



Gender Differences in Gambling Exposure and At-risk Gambling Behavior

Elizabeth Carneiro^{1,2} · Hermano Tavares³ · Marcos Sanches⁴ · Ilana Pinsky^{1,5} · Raul Caetano⁶ · Marcos Zaleski^{1,7} · Ronaldo Laranjeira^{1,5}

Published online: 30 August 2019

© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

This study aimed to evaluate the differences in gambling exposure and onset of gambling problems among male and female gamblers by comparing their demographic and behavioral profiles. This study utilized data from the gambling section of the First Brazilian National Alcohol Survey and Related Behaviors. Interviews were conducted with 3007 participants who were recruited after screening for at-risk gambling behaviors. Individuals who tested positive for at-risk gambling behaviors completed the Gambling Progression Questionnaire comprising items on games of chance, and were evaluated using the DSM-IV pathological gambling criteria. The participants' "lifetime gambling exposure" was 12.5%, with 4% having experienced gambling problems during their lifetime. Majority of the male at-risk gamblers (78%) reported that they began gambling in their 20 s and took approximately 3 years to start experiencing gambling-related problems. Contrastingly, female at-risk gamblers started gambling in their 30 s and they took about 12 years to start experiencing gambling-related problems. The present results show that men were 2.3 times more at risk of gambling exposure and 3.6 times more likely to experience gambling-related problems. Male at-risk male gamblers seemed to be lonelier and to have a low socioeconomic status, while women seemed to have lower income and social insertion. Considering these significant differences, more studies evaluating gender differences in gambling behavior are necessary.

Keywords Pathological gambling · Gambling gender differences · At-risk gambling · Gambling exposure

Introduction

The prevalence of problem and pathological gambling (PG) is increasing globally and it has reached new sectors of our society. Consequently, underrepresented groups in the gambling world are likely to grow significantly (Cox et al. 2005). Lifetime prevalence of problem gambling differs depending on jurisdiction, time and methodology

✉ Elizabeth Carneiro
e.carneiro.buba@gmail.com

Extended author information available on the last page of the article

applied in each survey resulting in considerable variation from 0.5 to 7.6%, with an average rate across countries around 2.3% (Williams et al. 2012). Nonetheless, a recurrent finding in population surveys around the world is the imbalance between male and female participation in gambling with a predominance of males (Calado and Griffiths 2016). As the level of gambling involvement and related problems increase so does this gender imbalance, hence the male-to-female ratio goes from close to 1:1 in social gambling up to 3:1 in problem and pathological gambling (Husky et al. 2015; Tavares et al. 2010). However, it is unknown whether women are a minority among players because they are less exposed to gambling or if probable barriers related to social prejudice based on gender is a protective factor. Accordingly, gender-related sociocultural aspects should be considered while providing more specific care for men and women (Baxter et al. 2016); social stigma appears to be an important predictor of individuals' postponing of seeking treatment for gambling problems (Tavares et al. 2003).

Numerous clinical studies have reported significant differences between men and women; asserting the need for specific treatment designed for each gender. Hing et al. (2016) report that the gambling habit in men tended to have an earlier onset and that they preferred cards, sports, and horse-race betting. On the other hand, despite tending to have a later onset, women progressed more rapidly toward a clinical dependency and that they preferred slot machines and bingo (Tavares et al. 2003).

Despite the differences highlighted in international research, studies about gender differences in gambling behaviors in the Brazilian community are scarce. Afifi et al. (2010), suggest that, for females, developing a gambling problem is associated with being middle-aged, having a low or average monthly income, having a low level of education, never having been married, having a stressful life, and resorting to negative coping strategies to deal with life's challenges. Among males, having a gambling problem is related to being separated, divorced or widowed, lacking social support and, as in the case of women, resorting to negative behavioral strategies to cope with stress. Furthermore, in a previous study conducted among adult males and females, religious practice did not show a significant relationship between gender and gambling behaviors; however, it appeared to be a significant protective factor against gambling problems in male adolescents (Spritzer et al. 2011).

Therefore, gambling behavior of men and women seems to be strongly influenced by social context and demographic variables, as well as major differences in habits and the progression of involvement in gambling. Only a minority of individuals with gambling problems seek treatment (Baxter et al. 2016). Thus, to better understand the sociocultural factors involved in each gender, it is critical to use community samples representative of the target population with gambling problems. These samples need to be selected without the interference of filters such as the demand for treatment present in clinical samples.

The present study aimed to compare both genders according to demographic factors associated with exposure to gambling and the emergence of gambling problems. Additionally, it aimed to contrast the demographic and behavioral profiles of men and women with a history of gambling problems.

Methods

Brazilian National Alcohol Survey and Related Behaviors

The Brazilian National Alcohol Survey and Related Behaviors (BNAS) was the first Brazilian national survey developed to assess the Brazilian population's alcohol consumption patterns and corresponding sociodemographic characteristics. The scope of this study went beyond alcohol consumption and it included gambling, problems commonly associated with smoking, other types of substance abuse, and domestic violence (Castro-Costa et al. 2008). It was approved by the Research Ethics Committee at the Universidade Federal de São Paulo (UNIFESP). See http://bvsmms.saude.gov.br/bvs/publicacoes/relatorio_padroes_consumo_alcool.pdf for further details on the study's objectives and design.

Sampling

Sample collection was conducted between November 2005 and April 2006. A total of 3007 household interviews were conducted in 143 municipalities, including 325 census tracts in both urban and rural areas, to define a stratified sample representative of the Brazilian population. Participants were aged 14 years and over, and individuals with the following conditions were excluded from the study: residents living in the country who did not speak Portuguese; individuals with intellectual disabilities or any other condition that prevented the application of informed consent prior to participation in the study; and inhabitants of indigenous reserves or other collective residence forms such as asylums, shelters, boarding schools, or military bases. The sampling error was set at 2%, with a confidence interval (CI) of 95%.

The stratification procedure was established in three probabilistic stages (Hansen et al. 1993) according to the population census closest to the time of the survey (Instituto Brasileiro de Geografia e Estatística; IBGE); city selection by region, population size, and average income. In the selected census tracts, a count was performed followed by the selection of eight households per tract, using a random 2013 numbers table. The households chosen were visited at least three times; at different times of the day, on two different days, with one visit required to occur on the weekend, or until an interview was conducted. Once contact with participants was established, interviewers had to confirm that all residents were over the age of 13 years and they chose individuals with their birthday closest to the interview date. In the event of a non-response, household substitution was allowed. The number of households selected per tract was established based on previous information available about non-response rates (DataUFF 2013). One extra sample of individuals aged between 14 and 17 years was collected. Specific data on this adolescent population were reported in previous communication (Spritzer et al. 2011).

Weights inversely proportional to the selection probability of the respective household, the total amount of residents, and the non-response rate (adjusted for gender and education), as well as the specific weight for the extra sample of adolescents, were assigned because of the selection and stratification processes. Finally, weights after the stratification process were adopted to adjust the demographic variables to the previously described population profile (IBGE 2013).

Interviewing and Sample Classification

Training about conducting face-to-face interviews was provided to 150 lay interviewers. A pilot screening was conducted to assess problems and optimize the interview process. The mean duration of the interviews was 50 min and the response rate was 66.4%. A post hoc analysis was conducted and biases were not detected among interviewers. Approximately 5% of the interviews ($n = 150$) were repeated as an additional measure to verify response reliability.

The gambling section of the Levantamento Nacional de Álcool e Drogas (LENAD) interview used for this study opens with the following three questions for all interviewees:

- “Have you ever had to lie to people who are important to you about how much money you bet?” Answer: Yes or No.
- “Have you ever felt the need to repeatedly bet more money?” Answer: Yes or No.
- “On an average, how much money do you spend on gambling per month?” Answer: I never gamble, I bet less than R\$1.00 per month, I bet between R\$1.00 and R\$10.00 per month, I bet between R\$11.00 and R\$100.00 per month, or I bet more than R\$100.00 per month.

The first two questions are part of the Lie/Bet Questionnaire (LBQ) (Johnson et al. 1998) and were adopted as a criterion for continuing the interview that explored additional information regarding specific gambling behavior. The LBQ has high sensitivity (99%) and specificity (91%) for PG (Johnson et al. 1998); every individual who answers yes to at least one of its items is considered a lifetime at-risk gambler (Götestam et al. 2004). Among the total of 3007 individuals who were initially interviewed, 118 were positive on the LBQ; thus, were classified as at-risk gamblers. This group then participated in the rest of the gambling interview.

Variables Investigated

Demographics

The demographic variables examined were gender, age, ethnicity, education level, student status, marital status, employment status, personal source of income, valid driver's license, socioeconomic level (IBGE 2013), birthplace, residence, residence in a metropolitan area, previous inhabitation in another town, religious affiliation, and importance attributed to religion.

Gambling Variables

The gambling section comprised questions adapted from a questionnaire previously devised to investigate gambling progression, addressing the age of the onset of regular gambling, age of first experiencing a gambling-related problem, preferred gambling game, and types of gambling-related problems experienced (Tavares et al. 2003). Initially, two dependent variables were defined as follows:

- Lifetime gambling exposure ($N=3007$) was defined as having gambled at least once in one's lifetime; 2683 individuals reported never having gambled in their lives.
- Lifetime history of gambling problems ($N=118$) was defined as having answered "Yes" to at least one of the two questions derived from the LBQ at the start of the gambling section during the interview (i.e., at some point in their lives having felt the need to repeatedly bet more money, and/or having lied to other people about their gambling).

Other factors related to gambling behaviors were analyzed, such as gambling preferences, milestone ages throughout gambling progression, and symptoms of gambling psychopathology. Individuals' current preferred game was determined by asking participants about which game they had been spending most of their money on. Individuals' current preferred games were classified into five types of games; non-commercially structured games divided into card games and clandestine lotteries (casinos are outlawed in Brazil, and during the survey, gambling via card games most often occurred informally at bars and clandestine venues), state lotteries (including sports lotteries), electronic game machines (EGM), other games, and none (stopped gambling). Previous studies evaluating clinical samples in Brazil have indicated that recollection of past-preferred games based on financial expenditure was not reliable because the monetary inflation of Brazil required several currency changes in the past. Therefore, past-preferred games were identified as the most frequently played games at gambling onset. The first gambling-related problem was defined as the first serious difficulty directly caused by gambling, classified as a family problem, financial problem, or other. The time of gambling progression (calculated only for pathological gamblers) was estimated by subtracting the age of onset of regular gambling from the age at which the first gambling-related problem occurred.

Finally, gambling symptoms were assessed by the National Opinion Research Center DSM-IV Screen for Gambling Problems (Gerstein et al. 1999) that investigates lifetime diagnostic criteria for PG in participants aged ≥ 18 years. Individuals younger than 18 years were assessed with the DSM-IV-Juvenile (DSM-IV-J) criteria (Fisher 2004) that provides age-sensitive adaptations for three of the original DSM-IV criteria for PG. A parallel analysis was conducted to determine whether using separate instruments for different age groups could have biased the identification of gambling symptoms. No differences were found in the frequencies of both the original and age-adapted criteria. Hence, age-specific scales did not seem to skew the identification of gambling symptoms towards adolescents or adults.

Statistical Analyses

Data were adjusted for sampling probability selection and non-response rate. The sample was adjusted to gender, age, and country region distribution according to post-stratification weights. The Statistical Package for Social Sciences (SPSS) Complex Samples module version 13.0 (SPSS 2004) for weighed comparisons was used for data analysis.

Analysis of Variance (ANOVA) and the Pearson's test of independence or likelihood ratio (LR) test were used respectively for continuous and categorical variables in the preliminary univariate analysis. Demographics and gambling variables were compared for the dependent variables "lifetime gambling exposure" and "lifetime history of gambling problems" (Tabachnick and Fidell 2001). Multivariate analyses were conducted by selecting variables that reached significance at 0.10 or lower in the univariate analysis. Backward binary logistic regression models were built as follows, for lifetime gambling exposure and

lifetime history of gambling problems: (1) independent variables were entered as a block alongside with gender, (2) non-significant variables were withdrawn via a step-by-step process until all remaining variables in the model were significant at 0.05 or less, and (3) excluded variables were introduced back into the model one at a time to check whether they might fit in the final model. Odds ratios (OR) and 95% CIs were calculated for each factor remaining in the final models. The aim of this procedure was to assess whether gender remained in the final regression models (i.e., if gender was significantly associated with gambling exposure and a history of gambling problems after controlling for other concurrent contributing factors).

Afterward, the demographic profiles of male and female at-risk gamblers ($n=118$) were compared. During a procedure like the one described above, data were first compared through univariate analysis. Later, the variables reaching significance at 0.10 were introduced in a binary backward logistic regression model with gender as the dependent variable, to determine the set of demographic variables that most significantly differentiated male and female at-risk gamblers.

Finally, gambling behavior variables among male and female at-risk gamblers were compared. Each gambling variable was entered as a factor in a binary logistic regression model, with gender as the dependent variable alongside the set of demographic variables from the previous regression model. This procedure aimed to check which gambling behavior variable remained significantly related to gender after controlling for differences in the demographic profiles of male and female at-risk gamblers. Continuous variables such as age were introduced in the model, either in their original or in the dichotomized format according to the median of the whole sample, depending on their best fit into the model.

Results

Lifetime Gambling Exposure

The lifetime gambling exposure rate for the overall sample was 12.5%. Individuals exposed to gambling were mainly male (88.3%) with a mean age of 42.5 years ($SE=1.09$ years, $n=324$). Majority of them were white (53.8%) and 42.9% were either of African descent or of mixed European–African descent. Results showed that 75.4% were catholic, 52.4% reported going to church occasionally (less than once a month), 65.9% had an educational level below high school, 59.1% were married or cohabited via common-law marriage, 60.1% were regularly employed, 78.3% had a personal source of income, 70.5% had previously lived in another town, and 76.3% were not living in a metropolitan area. The variables of having a personal source of income ($p=0.001$) and having previously lived in another town ($p=0.030$) were associated with gambling exposure but they were excluded from the backward stepwise regression procedure. Gender, age, ethnicity, employment status, and religious affiliation remained in the final regression model (Table 1).

Lifetime History of Gambling Problems

Four percent of the sample reported having experienced gambling problems throughout their lifetime. Individuals who experienced gambling problems were mainly male (73.8%), with a mean age of 41.0 years ($SE=1.74$ years, $n=118$). Compared to individuals without a history of gambling problems, at-risk gamblers had a greater proportion of individuals

Table 1 Backward logistic regression of factors associated with lifetime gambling exposure (N = 3007)

Factors	Gambling exposure % (SE)		Wald	Significance	Odds ratios	95% CI	
	No 88.3% (0.9)	Yes 11.7% (0.9)				Lower	Upper
<i>Gender</i>	% (SE)	% (SE)	25.5	<0.001			
Male	45.3% (1.3)	68.1 (3.2)			2.33	1.67	3.25
Female	54.7% (1.3)	31.9 (3.2)			1.0	–	–
<i>Age (in years)</i>	Mean (SE)	Mean (SE)	22.7	<0.001	1.03	1.02	1.04
	36.8 (0.40)	42.5 (1.09)					
<i>Ethnicity</i>	% (SE)	% (SE)	3.22	0.024			
European	50.0 (1.5)	53.8 (3.6)			1.00	–	–
African	10.7 (1.0)	15.8 (2.6)			1.56	0.98	2.49
African-European	36.3 (1.5)	27.1 (2.8)			0.75	0.56	1.02
Other	2.9 (0.4)	3.3 (1.3)			1.01	0.37	2.80
<i>Employment status</i>	% (SE)	% (SE)	3.95	0.009			
Employed	56.1 (1.2)	60.1 (3.3)			1.00		
Unemployed	8.4 (0.7)	12.5 (2.0)			2.14*	1.35	3.41
Retired	11.8 (0.8)	17.0 (2.4)			1.03	0.61	1.72
Other (housewife/student)	23.7 (1.0)	10.5 (1.7)			0.94	0.61	1.45
<i>Religious affiliation</i>	% (SE)	% (SE)	8.10	<0.001			
Catholic	66.1 (1.4)	75.4 (2.9)			1.00		
Protestant	24.9 (1.3)	11.7 (1.9)			0.43**	0.30	0.62
Other	3.8 (0.5)	5.2 (1.9)			1.16	0.53	2.53
None	5.2 (0.6)	7.7 (1.9)			1.43	0.80	2.56

* $p=0.001$; ** $p<0.001$

of non-European ethnic background, an almost two and a half times greater probability of living in a metropolitan area, and a reduced degree of social insertion, as indicated by a greater proportion of retired and unemployed individuals and a smaller percentage of individuals holding a valid driver's license. Table 2 shows the main outcomes.

Comparing Male and Female At-risk Gamblers

On comparing the demographic profiles of male and female at-risk gamblers, the following findings were observed. One variable was significant and four variables approached significance in the preliminary univariate analysis; marital status ($\chi^2=7.15$, $p=0.082$), having a personal source of income ($\chi^2=3.59$, $p=0.088$), having a valid driver's license ($\chi^2=5.61$, $p=0.002$), social class ($\chi^2=5.26$, $p=0.077$), and birthplace ($\chi^2=6.67$, $p=0.077$). When analyzed together in the multivariate process, all these factors retained or improved their significance level, except for birthplace, which was excluded from the model. However, the final model only approached statistical significance (Nagelkerke $R^2=0.349$, Wald's $F_{[6,49]}=2.13$, $p=0.066$) with a 82.9% overall correct classification. Male at-risk gamblers tended to lead a lonelier lifestyle (a greater proportion of individuals who never married or cohabited via common-law marriage) and have a lower socioeconomic level. Conversely, they displayed more

Table 2 Backward logistic regression of factors associated with lifetime history of gambling problems (N = 3007)

Factors	Gambling problems % (SE)		Wald	Significance	Odds ratios	95% CI	
	No 96.0 (0.5)	Yes 4.0 (0.5)				Lower	Upper
<i>Gender</i>	% (SE)	% (SE)	29.2	< 0.001			
Male	46.9 (1.2)	73.8 (4.3)			3.62	2.26	5.79
Female	53.1 (1.2)	26.2 (4.3)			1.00	–	–
<i>Ethnicity</i>	% (SE)	% (SE)	4.31	0.006			
European	50.8 (1.5)	44.3 (5.6)			1.00	–	–
African	10.8 (0.9)	23.8 (5.0)			2.12*	1.12	4.01
African-European	35.6 (1.4)	25.3 (4.7)			0.74	0.43	1.26
Other	2.8 (0.4)	7.2 (3.2)			3.17**	1.02	9.83
<i>Employment status</i>	% (SE)	% (SE)	4.00	0.09			
Employed	56.7 (1.2)	53.1 (5.2)			1.00	–	–
Unemployed	8.5 (0.7)	17.1 (3.8)			1.84***	1.03	3.30
Retired	12.0 (0.7)	20.9 (4.0)			1.93^	1.12	3.32
Other (housewife/student)	22.7 (0.9)	8.9 (2.8)			0.59	0.28	1.22
<i>Valid driver's license</i>	% (SE)	% (SE)	7.99	0.005			
Yes	23.3 (1.3)	16.1 (4.1)			0.405^^	0.216	0.762
No	76.7 (1.3)	83.9 (4.1)			1.00	–	–
<i>Metropolitan area inhabitant</i>	% (SE)	% (SE)	13.5	< 0.001			
Yes	80.6 (1.0)	64.1 (5.6)			2.48^^^	1.52	4.04
No	19.4 (1.0)	35.9 (5.6)			1.00	–	–

* $p=0.022$; ** $p=0.046$; *** $p=0.041$; ^ $p=0.018$; ^^ $p=0.005$; ^^ $p<0.001$

indicators of productive social insertion, such as having a personal source of income and holding a valid driver's license.

These four remaining factors from the final logistic model for demographics were then introduced as a block in the models comparing the gambling behavior variables among male and female at-risk gamblers. Results indicated that male at-risk gamblers started gambling during their 20 s, while female at-risk gamblers started gambling during their 30 s. Females took longer to develop gambling problems (about 12 years in total) as compared to men (only 3 years later after gambling onset). Further, in contrast with 9% of the male at-risk gamblers who reported having stopped gambling, such activities seemed to persist more among women, since none reported having interrupted gambling by the time of the survey. However, this difference only approached significance. The mean of the DSM-IV positive criteria for PG was approximately 2.5 and it did not differ between male and female at-risk gamblers. Table 3 shows the main outcomes.

Table 3 Logistic regression models of gambling behaviors for at-risk gamblers by gender (N = 118)

Factors	Gender % (SE)		Wald	Significance	Odds ratios	OR 95% CI	
	Male 72.2 (4.1)	Female 27.8 (4.1)				Lower	Upper
<i>Age at gambling onset</i>							
Before 20 years old	61.1 (6.6)	11.9 (5.4)	260.8	<0.001	11.6	3.65	36.87
After 20 years old	38.9 (6.6)	88.1 (5.4)					
<i>Preferred game at gambling onset</i>							
Card games	20.0 (5.8)	21.8 (7.8)	0.935	0.465	0.841	0.073	9.65
Illegal lotteries	20.0 (3.7)	32.5 (8.1)		0.908	0.782	0.010	61.24
State lotteries	35.5 (6.8)	18.5 (8.9)		0.402	0.279	0.013	6.18
New games	11.9 (4.0)	19.0 (6.2)		0.874	0.786	0.034	18.00
Others	12.6 (3.2)	8.2 (4.4)		–	1	–	–
<i>Age of first gambling problem</i>							
Mean (SE)	23.07 (2.34)	41.97 (2.64)	1068.7	<0.001	0.055	0.041	0.073
<i>Current preferred type of gambling</i>							
Stopped gambling	9.0 (3.6)	0 (0)	2.789	0.067	– ^a	–	–
Card games	16.3 (5.1)	7.2 (3.5)		– ^a	–	–	–
Illegal lotteries	21.4 (5.6)	21.6 (7.0)		0.930	0.881	0.046	16.99
State lotteries	31.3 (5.7)	33.1 (10.2)		0.303	0.318	0.033	3.03
New games	7.1 (3.3)	20.1 (6.7)		0.467	1.550	0.453	5.30
Others	14.9 (4.2)	18.1 (6.6)		–	1.00	–	–
<i>Total of DSM-IV positive criteria for PG</i>							
Mean (SE)	2.66 (0.34)	2.59 (0.41)	0.038	0.847	0.990	0.885	1.11

For each variable, a logistic regression model was tested with gender as the dependent variable (category reference = male), controlling for marital status, personal source of income, valid driver's license, social class, and region of birth

^aNon-valid values because of almost complete separation of data

Discussion

Gender was identified as a significant variable concerning gambling behavior among the present participants. As previously reported, men are at a higher risk of being exposed to and developing a gambling problem (Carneiro et al. 2014); specifically, they have a 2.3 times greater risk of being exposed to gambling. As for the onset of problems arising from gambling, men are 3.6 times more likely to have problems with gambling throughout their life.

Besides gender, other factors were significantly associated with gambling. Individuals exposed to gambling were about 6 years older; however, this could merely be a temporal effect (i.e., the longer one has lived, the more opportunities one has had to be exposed to gambling). Ethnicity was a variable significantly linked to exposure; minorities and particularly Afro-descendants were associated with the risk of developing a gambling problem. Additionally, employment status was related to both exposure and risk, particularly among unemployed and retired participants. The Protestant religion seemed to be a protective factor against contact with gambling; however, once exposure had occurred, it was difficult to avoid developing a gambling problem. On the other hand, being an inhabitant of a large metropolitan area represented a significant risk; perhaps due to the excessively urbanized and aggressive environment of Brazilian metropolises that have grown in an intense and disorganized manner in recent decades. This data set reinforces the perception previously reported by our group, that the risk of developing a gambling problem seems to reflect difficulties with social insertion (Tavares et al. 2010). Other studies also report that being part of an ethnic minority, having low income, being unemployed, and being single or divorced are risk factors for developing a gambling problem (Welte et al. 2017).

The noticeable differences in the demographic profiles of men and women with a history of gambling problems suggest that they come from distinct sociocultural contexts. At-risk male tended to exhibit higher loneliness (the largest proportion of individuals who were not married) and had a lower socioeconomic level, while women showed signs of lower social insertion in the economically active population, with a lower level of having a personal source of income and a driver's license. These results concur with previous reports on gender differences, either from population surveys (Hing et al. 2016) or treatment-seeking samples (Crisp et al. 2004), with female gamblers presenting a profile closer to the usual family woman: married, in their 40 s, having dependent children and lower debts than their male counterparts, probably because of less access to financial resources. Based on these differences, it is possible to speculate that men and women have distinct motivations for engaging in the problematic aspects of gambling; men may return to gambling because they are driven by the fantasy of elevating their social status, while women may be motivated by the fantasy of obtaining autonomy.

Additionally, men and women presented differences concerning the age of gambling onset and development of the first problems resulting from gambling. Men started gambling earlier, at approximately 20 years of age, and their first problems developed about 3 years later. Conversely, women were usually exposed to gambling for the first time when they were 30 years old, taking approximately 10 years for the first problems related to gambling to emerge. In the same manner that a typical gambler is usually characterized as a young, male, and serious gambler showing rapid gambling behavior progression (Carneiro et al. 2014), the present study identified a group of female players who started gambling later in life, mainly in informal or illegal games (which are less expensive and more secretive than other forms of gambling), and progressed more slowly than males. Both findings

are in stark contrast with the results previously reported by our own group based on clinical samples, where a more rapid progression of gambling disorder (GD) among women was described (Tavares et al. 2003). This apparent contradiction reinforces our previous concern about the selection bias inherent to clinical samples and the need for further studies conducted amongst population-based samples that can reveal the existence of subset of gamblers who are not reached by treatment offer, or who simply do not seek help, hence are likely to be underreported. Indeed, one of such few studies, i.e. gender differences in a population-based sample of gamblers confirms our finding of a later onset for PG and subclinical PG in female gamblers. Besides, these women reported higher rates of lifetime mood and anxiety disorders and being more likely than men to turn to gambling in search of relief from a depressed mood (Blanco et al. 2006), which once again strengthens the perception that women and men are motivated towards gambling for different reasons, hence they are likely to bring to treatment different demands and needs (Crisp et al. 2004).

The current profile of gambling preference showed a significant trend of more men claiming to have stopped gambling when the first problems arose; while all female at-risk gamblers kept on gambling. This finding indicates an alarming trend of the persistence of problematic gambling behavior in women. Another interesting fact derived from this study is that approximately one-third of at-risk gamblers, whether men or women, had a preferred method for gambling in official lotteries. This suggests that official lottery shops could work as effective channels to communicate messages about the prevention of gambling problems to the general public and facilitate GD screening in segments of the population that would otherwise remain unreachable.

This study had the following limitations: (1) the data set used for this study is now more than a decade old, as noted before gambling prevalence rates may go through considerable variations across time depending on regulation and socioeconomic changes. Brazil has a peculiar scenario regarding gambling regulation with all sorts of gambling being prohibited, except for horse racing and lottery draws. In the 90 s a new law allowed the introduction of EGM until the year 2004 (1 year prior to the beginning of the survey reported in this text) when they were banned again (Tavares 2014). Since then the availability to EGM was partially curtailed, but it is unlikely that access to them could have changed in significant ways until present; (2) it was a cross-sectional study, (3) the response rate obtained was only at the acceptable level, and (4) some responses were possibly distorted during face-to-face interviews since gambling still carries a social stigma in the Brazilian society. However, these limitations were reduced because of methodological rigor, which allowed the collection of a significant amount of data on a representative sample of the Brazilian society, including adolescents and adults (Spritzer et al. 2009).

Overall, the findings of this study reinforce the perception that gender and sociocultural differences have a strong influence on gambling behaviors (Medeiros et al. 2016). However, more research on gender differences from a cross-cultural perspective is necessary. The gender differences identified in this study suggest that men and women at risk of problematic involvement with gambling may have distinct social backgrounds and different motivations to gamble. A better understanding of these differences is fundamental for the future development of social policies concerning the guidance, prevention, and implementation of treatment strategies for gambling problems. Regarding female at-risk gamblers, the late onset and persistence of gambling behavior once problems have occurred are concerning findings. These results seem to indicate that this subgroup of the Brazilian community currently remains unfamiliar with treatment settings, thus highlighting the urgent need for research on Brazilian female at-risk gamblers.

Funding This study was partially funded by the National Anti-Drug Secretariat (SENAD), Grant # 017/2003.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interests.

Ethical Approval The study was approved by the Research Ethics Committee of the Federal University of São Paulo, located in the city of São Paulo, Brazil.


References

- Afifi, T. O., Cox, B. J., Martens, P. J., Sareen, J., & Enns, M. W. (2010). Demographic and social variables associated with problem gambling among men and women in Canada. *Psychiatry Research, 178*, 395–400.
- Baxter, A., Salmon, C., Dufresne, K., Carasco-Lee, A., & Matheson, F. I. (2016). Gender differences in felt stigma and barriers to help-seeking for problem gambling. *Addictive Behaviors Reports, 3*, 1–8.
- Blanco, C., Petry, N., Stinson, F. S., & Grant, B. F. (2006). Sex differences in subclinical and DSM-IV pathological gambling: Results from the National Epidemiologic survey on alcohol and related conditions. *Psychological Medicine, 36*, 943–953.
- Calado, F., & Griffiths, M. D. (2016). Problem gambling worldwide: An update and systematic review of empirical research (2000–2015). *Journal of Behavioral Addictions, 5*(4), 592–613.
- Carneiro, E., Tavares, H., Sanches, M., Pinsky, I., Caetano, R., Zaleski, M., et al. (2014). Gambling onset and progression in a sample of at-risk gamblers from the general population. *Psychiatry Research, 216*, 401–411.
- Castro-Costa, E., Ferri, C. P., Lima-Costa, M. F., Zaleski, M., Pinsky, I., Caetano, R., et al. (2008). Alcohol consumption in late-life: The first Brazilian National Alcohol Survey (BNAS). *Addictive Behaviors, 33*, 1598–1601.
- Cox, B. J., Yu, N., Afifi, T. O., & Ladouceur, R. (2005). A national survey of gambling problems in Canada. *The Canadian Journal of Psychiatry, 50*, 213–217.
- Crisp, B. R., Thomas, S. A., Jackson, A. C., Smith, S., Borrell, J., Ho, W. Y., et al. (2004). Not the same: A comparison of female and male clients seeking treatment from problem gambling counseling services. *Journal of Gambling Studies, 20*, 283–299.
- DataUFF. (2013). *Núcleo de Pesquisas da Universidade Federal Fluminense*. Niterói, Brazil: Universidade Federal Fluminense; (updated 5 September 2013). Pesquisa Social Brasileira; (updated 3 November 2009). <http://www.uff.br/datauff/PESB.htm>. Accessed September 8, 2013.
- Fisher, S. (2004). Measuring pathological gambling in children: The case of fruit machines in the U.K. *Journal of Gambling Studies, 8*, 263–285.
- Gerstein, D., Murphy, S., Toce, M., Hoffmann, J., Palmer, A., & Johnson, R. (1999). *Gambling impact and behavior study: Report to the National Gambling Impact Study Commission*. Chicago: National Opinion Research Center.
- Götestam, K. G., Johansson, A., Wenzel, H. G., & Simonsen, I. E. (2004). Validation of the lie/bet screen for pathological gambling on two normal population data sets. *Psychological Reports, 95*, 1009–1013.
- Hansen, H. M., Hurwitz, W. N., & Madow, W. G. (1993). *Sample survey methods and theory* (Vol. I and II). New York: Wiley.
- Hing, N., Russell, A., Tolchard, B., & Nower, L. (2016). Risk factors for gambling problems: An analysis by gender. *Journal of Gambling Studies, 32*, 511–534.
- Husky, M., Mitchel, G., Richard, J. B., Guignard, R., & Beck, F. (2015). Gender differences in the associations of gambling activities and suicidal behaviors with problem gambling in a nationally representative French sample. *Addictive Behaviors, 45*, 45–50.
- Instituto Brasileiro de Geografia e Estatística; IBGE. (2013). *Rio de Janeiro, Brazil: Instituto Brasileiro de Geografia e Estatística*; (updated 5 September 2013). Estimativas das populações residentes, em 1º de julho de 2008, segundo os municípios [Estimated resident populations on July 1, 2008, by municipality]; (updated 12 December 2008). http://www.ibge.gov.br/home/estatistica/populacao/estimativa2008/POP_2008_TCU.pdf. Accessed September 8, 2013.
- Johnson, E. E., Hamer, R. M., & Nora, R. M. (1998). The Lie/Bet Questionnaire for screening pathological gamblers: A follow-up study. *Psychological Reports, 83*, 1219–1224.

- Medeiros, G., Grant, J., & Tavares, H. (2016). Gambling disorder due to Brazilian animal game (“jogo do bicho”): Gambling behavior and psychopathology. *Journal of Gambling Studies*, 32, 231–241.
- Spritzer, D. T., Laranjeira, R., Pinsky, I., Zaleski, M., Caetano, R., & Tavares, H. (2009). Acesso a jogos de azar em adolescentes brasileiros: por que devemos nos preocupar? *Revista Brasileira Psiquiatria*. <https://doi.org/10.1590/S1516-44462009000400021>.
- Spritzer, D. T., Rohde, L. A., Benzano, D. B., Laranjeira, R. R., Pinsky, I., Zaleski, M., et al. (2011). Prevalence and correlates of gambling problems among a nationally representative sample of Brazilian adolescents. *Journal of Gambling Studies*, 27, 649–661.
- SPSS Inc. (2004). *SPSS statistical package for social sciences*. Version 13.0 for Windows. Chicago: SPSS Inc.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.
- Tavares, H. (2014). Gambling in Brazil: A call for an open debate. *Addiction*, 109(12), 1972–1976.
- Tavares, H., Carneiro, E., Sanches, M., Pinsky, I., Caetano, R., Zaleski, M., et al. (2010). Gambling in Brazil: Lifetime prevalence and sociodemographic correlates. *Psychiatry Research*, 180, 35–41.
- Tavares, H., Martins, S. S., Lobo, D. S., Silveira, C. M., Gentil, V., & Hodgins, D. C. (2003). Factors at play in faster progression for female pathological gamblers: An exploratory analysis. *Journal of Clinical Psychiatry*, 64, 433–438.
- Welte, J. W., Barnes, G. M., Tidwell, M. O., & Wieczorek, W. F. (2017). Predictors of problem gambling in the US. *Journal of Gambling Studies*, 33(2), 327–342.
- Williams, R., Volberg, R., & Stevens, R. (2012). The population prevalence of problem gambling: Methodological influences, standardized rates, jurisdictional differences, and worldwide trends. In *Report prepared for the Ontario problem gambling research centre and the Ontario Ministry of Health and Long Term Care*. Ontario: Ontario Problem Gambling Research Centre and the Ontario Ministry of Health and Long Term Care.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Affiliations

Elizabeth Carneiro^{1,2}  · Hermano Tavares³ · Marcos Sanches⁴ · Ilana Pinsky^{1,5} · Raul Caetano⁶ · Marcos Zaleski^{1,7} · Ronaldo Laranjeira^{1,5}

¹ National Institute of Public Policies on Alcohol and Drugs (INPAD), National Council of Technological and Scientific Development (CNPq), São Paulo, Brazil

² Addictions and Other Impulse Control Disorders Unit, Santa Casa da Misericórdia, Rua Santa Luzia 206, Rio de Janeiro, Brazil

³ Gambling Outpatient Unit, Institute and Department of Psychiatry, University of São Paulo, São Paulo, Brazil

⁴ Centre for Addiction and Mental Health, Toronto, Canada

⁵ Federal University of São Paulo, São Paulo, Brazil

⁶ University of Texas School of Public Health, Dallas, TX, USA

⁷ Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil