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Are there clinical, psychopathological and therapy outcomes correlates associated with self-exclusion from gambling?

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FULL-LENGTH REPORT



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ABSTRACT

Background and aims: Self-exclusion in gambling disorder (GD) is considered a measure to decrease the negative consequences of gambling behavior. Under a formal self-exclusion program, gamblers request to be banned from accessing to the gambling venues or online gambling. *The aims of the present study are:* 1) to determine sociodemographic characteristics of a clinical sample of seeking-treatment patients with GD who are self-excluded before arriving at the care unit; 2) to identify personality traits and general psychopathology of this clinical population; 3) to analyze the response to treatment, in terms of relapses and dropouts. *Methods:* 1,416 adults seeking treatment for GD, who are self-excluded completed screening tools to identify GD symptomatology, general psychopathology, and personality traits. The treatment outcome was measured by dropout and relapses. *Results:* Self-exclusion was significantly related to female sex and a high sociodemographic status. Also, it was associated with a preference for strategic and mixed gambling, longest duration and severity of the disorder, high rates of general psychopathology, more presence of illegal acts and high sensation seeking rates. In relation to treatment, self-exclusion was associated with low relapse rates. *Conclusions:* The patients who self-exclude before seeking treatment have a specific clinical profile, including high sociodemographic status, highest severity of GD, more years of evolution of the disorder and high emotional distress rates; however, these patients' presents better response to treatment. Clinically, it could be expected that this strategy could be used as a facilitating variable in the therapeutic process.

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KEYWORDS

gambling disorder, self-exclusion, sociodemographic characteristics, clinical profile, treatment outcome



INTRODUCTION

Gambling Disorder (GD) has been recently recognized as an addictive disorder. It is characterized by being a persistent and recurrent gambling pattern that causes clinically significant impairment or discomfort, adversely affecting psychosocial functioning and physical and psychological health (American Psychiatric Association, 2013). In adult population, research estimates that between 0.1 and 5.8% of the general population reach diagnostic criteria for gambling problems, and between 0.7 and 6.5% present these gambling problems throughout their lives (Calado & Griffiths, 2016).

The etiology of GD involves genetic and environmental factors, making it a multi causal disorder (Potenza et al., 2019). Being young and a man are factors associated with the development of GD (Calado, Alexandre, & Griffiths, 2017; Sharman, Butler, & Roberts, 2019; Turner et al., 2018). It has also found that having a low socioeconomic can be a risk factor (Subramaniam et al., 2015; Volberg, McNamara, & Carris, 2018).

In terms of other psychological characteristics, GD has been associated with high levels of impulsivity (Mestre-Bach et al., 2020; Steward et al., 2017) deficits in decision-making, emotional regulation, harm avoidance and low self-direction (Canale, Vieno, Griffiths, Rubaltelli, & Santinello, 2015; Leeman & Potenza, 2013; Mallorquí-Bagué et al., 2016; Moragas et al., 2015; Wyckmans et al., 2019). Moreover, several comorbidities have been reported in GD as substance use disorders (SUD) (Grant & Chamberlain, 2020; Petry, Stinson, & Grant, 2005; Rash, Weinstock, & Van Patten, 2016), affective disorders (Dowling et al., 2015; Karlsson & Håkansson, 2018; Rodriguez-Monguio, Errea, & Volberg, 2017) and personality disorders (Dash et al., 2019; Petry et al., 2005; Vaddiparti & Cottler, 2017) which have been associated with worse treatment outcomes (Stevens, King, Dorstyn, & Delfabbro, 2019).

However, not all risk factors are individual, there are factors directly related to the gambling industry which offer a legal and easy accessibility environment. Advertising strategies also contribute to its normalization, as well as the internet platforms which increased online gambling (Abbott, 2007; Bramley, Norrie, & Manthorpe, 2019; Echeburúa, 2000, 2010, Petry, 2006; Potenza, 2006).

Different strategies have been implemented to reduce or minimize the harm caused by GD. The scientific community has been participating in the development of harm minimization models, as well as the promotion of responsible gambling (Blaszczynski, Ladouceur, & Shaffer, 2004; Hing & McMillen, 2002) in which the gambling industry, supports associations for gamblers and public administrations are involved (Departament d'Interior; Relacions Insitucionals i Participació de la Generalitat de Catalunya, 2010; Departament de Salut de la Generalitat de Catalunya, 2017; Ministerio de Sanidad, 2018).

Within the responsible gambling programs, one of the key models is self-exclusion from gambling (Drawson, Tanner, Mushquash, Mushquash, & Mazmanian, 2017).

This is considered a restrictive form of protection used by gamblers who seek either achieving abstinence or reducing gambling behaviors (Motka et al., 2018). It consists of the gambler's request to be banned from accessing the gambling venues or online gambling, under a formal self-exclusion program carried out by the government regulators (Ley 13/2011, de 27 de Mayo, de Regulación Del Juego, 2011) or by the gambling provider (Gainsbury, 2014).

The characteristic that defines self-exclusion is that it can only be carried out if the gambler formally expresses his or her wish to be denied access to online gambling or gambling venues for a period of time (Gainsbury, 2014). In either case, the formalization of self-exclusion expresses an initial determination to put an end to problem gambling by using this protective tool that has been shown to decrease the negative impact of gambling behaviors, and can be used as a preventive measure against the possibility of relapse (Dickson, Derevensky, & Gupta, 2008).

Self-exclusion has become a good support for therapeutic treatment due to four reasons: 1) a voluntary action of the gambler based on his/her decision; 2) the Country Administration is the ultimate organization responsible for ensuring that self-exclusion is carried out efficiently; 3) there is an official record with the gambler's identification data and; 4) this record has to be available to land based or online gambling operators (Australian Communications and Media Authority, 2023; Direcció General d'Ordenació del Joc, 2023; Gambling Commission, 2022; National Council on Problem Gambling, 2014; National Responsible Gambling Programme, 2023; Responsible Gambling Council, 2023).

Some systematic reviews that have analyzed the effectiveness of self-exclusion programs in the last 16 years in different international jurisdictions (Motka et al., 2018; Sally, 2014), have found that self-exclusion rates in online gambling range from 5.4 to 11%, while in land-based gambling a variation of 0.6 and 17% has been found (Motka et al., 2018). The characteristics of self-exclusion are different in each country such as; the information offered about the gambling problem (which may lead the problem gambler to seek therapy or to consider self-exclusion as a mere administrative action), the place where the self-exclusion can be carried out, the way to manage the self-exclusion (online web, e-mail or postal mail) or the cancellation of the self-exclusion (Ladouceur, Sylvain, & Gosselin, 2007; Motka et al., 2018). In relation to the duration, studies have reported that a person can self-prohibit from 6 months to 5 years (Motka et al., 2018), while other authors suggest that the self-prohibition can be carried out for a period of one year and then it can be renewed (Ladouceur et al., 2007; McMahon, Thomson, Kaner, & Bambra, 2019); other authors propose that the self-exclusion could be irreversible (Ladouceur et al., 2007; Nowatzki & Williams, 2002).

Regarding people who use self-exclusion, sociodemographic characteristics, such as gender, age, educational level or economic level, are not fully known. According to current literature (Abbott, 2019b; Kotter, Kräplin, Pittig, & Bühlinger, 2019; Motka et al., 2018; Strohäker & Becker, 2018) the average age of people that self-exclude ranges between



forty and forty-five years and they are mostly men. Moreover, those who have banned themselves from online gambling are, on average, 10 years younger than those who have banned themselves from gambling venues. The same studies mentioned that those self-excluded people are mostly single and unemployed. Research has also found that the mental health of people who self-excluded is affected as they have symptoms of anxiety, depression and SUD, as well as alterations in social and work life (Hayer & Meyer, 2011; Kotter et al., 2019).

In spite of the protective role of self-exclusion, research has found that the greater the accessibility of gambling or the ease of evading self-exclusion measures, the less harm minimization of the gambling problem will be (Hayer & Meyer, 2011; Strohäker & Becker, 2018). This may be related with what some studies have reported, that the longer a person spends in a gambling establishment and the greater the accessibility is, the more likely they are to self-exclude several times, since some people return to gambling venues at the end of their self-exclusion period (Sharman et al., 2019; Strohäker & Becker, 2018; Turner, Shi, Robinson, McAvoy, & Sanchez, 2021).

Therefore, more effective relapse methods based on the profiles of people who resort to self-exclusion are needed to add to psychological treatments (Sharman et al., 2019; Strohäker & Becker, 2018; Turner et al., 2021). In addition to that, having a better knowledge of the socio-demographic, psychopathological, personality and gambling behavior profiles of people who ask for self-exclusion before seeking professional treatment can contribute to designing prevention programs that are more oriented towards the target population (people with gambling problems who are unaware of this protection strategy), and to strengthen the decision of those that have already self-excluded.

In the clinical setting, psychological treatment programs, such as motivational interviewing (MI), have proven to be very effective options for the treatment of GD, helping to increase the patient's motivation and commitment to the behavioral change required in therapeutic treatment (Lawrence, Fulbrook, Somerset, & Schulz, 2017; Yakovenko, Quigley, Hemmelgarn, Hodgins, & Ronksley, 2015). Recently, telephone intervention and Internet-based CBT interventions, virtual reality and serious video games have been shown to reduce the severity of gambling problems and improve quality of life (Abbott et al., 2018; Bouchard et al., 2017; Castrén et al., 2013). Mindfulness has also been shown to be effective in reducing gambling behavior (De Lisle, Dowling, & Allen, 2012; Lakey, Campbell, Brown, & Goodie, 2007) both at the end of treatment and at follow-up (McIntosh, Crino, & O'Neill, 2016). Some authors have proposed Mindfulness as an effective adjunct to CBT and also as a relapse prevention strategy after standard CBT (Toneatto, Vettese, & Nguyen, 2007).

The most widely used and especially effective therapy in the treatment of GD is remains the cognitive behavioral therapy (CBT) (Choi et al., 2017; Menchon, Mestre-Bach, Steward, Fernández-Aranda, & Jiménez-Murcia, 2018), as it has been shown to reduce gambling behavior and related

problems, with significant short- and long-term improvements, both in individual treatment and in the group modality (Abbott, 2019a; Ginley, Rash, & Petry, 2019; Merkouris, Thomas, Browning, & Dowling, 2016; Petry, Ginley, & Rash, 2017). However, research (Abbott, 2019a; Yakovenko & Hodgins, 2021) has reported that most at-risk gamblers do not seek psychological treatment with a professional and, when they do, the likelihood of dropout or relapse is high. Abbott (2019a) highlights in his systematic review the lack of treatments that include the needs of different gamblers with GD and their individual comorbidities, as well as the lack of research evaluating and identifying the efficacy of online, industry measures and self-exclusion in interventions.

Therefore, the present study had the following aims: 1) to determine the sociodemographic characteristics of a clinical sample of treatment-seeking patients with GD who are self-excluded before arriving at the care unit; 2) to identify personality traits and general psychopathology of this clinical population; 3) to analyze the response to treatment, in terms of relapses and dropouts, by comparing patients who were already self-excluded when they requested treatment with those who were not.

The starting hypothesis is that patients who come to the unit requesting treatment for GD that have previously self-excluded present a specific profile which differentiates them from other patients, as higher severity and duration of the disorder, and higher psychopathology. In relation to treatment response, self-prohibition will be associated with better outcomes.

METHODS

Participants

The total sample of the study consisted of 1,416 treatment seeking adults who met criteria for GD. All of them were attended at the Behavioral Addictions Unit of the Department of Psychology of Bellvitge University Hospital, between 2005 and 2020. The patients were evaluated by a group of psychologists and psychiatrists who are experts in the GD field, both, in assessment and treatment.

Distribution by sex was 161 women (11.4%) and 1,255 men (88.6%). 74.9% ($n = 1,060$) of the participants had not self-excluded previously, while 25.1% ($n = 356$) had used this resource before attending the first consultation.

Measures

Diagnostic Questionnaire for Pathological Gambling according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria (Stinchfield, 2009). This self-report questionnaire consists of 19 items that evaluate the DSM-5 diagnostic criteria for GD (American Psychiatric Association, 2013). The Spanish version (Jiménez-Murcia et al., 2009), which has achieved good psychometric properties, was used: $\alpha = 0.81$ for the general population and $\alpha = 0.77$ for the clinical sample. For this study, the total



number of DSM-5 criteria for GD was analyzed as a measure of gambling severity.

Symptom Checklist-Revised (SCL-90-R) (Derogatis, 1990). This checklist is used to measure various psychological and psychopathological symptoms. It is made up of 90 items that measure 9 dimensions of primary symptoms: somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. Furthermore, this test yields: (a) a global severity index (GSI), to measure general psychological distress; (b) a positive symptom distress index (PST), to assess the intensity of symptoms; and (c) a total of positive symptoms (PSDI), indicating self-reported symptoms. The Spanish adaptation (Derogatis, 2002) was used for this study, with good psychometric indices and mean internal consistency of 0.75 (Cronbach's α). In the study sample, consistency indices were in the very good ($\alpha = 0.83$ for hostility) to excellent range ($\alpha = 0.98$ for the global indexes), with the only exception of paranoia ($\alpha = 0.74$, good).

Temperament and Character Inventory – Revised (TCI-R) (Cloninger, Przybeck, Svrakic & Wetzel, 1999). This questionnaire assesses seven personality dimensions: four associated with temperament (search for novelties, harm avoidance, rewards dependence and persistence) and three character dimensions (self-direction cooperation and self-transcendence), and gathers information of 240 items. The Spanish version (Gutiérrez-Zotes et al., 2004) that was used, showed adequate internal consistency (mean value of Cronbach's $\alpha = 0.87$), with a variation of the consistency indexes from good ($\alpha = 0.70$ for searching for news) to very good ($\alpha = 0.84$ for persistence and self-transcendence).

Other measures. A semi-structured interview under the supervision of a staff clinical psychologist with more than 20 years of experience in the field of gambling disorder was conducted to collect additional data from the patients. This tool was developed by the research team, and it has been routinely used in the treatment unit for the assessment at baseline. The interview included sociodemographic features related to sex, marital status, education level, employment status and the socio-economic position index according to Hollingshead's scale (this scale generated a classification based on the employment status, the participants' level of education and the occupational prestige) (Hollingshead, 2011). Patients were also asked about the variables related to gambling (illegal behavior, preference for gambling, type of platform (online or land-based), gambling debts, use of some substances (tobacco, alcohol and other illegal drugs), age of onset on gambling behavior, and duration of gambling activity).

Self-exclusion

Self-exclusion is collected during the semi-structured interview as a self-reported data. Self-exclusion is an administrative procedure that the patients ask to the corresponding governmental office is before going to the hospital Unit to seek treatment. The self-excluded gamblers obtain an official

document (administrative resolution) indicating their identity and self-exclusion conditions. Their data are incorporated into an administrative record that is sent daily to the gambling establishment, so they have an updated instrument to control access for self-excluded.

Self-exclusion granted considering two variables: the geographical area in which the gambler will not be allowed accessing gambling establishments (Region of Catalunya and 190 gambling venues) and the period of time that the self-ban will last (between 1 and 5 years mandatory period that can be extended indefinitely at the gambler's will). Gambling establishments are required by law to verify the identity of the person who wants to access the venue. An adult chosen by the gambler can enforce self-exclusion by also signing the ban document. This implies that, when the gambler decides to cancel his or her self-exclusion the support person must agree and sign this decision.

CBT program

CBT was implemented in all participants; the treatment consisted of 16 weekly group sessions of 90 min each. All sessions were structured within an outpatient program in the Behavioral Addictions Unit of a third level, high complexity hospital. The main objective of the treatment was to achieve full abstinence from all types of gambling by providing training in self-control and emotional regulation strategies. The complete program was presented and developed by qualified clinicians, experts in problem and disordered gambling for more than 20 years.

The topics addressed in the intervention included: psychoeducation regarding the disorder (the onset and development of the disorder, vulnerability factors, diagnostic criteria), stimulus control (money management, avoidance of potential triggers, self-exclusion programs), response prevention (alternative and compensatory behaviors), cognitive restructuring focused on illusions of control over gambling and magical thinking, emotion-regulation skills training and other relapse prevention techniques. Patients were also encouraged to ask a close relative (or significant other) to act as a co-therapist, to help them throughout the treatment.

Throughout the process, participants received feedback regarding the improvement of their self-efficacy and all efforts made to achieve recovery were reinforced. Changes in gambling behavior and overall psychological state, as well as learned skills, were assessed by analyzing incidents, potential relapse/s, alternative activities carried out and attainment level with the treatment guidelines.

Treatment outcome was measured by dropouts and relapses. A relapse indicated that patients presented a full gambling episode in any type of gambling for money and not only in their problem game(s). Failure to attend three consecutive CBT sessions without notifying the therapist was considered a criterion for dropout. A full description of this CBT program has been previously published (Jiménez-Murcia, Aymamí-Sanromà, Gómez-Peña, Álvarez-Moya, & Vallejo, 2006).



Procedures

All participants in the study voluntarily sought treatment for GD and were diagnosed according to the DSM-5 criteria (American Psychiatric Association, 2013). Before initiating outpatient treatment, individuals completed all the questionnaires utilized in this study and a semi-structured interview under the supervision of a staff psychologist. After the baseline assessment, all patients were treated with a standardized 16-week cognitive-behavioral therapy (CBT) intervention described in a previous section. Patients did not receive any kind of compensation for their participation and signed informed consent was obtained from all of them.

Statistical analysis

Statistical analysis was done with Stata17 for Windows (Stata-Corp, 2021). Chi-square tests compared proportions between the groups and *t*-test for independent sample procedures compared means. Effect size was estimated with Cohen's-*h* (for difference between proportions) and Cohen's-*d* (for difference between means). Non-parametric tests were used since the expected counts for the crosstabs were higher than 5, and regarding the *t*-test procedures, according to the central limit theorem the distribution of sample mean values tends to follow the normal distribution regardless of the population distribution if the sample size is large enough. For these standardized coefficients, threshold 0.50 was considered for moderate-medium effect size and 0.80 for large-high effect size (Kelley & Preacher, 2012).

Next, a logistic regression was performed to obtain the best predictors of the self-exclusion based on all the measures at baseline. Stepwise procedure and hierarchical procedure were used. In the first block all the sociodemographic features were entered, and the statistical predictors were automatically selected and fixed. In the second step, the gambling measures were tested (onset and duration of the gambling problems, the DSM-5 criteria for GD, gambling preference, gambling modality and debts due to the gambling activity), and those significant contributors were also selected and retained. In the third block, the personality profile (TCI-R scales) was included, and in the last block the global psychopathological distress (SCL-90R GSI) and the presence of other comorbid addictions (tobacco, alcohol and drugs). The goodness-of-fit of the final model was assessed with the Hosmer-Lemeshow test ($p > 0.5$ is interpreted as adequate fitting), and the global discriminative capacity with the Nagelkerke's pseudo- R^2 coefficient.

Kaplan-Meier estimator obtained and compared the cumulate survival curves for the rate of dropout and relapses during the treatment, and Long-Rank method compared the survival functions. Survival method allows measuring the probability of patients "living" (survive without the presence of the outcome, in the study without dropout and without the presence of relapse episodes) for a certain amount of time after the beginning of the treatment plan (Aalen, Borgan, & Gjessing, 2008).

The increase in type-I error due the use of multiple statistical significance test was controlled with the familywise Finner's method (Finner & Roters, 2001). One relevant advantage of this procedure is allowing modeling censored data, which occurs if patients withdraw from the study (arrive to alive at the end of the follow-up, or is lost in the follow-up without event occurrence at last measurement time). In this work, the presence of a relapse was considered for patients who reported the presence of any gambling episode during the treatment. Dropout was considered for patients who abandoned the course of the treatment. Different Kaplan-Meier curves were modeled for the presence of relapses and dropouts.

Ethics

The present study was carried out in accordance with the latest version of the Declaration of Helsinki. The University Hospital Clinical Research Ethics Committee approved the study (Refs. 34/05, 307/06), and signed informed consent was obtained from all participants.

RESULTS

Descriptive for the sample

The distribution for sex was $n = 1,255$ men (88.6%) versus $n = 161$ women (11.4%). Most participant were single (47.0%) or married (38.1%), and only 14.9% were divorced. Participants reported primary or less education level (54.2%), secondary (36.7%) and university (7.1%); 55.6% were employed while 44.4% unemployed. Within social indexes, mean-low to low level correspond to 82.0% of the sample, and 18% correspond to mean to high level. The mean age of the participants was 42.1 yrs-old (SD = 14.5).

Prevalence of self-exclusion

The number of patients who reported lifetime self-exclusion was $n = 356$ (prevalence = 25.1%, 95% confidence interval [95% CI]: 22.9%–27.4%). Stratified by sex, $n = 297$ men reported self-exclusion (prevalence = 23.7%, 95% CI: 21.3%–26.0%), and $n = 59$ women (prevalence = 36.7%, 95% CI: 29.2%–44.1%). Table 1 shows the evolution of the prevalence of patients who reported self-exclusion during the period of recruitment data.

Variables associated to self-exclusion at baseline

Considering the sociodemographic features (Table 1), the likelihood of self-exclusion was increased among women, patients with higher education levels and higher socioeconomic status.

Considering the clinical data (Table 2), self-exclusion was related to the duration of the GD related problems, higher number of DSM-5 criteria for GD, worse psychology state (concretely, in the SCL-90-R scales obsessive-compulsive, depression, anxiety, hostility and GSI), higher novelty seeking, and lower persistence. Self-exclusion was also



Table 1. Comparison for the sociodemographic data

	Self-exclusion: no (n = 1,060)		Self-exclusion: yes (n = 356)		p	h
	n	%	n	%		
Sex Women	102	9.6%	59	16.6%	<0.001*	0.21
Men	958	90.4%	297	83.4%		
Civil status Single	482	45.5%	184	51.7%	0.113	0.12
Married	418	39.4%	121	34.0%		0.11
Divorced	160	15.1%	51	14.3%		0.02
Education Primary or less	599	56.5%	168	47.2%	0.002*	0.19
Secondary	397	37.5%	152	42.7%		0.11
University	64	6.0%	36	10.1%		0.15
Employment Unemployed	484	45.7%	144	40.4%	0.087	0.11
Employed	576	54.3%	212	59.6%		
Social index High	12	1.1%	6	1.7%	0.031*	0.05
Mean-high	49	4.6%	24	6.7%		0.09
Mean	100	9.4%	50	14.0%		0.14
Mean-low	369	34.8%	121	34.0%		0.02
Low	530	50.0%	155	43.5%		0.13
	Mean	SD	Mean	SD	p	d
Age (yrs-old)	42.49	14.55	41.07	14.38	0.110	0.10

Note. SD: standard deviation. *Bold: significant comparison.

associated to strategic and mixed gambling preference, on-line and mixed modality of gambling, and the presence of illegal behavior and debts due to the gambling activity.

Table 3 contains the result of the logistic regression obtained to select the significant contributors of the self-exclusion based on the set of variables registered at baseline. According to this multivariate model, the likelihood of self-exclusion was increased for women, patients with longer duration of the GD, higher severity of the GD symptom level (higher number of DSM-5 criteria), gambling preference different o non-strategic games, higher levels in novelty seeking and cooperativeness and lower scores in persistence.

Survival analysis for the treatment outcome

No differences between the groups were found for the risk of dropout in the treatment ($R = 33.5\%$ for patients without self-exclusion versus $R = 28.3\%$ for patients with self-exclusion; $p = 0.350$). However, the risk of relapse was lower among patients who reported lifetime self-exclusion ($R = 14.1\%$ versus $R = 23.0\%$; $p = 0.042$) (Fig. 1).

Considering the rate of the treatment outcomes modeled with the Kaplan-Meier method (Fig. 2), cumulate survival curves for dropout achieved no statistical differences comparing patients with and without self-exclusion (Long-Rank: $p = 0.342$), but the presence of relapse episodes were registered with greater speed among patients without self-exclusion (Long-Rank: $p = 0.048$).

DISCUSSION

In this study, sociodemographic characteristics, personality traits, general psychopathology and response to treatment of

patients who search for therapy for GD and previously self-excluded have been identified. Findings indicated that fewer patients are using self-exclusion prior to seeking treatment (25.1%).

Moreover, it has been found that self-exclusion was more related to female gender, but results of other studies have been inconclusive in this sense. While some authors (Håkansson & Widinghoff, 2020) found this same association with female sex in online gamblers, the systematic reviews by Motka et al. and by Kotter found greater association of self-exclusion with male sex (Kotter et al., 2019; Motka et al., 2018) and still other studies have found no relationship between sex and self-exclusion (Håkansson & Henzel, 2020). The results of these studies show the heterogeneity of the population with GD and even the possible involvement of other factors, such as sociodemographic or cultural. It is known that in recent years the incidence of GD in women has been increasing (Gainsbury, Russell, Blaszczynski, & Hing, 2015; Stevens, Dorstyn, Delfabbro, & King, 2021) and some studies have characterized women diagnosed with this disorder (Jiménez-Murcia et al., 2020; Lara-Huallipe et al., 2022), but due to the lack of research on self-exclusion, the performance of this strategy in this population is still unknown.

Although studies have shown that GD is more associated with low educational level and socioeconomic status (Hing, Russell, Tolchard, & Nower, 2016), present findings indicate that self-exclusion is more frequent among individuals with a higher educational level and higher social positions. These results correspond with other research indicating a relationship between self-exclusion and higher sociodemographic status (Yakovenko & Hodgins, 2021). Primarily, this relationship has been found in self-excluding online



Table 2. Comparison for the clinical data

	Self-exclusion: no (n = 1,060)		Self-exclusion: yes (n = 356)			
<i>Onset, duration and severity of GD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>p</i>	<i> d </i>
Onset of the GD related problems (yrs)	30.14	11.72	28.99	11.67	0.109	0.10
Duration of the GD related problems (yrs)	5.95	6.56	6.79	6.90	0.041*	0.12
Number or DSM-5 criteria for GD	6.82	2.03	7.41	1.71	<0.001*	0.31
<i>Psychopathology (SCL-90-R)</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>p</i>	<i> d </i>
Somatization	1.00	0.83	1.05	0.89	0.393	0.06
Obsessive-compulsive	1.15	0.82	1.28	0.86	0.016*	0.15
Interpersonal sensitivity	1.04	0.84	1.14	0.87	0.058	0.12
Depression	1.53	0.92	1.65	0.98	0.040*	0.13
Anxiety	1.06	0.83	1.18	0.86	0.012*	0.14
Hostility	0.93	0.84	1.07	0.92	0.008*	0.16
Phobic anxiety	0.51	0.69	0.53	0.70	0.640	0.03
Paranoia	1.01	0.81	1.00	0.81	0.866	0.01
Psychotic	0.93	0.77	1.01	0.81	0.115	0.10
GSI	1.09	0.72	1.18	0.75	0.038*	0.12
PST	46.90	22.12	48.83	21.94	0.154	0.09
PSDI	1.93	0.61	1.99	0.60	0.096	0.10
<i>Personality (TCI-R)</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>p</i>	<i> d </i>
Novelty seeking	107.64	13.36	113.23	13.27	<0.001*	0.42
Harm avoidance	98.82	15.65	100.76	17.73	0.052	0.12
Reward dependence	99.95	14.06	99.18	14.07	0.369	0.05
Persistence	112.64	19.98	106.77	19.41	<0.001*	0.30
Self-directedness	128.30	19.83	126.04	21.28	0.068	0.11
Cooperativeness	129.19	15.12	129.59	17.34	0.679	0.02
Self-transcendence	63.14	14.02	62.43	14.87	0.415	0.05
<i>Other clinical measures (prevalence)</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>p</i>	<i> h </i>
Gambling preference Non-strategic	613	57.8%	131	36.8%	<0.001*	0.42
Strategic	204	19.2%	97	27.2%		0.19
Mixed	243	22.9%	128	36.0%		0.29
Gambling modality Offline	966	91.1%	299	84.0%	<0.001*	0.22
Online/mixed	94	8.9%	57	16.0%		
Illegal behavior	260	24.9%	121	35.5%	<0.001*	0.23
Debts due to gambling	561	52.9%	211	59.3%	0.038*	0.13
Tobacco	619	58.4%	196	55.1%	0.270	0.07
Alcohol	178	16.8%	47	13.2%	0.109	0.10
Illegal drugs	113	10.7%	34	9.6%	0.553	0.04

Note. SD: standard deviation. *Bold: significant comparison.

Table 3. Logistic regression model

	B	SE	p	OR	95% CI for OR	
Sex (1 = men/0 = women)	-1.008	0.197	<0.001	0.365	0.248	0.537
Duration of GD (years)	0.032	0.010	0.001	1.033	1.013	1.053
DSM-5 total criteria for GD	0.131	0.039	0.001	1.139	1.055	1.230
Gambling preference			<0.001			
Strategic versus non-strategic	1.042	0.174	<0.001	2.834	2.013	3.989
Mixed versus non-strategic	0.987	0.158	<0.001	2.683	1.970	3.654
Mixed versus strategic	-0.055	0.176	0.756	0.947	0.670	1.338
TCI-R Novelty seeking	0.027	0.005	<0.001	1.027	1.017	1.038
TCI-R Persistence	-0.016	0.003	<0.001	0.984	0.978	0.991
TCI-R Cooperativeness	0.013	0.004	0.003	1.013	1.004	1.022
Fit statistics	Hosmer-Lemeshow test: $p = 0.487$; Nagelkerke's- $R^2 = 0.157$					

Note. SE: standard error. OR: odds ratio 95% CI: 95% confidence interval.



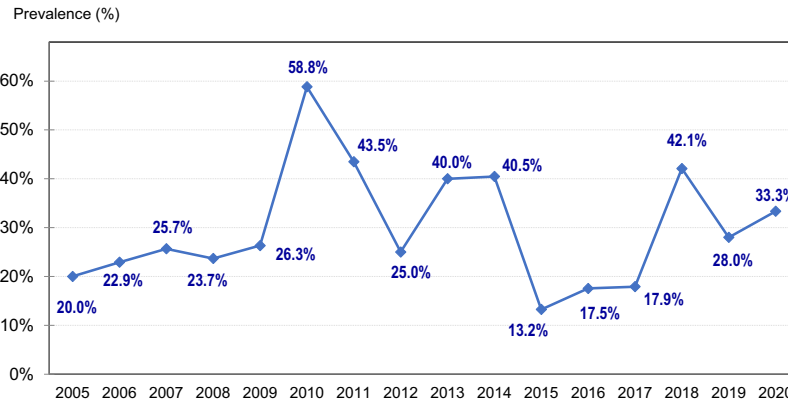


Fig. 1. Evolution of the prevalence of patients with self-exclusion

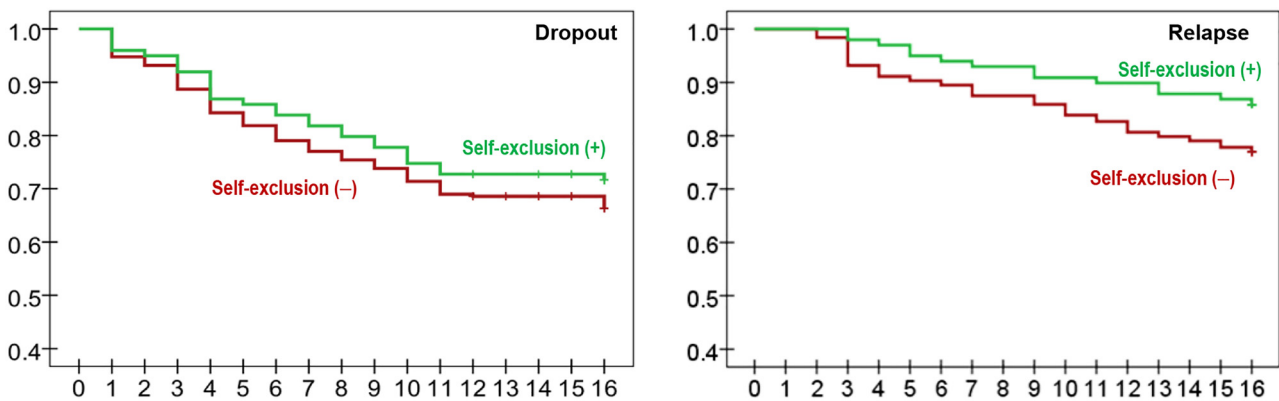


Fig. 2. Cumulate survival curves

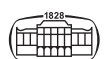
gamblers (Motka et al., 2018), as many of them resort to controlling the physical environment to place limits on gambling behavior and time spent on this activity (Siemens & Kopp, 2011).

It is possible that this higher sociodemographic status of self-excluding gamblers allows them to have access to more information about the consequences of GD behavior and better awareness of responsible gambling (RG) measures. In this regard, the Health Belief Model (HBM) proposes that a person will carry out a behavior change or a behavior to take care of their health until they have a minimum of motivation, necessary information on the subject, perceive themselves vulnerable to having a possible condition, consider that it could have significantly serious consequences, or perceive a benefit in changing their behavior to reduce the impact of the severity of the condition (Rosenstock, Strecher, & Becker, 1988). Studies that have investigated the importance of awareness in RG from the HBM have found that those who had greater awareness of RG tended to self-exclude more and were more likely to seek professional help (Tong, Chen, & Wu, 2019).

Concerning gambling profile, an association was found between self-exclusion and preference for strategic and mixed gambling and the online and mixed modality of gambling. Several studies showed that strategic gambling is related to greater symptoms of GD and higher levels of

psychopathology, with these results similar to those found in this study (Lévesque, Sévigny, Giroux, & Jacques, 2017; Moragas et al., 2015). Another important result is that self-exclusion is associated with more years of evolution and greater severity of GD. Previous researches also described that self-exclusion was related to greater gambling problems (Håkansson & Henzel, 2020). Therefore, these results could indicate that people seeking treatment may use self-exclusion as a strategy to regulate gambling behavior and their consequences. In the same vein, other studies found that the more gambling behavior the participants engaged in, the more they sought help from a health professional to abstain from gambling behavior (Hing, Nuske, Tolchard, & Russell, 2015).

Additionally, it was found that those who self-exclude have more gambling debts and have committed more illegal behaviors than those who do not use this strategy when seeking treatment. Findings from other research suggest that criminal behaviors such as theft, forgery, and fraud are related to GD (Folino & Abait, 2009; Grant & Potenza, 2007) and that those who commit these illegal acts also have significant money debts (Potenza, Steinberg, McLaughlin, Rounsaville, & O'Malley, 2000). Interestingly, a higher gambling severity is reported in those who engage in criminal behaviors related to GD (Ledgerwood, Weinstock, Morasco, & Petry, 2007). These behaviors could be an



important reason for patients seeking treatment to self-exclude, since another of the main reasons for people to resort to this strategy are financial problems (Motka et al., 2018).

In the clinical profile, self-exclusion turned out to be more associated with greater emotional distress, since participants who self-excluded showed more obsessive-compulsive traits, depression, anxiety and hostility. Moreover, in terms of personality these patients presented higher sensation seeking but less persistence in comparison with the other patients without self-exclusion. This coincides with other studies that have found a maladaptive personality profile in patients with GD With traits of high impulsivity, irritability, less self-direction, anxiety, depression, obsessive-compulsive traits and novelty seeking (Gervasi et al., 2017; Jiménez-Murcia et al., 2014; Mestre-Bach et al., 2019).

Other research has found that sensation seeking is a significant predictor of the severity of this disorder (Savvidou et al., 2017). This sensation seeking trait would also explain why the patients in this study continue over the years with gambling behaviors despite the negative consequences. Additionally, lower levels of persistence, common in most patients with gambling problems but more specifically in this group of patients with self-exclusion, could justify the fact that they request and withdraw from it several times over time.

In relation to treatment, participants who self-excluded were found to have a better response and showed lower relapse rates. These results are consistent with the results reported by some self-exclusion programs in the treatment of GD, which show that self-exclusion can decrease gambling behaviors, improve financial conditions, improve psychological well-being (decreasing anxiety and depression associated with gambling), and minimize the harms related to this disorder (Gainsbury, 2014; Kotter et al., 2019), thus self-exclusion could be a predictor of treatment response.

However, there is still a lack of research evaluating the long-term effectiveness of self-exclusion not only as a harm minimization strategy, but also as an important component that could be used in the treatment of individuals already diagnosed with GD. Findings from Gainsbury's systematic review showed one of the shortcomings of self-exclusion was that most gamblers who use this strategy do not sign an official agreement, either in an administrative office or with a mental health professional (Gainsbury, 2014). However, this was not the case for the patients in this study, since all of them had fulfilled the legal administrative requirements for this purpose.

From the clinical perspective, there is limited research on the treatment of GD and self-exclusion. There have been some brief interventions on motivation and self-management for participants with GD in the face-to-face and online modality that include the self-exclusion strategy at the same time (Gainsbury, 2014; Yakovenko & Hodgins, 2021). However, self-exclusion has not been fully adhered to in the programs, as some participants report defaulting to this measure and continue to gamble. That suggests that a strong collaboration between care centers, associations and the

administrations is required to maintain self-exclusion for longer periods.

It is known that few people with gambling problems seek professional treatment (Loy, Grüne, Braun, Samuelsson, & Kraus, 2018), so it is necessary to strengthen intervention and prevention programs. As a prevention, early self-exclusion strategy can avoid future financial, psychological and social problems related to GD. And as a treatment strategy, self-exclusion can reduce GD symptoms and its negative consequences. To this end, further studies are needed to characterize the sociodemographic and clinical profile of individuals who self-exclude when seeking treatment. In sum, these findings could contribute to generate other lines of research to understand the efficacy of this strategy in GD and in this vein, new treatments could include self-exclusion as one of the components of treatment.

CONCLUSIONS

Patients who self-exclude before seeking treatment have a specific clinical profile. This self-exclusion refers to patients with a high sociodemographic status, greater severity of GD, more years of evolution of the disorder and greater general psychopathology related to higher emotional distress; however, these patients present lower relapse rates. Clinically, it could be expected that this strategy could be used as a facilitating variable in the therapeutic process.

The evidence in this study has several limitations and additional questions for future research. As expected, the sample sizes of the groups were not homogeneous, as the prevalence of the disorder is not balanced between different gambling subtypes or sex. Also, data only included short-term therapy outcomes, so it would be interesting for future studies to include longitudinal data of long-term outcomes. Additionally, self-exclusion may imply a bias risk.

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