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The Prevalence of Depression and Its Determinants Among Internally Displaced Persons Affected by Banditry.

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ABSTRACT:

Background: Internal displacement is one of the most pressing humanitarian and political issues globally, with the Sub-Saharan African region accounting for over one-third of all internally displaced persons (IDPs) worldwide. Nigeria has the highest number of IDPs in Africa due to armed conflicts, banditry, cattle rustling, kidnappings for ransom, and terrorist attacks. IDPs are more likely to experience mental health disorders with depression being the second-most frequent mental illness, which affects three out of every five IDPs worldwide.

Methods: A cross-sectional study was conducted in Rabah LGA to determine the prevalence of depression among IDPs affected by banditry in Sokoto State, Nigeria. The study included 230 participants selected through systematic sampling. Socio-demographic, trauma-related, and displacement-related variables were collected using questionnaires. The Patient Health Questionnaire-9 (PHQ-9), the Mini International Neuropsychiatric Interview-7 (MINI-7), and the Hamilton Depression Rating Scale (HDRS) were used to screen, diagnose, and rate the severity of depression, respectively. Data were analyzed using SPSS version 25. At the univariate level, continuous variables were summarized using mean and standard deviation, while categorical variables were presented using frequency distributions and percentages. At the bivariate level, the Chi-square test was used to assess significant associations. At the multivariate level, logistic regression analysis was conducted to identify determinants of depression.

Results: The prevalence of major depressive disorder among the participants was 57% (95% CI 50.3%–63.4%), with 0.8% of these individuals experiencing moderate depression and 99.2% experiencing severe depression. Depression was significantly associated with gender ($p = 0.002$), marital status ($p < 0.001$), family type ($p < 0.001$), occupation ($p < 0.001$), estimated monthly income($p = 0.033$) level of education ($p < 0.001$), current living condition ($p = 0.010$), separation from family members ($p < 0.001$), witnessing death ($p = 0.006$), loss of loved ones ($p = 0.024$), physical injury ($p < 0.001$), sexual abuse ($p < 0.001$), domestic violence ($p < 0.001$) and affectation by disease outbreak ($p = 0.001$). Female gender ($p = 0.004$), physical injury ($p = 0.039$) and sexual abuse ($p = 0.007$) remained as independent determinants of depression.

Conclusion: There is high prevalence of depression among IDPs affected by banditry with female gender and sexual abuse identified as independent determinants of depression among them. The findings highlight the need to screen for depression among IDPs affected by banditry and will support mental health experts in advocating for relevant policies, as well as in developing and recommending interventions specifically tailored to the needs of this population.

Keywords: IDPs, Depression, Banditry

INTRODUCTION

Internally Displaced Persons (IDPs) under international law are “persons or group of persons who have been forced or obligated to flee or to have cause to flee their homes or places of habitual residence in particular as a result of or in order to avoid the effects of armed conflicts, situations of generalized violence, violations of human rights or natural or human-made disasters and they remain within their national borders” (1-3). According to the United Nations High Commission for Refugees (UNHCR), 55 million of the 82.4 million individuals who have been forcibly displaced around the world in 2021 are IDPs (4). Sub-Saharan Africa is the region of the world with the highest concentration of IDPs, accounting for over one-third of all IDPs worldwide (5). In Africa, Nigeria is the country with the highest number of IDPs, followed by the Democratic Republic of Congo and Sudan (5).

Nigeria is witnessing an increase in the number of IDPs due to environmental disasters, armed conflicts, armed banditry, cattle rustling, kidnappings for ransom, terrorist attacks and, more recently, in the Northwest geopolitical zone, resulting in many people being internally displaced (2,6). Due to relocation to unfamiliar locations, painful experiences, and forced migration, IDPs are more likely to experience mental health problems, with depression being the second-most frequent mental illness, which affects three out of every five IDPs worldwide (7,8).

Depression is a mental disorder characterized by depressed mood, loss of interest in pleasurable activities, and decreased energy, which are the core symptoms, as well as associated symptoms of decreased concentration, diminished self-esteem and confidence, feelings of guilt and unworthiness, pessimistic thoughts, thoughts of self-harm, and disturbed sleep. The symptoms should be present for most of the day and almost every day for two weeks, all of which lead to decreased social and occupational functioning (9,10).

Depression is a major contributor to the global burden of disease and was ranked by the World Health Organization (WHO) as the single largest contributor to global disability (11). The high disease burden puts additional pressure on health systems, increases rates of absenteeism, and reduces productivity while working (11). Depression is the second most common psychiatric disorder, affecting 60% of internally displaced persons worldwide (7,8). In a systematic review of literature on the health problems of internally displaced persons in Africa found the prevalence of depression to range between 31%–67% (12). A Study conducted in Nigeria found the prevalence of depression among internally displaced persons to be as high as 96.1% (13).

In a study titled Correlates of Depression Among Internally Displaced Persons After Post-Election Violence in Kaduna, North-Western Nigeria, identified the independent predictors of depression among IDPs as female gender, unemployment, experience of beating, and a comorbid diagnosis of PTSD (14). In another study conducted by Robert and colleagues, female gender, being unmarried, and displacement distance (camp >5 miles from home village) were identified as determinants of depression among IDPs in northern Uganda (15).

Considering the growing number of people internally displaced by banditry attacks and their increased vulnerability to mental disorders, this study was crucial for assessing the local prevalence of depression among them. Additionally, the findings are expected to raise public awareness and may contribute to improved resource allocation for the management of mental health problems among IDPs.

Despite the large number of IDPs in sub-Saharan Africa, the recent increase in Nigeria due to banditry, and the potentially negative impact of displacement on mental health, there is a paucity of local research on the mental health problems affecting this population (12,16). The aim of the study was to determine the prevalence of depression and its determinants among internally displaced persons affected by banditry in Sokoto state, Nigeria.

METHOD

Study Setting

The research was conducted at three internally displaced person camps, namely the government secondary school Gandi, Project, and Rahma extension houses, as well as in the IDP settlements in Rabah local government area, Sokoto state. Sokoto is one of the states in Nigeria with IDPs due to banditry. It is located in the extreme northwest of the country and shares a national border with the Republic of Niger. The IDPs reside in temporary shelters at the Government Secondary School Gandi, as well as in Project and Rahma extension areas. These shelters include classrooms, uncompleted buildings, and huts, which are often overcrowded and have limited access to food, clean water, sanitation, and healthcare facilities. Additionally, they face ongoing threats of attacks from bandits.

Study design

This was a descriptive cross-sectional study.

Study population

The participants were people living in IDP settlements in Rabah LGA of Sokoto State that were 18 years of age or older, affected by banditry, gave consent to participate in the research and fluent in Hausa or English Language. The exclusion Criteria involved IDPs diagnosed with mental disorder prior to the internal displacement caused by the banditry, those with severe hearing or speech impairment and those who are too physically ill to be interviewed.

Sample size estimation

A minimum sample size of 230 was calculated using Fisher's formula for estimating sample size for cross-sectional study.

Sampling technique

A systematic sampling technique was employed to recruit the participants. The total sample was distributed proportionally across the IDP camps based on their respective population sizes. For each camp, a list of individuals who met the inclusion criteria was compiled to form the sampling frame.

The sampling interval (k) for each camp was calculated using the formula:

$k = N/n$

Where: N = the number of eligible individuals (sampling frame) in the camp

n = the proportion of the total sample allocated to that camp

For example, if the sampling frame for a particular camp was 95 and the allocated sample size was 19, then $k = 95/19 = 5$.

PROOF

The first participant was selected using a simple random sampling method through balloting among the first k individuals in the sampling frame. If number 1 was selected, then every k-th individual (e.g., 6, 11, 16, 21, etc.) was subsequently selected until the required sample size for the camp was reached.
This procedure was applied independently in each IDP camp and settlement.

Study Instruments
The Socio-demographic, trauma- and displacement-related questionnaires, Patient Health Questionnaire-9 (PHQ-9), Mini International Neuropsychiatric Interview-7 and Hamilton Rating Scale for Depression.
The Patient Health Questionnaire-9 (PHQ-9) was initially used as a screening tool to identify individuals with probable depression based on self-reported symptoms. Participants who screened positive on the PHQ-9 were subsequently assessed using the Mini-International Neuropsychiatric Interview (MINI), a structured diagnostic interview designed to establish a clinical diagnosis of depression. Finally, the Hamilton Depression Rating Scale (HAM-D) was used to determine the severity of depressive symptoms among participants who met the diagnostic criteria for depression. This sequential use of instruments screening, diagnosis, and severity rating allowed for a comprehensive evaluation of depression, minimized the risk of false positives and enabling a tailored interpretation of symptom burden within the studied population.

Socio-Demographic, Trauma and Displacement-Related Questionnaires
The socio-demographic questionnaire was used to collect information on participants' socio-demographic characteristics, while the trauma- and displacement-related questionnaire assessed the impact of traumatic experiences and forced displacement on them.

Patient Health Questionnaire-9 (PHQ-9)
The Patient Health Questionnaire-9 (PHQ-9), a 9-item self-reported tool, was used to screen for depression among the participants. It has good psychometric properties with high validity and reliability, consisting of nine items, each of which is scored 0–3, providing a possible score of 0–27 severity score, with scores of 5, 10, 15, and 20 corresponding to mild, moderate, moderately severe, and severe depression, respectively (17,18). A PHQ-9 score of 5 or higher appears to detect more depressed patients with a sensitivity and specificity of 89.7% and 98.9%, respectively (19).

MINI International Neuropsychiatric Interview (MINI) 7th Version
The MINI international neuropsychiatric interview (MINI) 7th version is a brief; structured diagnostic interview designed for use in clinical and research settings. MINI has 16 modules with the letters A-P, each of which stands for a different diagnostic category. The module for the diagnosis of major depressive disorder was administered to all participants.

Hamilton Rating Scale for Depression (HRSD)
The Hamilton Rating Scale for Depression (HRSD) was developed by Max Hamilton, a psychiatrist at Leeds University. It has long been considered the gold standard for assessing the severity of depressive symptoms, which has been validated and provides a comprehensive assessment of depressive symptom severity. and it takes between 15 and 20 minutes to administer. The 17-item version is going to be used and is scored between 0 and 4 points. Scores of 0–7 are considered normal, 8–16 suggest mild depression, 17–23 moderate depression, and scores of 24 and above are classified as severe depression; the maximum score is 52 (20).

Ethical consideration
This study was conducted after obtaining ethical clearance from the Sokoto State Ministry of Health (SKHREC/0772023). It was carried out on internally displaced people who have provided informed consent. To maintain confidentiality, no names were used for data entry and analysis, and all information gathered during the research were stored in an encrypted computer accessible only to the researcher. Participants diagnosed with depression were referred to a nearest psychiatric facility for further care.

Statistical analysis
The data was analyzed using the statistical package for social science (SPSS) version 25. At the univariate level, quantitative variables were analyzed and summarized using the mean as a measure of central tendency and the standard deviation as a measure of dispersion, while qualitative variables were summarized using frequencies and percentages. At the bivariate level, Chi-square was used to test for the significant association between categorical variables or Fisher exact test as appropriate. The level of significance was set at less than 5%. A binary logistic regression model was constructed to identify the determinants of depression among the study participants.

Results
The prevalence of major depressive disorder among the participants, as assessed using the Mini International Neuropsychiatric Interview-7 (MINI-7) scale, was found to be 57% (95% CI 50.3%–63.4%) (Figure 1). Among those with major depressive disorder, 0.8% had moderate depression, while 99.2% had severe depression (Figure 2)

PROOF

The sociodemographic factors associated with depression include gender (p = 0.002), marital status (p < 0.001), family type (p < 0.001), occupation (p < 0.001), estimated monthly income (p = 0.033), and level of education (p < 0.001), as shown in Table 1.
The trauma- and displacement-related factors associated with depression include current living conditions (p = 0.010), separation from family members (p < 0.001), witnessing death (p = 0.006), loss of loved ones (p = 0.024), physical injury (p < 0.001), sexual abuse (p < 0.001), domestic violence (p < 0.001), and being affected by a disease outbreak (p = 0.001), as shown in Table 2.

Female gender, physical injury, and sexual abuse were the only factors that remained significant determinants of depression in the logistic regression analysis, as shown in Table 3.

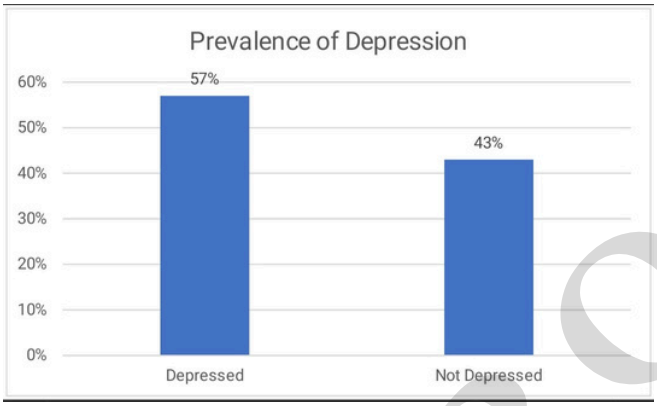


Figure1: Prevalence of Depression among the participants

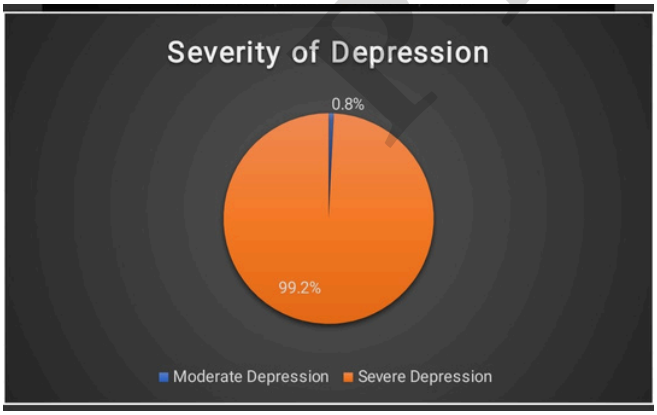


Figure 2: Severity of Depression among depressed participants

Table 1: Sociodemographic Factors associated with Depression among the Participants(N=230)

Variable	Depression (%)	No Depression (%)	Total (%)	χ^2	df	*p* –value
Age(years)				*		0.602
18-35(n=87)	47(54)	40(46)	87(100)			
36-45(n=54)	30(55.6)	24(44.4)	54(100)			
46-65(n=84)	52(61.9)	32(38.1)	84(100)			
>65(n=5)	2(40	3(60)	5(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Gender				10.098	1	**0.002**
Male(n=114)	53(46.5)	61(53.5)	114(100)			
Female(n=116)	78(67.2)	38(32.8)	116(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Marital status				*		**<0.001**
Single(n=26)	0(0)	26(100)	26(100)			
Married(n=180)	107(59.4)	73(40.6)	180(100)			
Divorced(n=6)	6(100)	0(0)	6(100)			
Widow(n=18)	18(100)	0(0)	18(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Tribe				*		0.148
Hausa(n=228)	131(57.5)	97(42.5)	228(100)			
Fulani(n=2)	0(0)	2(100)	2(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Religion				*		0.148
Islam(n=228)	131(57.5)	97(42.5)				
Christianity(n=2)	0(0)	2(100)				
Total(N=230)	131(57)	99(43)	230(100)			
Family Type				5.272	1	**0.030**
Monogamous(n=108)	39(36.1)	69(63.9)	108(100)			
Polygamous(n=122)	92(75.4)	30(24.6)	122(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Occupation				*		**<0.001**
Self-employed (n=220)	131(59.5)	89(40.5)	220(100)			
Government-employed (n=4)	0(0)	4(100)	4(100)			
Unemployed (n=6)	0(0)	6(100)	6(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Level of Education				36.088		0.730
No formal education(n= 210)	121(57.6)	89(42.4)	210(100)			
Primary education(n=10)	4(40)	6(60)	10(100)			
Secondary education(n=6)	4(66.7)	2(33.3)	6(100)			
Tertiary education(n=4)	2(50)	2(50)	4(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Estimated monthly income (Naira)				4.654	1	0.033
<30,000 (n=172)	105(61)	67(39)	172(100)			
≥30,000 (n=58)	26(44.8)	32(55.2)	58(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Current Living Condition				9.904	3	0.018
Alone (n=54)	12(36.4)	21(63.6)	33(100)			
Spouse (n=157)	89(56.7)	68(43.3)	157(100)			
Relative (n=18)	14(77.8)	4(22.2)	18(100)			
Child (n=22)	16(72.7)	6(27.3)	22(100)			
Total(N=230)	131(57)	99(43)	230(100)			

p<0.05. *Fisher's Exact

p<0.05. *Fisher's Exact

PROOF

Table 2: Trauma- and Displacement-Related Factors associated with Depression among the Participants

Variable	Depression (%)	No Depression (%)	Total	χ^2	df	*p* –value
Separated from family members				82.347	1	**<0.001**
Yes (n=116)	32(27.6)	84(72.4)	116(100)			
No (n=114)	99(86.8)	15(13.2)	114(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Witnessed Torture				2.196	1	0.162
Yes (n=190)	104(54.7)	86(45.3)	190(100)			
No (n=40)	27(67.5)	13(32.5)	140(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Witnessed Death				7.597	1	**0.006**
Yes (n=159)	81(50.9)	78(49.1)	159(100)			
No (n=71)	50(70.4)	21(29.6)	71(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Total(N=230)	68(29.6)	162(70.4)	230(100)			
Lost Loved Ones				5.542	1	**0.024**
Yes (n=212)	116(54.7)	96(45.3)	212(100)			
No (n=18)	15(83.3)	3(16.7)	18(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Physical Injury				60.562	1	**<0.001**
Yes (n=118)	38(32.2)	80(67.8)	118(100)			
No (n=112)	93(83.0)	19(17.0)	112(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Sexual Abuse				75.084	1	**<0.001**
Yes (n=89)	19(21.3)	70(78.7)	89(100)			
No (n=141)	112(79.4)	29(20.6)	141(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Domestic Violence				73.216	1	**<0.001**
Yes (n=109)	30(27.5)	79(72.5)	109(100)			
No (n=121)	101(83.5)	20(16.5)	121(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Living in Overcrowded Shelter				3.593	1	0.074
Yes (n=218)	121(55.5)	97(44.5)	218(100)			
No (n=12)	10(83.3)	2(16.7)	12(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Lack Basic Amenities				*		0.508
Yes (n=228)	129(56.6)	9943.4	228(100)			
No (n=2)	2(100)	0(0)	2(100)			
Total(N=230)	131(57)	99(43)	230(100)			
Affected by Disease Outbreak				11.421	1	**0.001**
Yes (n=54)	20(37.0)	34(63.0)	54(100)			
No (n=176)	111(63.1)	65(36.9)	176(100)			
Total(N=230)	131(57)	99(43)	230(100)			

p<0.05. *Fisher's Exact

Table 3: Regression Analysis for Determinants of depression among the Participants

Variables	Wald Estimate	Odds Ratio	*p* -value	95% Confidence Interval	
				Lower	Upper
Sex	8.444	4.942	**0.004**	1.682	14.520
Family type	0.003	0.974	0.960	0.355	2.674
Witnessed death	1.388	0.512	0.239	0.168	1.559
Lost loved ones	1.401	4.405	0.237	0.378	51.314
Physical injury	4.254	3.218	**0.039**	1.060	9.773
Sexual abuse	7.405	7.680	**0.007**	1.769	33.349
Domestic violence	1.033	2.277	0.310	0.466	11.135
Separation from family members	2.044	3.336	0.153	0.640	17.402
Affected by disease outbreak	1.585	2.508	0.208	0.599	10.489

df=1

Discussion

This study found the prevalence of depression to be 57%, with 99.2% of affected participants diagnosed with severe depression and 0.8% with moderate depression. This prevalence is significantly higher than the prevalence of depression among the general population in Nigeria, which was reported as 3.1% (21). However, it falls within the range of 31% to 67% for depression prevalence among internally displaced persons in Africa, according to systematic review conducted by Owoaje and colleagues (12). The reported prevalence is lower than that found in a study conducted in Maiduguri, which reported a prevalence of 96.1% among IDPs (22). This difference may be due to their use of the PHQ-9, a screening instrument, whereas our study utilized the MINI-7, a diagnostic instrument. Additionally, while both studies were conducted in the northern region of Nigeria, Maiduguri is located in the northeastern geopolitical zone, whereas Sokoto is in the northwestern geopolitical zone. In contrast, the prevalence of depression reported in this study is higher than that found in a study conducted in Kaduna, which examined the correlates of depression among internally displaced persons and reported a prevalence of 16.3% (14). Both studies were conducted in the northwestern geopolitical zone of Nigeria. However, the difference may be attributed to the Kaduna study being conducted among IDPs living in urban camps within the city, two years after displacement, whereas our study was conducted in rural IDP camps lacking basic amenities, where participants had been displaced for over six years and continued to face the threat of bandit attacks.

The study found that almost all the depressed participants had severe depression (99.2%), which may be attributed to several interrelated factors inherent to the context of internally displaced persons (IDPs) affected by banditry. The participants had been displaced for a prolonged period, often living in overcrowded and under-resourced camps with limited access to basic necessities such as food, clean water, healthcare, and education. This sustained exposure to adverse living conditions likely contributes to the chronicity and worsening of depressive symptoms. Furthermore, the trauma associated with violent attacks, loss of loved ones, destruction of property, abrupt disruption of livelihoods, and fear of recurrent attacks may intensify emotional distress and increase the severity of depressive episodes. The burden of chronic poverty and uncertainty about the future further compounds psychological vulnerability and worsens depressive symptoms. Additionally, the possibility of reporting bias, particularly due to social desirability cannot be ruled out and may have influenced how participants expressed or reported their symptoms.

In this study, female gender was associated with depression among IDPs, a finding consistent with the study Correlates of Depression Among Internally Displaced Persons After Post-Election Violence in Kaduna, North-Western Nigeria, which also identified female gender as a risk factor for depression among IDPs (14). This similarity may be due to both studies being conducted in northwestern Nigeria, where IDP camp conditions are comparable. However, a study by Ugbe et al., Sociodemographic Correlates and Associated Factors of Depression and Anxiety Among Internally Displaced Adults in Ogoja, Nigeria, found that depression was more prevalent among males (23). They attributed this to the greater burden men often feel in providing for their families, which places them under constant pressure to seek scarce livelihood opportunities.

Depression was associated with the loss of loved ones among IDPs, similar to findings from a study conducted among IDPs in southern Nigeria (23). This similarity may be due to the universal impact of grief and bereavement, especially in displacement settings where IDPs experience heightened emotional distress. This study identified female gender and sexual abuse as the only independent determinants of depression among IDPs affected by banditry (14,24). This finding is consistent with previous studies conducted among other IDP populations.

The findings of this study have important implications for guiding resource allocation, screening protocols, and intervention strategies for internally displaced populations affected by banditry. Given the high prevalence of depression identified, there is a clear need to prioritize mental health services within humanitarian response efforts. Resources should be directed toward deploying trained mental health personnel and integrating mental health care into primary health services in IDP camps. Routine screening using validated tools such as the PHQ-9 can facilitate early identification of at-risk individuals and enable timely referral and support. Additionally, interventions should incorporate community-based psychosocial support to effectively address the complex mental health needs of this vulnerable population.

Conclusion

This study concluded that one in two IDPs affected by banditry developed depression, with the majority of cases classified as severe. Furthermore, depression was found to be significantly associated with gender, marital status, family type, occupation, estimated monthly income, level of education, current living conditions, separation from family members, witnessing death, loss of loved ones, physical injury, sexual abuse, domestic violence, and exposure to disease outbreaks. However, female gender, physical injury and sexual abuse were identified as the only independent determinants of depression among IDPs affected by banditry.

Limitations

A key limitation of this study is its limited generalizability, as it was conducted exclusively among IDPs residing in camps and settlements. It excluded those staying with relatives or those who had relocated from the camps for other reasons, which may have led to a selection bias. Additionally, all the IDPs in this study have been displaced for more than 12 months; therefore, recall bias was possible among the participants.

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Conflict of interest

The authors declare no conflicts of interest.

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