# Mental Health of Women in Internally Displaced Persons Camps in Borno State, Nigeria: Can Sports and Performing Arts Be Effective?

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## Abstract

This study investigated the effectiveness of Sports and performing arts in the reduction of depressive symptoms among women in Internally Displaced Persons Camps (IDPs) in Maiduguri, Borno State, Nigeria. Pretest-posttest quasi-experimental design was adopted. Ninety women between the ages of 18-60 years ($\bar{x}$ = 1.56: SD = .49.2) were purposively recruited for the study. Three IDP camps were randomly assigned to treatment conditions. The experimental groups were exposed to nine weeks of interventions while the control group served as a comparison group. Two instruments were used for data collection, and Analysis of Covariance (ANCOVA) and Bonferroni post-hoc tests were used for data analysis at the 0.05 level of significance. The findings revealed that 14.4% of the participants had Moderate depression (MDD). 13.3% had moderately severe depression (MSD) while the majority (47.8%) had Major Depressive Disorder (MDD). Further, the mean difference at post-intervention suggests that the interventions were effective in managing depressive symptoms of participants. There was a significant main effect of treatments in reducing depressive symptoms ($F_{2,78} = 29.244$, $p < 0.05$, $\eta 2 = .357$). The outcomes suggest that the Performing Arts intervention was more potent ($\bar{x}$ = 28.91) than the Sports ($\bar{x}$ = 31.66) in the reduction of depressive symptoms of the participants. We concluded that both interventions were effective in reducing depressive symptoms among women in IDP camps. We recommend the use of these two therapies for the mental rehabilitation of women in other IDP camps in Nigeria.

*Keywords:* mental health**,** internally displaced persons**,** Maiduguri Borno State**,** sports, performing arts

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## Introduction

Internal displacement is one of the social factors that is documented to significantly affect the health and well-being of displaced persons (Ali et al., 2024). Internally Displaced Persons (IDPs) are people who have been forced to flee their homes due to armed conflict, generalised violence, violations of human rights, or natural or human-made disasters, but who remain in their own country (Adegbesan & Ofole, 2023). The Boko Haram insurgency has caused widespread internal displacement in Nigeria, particularly in the northeastern states of Borno, Adamawa, and Yobe. The Internal Displacement Monitoring Centre (IDMC) 2024 reports that as of June 2023, around 3.4 million Nigerians were living in internal displacement as a result of conflict and violence and about half of them in Borno State. Even though there are varying statistics about the exact number of internally displaced persons in northern Nigeria, statistics have shown that of the 1,134,828 persons displaced from their homes, about 49.5 per cent of them were women (National Bureau of Statistics, 2024). Studies in Nigeria, Ethiopia, and Kenya (Adegbesan & Ofole, 2023; Gichunge et al., 2020; Zeleke et al., 2025) indicated that IDPs are more likely than the non-displaced population to have mental health conditions. A study in Borno State found that at least 60% of IDPs reported at least one mental health symptom (Olufadewa et al., 2024). Similarly, another study in Yobe State found extremely high levels of PTSD (94%) and depression (98%) among IDPs (Adesina et al., 2024).

There is evidence that women were victims of all forms of abuse in IDP camps, including physical and sexual violence, which predisposes them to a higher risk of developing mental health problems (Dahie et al., 2023). It is also well reported that women are at higher risk of having unwanted pregnancies, unsafe abortions, maternal morbidity, sexually transmitted infections, including HIV, and maternal mortality. Lack of access to basic social, health, and education services, combined with a wide range of structural inequalities, increases the risk of mental illness among women. Mental health-related death and disability rates have remained constant over the years in IDP camps, indicating an urgent need for prevention, care, and treatment of these disorders. A recent study by Olufadewa et al. (2024) using 637 respondents revealed that slightly above half (54.6%) of the respondents met the diagnostic criteria for current depression, 19.9% had current PTSD symptoms, and 16% reported co-morbidity of depression and PTSD symptoms. Untreated depressive symptoms and mental illness can lead to suicide, and harmful health behaviours such as drug abuse and excessive alcohol consumption, which can in turn increase the risk of developing non-communicable diseases like cancer, hypertension, and Chronic Obstructive Pulmonary Disease (COPD) (Bohman et al., 2025).

Despite the increasing number of women with a burden of various mental health problems in several camps in Nigeria, there is a paucity of data on interventions targeting this cohort. Most studies have focused on sexual abuse of women and girls (Ali et al., 2024), women's Reproductive Health (Ngwibete et al., 2023) and nutrition support services for women (Eleojo & Etim Bassey, 2024). Though these studies have expanded the knowledge base on mental health, it has not established a cause-and-effect relationship; as a result, the problem of mental health persists. This could probably be due to the all “one-size-fits-all” approach adopted in previous studies, which obscured IDP women's unique marginal experiences in various IDP settings (Yacob-Haliso, 2021). Against this backdrop, this study sets out to investigate the effectiveness of Sports and Performing Arts in reducing the depressive symptoms associated with the mental health of women in Internally Displaced Persons Camps in Borno State, Nigeria. The evidence linking sports in improving the mental health of

diverse populations is robust (Eather, et al., 2023; Ofole & Pindar, 2024), yet it has remained unexplored in the management of mental health problems in IDP camps. Similarly, there is a growing body of evidence that art therapy possesses the "power to heal psychological wounds" (Fu et al., 2025).

## Materials and Methods

### Design

The study adopted the pretest-post-test, control group experimental design. This design was used to compare the mean changes/improvements over the 2 time points (pre, and post) across the groups (Sports, performing arts and control group) to find out if there is a significant improvement in the mental health. The control group served as baseline for comparison with the intervention groups.

The choice of this design was to enable us establish a cause-and-effect relationship by showing changes attributable to the intervention. This design is schematically represented as:

| | | |
|---|---|---|
| $O_1$ | $XA_1$ | $O_4$ |
| $O_2$ | $XA_2$ | $O_5$ |
| $O_3$ | | $O_6$ |

Where $O_1$, $O_2$ and $O_3$ are pre-tests$O_4$, $O_5$ and $O_6$ are post-tests
$XA_1$ = intervention using sports
$XA_2$ = Intervention using performing Arts

### The Study Site

The study was carried out in IDP camps in Borno State, Nigeria. Borno State is bordered by Yobe to the west, Gombe to the southwest Adamawa to the south, and Cameroon to the north. The state has an estimated population of 3,389,453 projected from 2006 national census. The Internal Displacement Monitoring Centre (IDMC) 2024 reports that around 3.4 Nigerians were living in internal displacement and about half of them live in Borno State as at June 2023. At the time of conducting this study, available records from Borno State Emergency Management Agency indicated that, a total of 200,000 IDPs were registered at the various camps in Borno State, Nigeria. An estimated 40% of the IDPs live in 309 camps and camp-like settings and 60% live in 2,072 host communities known as informal settings. The IDPs receive support from state government through State Emergency Management Agency and non-government organizations providing humanitarian support in the state such as United Nations children's fund, Action against hunger. They also have mobile clinic built and supported by UNICEF which provide preventive and curative services with referral system. Nigeria. The three formal camps used for this study were; Dalori 1 and Dalori 2, and El Miskin.

### Participants

A total 90 (94%) completed the intervention. Their age ranges from 18-60 years ($\bar{x}$ = 6: SD = .492). Of the ninety participants, 55 (61.1%) were married, 20 (22.2 %) were single mothers while seven (7.8%) and eight (8.9%) were widow and divorcee respectively. With regards to their tribes, majority (31.1%) were from Kanuri, while twenty-two representing 24.4 % of the

sample were Hausa. Others include, Bura (12.2%), Fulani (12.2%) and Margthi (11.1%). The participants were equally distributed with regards to camp location. Thirty participants were drawn from each of the camps (Dalori 1, Dalori 2, and El Misken). The three camps were formal camps (Formal IDP camps are government-approved locations established to shelter people who have been forced to flee their homes due to conflict, violence, natural disaster, or other crises). Segregation of participants according to number of children show that 42 (46.7%) has 1-3 children while those who had 4-6 children were 52 (57.8%). Only 6 participants representing 6.7% of the study sample had 7 seven children.

**Measures**

Two instruments were used in this study. Section A was used to obtain information about the respondents' socio-demographic characteristics while section B was based on the criterion variable (depression). The detail descriptions of the measures are provided below:

**Patient Health Questionnaire (PHQ-9)**

The PHQ-9 (Patient Health Questionnaire-9) questionnaire developed by Kroenke, et al. (2000). It is a widely used nine item a short self-report questionnaire that can be completed by the respondents in a few minutes. For the purpose of this study the questionnaire was adapted to assess the level of depressive symptoms over the past one to two weeks of women in IDP camps, based on the DSM-IV criteria for major depressive disorder. The PHQ-9 is designed to reflect the core diagnostic criteria for major depressive disorder as defined in the DSM-5. The questionnaire can be used for screening, diagnosing, and monitoring depression. The PHQ-9 classified the severity of depression into mild, moderate, and severe. It can also be used to track changes in symptom severity over time. The PHQ-9 was originally designed for both clinical and non-clinical settings, Typical items include "*Little interest or pleasure in doing things"; "Thoughts that you would be better off dead, or of hurting yourself."* The respondents were to indicate the extent to which the statements apply to them. The response is arranged based on depression Severity, minimal depression (1-4), mild depression (5-9, moderate depression (10-14), moderately severe depression (15-19) and severe depression or major depressive disorder (20-27). The PHQ-9's brevity, ease of administration, and strong psychometric properties make it a valuable tool for screening, diagnosis, and monitoring treatment response in various settings, including primary care, mental health clinics, and research. It exhibits adequate internal consistency, a robust factor structure, and good convergent validity with related constructs. Furthermore, it shows strong sensitivity and specificity in detecting depression, particularly moderate to severe convergent validity with Beck Depression Inventory and the Hamilton Depression Rating Scale. It can differentiate between individuals with and without depression, as well as between individuals with different levels of depression severity.

**Beck Depression Inventory (BDI) (1961)**

The Beck Depression Inventory (BDI) (1961) was used as the screening instruments to as criterion measure to assess the severity and behavioral manifestations of depression among women in IDP camps at baseline and post intervention. It is a 21-item multiple-choice questionnaire that uses a 4-point scale to rate depressive symptoms. The BDI can be used for ages 13 to 80. It categorized depression severity into mild, moderate, and severe, with each level characterized by the number and intensity of symptoms, and the extent to which they impact daily life. It measured attitudes and symptoms associated with depression over the

past week with scores ranging from 0 to 3 on each item, resulting in a total score from 0 to 63. The scoring was easy. It is categorised depression into normal (1-10), mild mood disturbance (11-16), borderline clinical depression (17-20), moderate depression (21-30), severe depression (31-40) Extreme depression (40 and above). The highest possible total for the whole test was sixty-three while the lowest possible score for each question was zero. Typical items on the questionnaire includes: "*I am sad all the time and I can't snap out of it". I feel discouraged about the future"* Only respondents who scored 17-30 were recruited for this study because they depressive levels were borderline (17-20), moderate (21-30) and sever (21-30). The BDI has demonstrated good psychometric properties, including internal consistency, validity, and sensitivity to change. The BDI exhibits high internal consistency, with mean coefficient alphas around 0.86 for psychiatric patients and 0.81 for non-psychiatric subjects. The BDI demonstrates good test-retest reliability, with correlations around 0.82 for a 4-week interval.

## Ethical Clearance

The protocol of this study was approved by the Social Sciences and Humanities Research Ethics Committee of the University of Ibadan. In addition, the research proposals were submitted to Borno State Emergency Management Agency (SEMA). The agency granted the request via a letter with reference number BO/SEMA/45/1 dated 5th August, 2021. All ethical issues for conducting social sciences research were adhered to during the sessions. The participants were not coerced. The researchers also upheld the values of integrity, honesty, and fairness in conducting the intervention. All information collected in the study was given code numbers and no name was recorded. As a result, the data cannot be linked to any of the participants in any way They were informed that the outcome of the research will be widely published to influence policies in IDP camps.

## Data Collection

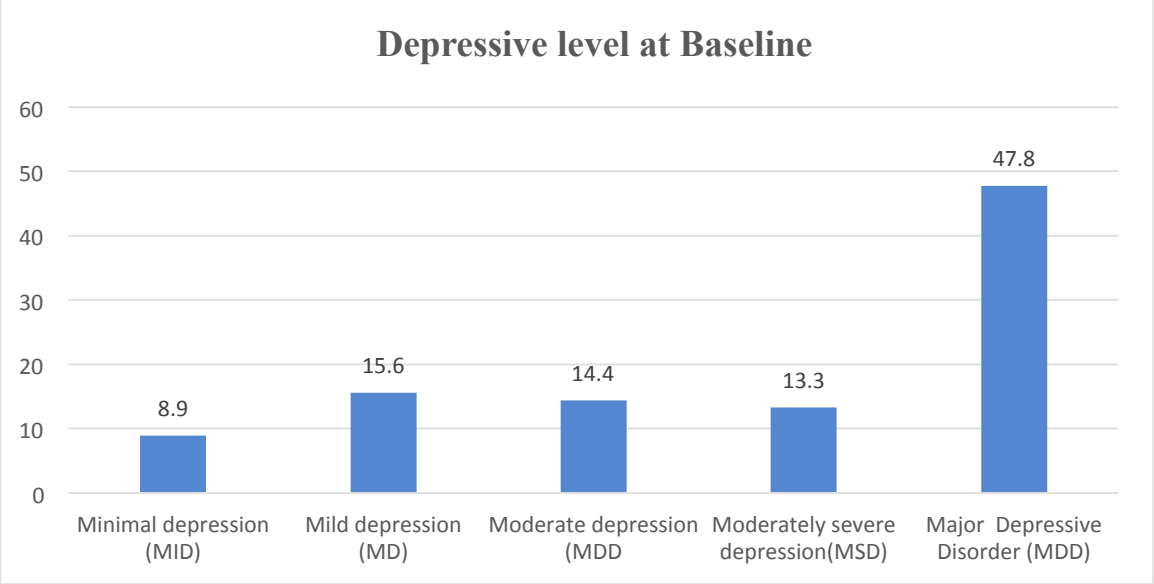
Five research assistant who could speak English, Kanuri and Hausa language fluently were recruited and trained for the study. For the music and sports components of the intervention, some staff of Borno State Ministry of Arts and culture were also trained to provide the songs that were culturally relevant to the community. While Staff of Human Kinetics and Borno State Ministry of sports were trained for the sports activities. A quasi-experimental study design (one-group pretest-posttest design) was used in this study. Data were collected before and after the intervention. This study design was used the most appropriate because it was used to evaluate the effect of the intervention among the same study participants. Of the one hundred and five IDP women recruited only a 90 completed the intervention. The IDPs camps were randomly assigned into treatment conditions. Dalori 1 and El Misken served as experimental group one and group two respectively (Sports and Performing Arts) while Dalori 2 was used as control group that received no intervention though participated in both the pre and post-tests. Only women who met the following inclusion criteria were purposively drawn. (1) be in one of the three IDPs Camps on Borno State, (2) between 18 years and above (3) have at least one child (4), scored between 1-16 in the screening instrument (Beck Depression Inventory, 1961), (5) signed consent forms. The following 3 groups were excluded (1) those suffering from mental illness, (2) those taking anti-anxiety, sedation, and other drugs and (2) women who have been diagnosed with severe mental health issues or other health conditions such as cardiovascular disease or malignant tumors.

A variety of physical activities including both individual and team-based were used to improve physical fitness, mental well-being, foster social connections. Individual sports are sports played alone without the help of any teammate. It is an individual sport or one on one sport is a sport in which participants compete as individuals, although the team competitions within individual sports also occur. Running, Bodybuilding, wrestling, fencing, martial arts and calisthenics were utilized. In Team-based sports individuals cooperate to achieve a common goal, typically by outperforming another team. These sports activities emphasize teamwork, strategy, and coordinated effort among team members. The basketball, baseball, volleyball and handball were the team-based sports used for rehabilitating the mental health of women in the IDP camps. Similarly, performing arts encompass a wide range of live presentations where artists use their bodies, voices, and which entails expressions to convey stories, emotions, or ideas were used with the participants. We specifically utilised music, dance, drama and spoken word adapted from the blend of Hausa, Kanuri and Bura cultures.

## Results

To answer the first research question, which aimed to investigate the level of depression experienced by women in IDP camps in Maiduguri, Borno State, data collected from the participants were fed into SPSS and then computed for frequencies and percentages. This result is displayed on Figure 1.

**Figure 1**
*Level of Depression*




The results show that of the ninety participants 8 representing 8.9 % of the total sample had Minimal depression (MID). While 14 (15.6%) had Mild depression (MD). Thirteen respondents (14.4%) indicated that they had Moderate depression (MDD). Twelve participants (13.3%) had moderately severe depression (MSD). The majority (47.8%) had Major Depressive Disorder (MDD). The implication of this finding is that 47.8 % of the participants have clinical depression, which is characterized by persistent feelings of sadness, loss of interest, and other symptoms that significantly impact daily life. This is because the symptoms were present for most of the day, nearly every day, for at least two weeks as assessed with Patient Health Questionnaire.

To investigate if Sports activities and Performing can impact on the mental health of women in IDP Camps in Maiduguri, Borno State, Nigeria. the women's' responses were fed into SPSS version 20.0. We first of all establish that the group had similar characteristics at (mean, standard deviation) baseline. Then we compared the means of the groups to have their mean differences. are used to compare the average values of two or more groups. The result is presented in Table 1.

**Table 1**
*Mean and Standard Deviation of Pre-test and Post-test Scores of Groups*

| Treatment Group | Test Type | N | Mean | SD | Mean Difference |
|---|---|---|---|---|---|
| Sports intervention | Pre-test | 30 | 66.69 | 9.84 | 35.03 |
| | Post-test | | 31.66 | 9.63 | |
| | Pre-test | 30 | 62.54 | 10.19 | 33.64 |
| Performing. Arts | Post-test | | 28.91 | 10.08 | |
| Control Group | Pre-test | 30 | 66.20 | 9.55 | |
| **Total** | | 90 | | | |

Table 1 shows that the means of the three groups (Sports intervention, Performing Arts and control group) were equal at baseline; $\overline{x}$ = 66.69, $\overline{x}$ = 62.54, and $\overline{x}$ = 6.20, respectively. This suggests that the groups have similar characteristics at baseline. However, at post-intervention, there were differences. The Mean of the Sports group at posttest reduced from $\bar{x}$ = 66.69 to $\bar{x}$ = 31,66. Similarly, the mean of the Performing Arts group reduced from $\bar{x}$ = 62.54 to $\bar{x}$ = 28.91. This is evidence of a reduction in the mean scores for depressive symptoms. This suggests that the interventions impact on the participants' depressive symptoms. By these findings, both the Sports activities and the Performing Arts were successful in reducing the depressive symptoms of women in IDP camps in Borno State; however, the impact of the Performing Arts on depressive symptoms was greater than that of Sports activities.

To test if there is a significant main effect of treatments (Sports and Performing Arts) on mental health among Women in Internally Displaced Persons Camps in Borno State, Nigeria, we used Analysis of Covariance. With ANCOVA, we compared the means of the two (Sports and Performing Arts) while statistically controlling for the influence of one or more continuous variables (covariates). The result of this hypothesis is presented in Table 4.

**Table 2**
*Analysis of Covariance (Ancova) for Pre-test and Post-test Mean Scores of the Groups*

| Source | Type III Sum of Squares | Df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 11605.272 [a] | 12 | 967.106 | 32.291 | .000 | .788 |
| Intercept | 29.595 | 1 | 29.595 | 32.377 | .000 | .332 |
| Pre-test | 1264.811 | 1 | 1264.811 | 42.231 | .000 | .283 |
| Treatments | 1781.648 | | 890.824 | 29.244 | .000 | .357 |
| Treatments* self esteem | 23.951 | | 11.926 | .400 | .671 | .007 |
| Error | 4947.124 | 78 | 63.4 | | | |
| **Corrected Total** | 200602.000 | 89 | | | | |

a. (R-squared = .784, Adjusted R-squared = .759)

Table 2 above shows a significant main effect of treatments in reducing depressive symptoms among women in IDP camps in Borno State, Nigeria. ($F_{2,78} =$ 29.244, $p < 0.05$, $\eta^2 = .357$). This result implies that there was significant difference in the mean score obtained from the three groups. Therefore, the null hypothesis was rejected. Bonferroni correction was as a post-hoc test after the ANCOVA to determine which specific group means differ significantly from each other while controlling the family-wise error rate (FWER). Bonferroni was most preferred for this study because it was straightforward to implement and provides a conservative (less likely to make a Type I error) approach to controlling the FWER.

**Table 3**
*Bonferonni Pair-Wise Comparison Showing the Significant Differences Among the Treatment Groups and Control Group*

| Treatment (I) | Treatment (J) | Mean Difference (I-J) | Std. Error | Sig. |
|---|---|---|---|---|
| Sports (mean = 31.66) | Performing Arts | 4.111[a,b] | 4.011 | .721 |
| | Control group | 11.221[a,b] | 4.034 | .066 |
| Performing Arts (mean = 28.91) | Sports | -4.111[a, b] | 4.011 | .721 |
| | Control group | 5.102[a,b] | 4.11 | .320 |
| Control group (mean = 66.20.) | Performing Arts | -5.102[a,b] | 4.11 | .320 |
| | Sports | -11.221[a,b] | 4.034 | .066 |

Table 3 reveals that after controlling for the effect of depressive symptom among women in IDP camp, experimental group I (Sports) ($\bar{x} =$ 31.66) displayed the lowest depressive symptoms, followed by experimental group II (Performing Arts) ($\bar{x} =$ 28.91) and control group had the highest (mean = 66.20.). By implication, Performing Arts $\bar{x} =$ 28.91) was more potent in decreasing depressive symptoms among this cohort of women ($\bar{x} =$ 28.91). The coefficient of determination (Adjusted R-squared =.759) indicates that the differences that exist in the group account for (75.9%) in the variation of depressive symptoms among women in IDP camps in Maiduguri, Borno State.

## Discussion

This study aimed to investigate whether Sports and Performing Arts are effective for rehabilitating the mental health of women in IDP camps in Maiduguri, Borno State, Nigeria. The first finding of this study revealed that there was a high prevalence of Major Depressive Disorder (MDD) in IDP camps in Maiduguri. This finding has significant implications for IDPs because it can lead to increased risk of suicide, worsening of other medical conditions, and disruptions to interpersonal relationships. MDD can also lead to social isolation, substance abuse, and lost work productivity. Furthermore, it's associated with a higher risk of developing comorbid anxiety and substance use disorders, which can further exacerbate the severity of depression and increase the risk of suicide. The findings of this study are consistent with those of Seon-Cheol et al. (2017), who reported that out of 1009 patients, only 2.2% did not suffer from depressed MDD. Similarly. Gharraee et al. (2019) in a meta review reported that the overall prevalence of major depressive disorder was 4.8% (CI: 3.6% -5.6%) in women and 2.3% (CI: 1.6% -3.6%) in men, which indicated that the incidence of this disorder was 1.95 times more in women than in men.

The third and fourth research questions focused on exploring the effects of the two interventions (sports activities and performing can) on the mental health of women in IDP Camps in Maiduguri, Borno State, Nigeria. Statistical analyses revealed significant reductions in the experimental group's mean scores following the implementation of the interventions. Therefore, the utilization of sports and performing arts directly contributed to the reduction in depressive symptoms among the participants. This finding corroborated several studies of Eather et al. (2023) and Fu, et al. (2025) who reported that in sport is related to better mental health, including improved psychological well-being (for example, higher self-esteem and life satisfaction) and lower psychological ill-being (for example, reduced levels of depression, anxiety, and stress), and improved social outcomes (for example, improved self-control, pro-social behavior, interpersonal communication, and fostering a sense of belonging). Overall, adults participating in team sports were said to have more favorable health outcomes than their counterparts who did not participate. Performing arts were also found to be effective, which affirmed the previous outcome by Agres and Chen (2025), who found that Performing arts are effective in managing mental health by providing a creative outlet for emotional expression, fostering social connection, and building self-esteem. They opined that activities like drama, dance, and music assist individuals in managing stress, processing emotions, and developing coping mechanisms. They further argued that the arts can promote mindfulness, self-confidence, and a sense of community, leading to improved overall well-being.

There were two possible reasons for the effectiveness of these interventions. It could be attributed to the participatory methods adopted during the intervention actively engaged the women in IDP camps. It also fostered deeper understanding, improved retention, and the development of essential skills. Thus, shifting the focus from passive reception to active participation promoted critical thinking, collaboration, and a sense of ownership over the intervention process. Secondly, the Bronfenbrenner and Ceci (1994) Ecological theory, upon which the study was anchored on facilitated a multi-disciplinary stimulation of participants and suited their preferences.

## Limitations

The following were limitations identified in the study; as such, generalization of the outcomes of the study should be done with caution. The first is reliance on self-reported data from surveys. While a self-report questionnaire is convenient, it has the problem of social desirability bias, memory limitations, and potential for misinterpretation of questions. Participants might exaggerate positive traits or underreport negative ones to appear favorable, which might lead to inaccurate data. Additionally, the wording of questions can influence responses, and participants may not always understand the questions in the intended way, introducing subjectivity and bias. There is also the limitation due to of lack of random assignment of participants into treatment groups. We assigned the camps to treatment groups. This could lead to issues with internal validity and the difficulty of establishing clear causal relationships. However, we controlled for this extraneous bias by ensuring that the participants had similar characteristics before the interventions.

## Conclusion

We investigated the level of depression among women in Internally Displaced Persons Camps in Borno State, Nigeria. The effectiveness of sports and performing on the mental health of women in IDP Camps in Maiduguri, Borno State, Nigeria was also examined. The outcome provided empirical evidence to suggest that the two interventions were effective in reducing depressive symptoms of women in IDP camps in Nigeria. The group exposed to performing arts gained more than their counterpart in the Sports group. This finding has practical implications for the treatment of mental health among groups at high risk of mental health problems. This study has also contributed to existing literature on mental health in Nigeria. Future research could look into the long-term impact of Sports and Performing arts to ensure that treatment gains are maintained. Further, studies can also be done in the camps targeting other populations in the camps. Such as males, girls and unaccompanied young people.

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