GENDER DIFFERENCES IN GAMBLING DISORDER: RESULTS FROM AN ITALIAN MULTICENTRIC STUDY

Nicolaja Girone, Ivan Limosani, Camilla Ciliberti, Martina Turco, Laura Longo, Maria Adele Colletti, Maddalena Cocchi, Gianmaria Zita, Mara Ida Fiocchi, Beatrice Benatti, Caterina Viganò, Mauro Percudani and Bernardo Dell'Osso

Abstract

Objective: Although gender-specific evidence on Gambling Disorder (GD) is still limited, some studies reported specific differences, mainly in psychopathological profiles, gambling behavior patterns, and pathogenesis. In order to further examine the role of gender in GD, we conducted a multicenter investigation in a sample of Italian outpatients.

Method: One hundred-four outpatients with a diagnosis of GD based on DSM-5 criteria were consecutively recruited at two clinics based in Milan. Socio-demographic and clinical variables were collected for the whole sample and analyzed for the effect of gender. The severity of illness was assessed using the Canadian Problem Gambling Index and the Gambling Attitudes and Beliefs (GABS).

Results: Among females, a significantly higher mean age (52.23 ± 10.95 vs. 40.96 ± 15.76; p=0.005) and older age at illness onset emerged (43.5 ± 11.92 vs. 29.22 ± 14.26; p<0.001). Females showed a significantly higher rate of psychiatric comorbidities, lifetime suicide ideation, stressful events at GD onset, and positive family history for GD compared to males. A predictive effect of male gender was found for the GABS questionnaires by performing a linear regression model, with males showing a higher risk to reach higher scores compared to females (B= 11.833; t=2.177; p=0.034).

Conclusions: Our study seems to confirm the hypotheses that gender in GD may influence psychopathological profiles, course, and comorbidity. GD in female gender is frequently a comorbid condition with other specific clinical characteristics compared to males. Identifying specific clinical factors by gender may prompt more focus on the public health of women in relation to gambling, while still recognizing that males are at-risk of earlier gambling problems. These findings should be considered in therapeutic perspectives.

Key words: gambling disorder, gender differences, pathological gambling, psychopathology

Nicolaja Girone[1], Ivan Limosani[2], Camilla Ciliberti[2], Martina Turco[2], Laura Longo[2], Maria Adele Colletti[2], Maddalena Cocchi[1], Gianmaria Zita[1], Mara Ida Fiocchi[1], Beatrice Benatti[1,3], Caterina Viganò[1], Mauro Percudani[2,f] and Bernardo Dell'Osso[1,3,4, f]

[1] University of Milan, Department of Mental Health, Department of Biomedical and Clinical Sciences Luigi Sacco, Milan, Italy
[2] Department of Mental Health and Addiction Services, Niguarda Hospital, Milan, Italy
[3] "Aldo Ravelli" Center for Neurotechnology and Brain Therapeutic, University of Milan, Milan, Italy
[4] Department of Psychiatry and Behavioral Sciences, Bipolar Disorders Clinic, Stanford University, CA, USA.
[f] Equally contributing senior authors

Corresponding author
Nicolaja Girone
Luigi Sacco University Hospital, University of Milan
Via GB Grassi 74, 20154 Milan, Italy
E-mail:girone.nicolaja@asst-fbf-sacco.it

Introduction

Gambling disorder (GD) is a psychiatric condition characterized by persistent and recurrent problematic gambling behavior, associated with impaired functioning and reduced quality of life. The latest classification change of GD as a "substance-related and addictive disorder" in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-5; American Psychiatric Association, 2013) has important implications for understanding the nature of the disorder and the associated factors that may maintain or worsen gamblers' behaviours.

Rates of GD prevalence have been estimated at around 3% in Europe, with slightly higher estimates in other non-European countries (Calado et al., 2017). However, higher rates of 6.9% and 4.3% have been reported in psychiatric inpatients and individuals with substance use disorders (SUDs), respectively (Cowlishaw & Hakes, 2015; Grant et al., 2005). These rates are consistent with

data that indicate frequent co-occurrence between GD and other psychiatric conditions, such as mood disorders, SUDs, and impulse-control disorders (Bruneau et al., 2016; Dell'Osso et al., 2006; Lorains et al., 2011). Consistent with recent neuroimaging findings, the frequent co-occurrence of GD and SUDs could indicate common vulnerability mechanisms across substance and behavioral addictions (Yip et al., 2017; Worhunsky et al., 2014). Moreover, among GD patients, 96% have been estimated to have one or more psychiatric disorders and 64% to have three or more psychiatric disorders (Kessler et al., 2008).

Regarding GD prevalence between genders, 2.8 male-female ratios have been reported (Blanco et al., 2006; Merkouris et al., 2016). Nevertheless, GD may have been underdiagnosed in women mainly because only a modest percentage seeks treatment (Baño et al., 2021; Braun et al., 2014; Crisp et al., 2004). Furthermore, being less exposed to gambling might be one of the additional reasons women are underdiagnosed. Therefore, social prejudice based on gender could be a protective factor (Carneiro et al., 2020).

Although gender-specific literature on GD is still limited, some studies reported gender-related differences, mainly in psychopathological profiles, gambling behavior patterns, and GD pathogenesis (Gavriel-Fried et al., 2019; Jiménez-Murcia et al., 2020; Wong et al., 2013).

Onset in GD may occur in a wide range of ags, from adolescents to old adults (American Psychiatric Association, 2013; Burge et al., 2004; Lynch et al., 2004; Medeiros et al., 2015). Several studies have shown that GD onset in women occurs later than in men, although the time between GD symptoms and the development of psychopathological problems appears to be shorter (Blanco et al., 2006; Richmond-Rakerd et al., 2013; Slutske et al., 2009). Moreover, female patients commonly show higher levels of associated psychiatric comorbidities, such as depression and anxiety (Khanbhai et al., 2017; Tavares et al., 2001).

GD is associated with severe consequences such as interpersonal, financial, legal problems, and suicidal behaviors (American Psychiatric Association, 2013; Lee et al., 2011; Petry & Kiluk, 2002). Suicidal behavior may be considered as a continuum that begins with suicidal ideation and may continue with planning, attempts, and suicide (Yuodelis-Flores & Ries, 2019). However, GD patients with a history of lifetime suicidal attempts are not a homogeneous group. In this regard, gender could play a role when understanding the heterogeneity among patients with GD and a lifetime history of suicidal behavior (Braun et al., 2014; Valenciano-Mendoza et al., 2021). In this respect, although most studies have focused on male patients, several studies have reported that the female gender may be a risk factor for suicidal behavior (Bischof et al., 2015; Martinotti et al., 2017). In particular, Husky et al. (2015) found that females with GD were more inclined to experience suicidal ideation and behaviors compared to men, underlying the fact that gender should be considered a relevant factor when assessing suicide risk in individuals with GD (Husky et al., 2015).

Some studies analyzed gender-related differences and risk to develop GD, showing a 2.3 times greater risk of being exposed in men than women (Carneiro et al., 2014). Furthermore, in a study by Hing et al. (2016), a low socioeconomic level, loneliness, absent social support, and negative behavioral strategies to manage stress were recognized as risk factors in men (Hing et al., 2016; Spritzer et al., 2011). On the other hand, being middle-aged, never being married and having negative

behavioral strategies to manage stress was related to a higher risk to develop GD in females (Afifi et al., 2010).

Although evidence of gender-related differences in GD was reported, gender-specific literature is still scarce, and women have been understudied. In order to further examine the role of gender in GD, the current study aimed at exploring specific clinical features across genders in a multicenter sample of Italian patients.

Methods

Participants

A sample of 104 GD outpatients of either gender or age were consecutively recruited at two hospital clinics based in Milan, Lombardia region: ASST Grande Ospedale Metropolitano "Niguarda" (n=86, 82.7%) and ASST FatebeneFratelli Sacco University Hospital (n=18, 17.3%), with the following inclusion criteria: (1) a DSM-5 (American Psychiatric Association, 2013) diagnosis of GD; (2) age ≥ 18 years, ≤ 70 years; (3) and capacity to provide a written informed consent. Patients with intellectual disability were excluded. Both hospital clinics provide extensive experience in treating substance-related and addictive disorders within a large territorial psychiatric area in the city of Milan (e.g., substance abuse and addictive services, gambling disorder outpatient clinics). The diverse patient populations accessing their clinical services enhance the generalizability of our findings. The study was conducted in accordance with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008 (PMC2566407). The patients provided their written informed consent to participate in this study and for the use of their anonymised data for research purposes.

Measures

Diagnoses were obtained through the administration of a clinical structured interview based on DSM-5 criteria (Structured Clinical Interview for DSM-5 Disorders, Clinician Version – American Psychiatric Association, 2013). The severity of illness was assessed using the Gambling Attitudes and Beliefs Scale (GABS; Breen & Zuckerman, 1994; Capitanucci & Carlevaro, 2004), a 35-item questionnaire assessing attitudes and beliefs about gambling. Items are scored on a 4-point Likert scale ranging from *"1=strongly disagree" to "4=strongly agree"*. Higher scores on the GABS indicate positive attitudes towards gambling (e.g., exciting, socially meaningful) and proneness to cognitive distortions regarding luck and strategies (e.g., illusion of control, gambler's fallacy). Higher scores reflect more dysfunctional gambling attitudes. The GABS showed good internal consistency (*Cronbach's alpha=0.90*) and significant correlation with gambling severity and frequency (Breen & Zuckerman, 1994).

The Canadian Problem Gambling Index (CPGI; Colasante et al., 2013; Ferris & Wynne, 2001), a 31-item scale measuring the presence of gambling behaviors. Each item is scored on a 4-point Likert scale, with higher scores indicating greater severity. Scores are interpreted as follows: *0= non-problem gambling, 1-2= low risk gambling, 3-7= moderate risk gambling, 8+(to maximum of 27)= problem gambling* (*Cronbach's alpha=0.86*).

Barratt Impulsiveness Scale-11 (BIS-11; Fossati et al., 2001; Patton et al., 1995), a 30-item scale measuring impulsivity across three subscales (attentional, motor,

and non-planning impulsiveness). All items are answered on a 4-point scale (*Rarely/Never, Occasionally, Often, Almost Always/Always*). The total scores can range from 30 to 120, with higher scores reflecting higher levels of impulsiveness (*Cronbach's alpha=0.82*).

Difficulties in Emotion Regulation Scale (DERS; Sighinolfi et al., 2010), a 36-item scale assessing difficulties in emotion regulation measured across six facets of emotion regulation: *awareness, clarity, impulse, goals, non-acceptance, and strategies*. Items are rated on a 5-point Likert scale from *1 ("almost never [0–10%]") to 5 ("almost always [91–100%]")*. Higher scores indicate more difficulty in emotion regulation. The DERS showed good internal consistency (*Cronbach's alpha=0.90*). All instruments used were administered in the corresponding Italian version.

Procedure

After obtaining written informed consent for using patients' information for research, socio-demographic and clinical variables were collected and included in a common database. All variables, along with psychometric measures, were collected during clinical interviews conducted by trained clinicians.

For the purpose of the present study, selected analyzed variables included: (1) psychiatric service; (2) gender; (3) age; (4) marital status; (5) educational status; (6) years of education; (7) employment; (8) age of GD onset; (9) duration of illness (years); (10) presence of a stressful event at GD onset and (11) type; (12) positive family history for GD; (13) positive family history for other psychiatric disorders; (14) age at comorbidity onset; (15) lifetime presence of comorbid psychiatric disorders and (16) type; (17) presence of Personality disorder; (18) presence of alchool abuse; (19) presence of substance abuse; (20) presence of lifetime suicidal ideation; (21) presence of lifetime suicide attempts; (22) type of gambling activities; (23) prevalent gambling activity; (24) online, offline or both gambling modalities; (25) gambling frequencies in the past 30 days; (26) presence of debts due to GD; (27) debts due to GD (in euros); (28) maximum money gambled in one day; (29) money gambled in the last 30 days.

Statistical analysis

Socio-demographic and clinical variables were collected for the whole sample and subsequently analyzed for the effect of gender. Statistical analyses were performed with *Pearson's chi-squared test* for categorical variables and *Student's t-test* for the continuous variables. In the comparative analysis, a *Bonferroni-Holm* procedure was utilized to reduce the risk for type 1 error, due to a large number of tests analyzed. Next, a linear regression was used to test whether GABS, CPGI, BIS-11, and DERS severity could be predicted by gender. All analyses were performed using Statistical Package for the Social Sciences (SPSS) 25 software for Windows (SPSS Inc, Chicago, IL, USA). Statistical significance was set at *p< 0.05*.

Results

The sample included 104 GD outpatients, distributed as follows: 86 patients from ASST Grande Ospedale Metropolitano "Niguarda" (82.7%) and 18 patients from ASST FatebeneFratelli Sacco, University Hospital, Milan (17.3%). No significant differences in terms of

age and gender distribution were found between centers, being therefore comparable.

The main socio-demographic and clinical variables of the study sample are provided in **table 1**.

The whole sample showed an 82.7% (n=86) male rate and a mean age of 43.03 ± *15.59* years. The mean years of education were 11.01 ± *3.94*; 68.8% (n=66) of the sample had a full-time/part-time occupation and 51.1% (n= 48) were single.

Regarding clinical features, the mean age at GD onset was 31.65 ± *14.86* years with a mean duration of illness of 11.61 ± *10.78* years. In addition, 43.4% (n=43) of patients showed a stressful event at GD onset: among these, the most represented was the breakup with the partner (n=9, 19%). Twenty-one percent of the sample reported a positive psychiatric family history for both GD and other psychiatric disorders (n=18). Moreover, 34.1% (n=30) showed a psychiatric comorbidity, with mood disorders as the most represented (n=15, 33.3%); 51.6% (n=32) of patients had a diagnosis of Personality Disorder (PD). At the time of inclusion in the study, 18% (n=16) and 29.9% (n=26) of the whole sample reported substance and alcohol abuse, respectively.

Regarding gambling dimensions, in the 30.8% of the sample, the prevalent gambling activity was slot machine/video-poker (n=28), followed by 26.8% of lotteries and sports betting (n=24), 6.6% of scratch cards (n=6), 2.2% trading online (n=2), and 7% of other activities (i.e. casino, poker, cards; n=7). Furthermore, 50.5% reported having more than one type of game activity simultaneously (n=46). The majority of the sample had a daily gambling behavior (n=51, 58.6%) and 43.9% of the total sample reported reaching maximum gaming spend of 100 to 1000 euros in one day (n=33), with a mean of money gambled in the last thirty days of 2.014 euros.

As regards disease severity, most patients were classified as "Severe Pathological Gamblers", according to the CPGI scale, showing high CPGI and GABS scores (52.33 ± *10.95* and 80.59 ± *17.33*, respectively). In addition, in the majority of the sample, significant impulsivity (BIS-11) and difficulties in emotion regulation (DERS) were found: specifically, the average total scales scores were 66.66 ± *11.01* and 94.38 ± *25.35*, respectively (see **table 2**).

For the purposes of the study, the total sample was divided into two subgroups based on gender.

Females with GD had a significantly higher mean age (52.23 ± *10.95* vs. 40.96 ± *15.76*; *p=0.005*) and age of DG onset (43.5 ± *11.92* vs. 29.22 ± *14.26*; *p<0.001*) compared to male patients (see **figure 1**). Moreover, significantly higher rates of stressful events at the onset (66.7% vs 38.3%; *p=0.028*) and positive family history for GD (46.7% vs 15.7%; *p=0.008*; see **figure 2**) emerged in the female subgroup.

Women were more likely to have lifetime psychiatric comorbidities (56.3% vs 29.2%; *p<0.039*), with mood disorders as the most represented (30.8%). Furthermore, a greater presence of lifetime suicidal ideation (70% vs. 28.8%; *p=0.013*) emerged in females.

Finally, no significant differences emerged in gambling behavior. However, the most represented gambling activities in the male subgroup were sports betting (n=23, 30.3%) and slot machines (n=23, 30.3%), followed by lotteries (n=18, 23.7%), other activities (i.e. casino, cards, poker; n=6, 7.9%), and scratch cards (n=4, 5.3%). Females reported higher rates of lotteries (n=6, 40%), followed by slot machines or video poker (n=5, 33.3%), scratch cards (n=2, 13.3%), sports betting (n=1, 6.7%), and other activities (n=1, 6.7%).

In respect to psychometric questionnaires, males showed significantly higher scores of GABS compared

Table 1. *Main socio-demographic and clinical variables of the sample*

	Females N=18	Males N=86	Total sample N=104
Service			
Niguarda Hospital	13(15.1%)	73(84.9%)	86(82.7%)
Fatebenefratelli Hospital	5(27.8%)	13(72.2%)	18(17.3%)
Gender (male;female)	18(17.3%)	86 (82.7%)	104
Age (years, *mean ± SD*)	**52.33 ± 10.95***	**40.96± 15.76**	43.03 ± 15.59
Marital status			
Single	**2(11.8%)**	**46(59.7%)**	48(51.1%)
Engaged/married	8(47.1%)	24(31.2%)	32(34%)
Separated/divorced	**6(35.3%)**	**6(7.8%)**	12 (12.8%)
Widow/er	1(5.9%)	1(1.3%)	2(2.1%)
Educational Status (%)			
None	0(0%)	1(1.3%)	1(1.1%)
Primary school	3(17.6%)	4(5.1%)	7(7.4%)
Secondary school	8(47.1%)	29(35.9%)	36(37.9%)
High school	5(29.4%)	34(43.6%)	39(41.1%)
Degree	1(5.9%)	11(14.1%)	12(12.6%)
Years of education (years, *mean ± SD*)	9.94 ± 4.33	11.24± 3.84	11.01 ± 3.94
Employment (%)			
Unemployed	3(17.6%)	13(16.5%)	16(26.7%)
Full-time/part-time	10(58.8%)	56(70.9%)	66(68.8%)
Student	0(0%)	5(6.3%)	5(5.2%)
Retired	1(5.9%)	4(5.1%)	5(5.2%)
Homemaker	2(11.8%)	0(0%)	2(2.1%)
Other	1(5.9%)	1(1.3%)	2(2.1%)
Age at GD onset (years, *mean ± SD)*	**43.5 ± 11.92**	**29.12± 14.26**	31.65 ± 14.86
Duration of illness (years, *mean ± SD)*	9.5 ± 11.62	12.08 ± 10.62	11.61 ± 10.78
Stress event at onset (yes, %)	**12(66.7%)***	**31(38.3%)**	43(43.4%)
Type of stress event (%)			
None	2(16.7%)	9(25.7%)	11(23.4%)
Mourning	2(16.7%)	3(8.6%)	5(10.6%)
loss of work	1(8.3%)	4(11.4%)	5(10.6%)
Partner break	3(25%)	6(17.1%)	9(19.1%)
Illness diagnosis	1(8.3%)	2(5.7%)	3(6.4%)
Moving abitation	0(0%)	3(8.6%)	3(6.4%)
Big win	2(16.75)	4(11.4%)	6(5.8%)
Other	1(8.3%)	4(11.4%)	5(10.6%)
Positive Family history			
for GD (yes, %)	**7(46.7%)***	**11(15.7%)**	18(21.2%)
for other psychiatric disorders (yes, %)	5(33.3%)	13(18.6%)	18(21.1%)
Age at psychiatric comorbidity onset	30 ± 15.62	33.27 ±14.03	32.11 ± 13.66
Psychiatric Comorbidity (yes,%)	**9(56.3%)***	**21(29.2%)**	30(34.1%)
Type of Psychiatric Comorbidity (%)			
Major Depressive Disorder	3(23.1%)	12(27.3%)	15(26.3%)
Bipolar Disorder	1(7.7%)	3(6.8%)	4(7%)
Substance use disorder	1(7.7%)	8(18.2%)	9(15.8%)
Psychotic spectrum disorder	3(23.1%)	2(4.5%)	5(8%)
Anxiety disorders	0(0%)	2(4.5%)	2(3.5%)
Post Traumatic Stress Disorder	0(0%)	1(2.3%)	1(1.8%)
Obsessive Compulsive Disorder	0(0%)	1(2.3%)	1(1.8%)
Polycomorbidities	1(7.7%)	1(2.3%)	2(3.5%)
Presence of PD (yes, %)	26(52%)	6(50%)	32(51.6%)
Alchool abuse (yes, %)	5(29.4%)	21(30%)	26(29.9%)
Substance abuse (yes, %)	3(17.6%)	13(18.1%)	16(18%)
Lifetime suicidal ideation (yes,%)	**7(70%)***	**15(28.8%)**	22(21.2%)
Lifetime suicide attempts (yes,%)	0(0%)	1(9.1%)	1(1.7%)

Notes: Values for categorical and continuous variables are expressed in percentages and *mean ± SD*, respectively. GD: gambling disorder; PD: Personality disorder; Polycomorbidities: co-occurrence of at least two comorbid psychiatric conditions other than GD. Reported variables had a percentage of missing data ranging from 0% to 16%. Boldface indicates parameters with statistical significant differences between subgroups; ***p<0.005 *p<0.05.*

Figure 1. *Comparison of socio-demographic and clinical variables between female and male GD patients*
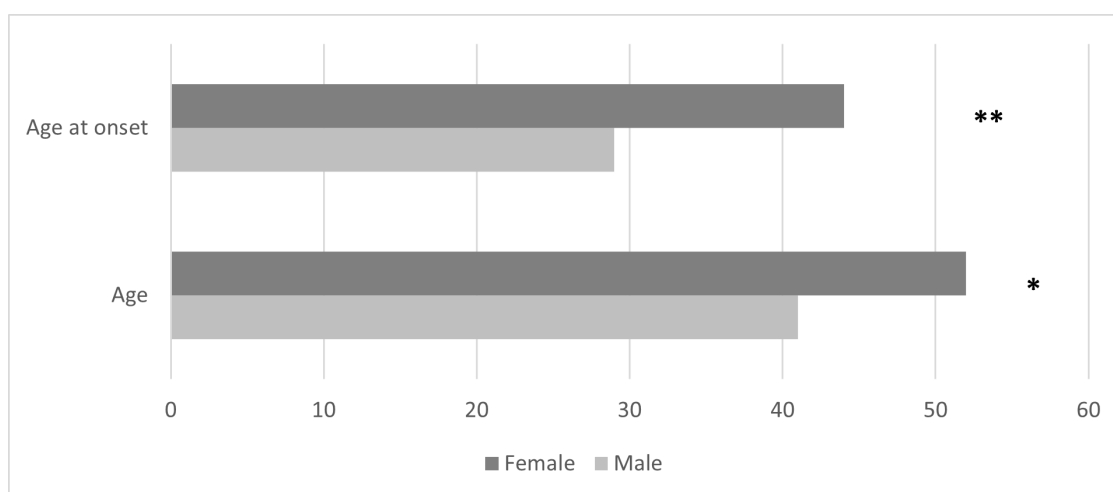
Notes: GD: Gambling disorder; **p<0.001 *p<0.05.*

to their female counterparts (83.00 ± *15.43* vs. 71.17 ± *21.6*; *p=0.034*). No other significant differences emerged for CGPI, BIS-11, and DERS questionnaires.

Finally, a predictive effect of gender was found only for GABS scale, with males showing a higher risk to reach higher scores compared to females (*B= 11.833; t=2.177; p=0.034*).

No predictive effect was found for the other psychometric questionnaires (CPGI: *B= -1.503; t= -1.763; p=0.081*; DERS: *B= 8.215; t= .939; p=0.353*; BIS-11: *B= -2.943, t= -0.711, p= 0.481; see Table 3*).

Discussion

Given the relevance of gender when understanding the heterogeneity among patients with GD and considering the mixed data in the field emerging from previous literature, we explored specific clinical features in relation to gender in a multicenter sample of Italian patients.

The first notable result is that female patients with GD showed a significantly higher mean age and age at the psychopathological onset, when compared to male patients. In this perspective, prior research reported an earlier age at GD onset among males (Richmond-Rakerd et al., 2013; Slutske et al., 2015), and a Brazilian study by Carneiro et al. (2014) reported that men tended to start gambling around 20 years of age developing their first problems about 3 years later. On the other hand, women usually were found to start gambling around 30 years for the first time, developing GD-related problems approximately 10 years later (Carneiro et al., 2014). Furthermore, other studies reported that, although GD onset in women tends to occur later than in men, the time between GD onset and the development of psychopathological problems appears to be shorter in women, showing a more rapid progression toward a clinical addition compared to males (Richmond-Rakerd et al., 2013; Slutske et al., 2009; Tavares et al., 2003).

Consistently with previous findings, in our sample, a frequent co-occurrence between GD and other psychiatric conditions was found (Dell'Osso et al., 2005; Petry et al., 2005; Welte et al., 2004;). Moreover, a significant difference in the presence of lifetime comorbidities emerged between groups. Interestingly, most female patients showed at least one lifetime psychiatric comorbidity, as compared to males (56% vs 29%, **table 1**), with mood disorders as the most represented

comorbidity (30.8%).

Available evidence indicates that the incidence of bipolar (8–31%) and unipolar disorder (28–76%) is significantly higher among patients who have GD, compared to the overall population (Kim et al., 2006). Moreover, gender-related differences have been observed in pathological gambling with women more likely than men to experience comorbid mood and anxiety disorders (Blanco et al., 2006; Potenza et al., 2019). A recent study by Sundqvist and Rosendahl (2019) reported that GD onset in women seems to appear after anxiety or depression occurrence, while in men GD onset occurs before any other psychiatric condition (Sundqvist & Rosendahal, 2019).

In this regard, several studies reported a stronger relationship between GD and major depression, generalized anxiety disorders in women, and SUD (Khanbhai et al., 2017; Petry et al., 2005). However, other studies showed higher rates of alcohol and other substance abuse in males compared to their female counterpart (Dannon et al., 2006; Martins et al., 2004; Wenzel & Dahl, 2009). Despite these findings, in our sample, we did not observe any differences between groups according to concomitant substance use. Although results are conflicting, some literature sources confirm our findings (Hakansson et al., 2018; Karlsson et al., 2021).

Of note, a significantly higher positive family history for GD was found in the female subgroup. In this regard, data available in the literature are limited. Heritability estimates for GD in twin studies have primarily been derived from two large registries (Eisen et al., 1989, 1998) that report heritability estimates of 40% for pathological gambling. Data have also indicated sex-related differences in the genetic contribution to gambling behaviors. In particular, shared environmental factors could contribute to explaining a moderate proportion of variation among women, indicating that familial context exerts greater influence over females' decision to initiate gambling than males (Eisen et al., 1998). These specific features need to be further investigated.

Furthermore, we observed a greater presence of lifetime suicidal ideation in females compared to male patients with GD (70% vs. 30%, **figure 2**). Several reports have already reported female sex as a risk factor for suicidality and/or suicide attempts (Bischof et al., 2015; Husky et al., 2015; Komoto, 2014). Hing et al. (2016) hypothesized that, greater likelihood of women to experience suicidal behavior was due to them proness

to gambling as a form of emotional regulation compared to males (Hing et al., 2016), and this has been associated with suicidality (Hatkevich et al., 2019; Neacsiu et al., 2018).

Moreover, in our study, a higher presence of stressful events at GD onset was observed in the female subgroup. Prior studies observed women's greater use of gambling behavior as a maladaptive coping mechanism to escape

stress, loneliness, and boredom (Lloyd et al., 2010; Sacco et al., 2011).

However, no gender differences in difficulties in emotion regulation rated by DERS questionnaire were found. In particular, males with GD reported higher scores than females, although not reaching statistical significance. A recent study by Sancho et al. (2019) on the comparison of emotion regulation profiles in

Table 2. *Comparison of gambling psychopathological dimensions and psychometric questionnaires between subgroups*

	Females N=18	Males N=86	Total sample N=104
Type of gambling activities (%)			
scratch cards	1(6.7%)	2(2.6%)	3(3.3%)
slot machine, video poker	3(20%)	11(14.5%)	14(15.4%)
lotteries	2(13.3%)	2(2.6%)	4(4.4%)
sports betting	1(6.7%)	17(22.4%)	18(19.8%)
trading online	0(0%)	1(1.3%)	2(1.1%)
other (casinò, poker, cards)	1(6.7%)	4(5.3%)	5(5.5%)
more than one typology	7(46.7%)	39(51.3%)	46(50.5%)
Prevalent gambling activities (%)			
scratch cards	2(13.3%)	4(5.3%)	6(6.6%)
slot machine, video poker	5(33.3%)	23(30.3%)	28(30.8%)
lotteries	6(40%)	18(23.7%)	24(26.4%)
sports betting	1(6.7%)	23(30.3%)	24(26.4%)
trading online	0(0%)	2(2.6%)	2(2.2%)
other (casinò, poker, cards)	1(6.7%)	6(7.9%)	7(7.7%)
Gambling modality			
Online gambling	0(0%)	10(13.7%)	10(11.4%)
Offline gambling	14(93%)	50(68.5%)	64(72.7%)
Both	1(6.7%)	13(17.8%)	14(15.9%)
Gambling frequencies in the past 30 days (%)			
none	1(6.7%)	1(1.4%)	2(2.3%)
less than once a week	0(0%)	5(6.9%)	5(5.7%)
more than once a week	4(26.7%)	25(34.7%)	29(33.3%)
daily	10(66.7%)	41(56.9%)	51(58.6%)
Presence of Debts due to GD (yes,%)	4(33.3%)	33(48.5%)	43(53.8%)
Debts due to GD (euros, Min-Max, *mean ± SD*)			
	500-10.000, 4.562	200-80.000, 10.688	200-80.000; 9.549
Maximum money gambled in a day (%)			
1 euro	0(0%)	2(3.2%)	2(2.6%)
from 1 to 10 euro	0(0%)	3(4.8%)	3(3.9%)
from 10 to 100 euro	4(26%)	10(15.9%)	14(18.4%)
from 100 to 1000 euro	7(53.8%)	26(41.3%)	33(43.4%)
from 1000 to 10.000	2(15.4%)	18(28.6%)	5(26.3%)
up to 10.000	0(0%)	4(6.3%)	4(5.3%)
Money gambled in the last 30 days (euros, Min-Max, *mean ± SD*)	0-1.000, 382 ± 310.6	0-25.000, 2.320 ± 4703.4	0-25.000, 2.014 ± 4370.4
Canadian Problem Gambling Index (*mean ± SD*)	13.44 ± 4.38	11.94 ± 3.02	52.33 ± 10.95
Canadian Problem Gambling Index (CPGI; %)			
Non-problem gambling	0(0%)	0(0%)	0(0%)
Low risk gambling	0(0%)	0(0%)	0(0%)
Moderate risk gambling	0(0%)	2(2.3%)	2(1.9%)
Problem gambling	18(100%)	84(97.7%)	101(97.1%)
The Gambling Attitudes and Beliefs (GABS; *mean ± SD*)	**71.17 ± 21.6***	**83.00 ± 15.43**	80.59 ± 17.33
Barratt Impulsiveness Scale-11 (BIS-11; *mean ± SD*)	69.00 ± 10.85	66.06 ± 11.13	66.66 ± 11.01
Barratt Impulsiveness Scale-11 (BIS-11, %)			
Absent	0(0%)	0(0%)	0(0%)
Mild	2(22.2%)	14(40%)	16(36.4%)
Moderate	5(55.6%)	15(42.9%)	20(45.5%)
Severe	2(22.2%)	6(17.1%)	8(18.2%)
Difficulties in Emotion Regulation Scale (*mean ± SD*)	88.09 ± 24.03	96.31 ± 25.75	94.38 ± 25.35

Notes: Values for categorical and continuous variables are expressed in percentages and *mean ± SD*, respectively. GD: gambling disorder. Reported variables had a percentage of missing data ranging from 0% to 16%. Boldface indicates parameters with statistical significant differences between the two subgroups; ***p<0.005 *p<0.05*.

Figure 2. *Comparison of clinical variables between female and male GD patients*
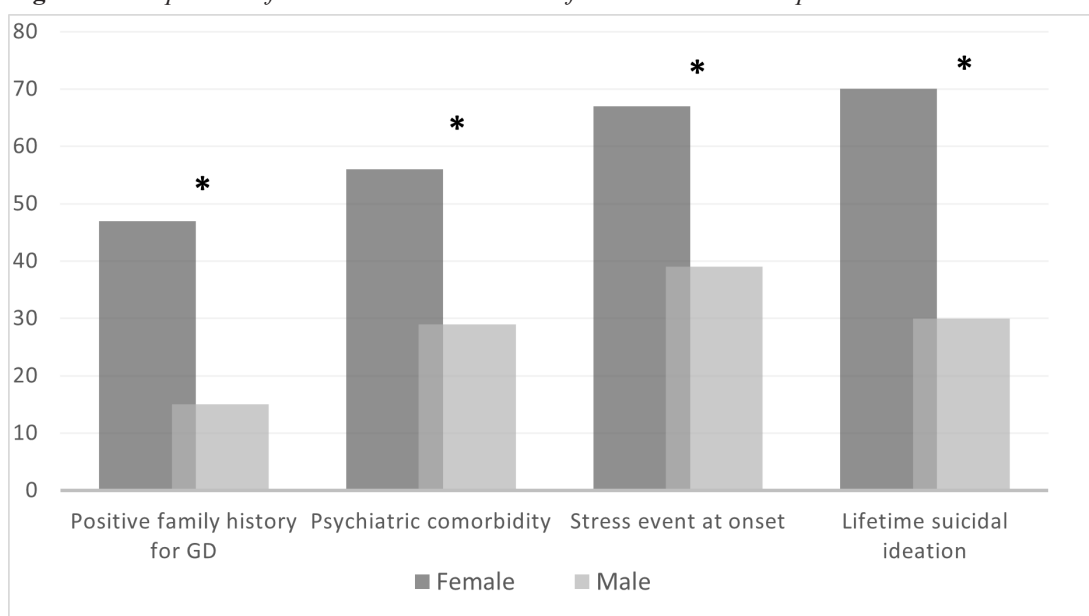
Notes: GD: Gambling disorder; **p<0.001 *p<0.05.*

relation to gender showed more difficulties in emotion regulation for men compared to women (Sancho et al., 2019). A possible explanation could be due to the fact that men tended to use less adaptive strategies, such as emotional suppression rather than cognitive reappraisal (Gross & John, 2003). On the other hand, women show a greater predisposition to share their emotional states and to use more adaptive strategies than men (Barrett & Bliss-Moreau, 2009; Nolen-Hoeksema & Aldao, 2011; Nolen-Hoeksema, 2012). These specific features need to be further investigated.

Regarding the other psychometric questionnaires, an effect of the male gender on the severity of GABS emerged. A higher risk of dysfunctional attitudes and beliefs related to the onset and maintenance of gambling behavior was observed in males with GD compared to females. As previously noted, in our study an earlier age at GD onset emerged among males. Greater GD severity in younger individuals could be explained by a preference for strategic gambling in this population. In particular, this subtype of gambling causes a higher level of gambling-related biases, such as the illusion of control and other dysfunctional attitudes analyzed by GABS scale (Myrseth et al., 2010; Rogier & Velotti, 2018;). Likewise, the early onset of GD is generally related to a severe presentation, as well as to dysfunctional personality traits and greater psychopathology (Granero et al., 2014; Jiménez-Murcia et al., 2009).

The aforementioned results should be interpreted taking into consideration the following methodological limitations. First, the sample size is limited. Secondly,

the number of women featured in the study is smaller compared to men, which could decrease statistical power. However, the number of women was enough to allow for statistical analyses. It must be argued, however, that this study included all the patients consecutively arriving at the treatment units, where the proportion of GD in men is higher. Future investigation may benefit from a wider sample size, necessary to confirm our results.

Conclusions

This study sought to present a gender-based analysis of specific sociodemographic and clinical features of GD. The main results of our study can be summarized in the following points. First, females showed an older age and a later age of GD onset. Secondly, females were more likely than males to have psychiatric comorbidity. Besides, female patients presented more often stressful events at psychopathological onset, suicidal ideation, and positive familiarity for GD. On the other hand, males showed a higher risk to reach higher scores of GABS.

Despite the number of disparate findings in the recent literature, our study seems to confirm the hypotheses that gender may influence GD psychopathological profiles, course, and comorbidity. Identifying specific clinical factors by gender may prompt more focus on the public health of women in relation to gambling, while still recognizing that males are at-risk of earlier gambling problems.

Table 3. *Linear regression model with gender as predictor*

Model	B	SE	Standardized β	t	p value
GABS	*11.833*	**5.435**	**.277**	**2.177**	**.034**
CPGI	*-1.503*	.852	-.172	*1.763*	*.081*
DERS	*8.215*	8.745	.139	.939	*.353*
BIS-11	*-2.943*	4.142	-.109	*-0.711*	.481

Notes: B: Unstandardized beta; SE: standard error; β: Standardized beta; t: t-test value; GABS: the Gambling Attitudes and Belief; CPGI: Canadian Problem Gambling Index, DERS: Difficulties in Emotion Regulation Scale, BIS-11: Barratt Impulsiveness Scale-11.

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*(2), 395–400. https://doi.org/10.1016/j.psychres.2009.10.003

American Psychiatric Association. Diagnostic and statistical manual of mental disorders (5th ed.) *American Journal of Psychiatry*. Arlington, VA; 2013

Baño, M., Mestre-Bach, G., Granero, R., Fernández-Aranda, F., Gómez-Peña, M., Moragas, L., Del Pino-Gutierrez, A., Codina, E., Guillén-Guzmán, E., Valero-Solís, S., Lizbeth Lara-Huallipe, M., Baenas, I., Mora-Maltas, B., Valenciano-Mendoza, E., Solé-Morata, N., Gálvez-Solé, L., González-Bueso, V., José Santamaría, J., Menchón, J. M., & Jiménez-Murcia, S. (2021). Women and gambling disorder: Assessing dropouts and relapses in cognitive behavioral group therapy. *Addictive behaviors, 123*, 107085. https://doi.org/10.1016/j.addbeh.2021.107085

Barrett, L. F., & Bliss-Moreau, E. (2009). She's emotional. He's having a bad day: Attributional explanations for emotion stereotypes. *Emotion*, *9*(5), 649–658. https://doi.org/10.1037/a0016821

Bischof, A., Meyer, C., Bischof, G., John, U., Wurst, F. M., Thon, N., Lucht, M., Grabe, H. J., & Rumpf, H. J. (2015). Suicidal events among pathological gamblers: the role of comorbidity of axis I and axis II disorders. *Psychiatry research*, *225*(3), 413–419. https://doi.org/10.1016/j.psychres.2014.11.074

Blanco, C., Hasin, D. S., 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*(7), 943–953. https://doi.org/10.1017/S0033291706007410

Braun, B., Ludwig, M., Sleczka, P., Bühringer, G., & Kraus, L. (2014). Gamblers seeking treatment: Who does and who doesn't?. *Journal of behavioral addictions*, *3*(3), 189–198. https://doi.org/10.1556/JBA.3.2014.3.7

Breen, R. B., & Zuckerman, M. (1994). The gambling beliefs and attitudes survey. University of Delaware; 1994.

Bruneau, M., Grall-Bronnec, M., Vénisse, J. L., Romo, L., Valleur, M., Magalon D., Fatséas, M., Chéreau-Boudet, I., Luquiens, A., JEU-Group Challet-Bouju, G., & Hardouin, J. B. (2016). Gambling transitions among adult gamblers: A multi-state model using a Markovian approach applied to the JEU cohort. *Addictive behaviors*, *57*, 13–20. https://doi.org/10.1016/j.addbeh.2016.01.010

Burge, A. N., Pietrzak, R. H., Molina, C. A., & Petry, N. M. (2004). Age of gambling initiation and severity of gambling and health problems among older adult problem gamblers. *Psychiatric services (Washington, D.C.), 55*(12), 1437–1439. https://doi.org/10.1176/appi.ps.55.12.1437

Calado, F., Alexandre, J., & Griffiths, M. D. (2017). Prevalence of Adolescent Problem Gambling: A Systematic Review of Recent Research. *Journal of gambling studies*, *33*(2), 397–424. https://doi.org/10.1007/s10899-016-9627-5

Capitanucci, D., & Carlevaro, T. (2004), Guida ragionata agli strumenti diagnostici e terapeutici nel Disturbo di gioco d'azzardo patologico, Bellinzona, *Hans Dubois Editore*

Carneiro, E., Tavares, H., Sanches, M., Pinsky, I., Caetano, R., Zaleski, M., & Laranjeira, R. (2014). Gambling onset and progression in a sample of at-risk gamblers from the general population. *Psychiatry Research*, *216*(3), 404–411. https://doi.org/10.1016/j.psychres.2014.01.035

Carneiro, E., Tavares, H., Sanches, M., Pinsky, I., Caetano, R., Zaleski, M., & Laranjeira, R. (2020). Gender Differences in Gambling Exposure and At-risk Gambling Behavior. *Journal of gambling studies*, *36*(2), 445–457. https://doi.org/10.1007/s10899-019-09884-7

Colasante, E., Gori, M., Bastiani, L., Siciliano V., Giordani P., Grassi M., & Molinaro, S. (2013). An assessment of the psychometric properties of Italian version of CPGI. *Journal of Gambling Studies*, *29*, 765–774.

Cowlishaw, S., & Hakes, J. K. (2015). Pathological and problem gambling in substance use treatment: Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *The American journal on addictions*, *24*(5), 467–474. https://doi.org/10.1111/ajad.12242

Crisp, B. R., Thomas, S. A., Jackson, A. C., Smith, S., Borrell, J., Ho, W., Holt, T. A., & Thomason, N. (2004). Not the Same: A Comparison of Female and Male Clients Seeking Treatment from Problem Gambling Counselling Services. *Journal of Gambling Studies*, *20*(3), 283–299. https://doi.org/10.1023/b:jogs.0000040280.64348.d1

Dannon, P. N., Lowengrub, K., Shalgi, B., Sasson, M., Tuson, L., Saphir, Y., & Kotler, M. (2006). Dual psychiatric diagnosis and substance abuse in pathological gamblers: a preliminary gender comparison study. *Journal of addictive diseases*, *25*(3), 49–54. https://doi.org/10.1300/J069v25n03_07

Dell'Osso, B., Allen, A., & Hollander, E. (2005). Comorbidity issues in the pharmacological treatment of Pathological Gambling: a critical review. *Clinical practice and epidemiology in mental health* : CP & EMH, 1, 21. https://doi.org/10.1186/1745-0179-1-21

Dell'Osso, B., Altamura, A. C., Allen, A., Marazziti, D., & Hollander, E. (2006). Epidemiologic and clinical updates on impulse control disorders: a critical review. *European archives of psychiatry and clinical neuroscience*, *256*(8), 464–475. https://doi.org/10.1007/s00406-006-0668-0

Eisen, S., Neuman, R., Goldberg, J., Rice, J., & True, W. (1989). Determining zygosity in the Vietnam Era Twin Registry: an approach using questionnaires. *Clinical genetics*, *35*(6), 423–432. https://doi.org/10.1111/j.1399-0004.1989.tb02967.x

Eisen, S. A., Lin, N., Lyons, M. J., Scherrer, J. F., Griffith, K., True, W. R., Goldberg, J., & Tsuang, M. T. (1998). Familial influences on gambling behavior: an analysis of 3359 twin pairs. *Addiction* (Abingdon, England), *93*(9), 1375–1384. https://doi.org/10.1046/j.1360-0443.1998.93913758.x

Ferris J., & Wynne, H. The Canadian Problem Gambling Index: Final report. *Ottawa: Canadian Centre on Substance Abuse*, 2001

Fossati, A., Di Ceglie, A., Acquarini, E., & Barratt, E. S. (2001). Psychometric properties of an Italian version of the Barratt Impulsiveness Scale-11 (BIS-11) in nonclinical subjects. *Journal of clinical psychology*, *57*(6), 815–828. https://doi.org/10.1002/jclp.1051

Gavriel-Fried, B., Moretta, T., & Potenza, M. N. (2019). Similar roles for recovery capital but not stress in women and men recovering from gambling disorder. *Journal of behavioral addictions, 8*(4), 770–779. https://doi.org/10.1556/2006.8.2019.73

Granero, R., Penelo, E., Stinchfield, R., Fernandez-Aranda, F., Savvidou, L. G., Fröberg, F., Aymamí, N., Gómez-Peña, M., Pérez-Serrano, M., del Pino-Gutiérrez, A., Menchón, J. M., & Jiménez-Murcia, S. (2014). Is pathological gambling moderated by age?. *Journal of gambling studies*, *30*(2), 475–492. https://doi.org/10.1007/s10899-013-9369-6

Grant, J. E., Levine, L., Kim, D., & Potenza, M. N. (2005). Impulse control disorders in adult psychiatric inpatients. *The American journal of psychiatry*, *162*(11), 2184–2188. https://doi.org/10.1176/appi.ajp.162.11.2184

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of personality and social psychology*, *85*(2), 348–362. https://doi.org/10.1037/0022-3514.85.2.348

Hakansson, A., Karlsson, A., & Widinghoff, C. (2018). Primary and Secondary Diagnoses of Gambling Disorder and Psychiatric Comorbidity in the Swedish Health Care System-A Nationwide Register Study. *Frontiers in psychiatry*, *9*, 426. https://doi.org/10.3389/fpsyt.2018.00426

Hatkevich C., Penner F., Sharp C. (2019). Difficulties in emotion regulation and suicide ideation and attempt in adolescent inpatients. *Psychiatry Research*, *271*. 10.1016/j.psychres.2018.11.038

Hing, N., Russell, A., Tolchard, B., & Nower, L. (2016). Risk Factors for Gambling Problems: An Analysis by Gender. Journal of gambling studies, *32*(2), 511–534. https://doi.org/10.1007/s10899-015-9548-8

Husky M. M., Michel, 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. doi: 10.1016/j.addbeh.2015.01.011

Jiménez-Murcia, S., Stinchfield, R., Alvarez-Moya, E., Jaurrieta, N., Bueno, B., Granero, R., Aymamí, M. N., Gómez-Peña, M., Martínez-Giménez, R., Fernández-Aranda, F., & Vallejo, J. (2009). Reliability, validity, and classification accuracy of a Spanish translation of a measure of DSM-IV diagnostic criteria for pathological gambling. *Journal of gambling studies*, *25*(1), 93–104. https://doi.org/10.1007/s10899-008-9104-x

Jiménez-Murcia, S., Granero, R., Giménez, M., Del Pino-Gutiérrez, A., Mestre-Bach, G., Mena-Moreno, T., Moragas, L., Baño, M., Sánchez-González, J., de Gracia, M., Baenas-Soto, I., Contaldo, S. F., Valenciano-Mendoza, E., Mora-Maltas, B., López-González, H., Menchón, J. M., & Fernández-Aranda, F. (2020). Contribution of sex on the underlying mechanism of the gambling disorder severity. *Scientific reports*, *10*(1), 18722. https://doi.org/10.1038/s41598-020-73806-6

Karlsson, A., Hedén, O., Hansson, H., Sandgren, J., & Håkansson, A. (2021). Psychiatric Comorbidity and Economic Hardship as Risk Factors for Intentional Self-Harm in Gambling Disorder-A Nationwide Register Study. *Frontiers in psychiatry*, *12*, 688285. https://doi.org/10.3389/fpsyt.2021.688285

Kessler, R. C., Hwang, I., LaBrie, R., Petukhova, M., Sampson, N. A., Winters, K. C., & Shaffer, H. J. (2008). DSM-IV pathological gambling in the National Comorbidity Survey Replication. *Psychological medicine*, *38*(9), 1351–1360. https://doi.org/10.1017/S0033291708002900

Khanbhai, Y., Smith, D., & Battersby, M. (2017). Gender by Preferred Gambling Activity in Treatment Seeking Problem Gamblers: A Comparison of Subgroup Characteristics and Treatment Outcomes. *Journal of gambling studies*, *33*(1), 99–113. https://doi.org/10.1007/s10899-016-9614-x

Kim, S. W., Grant, J. E., Eckert, E. D., Faris, P. L., & Hartman, B. K. (2006). Pathological gambling and mood disorders: clinical associations and treatment implications. *Journal of affective disorders*, *92*(1), 109–116. https://doi.org/10.1016/j.jad.2005.12.040

Komoto Y. (2014). Factors associated with suicide and bankruptcy in Japanese pathological gamblers. *International Journal of Mental Health Addiction*, *12*(5), 600–606. doi: 10.1007/s11469-014-9492-3

Lee, K. M., Guo, S., Manning, V., Thane, K., & Wong, K. E. (2011). Are the demographic and clinical features of pathological gamblers seeking treatment in Singapore changing?. *Singapore medical journal*, *52*(6), 428–431.

Lloyd, J., Doll, H., Hawton, K., Dutton, W. H., Geddes, J. R., Goodwin, G. M., & Rogers, R. D. (2010). How psychological symptoms relate to different motivations for gambling: an online study of internet gamblers. *Biological psychiatry*, *68*(8), 733–740. https://doi.org/10.1016/j.biopsych.2010.03.038

Lorains, F. K., Cowlishaw, S., & Thomas, S. A. (2011). Prevalence of comorbid disorders in problem and pathological gambling: systematic review and meta-analysis of population surveys. *Addiction* (Abingdon, England), *106*(3), 490–498. https://doi.org/10.1111/j.1360-0443.2010.03300.x

Lynch, W. J., Maciejewski, P. K., Potenza, M. N. (2004). Psychiatric correlates of gambling in adolescents and young adults grouped by age at gambling onset. *Archives of General Psychiatry, 61*(11), 1116–1122. doi:10.1001/archpsyc.61.11.1116

Martinotti, G,, Sarchione, F., Fiori, F., Corbo, M., Poloni, N., Tarricone, Serafini, G., Pompili, M., Di Giannantonio, M. (2017). Gambling disorder and suicide: an overview of the associated co-morbidity and clinical characteristics. *International Journal High-Risk Behaviors*. Addiction, *6*. doi:10.5812/ijhrba.30827

Martins, S. S., Tavares, H., da Silva Lobo, D. S., Galetti, A. M., & Gentil, V. (2004). Pathological gambling, gender, and risk-taking behaviors. *Addictive behaviors*, *29*(6), 1231–1235. https://doi.org/10.1016/j.addbeh.2004.03.023

Medeiros, G. C., Leppink, E., Yaemi, A., Mariani, M., Tavares, H., Grant, J. (2015). Gambling disorder in older adults: A cross-cultural perspective. *Comprehensive Psychiatry*, *58*, 116–121. doi:10.1016/j.comppsych.2014.12.021

Merkouris, S.S., A.C. Thomas, K.A. Shandley, S.N. Rodda, E. Oldenhof, N.A. Dowling (2016). An update on gender differences in the characteristics associated with problem Gambling: A systematic review. *Current Addiction Reports*, 3, 254-267. doi:10.1007/s40429-016-0106-y

Myrseth, H., Brunborg, G., Eidem, M. (2010). Differences in cognitive distortions between pathological and non-pathological gamblers with preferences for chance or skill games. *Journal of Gambling Studies*, *26*, 561–9. doi:10.1007/s10899-010-9180-6

Neacsiu, A. D., Fang, C. M., Rodriguez, M., & Rosenthal, M. Z. (2018). Suicidal Behavior and Problems with Emotion Regulation. *Suicide & life-threatening behavior*, *48*(1), 52–74. https://doi.org/10.1111/sltb.12335

Nolen-Hoeksema, S., Aldao, A. (2011). Gender and age differences in emotion regulation strategies and their relationship to depressive symptoms. *Personality and Individual Differences*, *51*, 704–8. doi:10.1016/j.paid.2011.06.012

Nolen-Hoeksema, S. (2012). Emotion regulation and psychopathology: the role of gender. *The Annual Review of Clinical Psychology*, 161–87. doi:10.1146/annurev-clinpsy-032511-143109

Patton, J.H., Stanford MS, Barratt E.S. (1995). Factor structure of the Barratt Impulsiveness scale. *Journal of Clinical Psychology*; *51*, 768–764

Petry, N. M., & Kiluk, B. D. (2002). Suicidal ideation and suicide attempts in treatment-seeking pathological gamblers. *The Journal of nervous and mental disease*, *190*(7), 462–469. https://doi.org/10.1097/00005053-200207000-00007

Petry, N. M., Stinson, F. S., & Grant, B. F. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of clinical psychiatry*, *66*(5), 564–574. https://doi.org/10.4088/jcp.v66n0504

Potenza, M. N., Balodis, I. M., Derevensky, J., Grant, J. E., Petry, N. M., Verdejo-Garcia, A., & Yip, S. W. (2019). Gambling disorder. *Nature reviews. Disease primers, 5*(1), 51. https://doi.org/10.1038/s41572-019-0099-7

Richmond-Rakerd, L.S.,. Slutske, W.S, Piasecki T.M. (2013).

Birth cohort and sex differences in the age of gambling initiation in the United States: Evidence from the National Comorbidity Survey Replication. *International Gambling Studies*, *13*, 3, 417-429. doi:10.1080/14459795.2013.836354

Rogier, G., Velotti, P. (2018). Narcissistic implications in gambling disorder: the mediating role of emotion dysregulation. *Journal of Gambling Studies, 34*, 1241–60. doi:10.1007/s10899-018-9759-x

Sacco, P., Torres, L.R., Cunningham-Williams, R.M., Woods, C., Unick, G. (2011). Differential item functioning of pathological gambling criteria: An examination of gender, race/ethnicity and age. *Journal of Gambling Studies, 27*, 317-330. doi:10.1007/s10899-010-9209-x

Sancho, M., de Gracia, M., Granero, R., González-Simarro, S., Sánchez, I., Fernández-Aranda, F., Trujols, J., Mallorquí-Bagué, N., Mestre-Bach, G., Del Pino-Gutiérrez, A., Mena-Moreno, T., Vintró-Alcaraz, C., Steward, T., Aymamí, N., Gómez-Peña, M., Menchón, J. M., & Jiménez-Murcia, S. (2019). Differences in Emotion Regulation Considering Gender, Age, and Gambling Preferences in a Sample of Gambling Disorder Patients. *Frontiers in psychiatry*, *10*, 625. https://doi.org/10.3389/fpsyt.2019.00625

Sighinolfi, C., Norcini Pala, A., Chiri, L. R., Marchetti, I., & Sica, C. (2010). Difficulties in emotion regulation scale (DERS): the italian translation and adaptation. *Psicoterapia Cognitiva Comportamentale*, *16*(2), 141–170.

Slutske, W. S., Blaszczynski, A., & Martin, N. G. (2009). Sex differences in the rates of recovery, treatment-seeking, and natural recovery in pathological gambling: results from an Australian community-based twin survey. Twin research and human genetics: *the official journal of the International Society for Twin Studies*, *12*(5), 425–432. https://doi.org/10.1375/twin.12.5.425

Slutske, W. S., Piasecki, T. M., Deutsch, A. R., Statham, D. J., & Martin, N. G. (2015). Telescoping and gender differences in the time course of disordered gambling: evidence from a general population sample. *Addiction* (Abingdon, England), *110*(1), 144–151. https://doi.org/10.1111/add.12717

Spritzer, D. T., Rohde, L. A., Benzano, D. B., Laranjeira, R. R., Pinsky, I., Zaleski, M., Caetano, R., & Tavares, H. (2011). Prevalence and correlates of gambling problems among a nationally representative sample of Brazilian adolescents. *Journal of gambling studies*, *27*(4), 649–661. https://doi.org/10.1007/s10899-010-9236-7

Sundqvist, K., & Rosendahl, I. (2019). Problem Gambling and Psychiatric Comorbidity-Risk and Temporal Sequencing Among Women and Men: Results from the Swelogs Case-Control Study. *Journal of gambling studies*, *35*(3), 757–771. https://doi.org/10.1007/s10899-019-09851-2

Tavares, H., Zilberman, M. L., Beites, F. J., & Gentil, V. (2001). Gender differences in gambling progression. *Journal of gambling studies*, *17*(2), 151–159. https://doi.org/10.1023/a:1016620513381

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. *The Journal of clinical psychiatry*, *64*(4), 433–438. https://doi.org/10.4088/jcp.v64n0413

Valenciano-Mendoza, E., Fernández-Aranda, F., Granero, R., Gómez-Peña, M., Moragas, L., Pino-Gutierrez, A. D., Mora-Maltas, B., Baenas, I., Guillén-Guzmán, E., Valero-Solís, S., Lara-Huallipe, M. L., Codina, E., Mestre-Bach, G., Etxandi, M., Menchón, J. M., & Jiménez-Murcia, S. (2021). Suicidal behavior in patients with gambling disorder and their response to psychological treatment: The roles of gender and gambling preference. *Journal of psychiatric research*, *143*, 317–326. https://doi.org/10.1016/j.jpsychires.2021.09.027

Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M. C., & Parker, J. C. (2004). Risk factors for pathological gambling. *Addictive behaviors*, *29*(2), 323–335. https://doi.org/10.1016/j.addbeh.2003.08.007

Wenzel, H. G., & Dahl, A. A. (2009). Female pathological gamblers: A critical review of the clinical findings. *International Journal of Mental Health and Addiction, 7*(1), 190–202. https://doi.org/10.1007/s11469-008-9174-0

Wong, G., Zane, N., Saw, A., & Chan, A. K. (2013). Examining gender differences for gambling engagement and gambling problems among emerging adults. *Journal of gambling studies, 29*(2), 171–189. https://doi.org/10.1007/s10899-012-9305-1

Worhunsky, P. D., Malison, R. T., Rogers, R. D., & Potenza, M. N. (2014). Altered neural correlates of reward and loss processing during simulated slot-machine fMRI in pathological gambling and cocaine dependence. *Drug and alcohol dependence*, *145*, 77–86. https://doi.org/10.1016/j.drugalcdep.2014.09.013

Yip, S. W., Morie, K. P., Xu, J., Constable, R. T., Malison, R. T., Carroll, K. M., & Potenza, M. N. (2017). Shared microstructural features of behavioral and substance addictions revealed in areas of crossing fibers. *Biological psychiatry*. Cognitive neuroscience and neuroimaging, *2*(2), 188–195. https://doi.org/10.1016/j.bpsc.2016.03.001

Yuodelis-Flores, C., & Ries, R. K. (2019). Addiction and Suicide: A Review. Focus *American Psychiatric Publishing*, *17*(2), 193–199. https://doi.org/10.1176/appi.focus.17203