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Online Gambling Addiction in Parakou (Benin, 2022)

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Abstract

Introduction: Online gambling is becoming increasingly popular worldwide. With its well-crafted visual and audio marketing, it is attracting more and more young people in Africa, where problems linked to employment and poverty are undermining youth. The consequences of gaming-related practices for health in general, and mental health in particular, are not negligible. The aim of this study was to measure the extent of the phenomenon within an urban community in Benin. **Methods:** Descriptive cross-sectional study with analytical aim conducted in the general population of Parakou, northern Benin, from December 2021 to November 2022. A self-administered questionnaire incorporating DSM 5 criteria for pathological gambling was used to collect data. **Results:** A total of 576 subjects divided into 30 clusters of 19 to 20 individuals consented to participate in the study. The proportion of gamblers was 30.56%. The prevalence of pathological gambling calculated according to DSM 5 criteria was 24.65% [21.31% - 28.33%] in the general population. The prevalence of severe pathological gambling was estimated at 8.16% [5.96% - 10.44%] in the general population. The prevalence of anxiety

was 28.30% ([24.62% - 31.98%]), compared with 15.10% ([12.18% - 18.02%]) for depression. Factors with a significant association with pathological gambling were: age, access to online gambling, access to video games, exposure to gambling advertisement, having gambling friends, debt accumulation. A statistically significant link was also found between pathological gambling and anxiety/depression. **Conclusion:** The reality of pathological gambling in northern Benin calls for effective preventive action among vulnerable groups at national level, involving various actors at different levels.

Keywords

Gambling, Chance, Money, Online, Benin, 2022

1. Introduction

Gambling is a major economic and financial sector, generating employment (direct and indirect), taxes and a gambling population numbering in the millions [1]. While for a large number of people, gambling is a recreational activity, for some it can be detrimental, leading to dependence with all its economic (debts), professional, family and psychological (anxiety, depression, suicidal ideation...) consequences. Gambling addiction is already recognized as a public health problem, due to the consequences of gambling among young people [2]. The advent of new information and communication technologies has made gambling more accessible to an increasingly young and impressionable population.

The prevalence of online gambling addiction (or pathological gambling) varies according to study and country. In Europe, Canada and the USA, prevalence varies from 0.8% to 2% [3]. This prevalence varied according to country and online gambling habits. In a 2007 national prevalence study in Canada, Huang *et al.* found a prevalence of pathological gambling of 2.22%, with the majority of pathological gamblers being male [4]. In Norway in 2009, a prospective study was carried out with an exhaustive census of the adolescent population aged 16 to 19. The factors associated with pathological gambling were alcohol abuse, anxiety and depression [5]. Costes *et al.* in France in 2010, in a metropolitan population with an exhaustive census of 25,034 people aged 18 to 75, carried out a prospective, analytical study to determine the prevalence of problem gambling. The Canadian Problem Gambling Index (CPGI) was used as the diagnostic tool. The prevalence of excessive gambling was 3.7%, and tobacco and alcohol consumption were the factors associated with problem gambling [6]. The prevalence of problem gambling has therefore increased in recent years as access to legal gambling has increased. Thus, excessive gambling affected 11% of a population of 1047 high-school students in a cross-sectional study carried out in the Czech Republic in 2020. In this way, Petruzelka *et al.* noted that 53% of the gambling population was male, with an average age of 17.49 years. Alcohol, tobacco and cannabis abuse were found in 28%, 12% and 11% of the population respectively

[7]. Furthermore in Spain, Choliz M. *et al.* in 2019 studied the prevalence of pathological gambling in a population of 6816 Spaniards aged between 18 and 95, recruited using stratified random sampling. In this sample, 12.48% of online gamblers were under 26 years of age, and 0.72% of the population had developed pathological gambling [8]. Also in 2020, Anderson Hakasson *et al.* conducted a descriptive and analytical cross-sectional study in a Swedish population. The aim of this study was to assess the impact of Covid 19 on online gambling. Participants numbered 997, 75% of whom were male and either working or retired. The sampling technique was simple random. The results showed that 10% of the population had developed an addiction to gambling (pathological gambling) and, as a social consequence of gambling, had fallen into debt [9]. Online gambling is a very widespread but potentially addictive leisure activity. In Casablanca, Morocco, an assessment of the frequency of pathological gambling in 2008 among a group of regular gamblers identified correlated risk factors and certain sociocultural characteristics relating to gambling. The South Oaks Gambling Screen (SOGS) was used to screen for and diagnose pathological gambling. Of the 243 people questioned, 200 men were selected. The frequency of pathological gamblers in the gambling population was 53%. The average age of the sample was 42.3 plus or minus 10.70 years. Horse racing and greyhound racing were the games most frequently played by 91% and 60% of subjects respectively. Factors associated with pathological gambling include primary school level, a personal psychiatric history and substance abuse [4]. Moreover in Nigeria in 2022, Afé *et al.* [10] conducted a descriptive and analytical cross-sectional study in two different independent populations in the southwest of the country, and found a 30.5% incidence of pathological gambling. The aim of this study was to identify the prevalence of pathological gambling on sports betting and the factors associated with gambling disorder. Using simple random sampling, the subjects surveyed were subjected to a questionnaire containing the DSM V, ICD11 and South Oaks Gambling Screen (SOGS) diagnostic criteria for pathological gambling. The respondents' low education level and poor employment status were associated with this high prevalence [10].

Africa is one of the continent's most exposed to this problem, due on the one hand to the precarious socio-economic conditions of its populations, and on the other to the inadequacy of the sector's regulatory mechanisms. To date, no data exists in Benin on the problematic use of online gambling. The present study was initiated to quantify this phenomenon in the university city of Parakou, and to determine the associated factors.

2. Study Framework and Methods

2.1. Population and Procedures

This was a descriptive cross-sectional study with an analytical aim, conducted from December 2021 to November 2022. A minimum sample size was estimated (277) to reach the necessary statistical power, using Schwartz's formula. Two-stage

cluster probability sampling was used to select 30 clusters of 19 to 20 statistical units.

2.1.1. Cluster Selection

The 30 clusters were distributed as follows:

- Random distribution of the list of neighborhoods in the commune of Parakou, along with the number of households in each;
- Calculation of the cumulative number of households in the neighborhoods of Parakou according to the order in which they appear in the list;
- Definition of the k-cluster step, obtained by dividing the total number of households in all neighborhoods by the total number of clusters (30), *i.e.*, /30. The calculated cluster step is 8516;
- Random selection of a digit between 1 and k to identify the starting point d; this made it possible to identify the neighborhood in which the first cluster would be located. This selection was made using Excel software. The starting point displayed by the software was 1159. The first cluster was located in the known neighborhood;
- The distribution of the other clusters was determined by adding the number of clusters to the random digit each time, until we had 30 clusters.

2.1.2. Selection of Houses

The selected city districts (with at least one cluster) were visited for the collection. The day before arriving in the district or village, the survey team contacted the district chief to introduce themselves, explain the process underway and present the authorizations. From time to time, the survey team had the opportunity to talk briefly with him about the gambling situation in general, and online gambling in particular, in his area of responsibility. He showed the team the boundaries and center of the area. On the day of the survey, after signaling their arrival, an interviewer positioned himself in the center and randomly chose a direction using the bottle method. Once the direction and street had been chosen, a house was drawn at random and represented the location of the first collection. The other elements of the cluster were selected in the vicinity of that one (houses behind and on both sides of the house drawn).

2.1.3. Selection of Study Subjects

If the house in which the survey was to be carried out comprised a single household, the individuals in that household were drawn to determine the subject to be surveyed. If the concession consisted of several households, the interviewer assigned a number to each of them. Then, using a random number generator, a number was drawn. The household corresponding to this number would be the one selected for the survey. Thus, by house, only one individual in a single household was taken into account in the survey. Once the household had been selected, the interviewer asked to meet the head of the household to whom he had introduced himself, explaining the reason for his intrusion. Authorization was then sought to recruit and interview the subject. If the head of household was

physically absent, the authorization of an adult representative was required.

If the selected household comprised several individuals meeting the inclusion criteria, only one was randomly selected to take part in the study. The selection technique consisted in writing "selected" and "not selected" on slips of paper. The total number of pieces of paper corresponded to the number of individuals present at that time in the selected household. Selected" was recorded only once. The slips of paper were folded over so that the hanwritten note could not be seen from the outside. Each individual drew a slip. The individual who drew the piece of paper marked "selected" was selected to be interviewed with his or her consent. If the subject was a minor, parental or legal guardian authorization was required. Withdrawal of consent excluded the subject from the study.

The recruitment process was stopped as soon as the required number of subjects for the neighborhood had been obtained.

2.2. Measures

The dependent variable was online gambling addiction. The independent variables were sociodemographic and economic factors, biography, past history, social inquiry, pathological gambling consequences and gambling-related variables.

The DSM V diagnostic criteria for addiction to online gambling and the Hospital Anxiety and Depression Scale (HADS) diagnostic criteria for depression and anxiety were used to assess the subjects' addiction to online gambling.

The HADS scale [11] is a screening instrument for anxiety and depressive disorders. It comprises 14 items rated from 0 to 3. Seven questions relate to anxiety (total A) and another seven to depression (total D), giving two scores (maximum score for each = 21).

Scores

Add up the points of answers: 1, 3, 5, 7, 9, 11, 13: Total A = _____

Add up the points of answers: 2, 4, 6, 8, 10, 12, 14: Total D = _____

Interpretation

In order to screen for anxiety and depressive symptoms, the following interpretation can be proposed for each of the scores (A and D):

- 7 or less: no symptomatology;
- 8 to 10: doubtful symptomatology;
- 11 and over: definite symptomatology.

2.3. Statistical Analysis

Data analysis was performed using R 4.3.0 software. Quantitative variables were expressed as means with their standard deviation; categorical or quantitative variables were expressed as proportions with their confidence intervals. In bivariate analysis, a significant association between two variables was established for a p value < 0.05 (5% significance level). For the comparison of two quantitative variables, the linear correlation test was used, and the CHI^2 test was used for the comparison of qualitative variables or quantitative variables rendered categori-

cal. The dependent variable was explained by the explanatory variables using binary logistic regression.

3. Results

At the end of the present study, 576 people were included.

3.1. Prevalence

Of the individuals surveyed, 30.55% (176) are online gamblers. Among these, 142 are pathological gamblers (24.65%) as defined by the Diagnostic and Statistical Manual of Mental Disorders (Figure 1 and Figure 2) (DSM-5).

3.2. Sociodemographic and Economic Characteristics

3.2.1. Age and Daily Financial Investment of Pathological Gamblers

The average age of pathological gamblers was 22.68 years, with extremes ranging from 13 to 45 years.

The daily financial investment was mostly 500 fcfa ($ 0.81; € 0.74) with a monthly expenditure of 15,951.06 FCFA ($ 25.76; € 23.64) on average. The largest sum spent on gambling in a single day averaged 17,563.69 FCFA ($ 9.52; € 26.78).

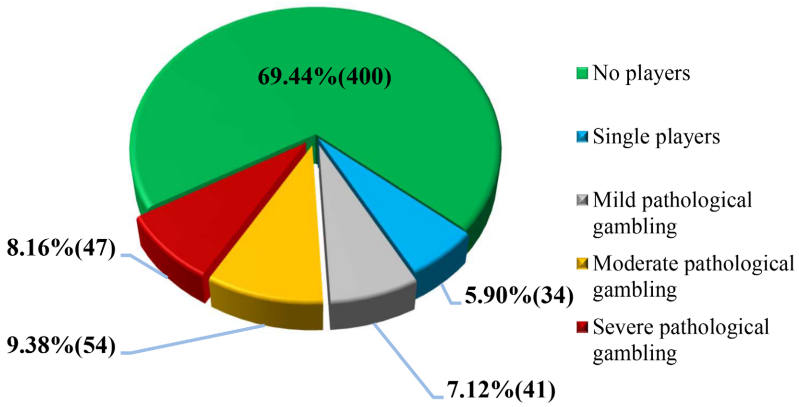

Figure 1. Distribution of all respondents by relationship to online gambling (Parakou, 2022, N = 576).

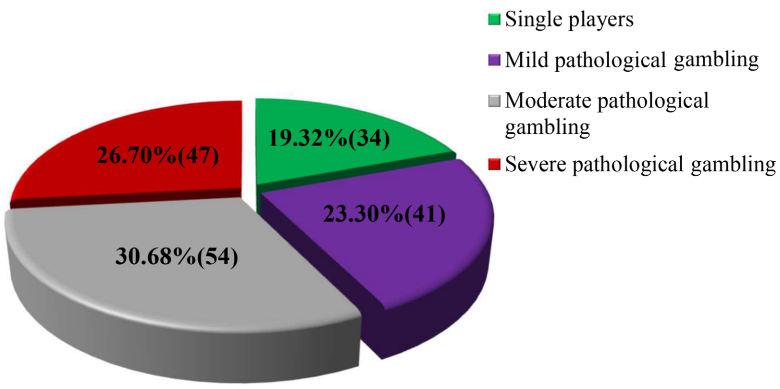

Figure 2. Presentation of the different clinical forms of online gambling withing the gaming population (Parakou, 2022, N = 576).

3.2.2. Marital Status, Religion and Education Level of Pathological Gamblers

In the population of pathological gamblers, the majority groups were: single people (85.9%), Christians (50.0%) and people with secondary education level (46.5%).

Table 1 summarizes the distribution of subjects surveyed according to

Table 1. Distribution of respondents by sociodemographic characteristics (Parakou, 2022).

	Sample (n = 576)	Online gamblers (n = 176)	Pathological gamblers (n = 142)
Education level			
Literate	50 (8.7%)	7 (4.0%)	5 (3.5%)
No	26 (4.5%)	4 (2.3%)	1 (0.7%)
Primary	69 (12.0%)	7 (4.0%)	7 (4.9%)
Secondary	251 (43.6%)	76 (42.2%)	66 (46.5%)
Higher	180 (31.3%)	82 (46.6%)	63 (44.4%)
Religion			
Endogenous	25 (4.3%)	8 (4.5%)	6 (4.2%)
Christian	254 (44.1%)	90 (51.1%)	71 (50.0%)
Muslim	297 (51.6%)	78 (44.3%)	65 (45.8%)
Profession/trade			
Farmer	14 (2.4%)	4 (2.3%)	3 (2.1%)
Craftsman	120 (20.8%)	25 (14.2%)	23 (16.2%)
Pupil/student	205 (35.6%)	93 (52.8%)	73 (51.4%)
Teacher	13 (2.3%)	4 (2.3%)	3 (2.1%)
Housewife	18 (3.1%)	0 (0.0%)	0 (0.0%)
Military/paramilitary	2 (0.3%)	0 (0.0%)	0 (0.0%)
Worker	24 (4.2%)	8 (4.5%)	9 (6.3%)
Retailer/Dealer	68 (11.8%)	10 (5.7%)	9 (6.3%)
Unemployed	60 (10.4%)	24 (13.6%)	17 (12.0%)
Other	52 (9.0%)	8 (4.5%)	5 (3.5%)
Marital status			
Single	379 (65.8%)	150 (85.2%)	122 (85.9%)
Cohabitation/Common-law union	38 (6.6%)	7 (4.0%)	6 (4.2%)
Divorced/Separated/Widowed	4 (0.7%)	0 (0.0%)	0 (0.0%)
Married	155 (26.9%)	19 (10.8%)	14 (9.9%)
Numbers of dependants			
No	334 (58.0%)	124 (70.5%)	100 (70.4%)
[1 to 2]	110 (19.1%)	32 (18.2%)	27 (19.0%)
[3 to 6]	111 (19.3%)	14 (8.0%)	12 (8.5%)
≥7	21 (3.6%)	6 (3.4%)	3 (2.1%)

sociodemographic and economic characteristics.

3.3. Presence of Anxiety or Depression among Respondents

The prevalence of depression among pathological gamblers was 5.60%, and anxiety 45.80% (Table 2).

3.4. Social Survey

Almost all of those surveyed had a good relationship with the people around them. Among pathological gamblers, 87.3% lived in an environment that favored access to online gambling, while more than half (52.8%) had access to online games (Table 3).

Online gambling motivation in pathological gamblers and suicidal ideation.

The ambition to become rich (54.2%) or to please oneself remains the primary motivations of pathological gamblers (Figure 3), among whom almost two out of ten (18.3%) reported to have suicidal thoughts following a loss of stake or winnings while gambling (Table 4).

Type of games played by pathological gamblers

Betting on sports results also known as sports betting (sports lotto or 1xBet) was the most popular game among pathological gamblers (83.8%) (Table 5).

Probable repercussions of online gambling in pathological gamblers

The probable repercussions of online gambling among pathological gamblers include: anxiety (45.8%), debt accumulation (24.6%), family conflicts (9.9%) and depression (5.6%).

3.5. Associated Factors (Table 6)

Multivariate analysis

Logistic regression revealed a significant association between pathological gambling and the following variables: age (OR = 0.91; IC 95%:0.87 - 0.96; p = 0.001), access to online gambling (OR = 9.48; IC 95%: 4.72 - 19.02; p < 0.001), access to video games (OR = 0.34; IC95%: 0.16 - 0.70; p = 0.003), exposure to gambling advertisements (OR = 8.92; IC95%: 4.63 - 17.19; p < 0.001), having gambling friends (OR = 9.10; IC 95%: 3.66 - 22.59; p < 0.001), accumulating debts (OR = 12.59; IC 95%: 4.09 - 38.75; p < 0.001), anxiety (OR = 2.39; IC 95%: 1.30 - 4.39; p < 0.001), and depression (OR = 0.06; IC 95%: 0.02 - 0.18; p < 0.001).

Table 2. Distribution of respondents according to their depression and/or anxiety profile.

	Depression		Anxiety	
	Yes	No	Yes	No
Non-players	67 (16.75%)	333 (83.25%)	94 (23.5%)	306 (76.5%)
Simple bettors	14 (10.85%)	115 (89.15%)	43 (33.33%)	86 (66.66%)
Pathological gamblers	8 (5.60%)	134 (94.40%)	65 (45.80%)	77 (54.20%)

Table 3. Distribution of respondents according to social survey data (Parakou, 2022).

	Sample (n = 576)	Online gamblers (n = 176)	Pathological gamblers (n = 142)
Good relationship with professional environment			
Yes	550 (95.5%)	171 (97.2%)	140 (98.6%)
No	26 (4.5%)	5 (2.8%)	2 (1.4%)
Good relationship with immediate environment			
Yes	543 (94.3%)	171 (97.2%)	138 (97.2%)
No	33 (5.7%)	5 (2.8%)	4 (2.8%)
Social survey			
Alcohol consumption			
Yes	137 (23.8%)	53 (30.1%)	42 (29.6%)
No	439 (76.2%)	123 (69.9%)	100 (70.4%)
Psychoactive substance use (Cannabis. tobacco. cocaine)			
Yes	43 (7.5%)	15 (8.5%)	12 (8.5%)
No	533 (92.5%)	161 (91.5%)	130 (91.5%)
Personal exposure to gambling			
Yes	248 (43.1%)	149 (84.7%)	124 (87.3%)
No	328 (56.9%)	27 (15.3%)	18 (12.7%)
Existence of other entertainments			
Yes	482 (83.7%)	168 (95.5%)	17 (12.0%)
No	94 (16.3%)	8 (4.5%)	125 (88.0%)
Access to online games			
Yes	104 (18.1%)	88 (50.0%)	75 (52.8%)
No	472 (81.9%)	88 (50.0%)	67 (47.2%)
Access to video games			
Yes	143 (24.8%)	39 (22.2%)	29 (20.4%)
No	433 (75.2%)	137 (77.8%)	113 (79.6%)
Exposure to social networks			
Yes	176 (30.6%)	52 (29.5%)	42 (29.6%)
No	400 (69.4%)	124 (70.5%)	100 (70.4%)
Sports activities			
Yes	146 (25.3%)	56 (31.8%)	47 (33.1%)
No	430 (74.7%)	120 (68.2%)	95 (66.9%)

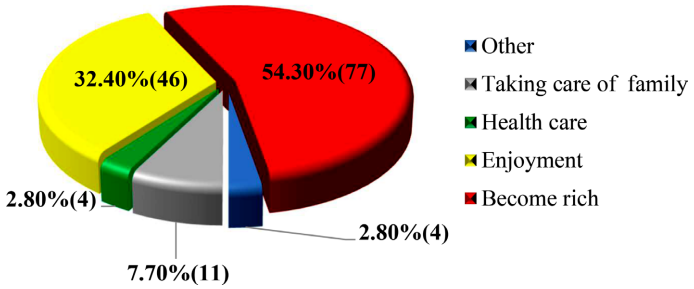

Figure 3. Distribution of pathological gamblers by motivation for online gambling.

Table 4. Distribution of pathological gamblers by gambling-related repercussions (Parakou, 2022).

	Workforce	%
Debt accumulation		
Yes	35	24.6
No	107	75.4
Suicidal ideation following a loss of winnings or stake		
Yes	26	18.3
No	116	81.7
Family conflict		
Yes	14	9.9
No	128	90.1
Legal proceedings		
Yes	1	0.7
No	141	99.3
Anxiety		
Yes	65	45.8
No	77	54.2
Depression		
Yes	8	5.6
No	134	94.4

Table 5. Distribution of different games played by pathological gamblers (Parakou, 2022).

	Workforce	%
Horse or other animal racing bet (PMU. gaming rooms…)		
Yes	9	6.3
No	133	93.7
Sports betting (football pools known as sports lotto **or 1xBet)**		
Yes	119	83.8

Continued

No	23	16.2
Crypt occurrence game		
Yes	15	10.6
No	127	89.4
Online lotteries (Lotto, scratch game…)		
Yes	17	12
No	125	88
Games (missions dames. Game of thrones, sipa, multigame)		
Yes	13	9.2
No	129	90.8
Card game		
Yes	16	11.3
No	126	88.7

Table 6. Factors associated with pathological gambling in multivariate analysis (Parakou, 2022).

	Pathological gambling		OR	95% CI		*P*
	Yes	No				
Age	-	-	0.916	0.871	0.963	**0.001**
Access to online games						
Yes	75 (52.8%)	29 (6.7%)	9.482	4.727	19.02	**0.000**
No	67 (47.2%)	405 (93.3%)	1	-		
Access to video games						
Yes	29 (20.4%)	114 (26.3%)	0.342	0.167	0.701	**0.003**
No	113 (79.6%)	320 (73.7%)	1	-		
Exposure to gambling advertisements						
Yes	124 (87.3%)	124 (28.6%)	8.927	4.636	17.191	**0.000**
No	18 (12.7%)	310 (71.4%)	1	-		
Gambling friends						
Yes	133 (93.7%)	221 (50.9%)	9.103	3.667	22.594	**0.000**
No	9 (6.3%)	223 (51.4%)	1	-		
Accumulation of debt						
Yes	35 (24.6%)	13 (3.0%)	12.591	4.091	38.753	**0.000**
No	107 (75.4%)	421 (97.0%)	1	-		
Anxiety						
Yes	65 (45.8%)	98 (22.6%)	2.393	1.303	4.393	**0.005**

Continued

No	77 (54.2%)	336 (77.4%)	1	-		
Depression						
Yes	8 (5.6%)	79 (18.2%)	0.061	0.021	0.183	**0.000**
No	134 (94.4%)	355 (81.8%)	1	-		

4. Discussion

4.1. Limitations of the Study

To achieve the objectives set out in the source thesis for the current publication, a descriptive, analytical cross-sectional study was carried out as part of a doctoral thesis in general medicine. Sampling was cluster probabilistic, with census of all people meeting the inclusion criteria enumerated. Determined using the Schwartz formula from the prevalence found in Canada in 2017 (66%), the sample size initially planned for 450 subjects was increased to 576 in order to obtain greater reliability of the results. The protocol was submitted to the Local Ethics Committee for Biomedical Reasearch of the University of Parakou (Comité Local d'Éthique pour la Recherche Biomédicale de l'Université de Parakou also known as CLERB-UP). Data collection was carried out by students at the end of their medical and epidemiological training, who had been briefed on the work. The collection technique used was a digital questionnaire to which eligible subjects were subjected. The survey form consisted of a questionnaire providing sociodemographic data, past history, biography, social survey, gambling-related characteristics, data on the diagnosis of pathological gambling (Diagnostic and Statistical Manual of Mental Disorders (DSM5), impact variables and Hospital Anxiety and Depression Scale (HADS) items to screen for anxiety and depression. The database was cleansed. The major limitation of this study was the subjective statements made by the respondents, which were used to create the database. As the proven reliability of these declarations cannot be established, they constitute a non-negligible bias factor. The other, albeit minimal, limitation of the study is that the scales used have not been validated in the Beninese sociocultural context. However, their international validation remains an asset to the present work.

4.2. Prevalence of Pathological Gambling

At the end of the present study, the prevalence of pathological gambling calculated in the commune of Parakou was 24.65% using DSM V.

This prevalence is higher than those reported by several other authors in varying degrees: Berrada *et al.* in Morocco in 2009 (19%) [4]; Afe *et al.* in Nigeria in 2022 (12.30%) [10]; Hakasson *et al.* in Sweden in 2020 (10.00%) [9]; Lever *et al.* in 2016 in France (9.90%) [12]; Molde *et al.* in 2009 in Norway (4.40%) [5]; Coste *et al.* in 2010 in France (3.70%) [13] and Huang *et al.* in 2007 in Canada (2.22%) [3]. The prevalence found in the present study is significantly lower than

those found by other authors: Odame *et al.* in 2020 in Ghana (34.30%) [14] and Matthews *et al.* in 2009 in the United Kingdom (53%) [15]. The larger sample size as well as diagnostic tools different from ours easily explains these higher proportions.

Methodological differences, sample sizes and diagnostic tools used could account for this discrepancy. But the variability of different study environments should not be discounted. Easy exposure to screens, easy and low-cost access to the Internet, and many other environmental factors could vary the risk of pathological gambling online one way or another.

4.3. Type of Game Played by Pathological Gamblers

In the present study, sports betting (sports lotto or 1xBet) was the game most favoured by pathological gamblers (83.8%). This result is in line with those of Odame *et al.* in Ghana in 2021 and Livazović *et al.* in Croatia in 2019, who found a high proportion of gamblers in that game [14] [16]. There is no longer any need to demonstrate that 1xBet is the most devastating online game for the Beninese youth to date. Its easy access on connected phones and the small stakes accepted make it the game of all socio-economic strata who suffer the full brunt of its afflictions.

On the other hand, Hakansson *et al.* in 2020 in Sweden, in a study during the Covid 19 health crisis, reported a high proportion of gamblers in online horse betting [9]. This could be explained by the fact that, during this health crisis, restrictions on sporting activities led gamblers to take up other types of gambling.

4.4. Impact

4.4.1. Anxiety

The proportion of anxiety found among pathological gamblers was 45.8%. This result is similar to that found by Fron-Martineau *et al.* in France in 2021 [17] (46%). The stress associated with the risk of losing one's stake would account for this marked anxiety in almost half of pathological gamblers.

4.4.2. Debt Accumulation and Suicidal Ideation

Debts had a rate of 24.6% among pathological gamblers. These results are similar to those of Hakansson *et al.* in 2020 [9] who reported that gamblers in the previous month had a higher degree of gambling and debt problems. In the city of Parakou, the psychiatric service receives many young people, especially students, who are in distress because they owe money to their classmates or have used up their schooling in gambling.

Note that 18.3% of pathological gamblers had had suicidal thoughts following a bet or winnings loss at gambling. Andronicos *et al.* in 2018 in Hong Kong [18] report a roughly equal proportion (20%). This is an opportunity to recall the case of a young man in his first year of study (or of university), the son of a health worker on duty in a nearby town, who was taken to hospital for a suicide attempt. His parents were stunned to discover that their son had not paid his

school fees, owed money to several fellow students and had not paid his rent for months. As the year drew to a close and he failed to earn the large sum of money he had hoped for, he decided to commit suicide in the midst of a thymic decompensation (depression). After treatment, which stabilized his condition, he became manically excited, with a pseudo-delirium whose theme was, unsurprisingly, the huge sum of money he would have won to lift his entire country out of poverty. The issue of gambling calls everyone's attention to the vulnerability of young people, who are exposed to them willy-nilly.

4.5. Factors Associated with Pathological Gambling

In multivariate analysis, pathological gambling was significantly associated with the following factors: age ($p = 0.001$), access to online gambling ($p < 0.001$), access to video games ($p = 0.003$), exposure to gambling advertisements ($p = 0.000$), existence of gambling friends ($p < 0.001$), accumulation of debts ($p < 0.001$), anxiety ($p < 0.001$), and depression ($p < 0.001$).

Indeed, Mehwash Mehroof *et al.* [19] in 2010 in the UK and Andreassen *et al.* [20] in 2016 also found a significant association between gambling addiction and anxiety. In addition, other authors have reported associated factors different from ours. Odame *et al.* in Ghana in 2020 [14] therefore found that gender was significantly associated with gambling addiction in multivariate analysis. Similarly, Model *et al.* [5] found in multivariate analysis that gender and alcohol abuse were associated with pathological gambling. Moñino-García M *et al.* [2] found in their study a significant association between pathological gambling and cannabis use, which is a more accessible substance in Spain than in Parakou.

The young age of pathological gamblers, hovering around 23, is an indicator to be taken into account. Indeed, young people's access to the Internet, with its many social networks that present the model of socio-economic success as a life of luxury, drives many to seek easy gain at an early age. The recent proliferation of several online games has quickly added to the perdition of these young people, who firmly believe in a fortune to be made by chance. The different types of game played by pathological gamblers were: horse or other animal racing betting, sports betting, cryptocurrency games, scratch lottery games, games (multi game dames, sipa etc.) and card games. The absence of employment opportunities after long studies for most, the precariousness of the majority of civil servants and the obvious and extreme poverty of most craftsmen push the latter to invest their meager resources in gambling, which not only robs them but also makes them dependent on them. Preventive and curative action is needed in this segment. Exclusively preventive action should start with the younger generation, with appropriate education and presentation of the risks associated with online gambling. It is not uncommon to observe several addictive behaviors in the same individual. All those playing video games should therefore be considered as being at risk of online gambling addiction, and the necessary action should be taken within them. When we consider that children have easier access to video

games today, a prevention resolution within them is all the more justified.

It's easy to understand that, with the current development of artificial intelligence, the realism of the phenomena offered online, and the phishing technique employed by the designers of games that were initially harmless and without stakes, are rekindling the desire to gamble among a segment of the population that is vulnerable because of its young age. Access to online gambling is a real danger for young people, and one that is set to worsen in the coming years. Raising awareness in schools and other places where children and teenagers gather is the only useful weapon to protect future generations from this phenomenon, which is a silent devastator. An addiction requires three elements: the individual, the environment and the object of addiction. It is therefore not surprising to notice in the present work that environmental elements such as exposure to advertisements and the existence of online gambling friends are associated with pathological gambling. If preventive and curative action is to be fully effective, it will have to take those environmental factors into account. But the great difficulty will be to eliminate or protect against advertisements. Reinforcing the individual's psychic capacities could be an alternative in this respect.

Anxiety and depression are factors associated with pathological gambling. It should be noted that it is not possible to play games of chance and money without losing a bet or winnings. The repetition of these losses, the investment of one's meager resources in the hope of winning without success, and sometimes the debts contracted for the investment, constitute anxiogenic and/or depressogenic factors which obviously maintain a permanent state of anxiety or depression in pathological gamblers.

5. Conclusions

The above results show that one in four people in the commune of Parakou is a pathological gambler. Pathological gamblers were predominantly young men. Sports betting was the game most frequently played by pathological gamblers. Factors associated with pathological gambling in multivariate analysis included age, access to online gambling, access to video games, exposure to gambling advertisements, having gambling friends, debt accumulation, anxiety and depression.

Preventive action needs to start very early among young people. Raising the general population's awareness of the phenomenon and its risks, as well as curative measures for those who are already addicted, remain imperative in the fight against the scourge of online gambling.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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