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Suicidality in Major Depressive Disorder in a Nigerian Psychiatric Hospital—Is There Any Relationship?

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Abstract

Background: There is increasing resurgence of suicide globally, especially in developing countries, probably owing to socio-economic instability. Majority of suicidal phenomenon is attributed to depressive disorders, which significantly contribute to the global burden of diseases. **Aim:** This study assessed the prevalence and correlates of suicidality (suicidal ideation and attempts) among adult outpatients with major depression at Federal Neuro-Psychiatric Hospital (FNPH), Benin City, Nigeria. **Method:** A cross-sectional study conducted between March and June 2018 utilizing systematic random sampling of eligible participants, aged between 18 and 64 years. One hundred and thirty-two patients with major depression, with their diagnosis confirmed with the Depression module of the Mini International Neuropsychiatric Interview (MINI) were recruited. A Socio-Demographic Questionnaire, the Brief Psychiatric Rating Scale (BPRS), the Pittsburgh Sleep Quality Index (PSQI) and Suicidality Module of MINI were administered to consented participants. **Results:** The past month prevalence of suicidality and suicidal ideation were 47.7% (n = 63) and 36.4% (n = 48) respectively. While, the lifetime prevalence of suicidal attempts was 18.2% (n = 24), the current suicidal 'moderate-high risk' was 12.1% (n = 16). Participants were 35% more likely to report suicidality for every unit increase in symptom severity (BPRS score) (aOR 1.35; 95% CI 1.20 - 1.52, P = 0.001). **Conclusion:** Suicidality is common among outpatients with major depression at the Federal Neuro-Psychiatric Hospital, Benin City.

Severity of psychopathology was an independent risk factor for suicidality in depressive disorder.

1. Introduction

Majority of suicides are associated with an underlying mental disorder, especially major depressive disorder, hence the prompt treatment of major depression is vital in reducing the rates of suicidality. Depressive disorders account for about two-thirds of suicide and carry up to a twenty-fold increase in the lifetime risk of suicide (Gaynes et al., 2004). Suicidal ideation is defined as a desire to die, or at least an indifference towards living, that may be accompanied by specific plans to kill oneself while 'suicide attempt' is a potentially self-injurious behaviour, associated with at least some intent to die, as a result of the act (Posner et al., 2007).

Suicide completion is usually preceded by various suicidal stages. First, the individual who is experiencing overwhelming stress passes through a phase of hopelessness, followed by entertainment of suicidal ideation or thoughts, then progressing to a suicidal plan, and finally carries out an attempt that may or may not lead to death. Suicidality is a complex behaviour with numerous predisposing factors (Isometsä, 2014) especially mental disorders. Over ninety percent of suicides are committed by individuals with mental disorders, especially depression (Park et al., 2015; Gunnell & Lewis, 2005; Shibre et al., 2014). There is a paucity of evidence regarding suicidality in Nigeria among persons with mental illness.

Depressive disorders are common psychiatric disorders with lifetime prevalence of about 19% globally (Kessler & Bromet, 2013) and up to 49.8% in Nigeria (Salihu & Udofia, 2016). It is characterized mainly by low mood, reduced or loss of interest in previously pleasurable activities and reduced energy level. Other features associated with major depression are disturbed sleep, low self-esteem, reduced attention, worthlessness, guilt feeling, hopelessness and suicidality (ICD-10, 2007). It is categorized into mild, moderate and severe depending on the number of depressive symptoms present. It is a major cause of disability and has been projected to become the second leading contributor to the global burden of disease by the year 2020 (Murray & Lopez, 1996).

It is difficult to predict suicide (Sher, 2011), and finding significant correlates of suicidality among this high-risk population will help clinicians to promptly predict and institute mitigating management plan for the patient.

2. Method and Materials

2.1. Study Design/Setting

A cross-sectional study was carried out at the out-patient clinics of the Federal

Neuro-Psychiatric Hospital, Benin-city, Nigeria. It is one of eight stand-alone psychiatric hospitals in Nigeria. It has a combined bed capacity of 230 beds and is a walk-in and referral centre for persons with mental health care needs around the five neighbouring states in the south-south geopolitical zone (Federal Neuro-Psychiatric Hospital, Benin City, n.d.). The Out-Patient Clinics runs from Monday to Friday except on public holidays between the hours of 9 am and 3 pm (Federal Neuro-Psychiatric Hospital, Benin City, n.d.).

2.2. Procedure

A total of one hundred and thirty-two patients aged between 18 and 64 years, who have a diagnosis of major depression according to the ICD-10 and confirmed with M.I.N.I-5, and who gave a written informed consent were recruited into the study. The exclusion criteria were patients that were uncooperatively agitated and or could not understand the nature of study. A systematic random sampling method was used. The first participant for each clinic day was selected by simple random sampling via balloting technique. Subsequent participants for each day were selected according to a calculated fixed interval which was four. So following the first participant, every subsequent 4th participant was recruited into the study.

2.3. Instruments

1) The Psychosis module of M.I.N.I 5.0.0 English version, used to confirm diagnosis of schizophrenia. Those who were not diagnosed by the MINI were excluded from the study.

2) Socio-demographic and clinical characteristics questionnaire, that was used to obtain information such as age, gender, religion, ethnicity, marital status, educational level, employment status, occupation, duration of illness, physical illness co-morbidity, and substance abuse.

3) Pittsburgh Sleep Quality Index (PSQI), which measures subjective sleep quality over the previous month according to seven subscale domains: sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction. The range of subscale scores is 0-3 and the sum of all seven domains yields a global score of subjective sleep quality (range 0 - 21). A score greater than five or equal to ($\geq$5) represents poor subjective sleep quality with a diagnostic sensitivity of 89.6% and specificity of 86.5% (kappa = 0.75, $p < 0.001$) (Buysse et al., 1989).

4) Suicidality module of MINI, used to assess the suicidal behaviour of the patients. There are nine questions in this module labelled C1 to C6. Questions C1 to C5 assessed events in the past one month while question C6 assesses for suicide attempt in a patient's lifetime. The module also assesses suicidal behaviour which includes suicidal intent, plan and attempt. Scores are graded as low, medium and high.

5) Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962) is a clini-

cian rating scale used to assess presence and severity of psychopathology. It contains 18 ordered categories of symptoms of mental illnesses. A 7-point rating scale is used ranging from "not present" = 1, to "extremely severe" = 7.

2.4. Ethical Consideration

The Ethics and Research Committee of the Federal Neuro-Psychiatric Hospital, Benin City gave approval for this study on 7th December, 2016 with reference number: PH/A.864/vol.vii/11. The nature and purpose of the study was explained to each participant and a written informed consent obtained from those who participated. All data were treated with confidentiality and anonymity was maintained. No incentive was offered for enrolment into the study.

2.5. Statistical Analyses

The collected data was analysed using the Statistical Package for Social Sciences (SPSS) version 23. Comparison of categorical variables with outcome variable was performed using the Chi-squared test. The continuous variables were tested for normality of data using the one-sample Kolmogorov-Smirnov test and were all found to be non-normally distributed, hence were compared with the outcome variable (suicidality) using Mann-Whitney U test. The sleep quality was classified as poor (PSQI score ≥ 5) and good (PSQI score < 5).

Significant associations with suicidality on bivariate analysis were entered into a binary logistic regression model using suicidality as the dependent variable to ascertain independent correlates (poor sleep quality, BPRS) of suicidality. All comparisons were two-tailed and level of statistical significance was set at $p < 0.05$.

3. Results

Socio-demographic characteristics of the participants are presented in Table 1. Ninety-five (72.0%) were female. The male to female ratio was 1 to 3. The average age of the participants was 40years. The detailed ethnic group, marital status, educational and employment statuses are shown in Table 1.

Regarding clinical characteristics of the participants (Table 2), about half had been diagnosed with major depression for at least forty months preceding the onset of study. Twenty-five percent of the participants have physical co-morbidity. At least, one in five had used psychoactive substance in the last one year.

Greater symptom severity was significantly associated with reporting suicidality (see Table 3 and Table 4). No other socio-demographic/clinical variables studied, had a statistically significant association with suicidality (see Table 3 and Table 4).

Forty-seven percent of the participants (n = 62; 47%) reported poor subjective sleep quality. Those who reported poor sleep quality were at least twice more likely to report suicidality when compared to those with good sleep quality (see Table 5). Results of binary logistic regression analysis predicting suicidality is

presented in Table 6. Participants with a unit increase in symptom severity (BPRS score) were 35% more likely to report suicidality.

Table 1. Socio-demographic characteristics of participants.

Variable	Category	Depression
Age (years)	18 - 31 32 - 38 39 - 46 47 - 64	Mean SD 40.55 10.89
Gender	Male Female	37 (28.0) 95 (72.0)
Religion	Christian Muslim	130 (98.5) 2 (1.5)
Ethnic group	Bini/Edo Others	86 (65.2) 46 (34.8)
Marital Status	Married Single	72 (54.5) 60 (45.5)
Educational status	No formal education Primary/Secondary Tertiary	5 (3.8) 83 (62.9) 44 (33.3)
Employment status	Unemployed Employed	32 (24.3) 100 (75.8)
Income/ Allowance (US)	≤50 >50	67 (50.8) 65 (49.2)

Table 2. Clinical characteristics of participants.

Variable	Category	Depression
Duration of mental illness (months)	1 - 18 19 - 36 37 - 96 97 - 396	Mean SD 40.16 46.12
Have a physical co-morbidity	Yes No	33 (25.0) 99 (75.0)
Substance use in past year	Yes No	36 (27.3) 96 (72.7)
Substance use in lifetime	Yes No	68 (51.5) 64 (48.5)
Lifetime substance use pattern (n = 59)	Alcohol Tobacco Alcohol + Tobacco Tobacco + Cannabis Alcohol + Tobacco + Cannabis	59 (86.8) 6 (8.8) 1 (1.5) 1 (1.5) 1 (1.5)

Table 3. Comparison of presence/absence of suicidality and socio-demographics.

Variable	Category	Suicidality		χ²	P
		Present	Absent		
Gender	Male	18 (48.6)	19 (51.4)	0.02	0.90
	Female	45 (47.4)	50 (52.6)		
Marital status	Single	29 (48.3)	31 (51.7)	0.02	0.90
	Married	34 (47.2)	38 (52.8)		
Education	No formal education	4 (80.0)	1 (20.0)	3.82	0.15♯
	Primary and secondary	42 (50.6)	41 (49.4)		
	Tertiary	17 (38.6)	27 (61.4)		
Employment	Unemployed	13 (40.6)	19 (59.4)	0.85	0.36
	Employed	50 (50.0)	50 (50.0)		
Have physical comorbidity	Yes	15 (45.5)	18 (54.5)	0.09	0.76
	No	48 (48.5)	51 (51.5)		
Past year substance use	Yes	19 (52.8)	17 (47.2)	0.51	0.48
	No	44 (45.8)	52 (54.2)		
Lifetime substance use	Yes	33 (48.5)	35 (51.5)	0.04	0.85
	No	30 (46.9)	34 (53.1)		

♯Yates corrected χ^2.

Table 4. Comparison of selected socio-demographic and clinical variables (continuous data) with presence/absence of suicidality.

Variable	Suicidality*		MWU♯	p
	Present	Absent		
Age	38.5	42	1972.0	0.36
Monthly income/allowance (US)	42	42	2139.5	0.88
Duration of illness (months)	24	24	1919.5	0.25
BPRS	25	19	758.0	**0.001**

*Median score. ♯Mann-Whitney U.

Table 5. Comparison of presence of suicidality and poor sleep quality.

	Suicidality		χ²	P	OR (95%CI)
	Present	Absent			
Poor sleep quality	41 (58.6)	29 (41.4)	7.03	**0.01**	2.57 (1.20 - 5.53)
Good sleep quality	22 (35.5)	40 (64.5)			

Table 6. Independent Correlates of Suicidality.

Variable	B	SE	Wald	OR (95% CI)	P
Constant	−6.849	1.273	28.944		
Poor sleep quality	0.009	0.441	0.000	1.01 (0.43 - 2.39)	0.98
BPRS	0.300	0.059	25.515	1.35 (1.20 - 1.52)	**0.001**

Keys: B = Regression Coefficient; SE = Standard Error of Regression Coefficient; Wald = Wald Chi-square.

4. Discussion

4.1. Prevalence of Current Suicidal Ideation and Lifetime Suicidal Attempt

A past-month prevalence of 36.4% of suicidal ideation among participants with major depression was found in this study. And this is in keeping with what have been reported in an earlier study by Vuorilehto et al. in Finland, where suicidal ideation in a particular group of patients with major depression were assessed by different instruments and a prevalence rate ranging between 8.0% to 44% (Vuorilehto et al., 2014) was reported. This implies that variation in prevalence of suicidality among patients could depend partly on the type of assessment tool employed.

However, the finding in this study is slightly higher than that reported by Khan (Khan et al., 2012) in Malaysia. It was a retrospective study; hence there could be a reporting bias. Furthermore, the authors reported that the majority of the case files showed that patients' suicidal behaviour were not assessed by a validated instrument, hence some suicidal data might have been missed. A far lower current prevalence of suicidal ideation of 18.9% compared to what is obtained in this study (36.4%) has been reported by DeVylder et al. in the United State (DeVylder et al., 2015). The difference in the prevalence rates between this study and that of DeVylder et al. could be attributed to the fact that the former focused only on the patients with major depression while the latter involved individual with any mental disorder. Also, while this study is a hospital-based study, DeVylder study was community-based. A cross-sectional study in Singapore reported suicidal ideation prevalence rate of 43.6% among those with major depressive disorder (Subramaniam et al., 2014). This rate is much higher than that obtained in the present study probably because of the longer duration of twelve months considered in assessing the participants suicidality unlike this study that evaluated suicidal ideation in the last one month according to suicidality module of MINI.

This study revealed an 18.2% lifetime prevalence of suicidal attempt among participants with major depression. This implies that at least one in five of those with depression have had a suicidal attempt in his or her lifetime. This is in contrast to what was reported by Banwari et al. (Banwari et al., 2013) which states that nearly one in two (44.0%) had a lifetime suicidal attempt. The very small sample of fifty participants used by Banwari et al. could explain the disparity as this would have reduced the statistical power of the study. Also, the lifetime prevalence of suicidal attempts among the participants with depression in this study is slightly higher than prevalence values reported by Khan et al. (15.2%) (Khan et al., 2012) and Vuorilehto et al. (17.0%) (Vuorilehto et al., 2006). The inconsistency of previous findings with this study may be as a result of methodological differences. For example, Khan et al.'s study (Khan et al., 2012) was a retrospective study design, and Vuorilehto et al. (Vuorilehto et al., 2006) reported that they assessed suicidal attempt without a validated or standardized

instrument, unlike in this study. Despite the location differences, the finding of this study has a near comparability with the rates found in Japan (20.0%) (Ishii et al., 2014) and Netherlands (20.4%) (Stringer et al., 2013) and in United Kingdom (20.5%) (Heslin et al., 2016).

4.2. Correlates of Suicidality

Poor subjective sleep quality had no independent association with suicidality in this study. This finding is contrary to existing literatures documenting significant association of poor sleep quality with increased odds of suicidal behaviours among individuals with major depressive disorder (Bernert et al., 2014). Gelaye et al. (Gelaye et al., 2015) study population comprised only female gender unlike in this study that recruited both male and female populations. Earlier studies has reported female preponderance in having depression (Akechi et al., 2010; Schuch et al., 2014), and experiencing more sleep problem compared to males (Guo et al., 2014). Bernert et al. (Bernert et al., 2014) in their follow-up study focused on community-based old age population, and not on patients with major depression.

Also, a significant finding in this study is the independent impact of severity of depressive symptomatology on suicidality. Every unit increase in depression symptom severity as measured by Brief Psychiatric Rating Scale (BPRS) is accompanied by 29% increased odds of suicidality in this study. Arnold et al. (Arnold et al., 2013) in their multivariate analysis observed similar significant association between depression symptom severity score and suicidal behaviour. Some other studies also reported significant association between severity of depression and major depression (Hawton et al., 2013; Vuorilehto et al., 2006).

The finding in this study is in keeping with some research evidences (Chan et al., 2011; Lim et al., 2014) which shows that there is no significant association between age and suicidality among individuals with depression. However, Wang et al. reported that depressed patients older than 45 years were more likely to be suicidal compared to those younger than 45 years (Wang et al., 2015). The likely explanation for such difference could be due to the fact that this study evaluated participants within the age range of 18 and 64 years, unlike the latter that included individuals with age more than 64 years.

Similarly, the association between gender and suicidality did not attain statistical significance. However, the trend shows that males with depression are more likely to be suicidal than their female counterparts as observed in some other studies as well (Moreno-Küstner et al., 2016; Srivastava & Kumar, 2005). The fact that males having depression experience greater social stigma (Hawton, 2000), more financial, health and occupational problems could be a predisposition to higher suicidal behaviour (Kawashima et al., 2012; Narishige et al., 2014). More so, males indulge more in substance use which increases their susceptibility to suicidality, especially due to impulsivity and impaired cognition associated with substance abuse (Lamis & Malone, 2012). A further explanation of the associa-

tion between gender and suicidality among individuals with depression might be related to the difference in severity of depression between the sexes. Ryan et al. (Ryan et al., 2008) found that, compared with women, men had less depression but, if depressed, they were more severely depressed than women.

The relationship between educational status and suicidality in individuals with major depression has been inconsistent in several research reports. For instance, Gan et al. (Gan et al., 2012) observed significant relationship between high educational achievement and suicidality, which is contrary to the findings of this study. The inconsistency may be due to methodological differences, for instance, while this study assessed both genders of wider age range of 18 and 64 years, Gan et al. recruited only females between the ages of 30 to 60 years. Some other studies (Choi et al., 2017; Ruengorn et al., 2012; Subramaniam et al., 2014) including this study, did not show significant association between educational attainment and suicidal behaviour.

Unemployment is linked to socioeconomic problems, and financial poverty is a known risk factor for suicidality (Córdoba-Doña et al., 2014), however, this study found no association between unemployment and suicidality. Ruengorn et al. (Ruengorn et al., 2012) reported similar finding but Koponen et al. (Koponen et al., 2015) reported the contrary. Factors such as marital status (Inder et al., 2014), physical comorbidity (Duggan et al., 1991), substance use (Isometsä, 2014; Riihimäki et al., 2014; Wang et al., 2015) and duration of illness (Schaub et al., 2013) have been associated with suicidality in previous study but not in this study. The inconsistency of these findings may be attributed to discrepancies in the population studied and methodology differences.

5. Limitations and Future Directions

This study was conducted in a single facility, hence may require a cautious generalization of the results. Secondly, being a cross-sectional study, identifying a causal relationship between severity of psychopathology and suicidality was not possible. Further research employing multi-centre and or longitudinal design are vital to explore the causal relationship between symptom severity, and suicidality.

6. Conclusion and Recommendation

This study reveals that suicidality among adult out-patients with depression at the Federal Neuro-Psychiatric Hospital, Benin City is high. At least one in ten patients has moderate-high suicidal risk. Severity of psychopathology is an independent risk factor for suicidality. Awareness campaign for early presentation and intervention will help reduce the illness severity, hence minimize suicidality.

Contribution Details

Oriji, Erohubie, Chimbo and James were involved in the conceptualization and data collection and analysis. Oriji, Onu, Iyidobi, Nwiyi and Uwakwe drafted, ed-

ited and reviewed the manuscript. All authors perused and approved the final draft for submission.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author (Oriji S O) upon reasonable request.

Disclaimer

The authors own the views expressed in this submitted article; and not an official position of the institution.

Conflicts of Interest

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

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