PSYCHIATRIC MORBIDITIES AMONG Bet9ja INTERNET GAMBLERS IN NORTHWEST NIGERIA

Adebiyi Adegbemi Olusegun[1], Abubakar Ahmad[2], Adebayo Sunday Adebisi[3], Sale Shehu[3]

1. Neuropsychiatric Hospital, Aro–Abeokuta, Ogun State
2. Usmanu Danfodiyo University Teaching Hospital, Sokoto
3. Federal Neuropsychiatric Hospital, Kware, Sokoto State

ABSTRACT

Background: The internet plays a crucial role in knowledge development and business growth, but also poses challenges. Problematic internet use in youths increases their risk of developing psychiatric disorders. Factors contributing to this vulnerability include unstructured internet time, unlimited access, and addictive tendencies. Mental and behavioral disorders, such as substance use, depression, and personality disorders, are associated with internet use. Problem gambling has a higher association with suicidality than general population. **Materials and methods:** This was a cross-sectional study among users of Bet9ja spots in Sokoto metropolis to gamble online. South Oaks Gambling Screening Test, General Health Questionnaire-12 and Composite International Diagnostic Interview were used. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 23 for Windows. **Results:** A total of 390 subjects were studied, the majority (76.4%) had a single diagnosis, with depression being the most common, followed by anxiety and psychosis. Most were probable pathological gamblers, while 2% were non-pathological gamblers. The study found that 190 participants with comorbid depression were probable pathological gamblers, while 76.6% were non-pathological gamblers. Among the 124 non-depressed participants, 104 were probable pathological gamblers and 16.1% were non-pathological gamblers. Depression had a significant association with internet gambling behavior. Over half of the participants used psychoactive substances in the past year, with a significant association between internet gambling behavior and the use of psychoactive substances. The majority of probable pathological gamblers (83.1%) use both

stimulants and depressants, with 82.0% using only depressants. A significant association exists between stimulant users and probable pathological gamblers. Alcohol and other psychoactive substances were common, with 26.7% using alcohol alone, while 21.3% used alcohol and other substances. Indian hemp was used by 17.9%, while codeine syrup and other substances were used by 2% and 2%, respectively.

Conclusion: The study reveals a high rate of depression, followed by anxiety psychosis and multiple psychoactive substance use among pathological gamblers, emphasizing the need for policies to reduce mental disorders among internet gamblers, particularly youth.

Keywords: internet gambling behavior, Bet9ja, psychiatric comorbidity, northwest Nigeria

INTRODUCTION

The world is undergoing a lot of transformations, and therefore, the use of internet has now become necessary. Thus, Internet plays a significant role in the development of knowledge and other related issues.(1) Internet users have access to information, business opportunities for growth and development of their day to day activities.(2) Some of the major benefits of the internet is the provision of better means for communication, information, and social interaction.(3) These are however, not without their attendant challenges.

Studies have shown that youths with problematic internet use, are more at risk of developing psychiatric disorders.(4),(5) Though, the relationships between the psychiatric disorders and internet gambling is bidirectional, (6) several factors were attributed to this vulnerability. These includes unstructured time spent on the internet, unlimited access to the internet, and its addictive tendency.(7)

Varying degree of the mental and behavioral disorders were associated with internet use.(8) These includes disorders such as the substance use, depression, obsessive compulsive, impulse control, psychosis, attention deficit and hyperactivity; the personality disorders, particularly, the cluster B type (9) and post-traumatic stress disorder. Also, the association between problem gambling and suicidality was found to be higher than that of the general population.(10)

However, despite the extensive link between the duo (8), our literature search revealed dearth of data on the prevalence of psychiatric disorders among persons with internet gambling behaviors in northwest Nigeria. We therefore, aim to determine the prevalence of psychiatric disorders among internet gamblers attending Bet9ja centers in Sokoto metropolis, northwest Nigeria. This may go a long way to create awareness and possibly, propose ways to curtail the psychiatric morbidities associated with internet gambling behavior.

MATERIALS AND METHODS

Study Location

Sokoto is a city in the northwestern Nigeria packed with internet football gambling centers which are equipped with computers, internet and all that is required to serve their customers

Study design and population

This was a cross-sectional study among users of Bet9ja spots in Sokoto metropolis to gamble online.

Inclusion Criteria

Individuals aged 18 and over who accessed Bet9ja centers to gamble on the internet and agreed to participate in the study. They must have been actively involved in the internet football gambling for at least a year period and be fluent in either Hausa or English.

Exclusion Criteria

Persons under the ages of 18, those who rejected consent, and those who do not comprehend either of the two interview languages (Hausa and English).

Selection of Bet9ja Centres and Participants

The study instruments were given to participants who arrived at the Bet9ja facilities for the internet football gambling and met the inclusion criteria. The Sokoto metropolis was divided into five clusters based on the number of Bet9ja centres recorded by the internal revenue office. A specified portion of the participants was assigned to each of the five local governments based on the number of Bet9ja centers discovered in each of the local government areas in Sokoto metropolis. Given the 36% prevalence of internet gambling in Nigeria, the formula for calculating sample size for a cross-sectional study was utilized.(11) A total of 390 people were studied as a result of these.

Ethical considerations

The ethical approval was obtained from the ethics committee of the Federal Neuropsychiatric Hospital in Kware, Sokoto. (see appendix I) The owners and operators of the Bet9ja centres gave permission for the research to be conducted at their premises. All the participants gave informed consent, and confidentiality was maintained both during and after the survey. The study's purpose was conveyed to the stakeholders, who were informed of their right to withdraw at any moment. (See Appendix I)

Procedure for data collection

The study instruments were administered to individuals who met the study's inclusion criteria, and data was collected in a twenty-week period, from November 2019 to March 2020.

Data Analysis

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 23 for Windows. The categorical variables were presented in tables using frequencies and percentages. Where applicable, additional analyses were performed using the chi-square or Fisher's exact test. The level of significance for all statistical analyses was set at $p < 0.05$.

Study instruments

South Oaks Gambling Screen (SOGS)

The SOGS is a screening tool that has been utilized in therapeutic communities, psychiatric facilities, and those with pathological gambling, alcoholism, and drug dependence.(12) It is a DSM-IV-based instrument for pathological gambling that has been translated into Hausa and analyzes the highest sum ever gambled in Naira.(13)

General Health Questionnaire (GHQ-12)

The GHQ-12 is a 12-item self-administered screening questionnaire meant to identify persons with a diagnosable psychiatric condition. It has been used in a variety of countries with a wide range of demographics and has a high level of internal consistency (a Cronbach's alpha of 0.82 to 0.93). The GHQ-12 was validated in Nigeria, therefore it was used in this study due to its validity and popularity among student samples and the community's youthful population. It is graded either using the Likert or binary scoring techniques, with a minimum of 0 and a maximum of 12. The binary scoring system was used, and the results were categorized. Any score more than three is deemed important.

Composite International Diagnostic Interview (CIDI)

The CIDI, developed by the World Health Organization, was used to screen for psychiatric morbidities. It combines diagnostic interview questions aimed to elicit present state examination items. When respondents were identified as having symptoms, probe questions were asked to determine severity or clinical significance.

CIDI has been validated in a number of countries and cultural contexts; it is frequently used as a diagnostic tool in epidemiological and clinical researches. CIDI has been used by Taiwo et al (2012),

and in northern Nigeria by Armiya'u et al (2013), for research (14,15). The English version of the CIDI was translated into Hausa to make administration easier for persons who do not speak English. Participants received only the modules for depression, anxiety disorders, psychotic and substance use disorders.

RESULTS

Pattern of Psychiatric Morbidities among Persons with Internet Gambling Behavior

Majority 298 (76.4%) of the participants had single diagnosis, while 92 (23.5%) had dual diagnosis. Depression was the most common psychiatric morbidity among the study participants, 266 (68.2%) followed by anxiety, 211 (54.1%) and psychosis being the least common 5 (1.3%). (See Table I)

Table I: Psychiatric Morbidities among Persons with Internet Gambling Behavior

Psychiatric Morbidity using GHQ–12	Probable cases	Non-probable cases
Depression	266 (68.2%)	124(31.8%)
Anxiety	211(54.1%)	179(45.9%)
Single / Dual diagnosis	298(76.4%)	92 (23.6%)
Psychosis	5.0(1.3%)	385(98.7%)

General Health Questionnaire Results of the Participants

A vast majority 258 (74.8%) of the participants were probable pathological gamblers and 9(2.0%) were non-pathological gamblers when screened with GHQ–12. (See Table II)

Table II: General Health Questionnaire Result of the Study Participants

GHQ–12 Grades	Non-Pathological Gamblers	Probable Pathological Gamblers	Total
Probable cases	87(25.2%)	258(74.8%)	345(100%)
Non-probable cases	9(2.0%)	36(8.0%)	45(100%)

Association between Internet Gambling Behavior and Psychiatric Comorbidities

Out of the 266 participants that presented with comorbid depression, 190(71.4%) were probable pathological gamblers while 76(28.6%) were non pathological gamblers. Meanwhile, among the 124 non-depressed, 104 (83.9%) were probable pathological gamblers and 20 (16.1%) were non pathological gamblers. A significant association was observed between depression and level of internet gambling behavior (p=0.008).

Among the 210 participants that presented with comorbid anxiety, 167(79.5%) were probable pathological gamblers while 43(20.5%) were non pathological gamblers. Also, the majority 127(70.6%) of probable pathological gamblers had no anxiety. There is significant association between anxiety and the level of internet gambling behavior (x^2=4.201, p=0.04).

Probable pathological gamblers among the non-psychotic group were 289(75.1%), while 96(24.9%) were non psychotic non, pathological gamblers. No significant association was found, F=2.557, p=0.368.

More than half (51.5%) of the participants have used psychoactive substances in the past 1 year, of which 167(83.1%) were probable pathological gamblers while 34(16.9%) were non pathological gamblers. A significant association between the level of internet gambling behavior and the use psychoactive substance (x^2=13.252, p=0.001).

Majority of the participants with probable pathological gambling 128(82.0%) were using multiple substances; On the other hand, 9(18.0%) of non-pathological gamblers were using single substance, 127(67.2%) of probable pathological gamblers were not using any of the substances. A significant association between pattern of psychoactive substance use and internet gambling behavior (x^2=4.039, p<0.001). See Table III below

Table III: Association between Internet Gambling Behavior and Psychiatric Disorders

Variables	Probable Pathological Gamblers (%)	Probable Pathological Gamblers (%)	X^2	D.F	P- value
Depression					
Yes	190(71.4%)	76(28.6%)	0.056	1	0.008
No	104(83.9%)	20(16.1%)			
Anxiety					

Yes	43(20.5%)	167(79.5%)	4.201	1	**0.04**
No	53(29.4%)	127(70.6%)			
Psychosis					
Psychotic	0.0(.0%)	5(100%)	2.557*		0.368
No psychosis	96(24.9%)	289(75.1%)			
Psychoactive substance past 1 year					
Yes	34(16.9%)	167(83.1%)	13.252	1	**0.001**
No	62(32.8%)	127(67.2%)			
Pattern of substance use					
Multiple	26(18.0%)	128(82.0%)	4.039	6	**0.001**
Single	9(18.0%)	41(82.0%)			
Nil	61(32.8%)	125(67.2%)			

*Fishers' exact, p-value in bold shows level of significance

Psychoactive Substance Use among the Study Participants in the Past 1 Year

About 167(83.1%) of the probable pathological gamblers have used psychoactive substances while 34(16.9%) of non-probable pathological gamblers have used psychoactive substances within the past one year. (see Table IV)

Table IV: Psychoactive Substance Use among the Study Participants in the Past 1 Year

History of Psychoactive Substance Use in the Past 1 Year	Non Pathological Gamblers	Probable Pathological Gamblers	Total
No	62(32.8%)	127(67.2%)	189(100%)
Yes	34(16.9%)	167(83.1%)	201(100%)

Association between Psychoactive Substance use and Internet Gambling Behavior

The majority (83.1%) of the probable pathological gamblers were using both stimulants and depressants, 41(82.0%) of probable pathological gamblers were using only depressants. All (100%) of stimulant users were probable pathological gamblers, and more than half (67.2%) of probable pathological gamblers were not using any of the substances. A significant association exist (x^2=4.058, p<0.001). See Table VI

Table VI: Association between Psychoactive Substance use and Internet Gambling Behavior

Variables	Non-pathological Gamblers	Probable Pathological Gamblers	X²	D.F	P
Depressants	9(18.0%)	41(82.0%)	4.058	8	0.001
Stimulants	0(0.0%)	9(100%)			
Depressants and Stimulants	26(16.9%)	128(83.1%)			
Nil psychoactive substance use	61(32.8%)	125(67.2%)			

Pattern of Psychoactive Substance use among the Study Participants

About 26(6.7%) participants were using Alcohol alone, while 88(21.3%) were using alcohol and other psychoactive substances, meanwhile, 8(2%) of the subject were using tobacco alone while 137(35%) were using cigarette along with other psychoactive substances. More so, 9(2.3%) subjects were using Indian Hemp only while 70(17.9%) were using Indian hemp with other psychoactive substance. Also, 6(1.5%) of the participants were using Codeine Syrup alone, while 8(2%) subjects were using codeine syrup along with other psychoactive substances. Likewise, 7(1.8%) of participants were using Tramadol tablets along with other substance. while 2(0.5%) participants were using Diazepam tablets along with other psychoactive substance and only 1(0.25%) participants were using solvents along with other substance. (See Table VII)

Table VII: Pattern of Psychoactive Substance Use among the Study Participants

Types of substance used	Those using single substance	Those using multiple substances
Alcohol	26(6.7%)	88(21.3%)
Nicotine	8(2%)	137(35%)
Cannabis	9(2.3%)	70(17.9%)
Codeine syrup	6(1.5%)	8(2%)
Tramadol tabs	7(1.8%)	2(0.5%)
Diazepam	2(0.5%)	-
Solvents	1(0.25%)	-

Association between Internet Gambling Behavior and the Pattern of Diagnosis

The majority 298(76.4%), of the participants had single diagnosis out of which 225(75.5%) were probable pathological gamblers which represent 76.5% of probable pathological gamblers and 73(18.7%) were non pathological gamblers, meanwhile, participants with dual diagnosis were 92(24.5%), out of which 69(75%) were probable pathological gamblers which represent 23.5% of probable pathological gamblers and 23(25%) were non pathological gamblers, there were less likelihood for participants with internet gambling behavior to have dual diagnosis (x^2=0.010, p=0.922). See Table VI.

Table VI: Association between Internet Gambling Behavior and Pattern of Diagnosis

Psychiatric Comorbidity Using CIDI	Non Pathological Gambler	Probable Pathological Gambler	X²	D.F	P-value
Dual diagnosis	23(25%)	69(75%)	0.010	1	0.922
Single diagnosis	73(24.5%)	225(75.5%)			

Binary Logistic Regressions for Determinants of Internet Gambling among the Study Groups.

Binary logistic regression was carried out with some independent variables that had significant association with pathological gambling. These variables were necessary for a diagnosis of pathological

gambling in DSM-IV. The dependent variables were probable pathological gamblers and non-pathological gamblers. The independent variable used were; the frequency of gambling per week, multiple gambling on the internet, thinking about internet gambling most times, interference with socio-occupational functioning, using gambling to alleviate bad mood, the need to increase the amount gamble with, depression, anxiety, psychoactive substance use, largest amount of money ever loss through internet gambling and family history of mental illness.

However, only the frequency of gambling per week (p=0.000) and thinking about internet gambling most time (p=0.010) were significant predictors of pattern of internet gambling behavior (See Table VII).

Table VII: Binary Logistic Regressions on the Pattern of Internet Gambling Behavior

Predictor Variable	B	S.E	Wald	Df	Sig.	Exp.(B)	95.0% C.I for exp (B)	
							Lower	Upper
Depression	13.894	2414.169	0.000	1	0.995	1.082E6	0.000	
Anxiety	-.414	0.566	0.536	1	0.464	0.661	0.218	2.003
Family history of mental illness	-.324	0.384	0.710	1	0.399	0.724	0.341	1.536
Psychoactive substance use	-.271	0.336	0.646	1	0.421	0.763	0.395	1.475

Discussion

Depression is the most common psychiatric disorder associated with internet gambling.(16) Our study shows high rate of depression among the pathological gamblers; and this rhythm with the findings of Petry, et al. (2005). Depression is a common mental disorder (17); and the amount of resources being loss in the course of gambling could be an explanation to our findings.

Our study population found generalized anxiety disorder among probable pathological gamblers to be higher than those with non-pathological gamblers. This is also in keeping with findings of Petry et al.,

(2005); Black et al., (1999), who found that pathological gamblers as having high prevalence of generalized anxiety disorders. The higher prevalence of generalized anxiety disorder in our study may portrays the fact that anxiety disorders are considered as the second commonest mental disorder globally, this is in addition to the neurobiological features they share with depression.

Our study also found a number of individuals with psychosis, in the category of probable pathological gamblers. This is in keeping with the findings of Hodgins et al. (2011), and Perala et al. (2007), who found the prevalence of psychosis to be higher among probable pathological gamblers than the general population. This is also in keeping with Cassetta et al., (2018) and Cunningham-Williams et al., (1998) who found pathological gamblers were 3.5 to 3.8 time more likely to be diagnosed with psychosis than the general populations. Similarly, Aragay et al., Desai et al., and Haydock et al., all found higher rate of psychosis among the disordered gamblers.
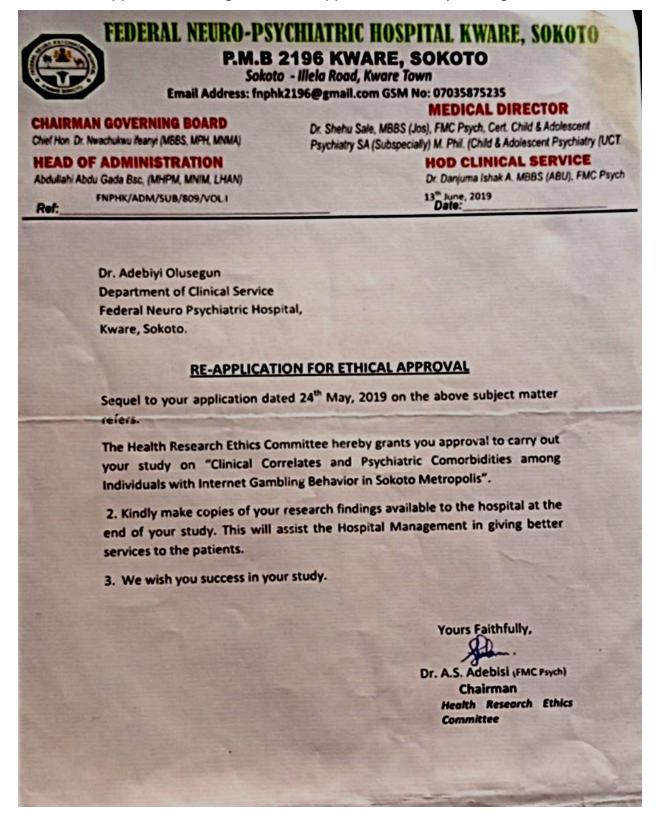
The prevalence of psychoactive substance use varies among harmful gamblers due to differences in socio-cultural, religious, economic and political factors.(18) In keeping with these, our study found the use of psychoactive substances, among probable pathological gamblers to be higher than in non-pathological gamblers. Similar findings of Zimmerman et al., (2006) and Black et al., (1999) who found high rate of substances among pathological gamblers. On the contrary, Petry et al., (2005) reported a lower rate of substance use among pathological gamblers.

Also, our study found a high rate of multiple psychoactive substance use, among probable pathological gamblers than non-pathological gamblers. This is comparable to what Zimmerman et al., (2006) and Black et al., (1999) reported in which there was high rate of psychoactive substances among pathological gamblers. The most commonly abused substances were cigarettes, followed by alcohol and cannabis, codeine syrup, oral tramadol, benzodiazepines and solvents. This corresponds to the findings of Tolchard et al., (2014) who found significant increase in the rate of smoking and alcohol consumption among high frequency gamblers. This rampant use of psychoactive substance may be influenced by the age of the participants who are mostly youth and the drug paraphernalia.

Conclusion and Recommendations

This study found high rate of multiple psychoactive substance use, among probable pathological gamblers than non-pathological gamblers. There is need to pay attention to the rising level of mental disorders among internet gamblers and develop policies to curtail their occurrence. This is especially among the youth who are more vulnerable as seen from this study.

Appendix Showing the Ethical Approval of the Supervising Centre

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