights gender-specific variables that influence harms experienced by women related to their alcohol use. Exploring within-gender comparisons exposes a diversity of women that would not emerge if only between-gender comparisons are carried out (Afifi et al., 2010b; Wardle, 2015). Differences between men and women are expected on various levels including lived experiences of gambling and gambling problems, as well as conditions and contexts in which those experiences unfold. Thus, in addition to research comparing women's and men's gambling practices, research delving deeper into the realities of women exclusively is much needed (Bowden-Jones & Prever, 2017).

More than a decade ago Mark and Lesieur (1992), two recognised researchers, claimed, "it is time for professionals in the field to rethink their conceptualization of problem gambling in terms of the various subgroups within the population-at-large, and not just the dominant culture. To do otherwise would only serve to perpetuate the existing inequities and biases currently embodied in the literature" (p. 561). Nevertheless, the few existing studies with samples composed only of women revealed a heterogeneity in gambling practices within this group (e.g., McCarthy et al., 2018; Wardle, 2015). For

instance, compared to other age groups, women gamblers aged 18 to 34 stood out because of their more frequent gambling practices and participation in a higher number of activities (McCarthy et al., 2018). This group also reported a higher prevalence of gambling problems. Moreover, women do not engage only in gambling activities based on chance (Abarbanel & Bernhard, 2012; Svensson, 2017; Wood et al., 2007). One of the rare existing published studies of exclusively women poker players suggested that women's behaviours go far beyond current theories that reduce women's choices to gendered gambling activity preferences (Abarbanel & Bernhard, 2012). Along with the small but significant increase in women's participation in strategic gambling activities (Wardle, 2015), the number of women playing online poker has risen. Women often seek anonymity through online poker playing (Afifi et al., 2010a), and they generally appreciate the convenience of online access to poker gambling (Corney & Davis, 2010). Several studies have also reported stigma associated with being a woman in the world of poker and the tendency for women to play online to offset this stigma (e.g., Wood et al., 2007). Despite the presence of women poker players, this group remains seriously underrepresented in studies and sometimes women are not included at all (e.g., Morvannou et al., 2018; Talberg, 2018). The fact that poker is a male-dominated activity (Abarbanel & Bernhard, 2012; LaPlante et al., 2009; Svensson & Romild, 2014) means that our current understanding of poker players is based on a predominantly male framework and does not provide an accurate understanding of women players (Mark & Lesieur, 1992).

Public health has shown concern about poker playing, with players being identified as an at-risk population for gambling problems (from 7.9 to 17.2% - Barrault & Varescon, 2013; Kairouz et al., 2014). Until now, studies on poker players, albeit with very few women included, have indicated that poker players are typically educated (Bjerg, 2010; Dufour et al., 2015; Hopley et al., 2012), and the risk factors associated with gambling problems are playing poker on the Internet (Dufour et al., 2019; Kairouz et al., 2012), gambling on various activities (Brosowski et al., 2012; Dufour et al., 2019), playing frequently, being impulsive (Barrault & Varescon, 2013; Hopley & Nicki, 2010) and presenting symptoms of anxiety and depression (Hopley & Nicki, 2010; Mitrovic & Brown, 2009; Shead et al., 2008). To our knowledge, the prevalence of gambling problems in women who play poker is unknown, nor is whether women with gambling problems have the same risk factors as men.

Despite consensus among researchers in the gambling field to refrain from assuming that results obtained with samples of men apply to women (Brandt & Whör, 2017; Mörsen, 2008), there is still too little data to provide a portrait of women poker players. This study aims to describe the relationships among gambling behaviours, substance use, mental health and severity of gambling problems among women poker players. To compare analyses and establish a benchmark for interpreting results for women poker players, the same relationships will be independently analyzed using a sample of male poker players. This will be the first study to explore whether, ultimately, the factors associated with gambling problems for women poker players are specific and distinct from those for men.

Methods

This study is based on cross-sectional analyses from a broader prospective cohort study on gambling behaviours among poker players in Quebec, Canada (*blinded for blinded review*). This research was approved by the *blinded for blinded review* (*blinded for blinded review).*

Broader study

The broader study is a prospective cohort study conducted among poker players between September 2008 and June 2016. The methodology has been described in detail elsewhere (*blinded for blinded review*). To be eligible, participants had to consider themselves poker players, have bet money on poker in the past year, be at least 18 years old and speak French. A convenience sample of poker players was recruited in various poker-playing venues (casino, tournaments in bars, tournaments in poker rooms) in 16 out of 18 regions in the province of Quebec through ads on poker information websites and in regional and cultural newspapers. After providing informed consent and personal contact information, participants completed an interviewer-administered questionnaire lasting approximately 90 minutes, for which they were paid a monetary stipend of CAD $30.

Current study

Study sample

The sample in this analysis was drawn from the broader study (*blinded for blinded review*). All participants in the broader study who self-identified as women poker players were considered for this analysis (n = 46). Due to the low retention rate among women and its implications for statistical analyses, only data at baseline were selected for this analysis, that is, data from the first questionnaire they completed.

Measurements

Sociodemographic - Socio-demographic information was collected for each participant: nationality, age, marital status (married, common-law, single, divorced or separated), number of children and economic situation (current employment status and annual average income).

Gambling problems and behaviours - Several questions designed to assess participants' involvement in gambling and poker during the last year were used.

Gambling problems: Severity of gambling problems was evaluated using the 9-item Problem Gambling Severity Index (PGSI), with scores ranging from 0 to 27 (score of 0 = non-problem gambling, 1 or 2 = low-risk gambling, 3 to 7 = moderate-risk gambling, 8+ = problem gambling; Ferris & Wynne, 2001). Based on individual PGSI scores, the study sample was divided into two categories: an at-risk gamblers group (moderate-risk and problem gambling) and a non-problem gamblers group (non-problem and low-risk gambling). This categorization is common in the field of gambling due to the low prevalence of problem gamblers in the general population (Kairouz et al., 2014) and allows the realization of statistical analyses.

Perceived gambling-related difficulties were measured and a dichotomous response was coded (lifetime difficulties: 0 = no; 1 = yes; help-seeking: 0 = no; 1 = yes).

Gambling behaviours: The players' main poker form (Internet poker playing vs. land-based) was determined by their answers to one of these two statements: "I mostly or exclusively play poker on the Internet" or "I mostly or exclusively play land-based poker". A dichotomous response was coded (Internet poker playing: 0 = no; 1 = yes).

Most-used poker modality (poker cash game vs. tournament) and trying to improve poker were measured, and dichotomous responses were coded for each question (cash game: 0 = no; 1 = yes; trying to improve: 0 = no; 1 = yes).

Age at poker initiation was measured with the question, "How old were you when you first played poker?", allowing for calculation of mean and standard deviation (*M, SD*).

The number of gambling activities in which poker players were involved was determined based on past 12-month participation in 18 types of gambling activities, allowing for calculation of total scores (ranging from 0 to 18). Each gambling activity (e.g., bingo, slot machines, video lottery terminal) counted as 1 when a participant gambled at least once over the past 12 months.

Factors associated with gambling problems - Other factors generally associated with gambling problems in the literature were examined using the following questions and tools:

Substance use: Smoking cigarettes and drinking alcohol when playing poker were measured, and a dichotomous response was coded for each question (smoking cigarettes: 0 = no; 1 = yes; drinking alcohol: 0 = no; 1 = yes).

The DEBA-Alcohol and DEBA-Drugs questionnaires (Tremblay et al., 2000) were used to assess level of alcohol or drug dependency problem in the past year, with scores ranging from 0 to 45 for alcohol (1 to 9 = low, 10 to 19 = moderate, 20 to 45 = high) and 0 to 15 for drugs (1 or 2 = low, 3 to 5 = moderate, 6 to 15 = high). The French versions of the DEBA-Alcohol and DEBA-Drugs were validated through a one-year process with clinicians, and have shown good psychometric properties (Tremblay et al., 1999, as cited in Tremblay et al., 2004). Based on individual DEBA-Alcohol and DEBA-Drugs scores, the study sample was divided into two categories: an at-risk alcohol dependency group (moderate-risk and high-risk) and a low alcohol dependency group (no-risk and low-risk); and an at-risk drugs dependency group (moderate-risk and high-risk) and a low drugs dependency group (no-risk and low-risk).

Mental health: The Beck Anxiety Inventory (BAI), a 21-item scale, was used, with scores ranging from 0 to 63 (score of 0 to 9 = normal or no anxiety, 10 to 18 = mild to moderate anxiety, 19 to 29 = moderate to severe anxiety, 30+ = severe anxiety; Beck et al., 1988). It assesses the intensity of affective, cognitive and somatic symptoms of anxiety experienced in the past week. Participants are asked to respond to each item on a 4-point Likert-type scale (0 = not at all to 3 = severely). The validated French version has excellent psychometric properties (Freeston et al.,1994). Based on individual BAI scores, the study sample was divided into two categories: normal or no anxiety group and mild to moderate anxiety group.

The Beck Depression Inventory (BDI), a 21-item test that evaluates the main symptoms of depression in the past week (Beck et al., 1996), was used, with scores ranging from 0 to 63 (score of 0 to 13 = minimal depression, 14 to 19 = mild depression, 20 to 28 = moderate depression, 29+ = severe depression). The validated French version has good methodological qualities (Bourque & Beaudette, 1982). Based on individual BDI scores, the study sample was divided into two categories: a minimal to mild depression group (minimal and mild depression) and a moderate to severe depression group (moderate and severe depression).

Analyses

Descriptive statistics (e.g., mean *M*, median *Med*, standard deviation *SD*) were used to characterize the study population's socio-demographic characteristics, gambling behaviours as well as problems and factors generally associated with gambling problems. The dependent variable was severity of gambling problems evaluated by the PGSI. The three groups of exposure variables studied to understand the association with gambling problems were gambling behaviours, substance use, and mental health. A multiple logistic regression analysis was conducted to assess the independent effects of gambling behaviours, substance use and mental health on moderate-risk and problem gambling. The first step consisted of conducting Pearson's Chi square test analyses with each exposure variable. All variables with p-values <0.2 for Pearson's Chi square test analyses were included in the multiple regression model. The second step consisted of following the backward procedure; significant variables with p-values <0.05 and those with a confounding effect were kept in the final model. A variable was considered confounding if its removal from the model changed a significant coefficient by more than 20%. Adjusted odds ratios (AOR) and 95% confidence intervals (CI) were derived from the final model. All analyses were carried out using SAS version 9.4 (SAS Institute, Cary NC).

To contrast the analysis and have a benchmark to interpret results for women poker players (n = 46), the same analyses were conducted independently with the sample of men from the broader study (n = 351 – see *blinded for blinded review* for more details).

Results

Participants

Of the 46 women poker players, the majority were born in Canada (n = 45, 97.8%) and aged 19 to 74 years (*Med* = 33, *SD* = 14.5). Most were married or in common-law relationships (n = 31, 67.4%); the others were single, divorced or separated (n = 15, 32.6%). More than half of participants did not have children (n = 24, 52.2%), and had full-time jobs (n = 24, 52.2%). Their annual average income was CAD $35,000 (*Med*, *SD* = $24,259).

Of the 46 participants, 11 were at-risk gamblers (n = 10, 21.7% moderate-risk; n = 1, 2.2% problem gambling); the majority were non-problem gamblers (n = 17, 37% non-problem; n = 18, 39.1% low-risk). A few participants perceived having had lifetime

gambling difficulties (n = 4, 8.7%) and none had sought help to control their problems in the last year or in their lifetimes.

Descriptive statistics showed that, the majority of women experienced mild to moderate anxiety in the past week (n = 33, 71.7%), whether they had gambling problems or not (at-risk gamblers n = 10, 90.9%; non-problem n = 23, 65.7%). The others had normal or no anxiety. When compared to men, more women poker players (both non-problem and at-risk gamblers) experienced mild to moderate anxiety and moderate to severe depression (anxiety in women n = 33, 71.7% versus men n = 235, 66.9%; depression in women n = 14, 30.4% versus men n = 28, 7.9%).

Women's factors for gambling problems distinct from men's

The model to predict at-risk gambling problems for women poker players comprised different factors than the one for men. Factors associated with gambling problems for women poker players were playing slot machine at the casino, playing Internet poker and smoking cigarettes (Table 1), whereas men's factors were number of gambling activities, age at poker initiation, having moderate or high levels of drug dependency, and mild to moderate levels of anxiety and moderate to severe depression (Table 2). While factors related to mental health were not linked to at-risk gambling problems for women, they were for men.

Table 1 about here

Table 2 about here

Comparison between women at-risk and non-problem gamblers

Pearson's Chi square test analyses showed statistically significant differences for 3 of 14 factors examined (Table 1). Specifically, when compared to women non-problem gamblers, women at-risk gamblers were more likely to gamble on more gambling activities, play slot machines at the casino and smoking cigarettes.

Multiple logistic regression analyses showed that, compared to non-problem gamblers, at-risk gamblers were more likely to play slot machines at the casino (AOR 38.45; 95% CI 2.41–613.79), choose Internet poker as the main poker form (AOR 13.88; 95% CI 1.17–164.35), and smoking cigarettes (AOR 11.43; 95% CI 1.01–129.78) (Table 1). However, other gambling behaviours, substance misuse and mental health factors were not associated with at-risk gambling. This overall model is well calibrated, according to the Hosmer-Lemeshow test (p =0.3443), statistically significant, and reliably predicts gambling problems (Chi square test (3) = 24.4055, p <.0001).

Discussion

This is the first study to evaluate factors associated with gambling problems among women poker players. The aim of this study was to examine the relationships among gambling behaviours, substance use and mental health in women poker players, and their associations with gambling problems. Notably, at-risk women gamblers, compared to non-problem women gamblers, were more likely to play slot machines, play Internet poker and smoking cigarettes. These results mirror previous findings from studies of gamblers, both women and men, engaged in gambling activities other than poker. Several studies have demonstrated the following: slot machines are one of the most problematic gambling activities in terms of gambling problems in the general population (Kairouz et al., 2014; Lund, 2006); Internet gamblers are more likely to be at-risk problem gamblers compared to gamblers using more land-based gambling activities (Gainsbury et al., 2012); and people who smoke cigarettes are more at-risk of developing gambling problems than non-smokers (Griffiths et al., 2010; Petry et al., 2005). A recent study demonstrated that for Internet gamblers, playing slot machines either online or land-based is associated with gambling problems (Gainsbury et al., 2019). Taking all these considerations into account, gambling problem prevention should warn women poker players who play slot machines, play on the Internet and smoke cigarettes about the high risk of developing gambling-related problems. The results also suggest that casinos and gambling websites should be targeted for prevention interventions. It might also be relevant to include other activities considered to be at risk, such as gambling, in tobacco prevention campaigns.

In the present study and even though they are a minority, some women poker players have gambling problems. Interestingly, results highlighted that women who play poker and also engage in chance-based gambling activities (i.e., slot machines) are more likely to endorse at-risk or gambling problems. Given the fact that women poker players engage in different gambling activities, it would be interesting to reach women through different venues. Also, the number of gambling activities has been identified associated with gambling problems in previous studies among poker players (e.g., Brosowski et al. 2012). Prevention efforts should be made to inform women poker players that gambling on various activities increase the risks of developing gambling problems. It is possible that women with gambling problems gambled on multiple activities to begin with and are experiencing gambling problems due to their engagement in multiple gambling activities, including poker. However, the design of this study blurs the temporality of their involvement in various gambling activities (i.e., poker first and then other activities or vice versa) and when they developed gambling problems. Furthermore, previous studies of men who play poker have reported that men consider poker to be different from other gambling activities, most rarely engage in other gambling activities, and do not perceive themselves as “gamblers” (Dufour et al., 2013; Morvannou et al., 2018). The contrast between the study results and the literature reinforces the idea that poker players could demonstrate different gambling behaviours, depending on whether they are women or men. This suggest that women poker players differ from men, and that it is critical to consider those differences in prevention, treatment and study of gambling problems in poker players. Some researchers consider gender to be a social determinant of gambling

problems, with implications for intervention (Nuske et al., 2016). They encourage women's community-based interventions in response to gambling problems in order to increase women's social connectedness and social support. A recent narrative literature review also recommended that future research should guide the development of programs tailored to the profiles, vulnerabilities, and needs of women with gambling problems (McCarthy et al., 2019). For example, women who participate in at-risk gambling activities should have access to community-based interventions that give them access to other activities or safe alternatives venues (McCarthy et al., 2019). So far, there have been no studies to determine whether women who play poker have the same perspectives and gambling behaviour patterns as men. Taken together, these data indicate that the findings for men should not be extended to women.

Playing poker on the Internet - a factor associated with gambling problems in the results - is of concern as the number of women playing online poker has increased (Afifi et al., 2010a). Previous studies among women reported the motives for preferring online over land-based gambling activities include flexible hours, lower cost, physical and emotional safety (Wang, 2018), anonymity (Afifi et al., 2010a), and accessibility (Corney & Davis, 2010). One study reported stigma associated with being a woman in the poker world and the tendency for women to play online to offset this stigma (Wood et al., 2007). However, the lack of studies of women poker players does not permit understanding of women's conditions, contexts, experiences and gambling problems, making it difficult to propose recommendations adapted to their specific risks and needs. This is consistent with previous recommendations made by other researchers who highlighted the fact that focus on women remains scarce (e.g., Holdsworth et al., 2012; McCarthy et al., 2018). So far, it is not known to what extent women use the prevention initiatives proposed on websites. But it is known that prevention is not perceived to be reaching men poker players (Morvannou et al., 2020). Future research could shed light on whether or not current preventive initiatives reach women, and if those initiatives need to be adapted according to gender.

Although some previous studies of poker player populations have demonstrated significant positive relationships between substance use (McCormack & Griffiths, 2012; Mihaylova et al., 2013) or mental health and gambling problems (Hopley & Nicki, 2010; Mitrovic & Brown, 2009; Shead et al., 2008), those findings are not supported by the present study, where neither substance use nor mental health problems are associated with at-risk gambling behaviours among women poker players. However, given the small sample of women recruited in this study, it is wise to remain cautious in asserting that there is no link. In addition, according to the descriptive statistics, women in the study (problem gamblers or not) were more likely than men to experience mental health problems (i.e., anxiety and depression). This could potentially create a ceiling effect on the results, so that significant differences were more difficult to detect between women with gambling problems and with no-problem because both experienced mental health problems. Moreover, given this ceiling effect, we can hypothesize that with a larger sample size, a difference could have been detected. Moreover, our findings diverge from other findings from samples of women gamblers recruited in treatment centres. In fact, several studies have reported that women with gambling problems are at higher risk of

also having mental health problems such as depression (e.g., Beaulac et al., 2017). The present study does not support the finding that depression and anxiety can be good predictors of gambling problems in women poker players. This contrast can be explained by recruitment, in the present study, of individuals in the general population (versus in treatment centres) who may have different mental health profiles and who are unlikely to seek help in specialized services. This result suggests that women gamblers form a heterogenous population. Future research should investigate the diversity of women gamblers and vary recruitment method to explore whether prevention and intervention needs are similar to those of other women gamblers.

Study limitations should be considered. The use of a convenience sampling strategy and recruitment only in the province of Quebec may have affected the generalizability of the results. The cross-sectional nature of the study design does not allow for causal relationships to be drawn and due to the small number of women participants, the results should be interpreted with caution. However, the logistic regression test used is powerful enough to support the type of analyses performed, and this study is the first to focus on factors associated with gambling problems in a specific population of women poker players, a population that is difficult to recruit. It is important to study this population even though it represents a minority of players.

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Table 1. Factors associated and not associated with at-risk gambling in women poker players (*n* = 46)

	All (*n* = 46)	Non-problem (*n* = 35)	At-risk (*n* = 11)	OR	*p*-value
Bivariate analyses [a]	*n* (%)	*n* (%)	*n* (%)	(95% CI)	
Gambling behaviours					
Internet poker playing	19 (41.3)	12 (34.3)	7 (63.6)	3.35 (0.81-13.77)	0.0932
Poker cash games [b]	22 (47.8)	15 (42.9)	7 (63.6)	2.33 (0.57-9.45)	0.2352
Number of gambling activities [c]	6.57 (2.6)	6.06 (2.6)	8.18 (1.9)	1.42 (1.04-1.95)	0.0250*
Playing bingo	8 (17.4)	4 (11.4)	4 (36.4)	4.42 (0.88-22.16)	0.0701
Playing slot machines at the casino	20 (43.5)	10 (28.6)	10 (90.9)	25.00 (2.81-221.72)	0.0038**
Playing video lottery terminal in bars	19 (41.3)	12 (34.3)	7 (63.6)	3.35 (0.81-13.77)	0.0932
Trying to improve poker	28 (60.9)	20 (57.1)	8 (72.7)	2.00 (0.45-8.84)	0.3607
Age poker initiation [c]	30.28 (12.7)	30.37 (13.2)	30.00 (11.4)	0.99 (0.94-1.05)	0.9318
Substance use					
Smoking cigarettes	20 (43.5)	11 (31.4)	9 (81.8)	9.81 (1.81-53.22)	0.0081**
Low alcohol dependency	12 (26.1)	7 (20.0)	5 (45.5)	3.33 (0.78-14.17)	0.1030
At-risk drugs dependency	6 (13.0)	4 (11.4)	2 (18.2)	1.72 (0.27-10.98)	0.5652
Drink alcohol during poker	17 (36.9)	14 (40.0)	3 (27.3)	1.50 (0.13-17.17)	0.7446
Mental health					
Mild to moderate anxiety	33 (71.7)	23 (65.71)	10 (90.91)	5.21 (0.59-45.73)	0.1358

Moderate to severe depression	14 (30.4)	8 (22.86)	6 (54.55)	4.05 (0.97-16.84)	0.0544
Multiple logistic regression model [d, e]				AOR (95% CI)	*p*-value
Internet poker playing				13.88 (1.17-164.35)	0.0369*
Playing slot machines at the casino				38.45 (2.41-613.79)	0.0098**
Smoking cigarettes				11.43 (1.01-129.78)	0.0494*

Note. Due to the small number of participants included in the analyses and the size of the confidence intervals for independent variables found to be associated for problem gambling, results should be interpreted with caution; [a]Wald Chi-square for both categorical and continuous variables; [b] online or land-based cash game during the past 12 months; [c]mean and standard deviation *M, SD*; [d]pseudo R^2 measure of fit in the statistical modeling was **0.617**; [e]Referring to the first step of the analyses carried out (i.e., variables with p-values <0.2 for Pearson's Chi square test analyses were included in the multiple regression model), 9 variables were tested (i.e., Internet poker playing, number of gambling activities, playing bingo, playing slot machines at the casino, playing video lottery terminal in bars, smoking cigarettes, low alcohol dependency, mild to moderate anxiety, moderate to severe depression), of which only 3 were found to be significant; OR odds ratio; AOR adjusted odds ratio; * $p < .05$; ** $p < .01$

Table 2. Factors associated and not associated with at-risk gambling in men poker players (*n*=351)

	All (*n* = 351)	Non problem (*n* = 232)	At-risk (*n* = 119)	OR	*p*-value
Bivariate analyses [a]	*n* (%)	*n* (%)	*n* (%)	(95% CI)	
Gambling behaviours					
Internet poker playing	173 (49.3)	102 (43.9)	71 (59.7)	1.91 (1.21-3.00)	0.0053**
Poker cash games [b]	214 (61.0)	118 (50.9)	96 (80.7)	3.96 (2.34-6.68)	<.0001**

Number of gambling activities [c]	7.38 (3.0)	6.69 (2.6)	8.71 (3.3)	1.26 (1.16-1.37)	<.0001**
Playing bingo	26 (7.4)	17 (7.3)	9 (7.6)	1.03 (0.44-2.39)	0.9362
Playing slot machines at the casino	127 (36.2)	76 (32.8)	51 (42.9)	1.53 (0.97-2.42)	0.0631
Playing video lottery terminal in bars	113 (32.2)	66 (28.5)	47 (39.5)	1.64 (1.03-2.61)	0.0367*
Trying to improve poker	265 (75.5)	165 (71.1)	100 (84.0)	2.10 (1.19-3.71)	0.0101*
Age at poker initiation [c]	24.39 (9.8)	24.6 (10.3)	23.90 (8.8)	0.94 (0.90-0.98)	0.0071**
Substance use					
Smoking cigarettes	75 (21.4)	46 (19.8)	29 (24.4)	1.28 (0.76-2.18)	0.3468
Low alcohol dependency	151 (43.0)	91 (39.2)	60 (50.4)	1.57 (1.00-2.46)	0.0455*
At-risk drugs dependency	77 (21.9)	38 (16.4)	39 (32.8)	2.48 (1.48-4.17)	0.0005**
Drink alcohol during poker	157 (44.7)	115 (49.6)	42 (35.3)	0.75 (0.37-1.50)	0.4234
Mental health					
Mild to moderate anxiety	235 (66.9)	139 (59.9)	96 (80.7)	2.79 (1.65-4.72)	0.0001**
Moderate to severe depression	28 (7.9)	9 (3.9)	19 (15.9)	4.70 (2.05-10.76)	0.0002**
Multiple logistic regression model [d]				AOR (95% CI)	*p*-value
Number of gambling activities				1.25 (1.15-1.37)	<.0001**
Poker initiation age				0.95 (0.91-0.99)	0.0353*
At-risk drugs dependency				2.38 (1.33-4.25)	0.0033**
Mild to moderate anxiety				1.94 (1.08-3.50)	0.0258*
Moderate to severe depression				2.76 (1.12-6.79)	0.0267*

Note. [a]Wald Chi-square for both categorical and continuous variables; [b] online or land-based cash game during the past 12 months; [c]mean and standard deviation *M, SD*; [d]pseudo R^2 measure of fit in the statistical modeling was **0.249**; [e]Referring to the first step of the analyses carried out (i.e., variables with p-values <0.2 for Pearson's Chi square test analyses were included in the multiple regression model),11 variables were tested (i.e., all the variable excepted playing bingo, smoking cigarettes, and drink alcohol during poker), of which 5 were found to be significant; OR odds ratio; AOR adjusted odds ratio; * $p < .05$; ** $p < .01$.