



## Gambling at the time of COVID-19: Results from interviews in an Italian sample of gamblers

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### ABSTRACT

The coronavirus pandemic affected the life of those suffering from addictive behaviors often confined to prolonged periods of self-isolation. To explore the variation of symptoms related to gambling, 46 outpatients of the mental health services in the Trento Province were invited to take part in a phone interview at the start of the national lockdown. Although only 2.17% increased gambling activity during this period, half of the sample (50.00%) experienced irritability, mood fluctuation (43.48%) and anxiety (39.13%). Follow-up studies should assess modifications in their behaviors that occurred after the reopening of gambling venues.

### 1. Introduction

The outbreak of the COVID-19 pandemic significantly affected the lives of people all over the world. The first country to face such an emergency in Europe was Italy (Saglietto et al., 2020), where restrictive measures, such as social and physical distancing, were adopted to contain the spread of the virus starting from late March until May 2020. This sudden and prolong period of in-home self-isolation (Smith et al., 2020, Alkamees et al., 2020, Wang et al., 2020) had severe repercussions in people's lives sometimes leading to the risks for aggravation of psychological health symptoms, especially among those diagnosed with a mental disorder. A corresponding shift was also plausible in patients with behavioral addictions since the accessibility to substances, or mechanisms, was drastically reduced or modified. Specifically, gambling has been affected not only by the closure of land-based venues (i.e., casinos, betting shops), but also by the suspension of sports events

and other related social activities, in combination with the necessity to use the internet more often to communicate and work (Håkansson et al., 2020, Lischer et al., 2021). Hence, the only available place to gamble was on online with the temptation to do so being just a "click away". Risky online gambling behaviors could have also been further facilitated by financial concerns (Orford, 2004), perceived isolation (King et al., 2010), feelings of boredom and loneliness (Mercer and Eastwood, 2010, Błaszczynski et al., 1990), and reduced social support (Holdsworth et al., 2015) affecting the overall psychological well-being and potentially aggravating pre-existing symptoms in pathological gamblers, such as mood and anxiety disorders (Dowling et al., 2015, Sharman et al., 2021). Initial data shows that most of the reported increase in gambling during the pandemic was referred to online gambling platforms (Håkansson, 2020). However, findings present some discrepancies: a recent investigation on US residents found that on-line gambling decreased during the first COVID-19 outbreak. Within those who were not involved with online

*Abbreviations:* AMA, Auto Mutuo Aiuto; APSS, Azienda Provinciale per i Servizi Sanitari; HAM-D, Hamilton Depressions Rating Scale; SERD, Servizio Dipendenze; VLT, Video Lottery Terminal.

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gambling before the onset of the coronavirus pandemic, only a minority reported a migration from land-based gambling to the online equivalent (Xuereb et al., 2021). Other results highlighted that the total online gambling activity during the first phases of COVID-19 did not increase, requiring further research to investigate this subject more in detail (Lindner et al., 2020). While further assessment is required, consideration also needs to be given to psychological distress which can be associated with gambling activities (Gainsbury et al., 2019), and mental health worsening in more vulnerable individuals (Sharman et al., 2021), including gamblers. Comorbidities between gambling and other psychiatric disorders, in particular depression, anxiety, mood and personality disorders, have been proved to be common (Black and Moyer, 1998, Petry et al., 2005, Lorains et al., 2011), and in some cases, land-based gambling has been substituted with other forms of behavioral addiction, such as increased rates of alcohol consumption, tobacco, and other substances intake (Xuereb et al., 2021). Regarding the possible impact of these disorders on gambling behaviors, some studies have found a correlation between depression and gambling symptoms (Thomsen et al., 2009, Sharman et al., 2021), which might be explained through the shared genetic contribution (Potenza et al., 2005). Stress was also considered a possible reason to gamble as a coping strategy and as a result of the social, familiar, and financial difficulties that a gambler usually has to face (Buchanan et al., 2020). All these factors are even more prominent with the all-rounded pressure of COVID-19. Due to the complex nature of the problem, the conditions of gamblers in the Province of Trento, Italy, were explored during the first phase of national lockdown which occurred from March to late May 2020. Specifically, the investigation focused on both behavioral variations (i.e., increased gambling activity) and related mental health symptoms (i.e., depression, anxiety). The aim of the present study is to investigate possible behavioral variations (i.e., increased gambling activity) and related mental health symptoms (i.e., depression, anxiety) during the Italian national lockdown.

## 2. Methods

The Ethics Committee of the local Public Health Unit services approved authorized the present study on April 28, 2020. The authors recruited all the outpatients diagnosed with pathological gambling according to the DSM-5 criteria (xxx, 2013) and in treatment at the Addiction Treatment Unit (SERD) of the local public health services in the Province of Trento, or attending mutual-help groups based in the same province (Associazione Auto Mutuo Aiuto, AMA), for a total of 77 potential participants. Inclusion criteria were: (i) minimum 18 years of age; (ii) being in charge as outpatient at the SERD or attending a therapeutic group at the AMA during the period of data collection. Exclusion criteria adopted were the patient's refusal to take part in the interview and the unavailability of the phone number in the patients' record. Informed consent was asked and obtained before the interview. Due to the restrictions imposed on face-to-face interactions, responses were provided remotely through a telephone call immediately after the first lockdown, between May and July 2020. The study involved 77 outpatients to meet the inclusion criteria, 47 of whom answered the phone call, but with 1 refusing the interview. Phone calls were made by professionals (3 physicians, 3 psychologists, 1 social assistant, and 1 mental health practitioner) who were familiar with the outpatients and with whom they had established a significant therapeutic relationship. All data were collected anonymously during a single telephonic session.

### 2.1. Materials

The investigation included targeted questions about the variations in behavioral symptoms related to gambling (i.e., craving, abstinence), the presence of other addictions, mental health issues (i.e., sleep disturbances, appetite, irritability), prescription of medicines and changes in drugs intake, and the perception of the gambling-related problem. To

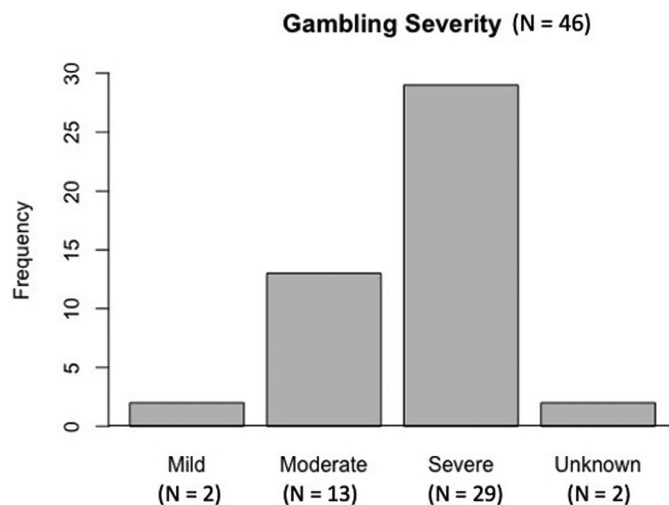


Fig. 1. Distribution of the sample according to perceived gambling severity.

this purpose, two types of questions were adopted: dichotomous questions (yes/no), and categorical questions to investigate variations in gambling behaviors and related symptoms. The dichotomous questions covered several topics, such as the presence of a psychiatric diagnosis, a prescription of medicines, consumption of alcohol/other substances, and mental health issues; furthermore, questions inquiring about online gambling and gaming, job circumstances (i.e., smart working), variations in behavioral symptoms (i.e., craving and abstinence of other substances) and self-evaluation (i.e., awareness of their own gambling-related problem, feeling the need to seek help) were included in this category. The categorical questions investigated about socio-demographic information, changes in gambling activities and in drugs, alcohol and other substances intake, the typology of the psychiatric diagnosis, and of the pharmacological therapy if present, and typology of online gambling if indulged in, with the possible answers being "increased", "unvaried", and "decreased". Lastly, to indicate the gambling severity participant could choose between "mild", "moderate" and "severe". All unreported answers were labeled as "unknown". The Hamilton Depression Rating Scale (HAM-D, (Hamilton and Guy, 1976)) was used to assess depression further. HAM-D is widely utilized for clinical and research purposes, and it consists of 17 items scored between 0 and 4 on a Likert scale. Scores between 0 and 7 suggest the absence of depression. The range 8–16 indicates the presence of mild depression, points from 17 to 23 imply moderate depression, and scores over 24 hint severe depression, with the maximum score being 52.

## 3. Results

RStudio Desktop 2021.09.0+351 was used to explore the database and compute analyses. One person refused to answer the interview. The final sample consisted of 46 outpatients of the Addiction Treatment Unit diagnosed with pathological gambling. Table 1 shows the socio-demographic characteristics of the sample in detail. The mean age of the sample was

52.62 years ( $SD = 15.69$ ), and 84.78% were males ( $N = 39$ ). Half of the participants were currently working at the time of the interview ( $N = 23$ , 50.00%), and 45.65% of the respondents were living with other people ( $N_{-spouse} = 14$ , 30.43%;  $N_{-parents} = 7$ , 15.22%), while the 36.96% was living alone ( $N = 17$ ). Most of the sample reported the gambling problem to be severe ( $N$

$= 29$ , 63.04%) or moderate ( $N = 13$ , 28.26%) (see Fig. 1) and expressed a preference for the Video Lottery Terminal (VLT) ( $N = 35$ , 76.09%). Only 8.70% ( $N = 4$ ) indicated using online gambling habitually (see Fig. 2).

### Gambling Activity (N = 46\*)

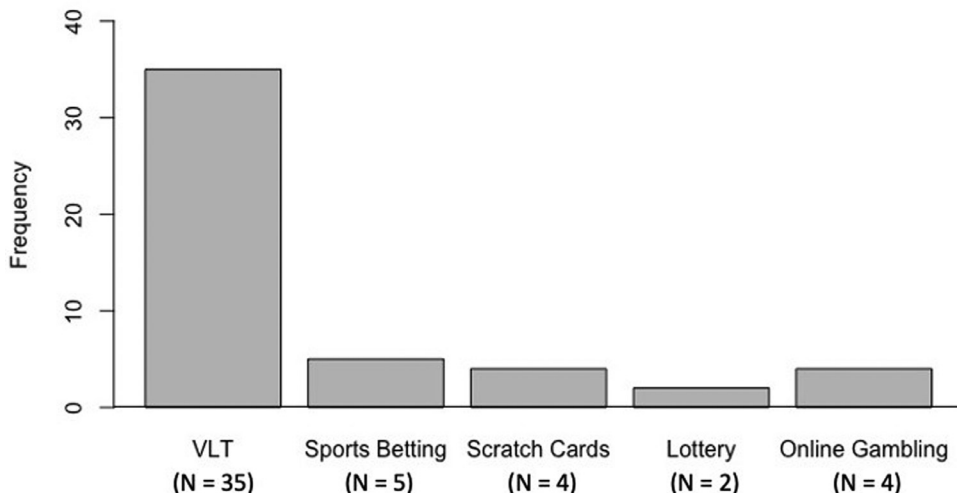


Fig. 2. Distribution of the preferred gambling activity in the sample. \* = participants could indicate more than one preference.

Table 1  
Socio-demographic characteristics of the sample.

Variable	Mean (SD)	N	%
Age	52.62 (15.69)		
Sex			
Male		39	84.78%
Female		7	15.22%
Marital Status			
Single	17	36.96%	
Married	14	30.43%	
Separated	9	19.57%	
Widowed	2	4.35%	
NS	4	8.70%	
Occupation			
Employee	23	50%	
Student	1	2.17%	
Unemployed	8	17.39%	
Retired	10	21.74%	
NS	4	8.69%	
Living with			
Spouse/partner	14	30.43%	
Parents	7	15.22%	
Alone	17	36.96%	
NS	8	17.39%	
Gambling Severity			
Mild	2	4.35%	
Moderate	13	28.26%	
Severe	29	63.04%	
NS	2	4.35%	
Gambling Type*			
VLT	35	76.09%	
Sports betting	5	10.87%	
Scratch Cards	5	8.70%	
Lottery	2	4.35%	
Online	4	8.70%	

N= Number of respondents; % = percentage; NS = non specified; VLT = Video Lottery Terminal.

\* for this question, participants could express more than one preference.

### Variation in Gambling during the Lockdown (N = 46)

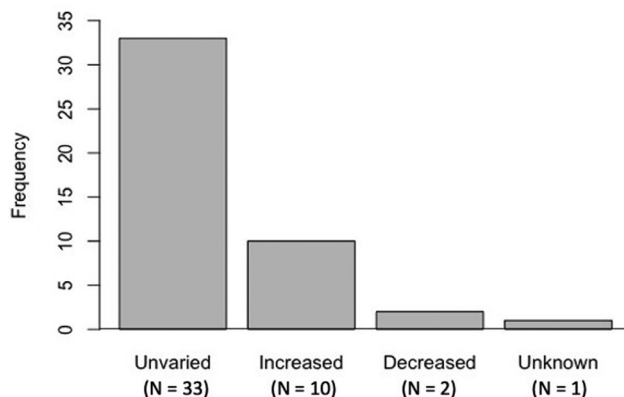


Fig. 3. Variations of gambling activity of the sample during the national lockdown.

#### 3.1. Gambling habits and modifications during the lockdown

Most of the respondents (N= 34, 73.91%) reported that no variation occurred during the first lockdown in terms of gambling frequency, followed by increased gambling (N= 10, 21.74%) and a decreasing trend (N= 2, 4.35%). Only one person reported increased online gambling (2.17%) (see Fig. 3). Although most participants did not express symptoms related to addictive gambling behaviors, 39.13% of the sam-

ple (N= 18) revealed increased craving, and 19.57% (N= 9) indicated symptoms associated with abstinence. Only three respondents (6.52%) perceived the variations occurred as a problem and decided to speak with somebody, or to reach out for help (N= 5, 10.87%), blocking the app (100%) or referring to specific interlocutors (N<sub>therapist</sub>= 2, 40.00%; N<sub>close person</sub>= 3, 60.00%; N<sub>other</sub>= 2, 40.00%). Results are displayed in detail in Table 2.

#### 3.2. Comorbidity and other mental health issues

Responses from inquiries on comorbidity and other psychopathological symptoms are shown in Table 3. 45.65% of the sample indicated to have been diagnosed with a mental disorder, predominantly a mood disorder

(N= 20), followed by addiction (N= 5, 23.81%), personality disorder (N= 3, 14.29%), psychotic disorder (N= 2, 9.52%), and eating disorder (N= 1, 4.76%). 26.09% declared to use alcohol and 8.70% to use other substances (see Fig. 4). Half of the sample was undergoing pharmacological therapy, mainly taking anxiolytics (65.22%) and antidepressants (47.83%).

With regards to the variations in mental health symptoms that might have occurred during the period of self-isolation, 52.17% of respondents declared increased irritability, followed by mood fluctuation (N= 20, 43.48%), anxiety and sleep disorders (N= 18, 39.13%, eating disorders

**Table 2**  
Responses to gambling habits and variations during the lockdown.

Variable	Yes		No	
	N	%	N	%
Variations in gambling	12	26.09%	34	73.91%
Increased	10	21.74%		
Decreased	2	4.35%		
Craving	18	39.13%	28	60.87%
Abstinence	9	19.57%	37	80.43%
Other types of gambling	5	0.87%	41	89.13%
Online gambling pre-lockdown	9	19.57%	37	80.43%
Increased online gambling	1	2.17%	45	97.83%
Perceived as a problem	3	6.52%	43	93.48%
Spoken with somebody*	3	6.52%	43	93.48%
with a family member (N= 3)	2	66.67%		
with a friend (N= 3)	1	33.33%		
with a health worker (N= 3)	2	66.67%		
other NS (N= 3)	2	66.67%		
Asked for help*	5	10.87%	41	89.13%
app blocked (N= 5)	5	100%		
therapist/therapeutic group (N= 5)	2	40.00%		
close person (N= 5)	3	60.00%		
other (support administrator) (N= 5)	2	40.00%		

N= Number of respondents; % = percentage; NS = not specified.  
\* for this question, participants could express more than one preference.

**Table 3**  
Responses to other mental health issues, pharmacotherapy, psychopathological symptoms, and variations during the lockdown.

Variable	Yes		No	
	N	%	N	%
Psychiatric diagnosis Diagnosis *	21	45.65%	25	54.35%
Mood disorder (N= 21)	20	95.24%		
Addiction (N= 21)	5	23.81%		
Personality disorder (N= 21)	3	14.29%		
Psychotic disorder (N= 21)	2	9.52%		
Eating disorder (N= 21)	1	4.76%		
Alcohol use (N= 45)	12	26.09%	33	71.74%
Substance use (N= 45)	4	8.70%	41	89.13%
Pharmacological therapy*	23	50.00%	23	50.00%
anxiolytics	15	65.22%		
antidepressants	11	47.83%		
mood stabilizers	3	13.04%		
neuroleptics	2	8.70%		
substitutive therapy	2	8.70%		
Variations during self-isolation	Yes		No	
	N	%	N	%
Anxiety	18	39.13%	28	60.87%
Mood fluctuation	20	43.48%	26	56.52%
Irritability	24	52.17%	22	47.83%
Altered thinking	8	17.39%	38	82.61%
Eating disorders	12	26.09%	34	73.91%
Sleep disorders	18	39.13%	28	60.87%
Alcohol use (N= 45)	9	19.56%	36	78.26%
increased	6	13.04%		
decreased	3	6.52%		
Substance use (N= 45)	3	6.52%	42	91.30%
increased	2	4.35%		
decreased	1	2.17%		
Substances - Craving	1	2.17%	45	97.83%
Substances - Abstinence	0	0.00%	46	100.00%

N= Number of respondents; % = percentage; NS = not specified.  
\* for this question, participants could express more than one response.

(N= 12, 26.09%), and alterations of thought (N= 8, 17.39%). 19.56% reported modifications in alcohol use (N<sub>increased</sub> = 6, 13.04%; N<sub>decreased</sub> = 3, 6.52%), 4.35% indicated increased substance intake, and 2.17% a decreased substance consumption. Only 1 participant declared symptoms associated with substance craving.

### 3.3. Gambling habits and depressive symptoms

With regards to depressive symptoms, the sample scored an average of 9.28. Participants mostly had no symptoms related to depression (N=23, 50.00%) or mild manifestations (N= 15, 32.61%). 15.22% of the sample scored moderate levels of depression, and only one participant reached severe levels. Results regarding the HAM-D and gambling features are described in Table 4.

T-tests revealed differences between the different levels of depression, with regards to reported gambling severity ( $t_{.45} = 6.57, p < 0.001$ ) and modifications occurred during the social distancing period ( $t_{(45)} = 7.86, p < 0.001$ ). Further investigations revealed a statistically significant levels of depression between those reporting mild ( $M_{mild} = 3.5; SD = 3.5$ ) and moderate gambling severity ( $M_{moderate} = 10.31; SD = 3.86$ ) ( $t_{(13)} = 2.34, p = 0.036$ ). An other significant difference was found on level of depression between respondents who had no variations in gambling activity ( $M_{no\ variations} = 8.24; SD = 6.19$ ) and those reporting an increasing practice ( $M_{increased} = 14.20; SD = 7.66$ ) ( $t_{(41)} = 2.52, p = 0.015$ ).

### 3.4. Factors predicting gambling severity

To explore the existence of a predicting factor for gambling severity, a multiple regression analysis was adopted. All the dichotomous variables (Yes/No) into dummy variables prior analysis. Among the factors assessed in the telephonic interview, only the model related to the type of gambling nearly reached the level of significance (see Table 5). Within this model, VLT resulted as the factor that was more likely to predict the gambling severity. Taking a further look into this result, the respondents that indicated VLTs as a preferred gambling type (N= 35) also reported moderated levels of gambling severity (N= 14; 40%) or severe gambling activity and (N= 21; 60%).

## 4. Discussion

The current study sought to investigate the possibility of a behavioral change within a cohort of gambling patients at the Addiction Treatment Unit of Trento, alongside whether or not they experienced any worsening symptoms associated with mental health (e.g., anxiety, depression, insomnia) as a result of prolonged periods of self-isolation during the first onset of the coronavirus pandemic. Concerning the possibility that online gambling would increase during this period, we registered a very marginal increase (2.17%) in online gambling activities. Such a lack of online gambling during the lockdown is corroborated by some recent findings (Xuereb et al., 2021), but in contrast with others (Lischer et al., 2021, Håkansson, 2020), where those with an increased online activity were more likely to be problematic gamblers. Regarding the gambling situation during the lockdown on a larger national level, Lugo et al. found a decrease in gambling activity, including online gambling and explained it as it was due to national regulations banning various types of land-based games (Lugo et al., 2021). However, the answer to such a complex and unprecedented phenomenon is heterogeneous and the impact of the pandemic on online gambling is still up to debate, therefore more studies on the changes in gambling activity and their relation to other behavioral addictions are required. In terms of our investigations, result could be reinforced by the older age of the group of most of the patients, as they could have been less familiar with technological devices and use of the internet. Although no increase in online gambling was recorded during the lockdown, more than half of the interviewed (52.17%) felt more irritable during the lockdown. In addition, high rates of respondents reported mood fluctuation (43.48%) or anxiety (39.13%), confirming the existence of comorbidity coherently with the literature (Dash et al., 2019, Black and Moyer, 1998, Petry et al., 2005, Lorains et al., 2011, Thomsen et al., 2009, Sharman et al., 2021). Moreover, gambling severity resulted significantly associated with levels of depression. Similarly, the mean score of depression was statistically significant between respondents who declared no variations

**Table 4**  
Distribution of responses to the Hamilton depression rating scale.

Variable	Mean (SD)	N	%	Gambling Severity		Variation in Gambling	
				Differences	p-value	Differences	p-value
HAM-D	9.28 (6.86)	46	100%	<i>t</i> = 6.57	<0.001	<i>t</i> = 7.86	<0.001
0–7 (none)		23	50.00%				
8–17 (mild)		15	32.61%				
18–24 (moderate)		7	15.22%				
over 25 (severe)		1	2.17%				

N = Number of respondents; % = percentage; HAM-D = Hamilton Depression Rating Scale; *t* = Student's *t*-test. Results in bold are significant.

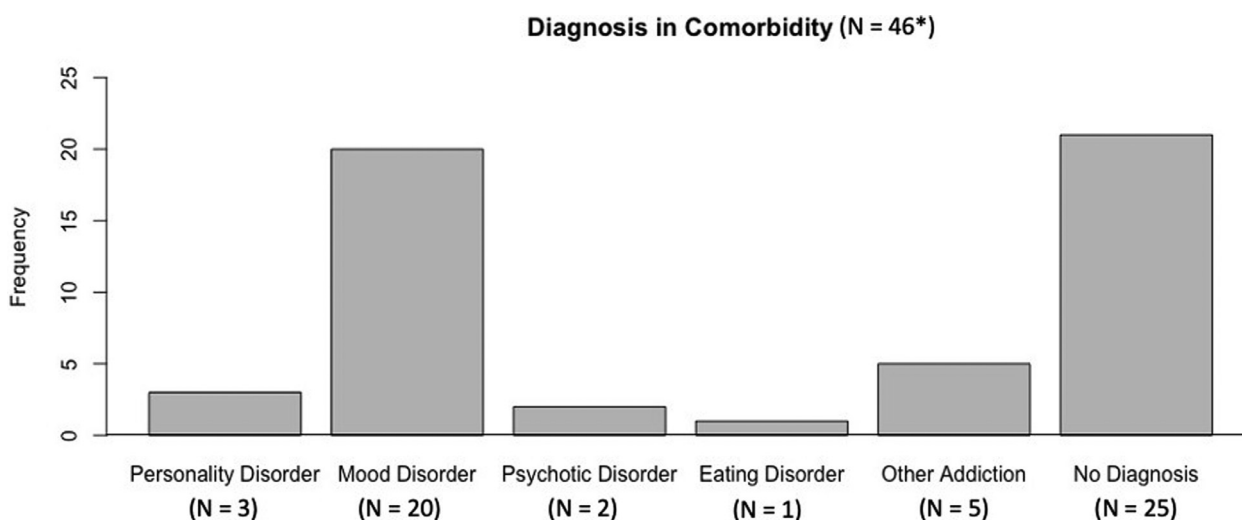


Fig. 4. Other diagnosis and mental health issues co-occurring in the sample. \* = participants could indicate more than one response.

**Table 5**  
Multiple regression on gambling severity.

Variable	$\beta$	SE	<i>t</i>	$R^2$	F	p-value
<i>Model</i>				0.20	2.49	0.05
VLT	0.62	0.24	2.57			0.01*
Scratch Cards	0.56	0.32	1.74			0.08
Lottery	0.91	0.44	2.06			0.05
Online Gambling	0.53	0.32	1.66			0.11
Sports Betting	0.20	0.42	0.48			0.63

SE = standard error of unstandardized coefficient. Results in bold are significant.

in gambling and those reporting increased activity. These results suggest that the awareness of moderate or increased gambling could exert greater preoccupation and mood aggravation, especially in times of uncertainties and potential financial insecurities. Concerning the factors that might predict gambling severity, we found that preferring VLT as gambling activity corresponds to moderate and severe levels of intensity. This finding is in line with previous studies indicating that VLT players are at greater risk to develop problematic gambling (Holtgraves, 2009), especially when depression co-occurs (Lévesque et al., 2018).

The onset of the COVID-19 pandemic could be pointed to as an additional reason for the increase of psychiatric symptoms among gamblers: the fear and anxiety related to the risk of being infected were generally really high among the population (Serafini et al., 2020), so it is not so far-fetched to think that individuals with an already fragile mental health could be affected in a significant way. This study provides an insightful exploration into the importance of implementing therapies focused on treating psychiatric symptoms such as depression, anxiety, stress, and irritability, extensively confirmed as comorbidities

of the Gambling Disorder. While providing an overview of the Italian gamblers' community, this study is not without limitations. Firstly, the sample was composed mainly of men (84.78%), leaving the problem underexplored in the female population. Secondly, the group's average age is higher than other studies on gambling, where the sample is usually younger. Thirdly, if, on the one hand, the focus on a local reality concedes the possibility to implement results in the clinical work more promptly, it precludes the exploration of the problem in the broader population, limiting the number of participants to a small targeted sample. The sample size, in fact, might have affected the statistical significance of the results, although a total of 46 participants can be enough for exploratory studies (Daniel, 2011). In addition, phone call interviews were adopted instead of face-to-face interviews. This procedure allowed the researchers to conduct the study following a safe procedure and keeping a personal touch, which is fundamental in health care services. At the same time, the phone interview as a methodological approach requires short and precise questions to facilitate comprehension. As well, replies need to be concise to reduce the possibility of collecting inaccurate information and might be limit the exploration of the targeted construct to essential elements. (Frey and Fontana, 1991). Furthermore, it is also essential to consider different regulations concerning gambling activity in each country since the restrictions imposed by one government could be more or less strict compared to another one (Sharman et al., 2021). Therefore, it is mandatory to consider national policies when comparing studies conducted in different countries. The cross-sectional nature of the present investigation did not permit to assess exhaustively the possible causal association between the variables considered. A follow-up study would allow to study more in detail the causation among phenomena and register further variations in gambling habits (i.e., type, frequency, preferences) in the period post lockdown, after the physical venues have been reopened.

## Fundings

The study was supported by the Addiction Treatment Unit (SERD) of the local public health services of the Province of Trento, Italy.

## Ethics

The Ethics Committee of the local public health services approved the present study. It complied with the Declaration of Helsinki and with the European General Data Protection Regulation. The participants provided their written informed consent to participate in this study.

## Data availability

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Declaration of Competing Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

## CRediT authorship contribution statement

**Iliaria Cataldo:** Investigation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing. **Eleonora Casonato:** Investigation, Writing – original draft, Writing – review & editing. **Ermelinda Levari:** Methodology, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Funding acquisition. **Attilio Negri:** Data curation, Writing – original draft, Writing – review & editing. **Pierluigi Simonato:** Data curation, Writing – original draft, Writing – review & editing. **Giulia Tomasi:** Methodology, Data curation, Writing – original draft, Writing – review & editing. **Giovanna Branz:** Data curation, Writing – original draft, Writing – review & editing. **Aurora Coppola:** Data curation, Writing – review & editing, Writing – original draft. **Pietro Gianfranceschi:** Data curation, Writing – review & editing, Writing – original draft. **Pietro Mistretta:** Data curation, Writing – review & editing, Writing – original draft. **Martina Stefani:** Data curation, Writing – review & editing, Writing – original draft. **Miriam Vanzetta:** Data curation, Writing – review & editing, Writing – original draft. **Anna Franceschini:** Data curation, Writing – review & editing, Writing – original draft. **Gianluca Esposito:** Writing – review & editing, Supervision, Writing – original draft. **Ornella Corazza:** Conceptualization, Methodology, Writing – review & editing, Supervision, Funding acquisition, Writing – original draft.

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