ORIGINAL RESEARCH

Social and Psycho-Physiological Consequences of Overcrowding Among Internally Displaced Persons in Nigeria's North-East (A Psychological Appraisal of IDP'S in Dalori Camp, Maiduguri, Borno State Nigeria)

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ABSTRACT

Human beings have an acceptable level of crowding above which their well-being will become significantly impaired. This study examined the social and psycho-physiological consequences of overcrowding on the well-being of IDPs. Data was gathered from 90 IDPs from the Dalori IDP camp in Maiduguri, Borno state, Nigeria. The study is anchored on Freedman's Density-Intensity Theory and Stokol's Overcrowding Theory, which posit that sensory inputs overload and perception of insufficient control over the environment impair human psych-physiological functioning, as well as engender feelings of learned helplessness. Participants responded to four survey instruments, the Health Symptoms Checklist (HSC), The Stress Symptoms Checklist (SSC), The Automatic Thoughts Questionnaire (ATQ), and The Symptom Distress Checklist (SCL-90). Results showed that IDPs in crowded shelters reported more health symptoms, sleep disorders, and physical and psycho-physiological dysfunctions than those in less crowded shelters. The study also revealed that IDP residents in the camp report more psycho-physiological dysfunctions and depressive symptoms than those who are residents outside the camp. A major implication of the finding is that given the precarious environmental conditions prevailing in IDP camps in the North-East, of Nigeria, there is a need to focus on addressing the issue of overcrowding in IDP camps to improve the well-being of IDPs resident in the camps.

Keywords: Overcrowding, health symptoms, sleep disorders, psycho-physiological dysfunctions.

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INTRODUCTION

Conflicts and displacement have become a common phenomenon in human society globally, especially in African and Middle East countries. Conflict was the big story in the 2023 global world, with frightening record of numbers of people living in internal displacement at the end of the year as the result of conflict and violence [1]. Earthquakes also triggered nearly a fourth of all disaster displacements during 2023, far more than usual.

The 2024 Internal Displacement Monitoring Center (IDMC) report presents the data and analysis behind these stories along with top-line and in-depth results of global internal displacement data collected by IDMC throughout 2023. It includes maps, charts and written analysis of the numbers of internally displaced people and internal displacements, or movements, globally and by region and country [1]. Much as conflicts and displacement could sometimes be a positive development needed for expansion and for new communities to be established, it is a development with a very high cost to the health, social and psychological well-being of the displaced persons. The plight of displaced persons has become a global concern, particularly in Nigeria. Apart from experience of mental health problems, vulnerabilities and profound psychological symptoms for the victims, displacement constituted a complex life-changing process for all victims [2]. According to the International Organization for Migration (IOM), approximately 1.87 million people reside in 22 Internally Displaced Persons (IDP) camps across the country's north-eastern states: Borno, Yobe, and Adamawa (IOM, 2016). These camps accommodate both adults and nearly 1.1 million children who have fled conflict and insecurity. Despite awareness of IDP camps, understanding the challenges faced by these individuals remains crucial. Displacement arises from communal clashes, natural disasters, ethnic tensions, religious violence, land disputes, administrative boundary conflicts, and oil-related strife. The consequences include loss of livelihood, frustration, abuse, threats, and assaults. Displaced individuals typically receive support from family members, governmental agencies, and non-governmental organizations [3-5].

According to the 2023 Global Report on Internal Displacement by the Internal Displacement Monitoring Centre (IDMC), as of May 2016, there are 207 Local Government Areas in 13 States of Northern Nigeria that are of concern due to internal displacement. These areas include Abuja (with 13,481 internally displaced persons - IDPs), Adamawa (136,010 IDPs), Bauchi (70,078 IDPs), Benue (85,393 IDPs), Borno (1,434,149 IDPs), Gombe (25,332 IDPs), Kaduna (36,976 IDPs), Kano (9,331 IDPs), Nasarawa (37,553 IDPs), Plateau (77,317 IDPs), Taraba (50,227 IDPs), Yobe (131,203 IDPs), and Zamfara (44,929 IDPs) (GRID, 2023). There has been global unrest with so many displaced persons, this current study is limited and focus entirely on the Nigeria experience and the statistics provided here strictly reflect the focus of the study.

Some of the major incidents of displacement in Nigeria since June 2001 are listed below:

- **June 2001**: ethnic fighting between Tivs and Hausa-speaking Azaras in Nasarawa State displaced some 50,000. Fighting spread to Taraba State in July 2001, creating a further 25,000 IDPs. Some 1,800 people remained in Benue State as of July 2002.

- **September 2001:** religious violence between Hausa-Fulani Muslims and indigenous Christians in Plateau State displaced 60,000, most of whom later returned.

- **October 2001:** ethnic clashes between the Tiv and Jukun groups and army violence displaced some 300,000 to 500,000 people in Nigeria's central region. Some 15,000 displaced remained in Benue State as of July 2002.

- **January 2002:** revenge attacks on Christians in Plateau State caused the displacement of some 3,000 people, all of whom returned.

- **February 2002:** ethnic clashes in Lagos between Yoruba's and Hausa-speaking northerners displaced more than 2,000 people, who returned by July 2002.

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Unfortunately, Boko Haram's insurgent activities in the last two decades have caused a substantial humanitarian crisis in Nigeria's Northeast and Lake Chad region. The North-East remains the country's poorest zone, with high poverty rates and unemployment and the location of the overcrowded IDP camps like Dalori in Borno state, where unfavourable psycho-social conditions prevail due to cramped living spaces.

Crowding in displaced person's camps refers to people's psychological response to density, including feelings of being crowded, lack of privacy, and increased distress [6-9]. While it's assumed that crowding harms physical and mental health, there's an ongoing debate about whether it's genuinely harmful or merely socially undesirable to outsiders. Internally displaced persons (IDPs) are those forced to leave their habitual residence due to armed conflict, violence, human rights violations, or disasters arising from underdevelopment, poverty, unequal distribution of wealth, unemployment, ethnic tensions, political and economic subjugations of minorities, intolerance, absence of democratic procedures [10]. When within their borders, they're referred to as IDPs. Therefore, the fact that internally displacement persons are localized within their home country makes it a disadvantage and attracts little concern in comparison to refugees who are located outside their home country.

Internally displaced persons (IDPs) constitute the world's largest group of vulnerable individuals [11]. They endure extreme poverty, human rights abuses, and lack autonomy [4]. High-risk coping strategies such as 'seeking support by begging' and 'transactional sex for exchange of need were predominantly adopted by female participants, threats to physical safety and restricted movement compound their plight [1,2]. Emotional distress, including nightmares [2] and a decrease in the quantity and quality of sleep is common among them. Over the years, the IDP camps' living conditions have raised concerns among national and international authorities. Since 2009, these camps have been observed to lack adequate facilities, leading to poor sanitation and increased disease incidence (e.g., Malaria, Diarrhea, Measles, and Pregnancy-related issues). Despite the Nigerian government's efforts to address the plight of the inhabitants of the IDP Camps, their challenges persist such as overcrowding, poor sanitation, joblessness, and insecurity in North-Eastern camps. These challenges exacerbate psychological trauma, socio-economic hardship, and mental health issues among these categories of people. While health, education, and feeding, have received some research attention, the spatial characteristics and overcrowding's impact on IDPs' well-being remain underexplored (especially in Nigeria) with paucity of research attention the current study seek to provide empirical psychological analysis of the plights of IDPs Dalori camp and by extension other displaced persons in Nigeria.

Crowding and Human Psycho-Physiological Functioning

The study of crowding has fascinated biologists, ecologists, and psychologists for centuries. Research indicates that animals have optimal crowding levels, beyond which biological and behavioural functions suffer. Historical studies on rat and mouse populations revealed various consequences of crowding, including increased social contact, aggression, and disrupted nesting behaviour [12-17] Crowded conditions led to intense aggression, nest breakdown, and poor care for offspring. Some theories highlight positive aspects of crowding, such as altered social spacing. However, "pathological togetherness" or the "behavioural sink" phenomenon can occur. Crowded animals may become conditioned to it early in life, seeking further crowding as adults. Deviant behaviours, including misdirected sexual behaviour and social withdrawal, also emerge. Increased social contact and fighting may trigger endocrine changes, akin to the General Adaptation Syndrome (GAS). The GAD is the precursor of stress, while prolonged stress can result in adrenal exhaustion, chronic shock, Addison's disease, myasthenia, and ultimately, coma and death. Though, no single episode is immediately lethal, cumulative long-term stress can be fatal [12].

Similarly, in their influential study, Gove and Hughes [18] explored overcrowding in households. They found that the number of rooms available per person significantly influences household interactions and is

linked to poor mental and physical health (objective crowding). Objective crowding negatively affects parent-child relationships, couples' sexual behaviour, and social interactions with those outside the home. A key aspect of overcrowding is the "felt lack of privacy" (subjective crowding), which includes a sense of limited control over others' access to personal information [19-20]. Some participants demonstrated resilience by engaging in religious behavioural coping, which they considered necessary to mitigate their past traumatic memories [2].

Overcrowding significantly impacts social relations. Research by Baum and Koman [22] revealed that individuals in densely populated environments tend to become socially withdrawn, while spatial density can lead to aggressive behaviour. Milgram [23] highlighted the challenges of city life, where sensory overload from encountering large crowds prompts adaptive responses. City dwellers often filter out social interactions, ignoring opportunities and distancing themselves from their environment to manage the overwhelming input. Similarly, overcrowding has far-reaching social and psychological effects. It strains social relations within homes and communities, impacting individuals and relationships at various levels. For example, internally displaced adolescents' experience of psychological symptoms and choice of coping mechanisms relate to their contextually perceived needs [24].

Within households, overcrowding can lead to stress, difficult social interactions, and behavioural problems. Parents in overcrowded homes may exhibit less responsive parenting, which can affect their participation in parent-teacher organizations [25]. Moreover, overcrowding in schools and homes is linked to substandard education, functional illiteracy, and even increased child labour. The burden on infrastructure and utilities exacerbates these issues, making overcrowding a critical concern that requires attention and solutions [20,25,26].

Theoretical Framework

This study was anchored on the following theoretical positions:

Density-Intensity Theory: Freedman [26] asserts that understanding an individual's mental state is crucial for predicting the impact of crowding. This state can be negative, positive, or neutral, and virtually any effect of crowding becomes possible. Various models have emerged to explain these effects. The overload concept suggests that high density overwhelms us with sensory inputs, leading to negative consequences when our coping abilities are exceeded. In contrast, the behaviour constraint approach views high density as aversive due to reduced behavioural freedom. Additionally, the ecological model posits that insufficient resources resulting from high density can have negative consequences. Crowding significantly influences physiological and psychological well-being, making it a key predictor of subjective well-being.

Stokols' theory [27] posits that the experience of crowding arises from perceiving insufficient control over the environment. Crowding triggers, a desire to expand physical or psychological space as a means of gaining control and avoiding interference. The intensity and persistence of crowding-related feelings are most pronounced when failure to increase space heightens security threats. Seligman further suggests that individuals who perceive no control over their environment may experience learned helplessness, leading them to cease efforts to influence their surroundings. Researchers propose that high-density situations can induce a loss of control over social interactions, potentially contributing to behavioural dysfunction observed in Internally Displaced Persons [22].

Despite the forging, overcrowded IDP camps in Nigeria, lacking adequate facilities and sanitation, pose significant challenges to its inhabitants; while the Nigerian government incurs substantial costs to support IDPs, safety concerns sometimes force them to flee the camps, thereby exacerbating their predicaments. However, Nigeria has experienced a concerning rise in mortality rates in recent times, including maternal mortality, compounded by the health situation of internally displaced persons (IDPs) which has led to Nigeria re-entering the World Health Organization's list of countries with polio cases, hindering global

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eradication efforts thereby increasing the risk of vaccine-preventable diseases and affecting the national productivity and the wellbeing of IDPs.

Nevertheless, the well-being of internally displaced persons (IDPs) significantly impacts Nigeria's growth and societal reintegration, and despite the challenges faced by IDPs in Nigerian camps, there is a paucity of research exploring the effects of overcrowding on the social and psycho-physiological health of the inhabitants. This study aims to address this gap in knowledge by focusing on Nigeria's experience to investigate the social and psycho-physiological impact of overcrowding on the well-being of internally displaced persons (IDPs) in Nigeria. The findings of this research will provide baseline data and serve as a reference for further research on overcrowding among displaced individuals in Nigeria. It will also benefit the Nigerian government, the global community, and other stakeholders on peace by informing planning and funding decisions and promoting spatial planning awareness in IDP camps to optimize their capacity. Thus, based on the reviewed literature and the objectives of the study, we hypothesize that:

(i) IDPs in crowded shelters will report significant high-level health symptoms compared to those in less crowded shelters.

(ii) IDPs in crowded shelters will report significant severe sleep disorders compared to their counterpart in less crowded shelters.

(iii) IDPs in crowded shelters will report significantly higher physical and psycho-physiological discomforts than those in less crowded shelters.

(iv) IDPs resident in camps will report more dysfunctional behaviour compared to their counterpart residents outside the camp

(v) IDPs resident in camps will report more depressive symptoms compared to their counterpart residents outside the camp.

MATERIALS AND METHODS

Settings

The research was conducted among internally displaced individuals (IDPs) residing in the Dalori IDP camp, situated in Borno State, North-East Nigeria. The Dalori camp, located within the Dalori quarters of Maiduguri, hosts approximately 48,600 IDPs, including men, women, youth, and children. The camp was established in 2013 to provide shelter for those displaced by Boko Haram attacks in the Bama local government area of Borno State. Bama local government area covers an area of 4,997 km² and has a population of 269,986 according to the 2006 census. It is approximately 60 kilometers (37 miles) away from Maiduguri, the capital of Borno State.

Design

In pursuit of the study's objective to investigate the influence of overcrowding on the well-being of internally displaced persons (IDPs) in Nigeria's northeast - a between-group, ex-post-facto research design was employed. The study collected quantitative data through cross-sectional surveys, comparing independent groups across all relevant measures. Notably, no direct experimental manipulations were conducted, as the variables under investigation had already been sufficiently manipulated before the in-depth study of IDP situations within the sampled camp.

Sampling Technique

Sampling techniques employed was basically purposive for the choice of Dalori, where IDPs lived both in the camp and outside the camp among regular residents. Accidental sampling technique was employed for selecting participants for the study. These techniques were so considered bearing in mind that they are captive respondents by the nature of the prevailing circumstances around them. Also, these techniques were adopted to ensure that only respondents that fit the inclusion criteria, available within and outside Dalori camp, and capable of providing information for the study were sampled to complete the surveys (questionnaires).

Participants

A total of Ninety-nine (99) respondents consisting of male and female IDPs successfully participated in the

survey. Ability of the IDP's to read and understand the survey instruments was considered as an important factor of inclusion. As a result, respondents who were able to interact with survey were purposively selected to complete the survey. This was done to ensure that the information obtained reflects the general perception of the fifty-two (52) sampled IDPs in Dalori on-resident camp and forty-seven IDPs that are resident outside camp in Dalori.

Procedure

To conduct the study, we obtained approval from camp authorities for administering questionnaires within the camp. Once approval was secured, three trained, multilingual research assistants, along with a cooperating journalist responsible for camp activity coverage, administered the questionnaires to respondents. These research assistants closely collaborated with camp officials during the five-week data collection period. Given that many IDPs had limited literacy skills but were willing to participate, the research assistants translated the questionnaires into local languages. They often read the questions aloud and recorded responses in various languages, ensuring participants' comprehension. Additionally, participants were informed about the confidentiality of their responses and had the option to choose whether to participate.

Measures/Instruments

The primary data collection instrument employed in this study was the questionnaire. A questionnaire is a research tool comprising a series of questions and prompts designed to gather information from respondents. The specific questionnaires utilized included:

1. The Health Symptoms Checklist (HSC-Scale), developed and validated by Akinbode [28], assessed health symptoms. This scale comprises 26 common health symptoms associated with ill-health. Participants were instructed to indicate the extent to which they experienced each symptom listed in the questionnaire. The response structure employed a three-point scale: (1) Not bothered at all, (2) Bothered a little, and (3) Bothered a lot. Akinbode [28] reported a coefficient alpha of 0.89 and a divergent validity coefficient of 0.86 by correlating the HSC with Bourne's [29] Stress Symptoms Checklist.

2. The Stress Symptoms Checklist, developed by Edmund J. Bourne [29], was utilized to assess participants' stress symptoms. This 52-item scale includes two subscales: (1) Physical symptoms (29 items) and (2) psychological symptoms (23 items). Interpretation of the checked items is as follows: 0-7 indicates a low-stress level, 8-14 corresponds to a moderate stress level, 15-21 reflects a high level of stress, and 22 or more checked items indicate a very high stress level. Akinbode [28] reported a reliability coefficient (Cronbach's Alpha) of 0.78 based on a Nigerian sample.

3. The Automatic Thoughts Questionnaire (ATQ), a 30-item scale developed by Philip C. Kendall and Steven D. Hollon (1980), assesses psychological dysfunction by measuring the frequency of automatic negative self-statements. These statements play a crucial role in the development, maintenance, and treatment of various psychopathologies, including depression. The ATQ evaluates four aspects of automatic thoughts: personal maladjustment and desire for change, negative self-concepts, negative expectations, and feelings of low self-esteem and helplessness. Respondents rate the frequency of occurrence on a scale from 'not at all' to 'all the time.' A higher total score indicates more frequent automatic negative self-statements, while a higher belief score reflects greater credibility in these negative thoughts. The authors reported strong internal consistency with an alpha coefficient of 0.97.

4. The Symptom Distress Checklist (SCL-90), developed by Dergatis, Lipman & Covi (1977), serves the purpose of assessing various manifestations of depressive symptoms. This 90-item inventory covers ten primary categories of symptoms associated with depression and the distress experienced due to general life problems. Respondents rate the extent to which these problems bothered or distressed them in the recent past using a 5-point Likert scale: (0) Not at all, (1) A little bit, (2) Moderately, (3) Quite a bit, and (4) Extremely. The authors reported reliable and valid indexes of reliability and validity coefficients.

RESULTS

In this study, we employed a between-group framework to compare the frequencies, means, and standard deviations of health symptoms, sleep disorders, distress symptoms, and socially dysfunctional behaviours among internally displaced persons (IDPs) residing both inside and outside the Dalori IDP camp in Borno state, North-East Nigeria. The results revealed statistical significance, with 87.7% of IDPs reporting overcrowding within the camp. Furthermore, the mean scores for health symptoms, distress, sleep disorders, physical and emotional distress symptoms, and socially dysfunctional behaviours were higher among IDPs residing in the camp compared to those residing outside. Detailed analyses are presented in the subsequent tables 1 to 7.

Table 1 presents the mean and standard deviation of dependent variables, including health symptoms (HS), sleep disorders, and physical and psycho-physiological distress symptoms. The results indicate that individuals residing in crowded shelters reported significantly higher mean scores for health symptoms (M=49.72; SD=7.07) compared to those in less crowded shelters (M=24.00; SD=2.78). Similarly, concerning sleep disorders, individuals in crowded shelters had a higher mean score (M=9.12; SD=1.68) than those in less crowded shelters (M=4.00; SD=1.50). Additionally, the evaluation of health distress symptoms (both physical and psycho-physiological) revealed that individuals in crowded shelters had higher mean scores (physical: M=7.75; SD=3.56; psycho-physiological: M=7.98; SD=2.68) compared to those in less crowded shelters (physical: M=1.00; SD=0.00; psycho-physiological: M=2.44; SD=1.23).

Table 2 presents the mean and standard deviation of dependent variables, including dysfunctional behaviour and symptom distress, alongside the independent variable of residence in the camp. The results indicate that internally displaced persons (IDPs) residing in the camp reported significantly higher mean scores for the frequency of automatic negative self-statements (M=71.09; SD=1.65) compared to those residing outside the camp (M=40.25; SD=1.69). Additionally, the results revealed that those in the camp had a higher mean score for the degree of believability in negative thoughts (M=70.54; SD=3.62) compared to those outside the camp (M=31.00; SD=3.81). Furthermore, regarding symptom distress, IDPs residing in the camp reported a higher mean score (M=172.40; SD=5.91) than those residing outside the camp (M=66.500; SD=4.79).

Hypotheses Testing

Hypothesis 1: IDPs in crowded shelters will report significant high-level health symptoms compared to those in less crowded shelters.

Table 3 presents a significant difference between crowded and less crowded shelters within the camp regarding reported health symptom distress. The independent t-test comparison yielded a positive t-value of 10.713 at $p < 0.05$. As expected, this result indicates that internally displaced persons (IDPs) in crowded shelters reported significantly higher levels of health symptom distress compared to their counterparts in less crowded shelters. Consequently, hypothesis 1 is supported.

Hypothesis 2: IDPs in crowded shelters will report significant severe sleep disorders compared to their counterparts in less crowded shelters.

Table 4 reveals a significant difference in the number of hours slept at night and the reported sleep disorder symptoms between internally displaced persons (IDPs) in crowded and less crowded shelters within the camps. The t-test comparison yielded a significant positive t-value of 8.583 at $p < 0.05$. As expected, IDPs in crowded shelters reported insufficient hours of sleep and a higher level of severe sleep disorder symptoms. Consequently, hypothesis 2 is accepted.

Hypothesis 3: IDPs in crowded shelters will report significantly higher physical and psycho-physiological symptoms than those in less crowded shelters.

Table 5 reveals a significant difference in the reported physical and psycho-physiological distress symptoms among internally displaced persons (IDPs) residing in

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various sampled shelters within the Dalori camp. The independent t-test comparison yielded a positive t-value of 5.648 at $p < 0.05$ for physical symptoms and a t-value of 6.042 at $p < 0.05$ for psycho-physiological distress symptoms. These results indicate that IDPs in crowded shelters reported a high level of physical and psycho-physiological distress symptoms compared to their counterparts in less crowded shelters within the camp. Consequently, hypothesis 3 is supported, with grave implications for psycho-therapeutic management.

Hypothesis 4: IDP residents in the camp will report more dysfunctional behaviour compared to their colleague residents outside the camp.

Table 6 presents the results of a between-group independent t-test, revealing significant differences between internally displaced persons (IDPs) residing in the camp and those outside the camp in terms of reported dysfunctional behaviours. Specifically, the independent t-test comparison of mean scores for negative statements yielded a positive t-value of 4.513 at $p < 0.05$. Similarly, personal maladjustment and desire for change produced a significant t-value of 5.261 at $p < 0.05$. Additionally, negative self-concepts and negative expectations yielded a significant t-value of 4.674 at $p < 0.05$, as did low self-esteem with a significant t-value of 4.732 at $p < 0.05$. Furthermore, helplessness yielded a significant t-value of 4.820 at $p < 0.05$. These results collectively indicate that IDPs residing in the camp reported a higher level of dysfunctional behaviours compared to their counterparts residing outside the camp. Additionally, on the same scale, the degree of believability in such negative thoughts yielded a positive t-value of 5.224 at $p < 0.05$, suggesting a greater endorsement of negative thoughts. Consequently, the postulated hypothesis is accepted.

Hypothesis 5: IDP residents in camps will report more depressive symptoms compared to their colleague's residents outside the camp.

Table 7 reveals significant differences in reported depressive symptoms between internally displaced persons (IDPs) residing in the camp and those outside the Dalori camp. The results of the between-group independent t-test comparison of mean depressive symptoms yielded positive and significant t-values across various categories of the symptom distress checklist. Specifically, symptom distress showed a significant t-value of 5.529 at $p < 0.05$. Furthermore, the t-test comparison was conducted for the 10 symptom distress categories: somatization (t-value of 4.830 at $p < 0.05$), obsessive-compulsive (t-value of 4.910 at $p < 0.05$), interpersonal sensitivity (t-value of 4.768 at $p < 0.05$), depression (t-value of 4.975 at $p < 0.05$), anxiety (t-value of 3.628 at $p < 0.05$), hostility (t-value of 3.408 at $p < 0.05$), phobic anxiety (t-value of 2.619 at $p < 0.05$), paranoid ideation (t-value of 2.743 at $p < 0.05$), psychoticism (t-value of 3.478 at $p < 0.05$), and neuroticism (t-value of 3.296 at $p < 0.05$). These results collectively indicate that IDPs residing in camps reported more depressive symptoms (high distress) compared to their counterparts residing outside the camp. Consequently, the hypothesis is accepted, with serious implications for psychotherapeutic management.

DISCUSSION

The relationship between a home and a shelter in internally displaced camps is multifaceted. While both serve as places of refuge, they differ significantly. A "home" typically represents stability, personalization, and emotional attachment. It embodies memories, cultural identity, and a sense of belonging. In contrast, a "shelter" within IDP camps is often temporary, lacking personalization and permanence. It provides basic protection from the elements but lacks the emotional ties associated with a true home. The transition from a home to a shelter can be jarring, impacting mental well-being and resilience. Addressing this dichotomy is crucial for supporting IDPs during displacement. Thus, this study examined the social and psycho-physiological consequences of overcrowding among internally displaced persons in Nigeria.

The result of our study revealed significantly higher levels of health symptoms among the inhabitants of crowded shelters in IDP camps compared to their counterparts living in less crowded shelters. This finding is not surprising because studies and reports abound on

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the unhealthy situations and conditions of living of the internally displaced persons sheltered in camps in Nigeria, a situation of no basic living and hygiene amenities such as Kitchen, water, toilet, basic hygiene skills, and functional clinic. Some camps are derelict and unfit for human habitation while food supply and security have posed serious challenges both for managers and the inhabitants of crowded Camps. However, several authors have challenged the view of a relationship between crowding and health [12,24]. Ambrose [30] asserts that the relationship is extremely complex and influenced by several variables and Myers et al. [31] questioned the relationship demanding if overcrowding is harmful to the people affected or merely socially distasteful to outsiders who observe its presence. Conversely, we found a similarity between the present study result and the work of Roberts et al [32] in which they conducted an exploratory study on the social determinants of health among internally displaced persons in northern Uganda. They found that among other social determinants, overcrowding impacted physical health and contributed to an emotional sense of loss of freedom. Similarly, they found that poverty and loss of land affected physical health due to insufficient food and income, while also impacting mental health through worry and uncertainty. Although there are divergences of opinion regarding the relationship between overcrowding and negative health symptoms, nevertheless our findings indicate that overcrowding is harmful and has health implications and can lead to increased mortality among IDPs.

Our study results revealed significantly higher rates of sleep problems among internally displaced persons (IDPs) residing in crowded shelters within the camps, compared to their counterparts in less crowded shelters. This finding suggests that inhabitants of the densely populated camps face substantial challenges related to both the quality and quantity of sleep. As a consequence, many residents of the Dalori camp do not experience restful sleep at night. Additionally, some individuals in these camps have pre-existing health conditions that may predispose them to developing sleep disorders, likely exacerbated by the poor health conditions prevalent in the overcrowded camps. These findings align with previous research by Freedman [26], Evans et al. [12], Aptekar et al. [24] which highlight the impact of overcrowding on health. Specifically, when people are exposed to high population density, their health can be affected, particularly due to sensory overload, respiratory infections (as noted by Rudnai & Ranson, [20]), and elevated blood pressure (as observed by D'atri, [13]). The cumulative negative effects of excessive sensory stimulation in densely populated environments can lead to adverse physiological and psychological behaviors among living beings.

Furthermore, our study reveals significantly higher rates of physical and psycho-physiological symptoms among internally displaced persons (IDPs) residing in crowded shelters within IDP camps, compared to their counterparts in less crowded shelters. These findings underscore the impact of overcrowding on people's physiological, behavioral, and mental health conditions, aligning with previous research by Clauson-Kaas et al. [33], Vadheim et al. [34], Heiberg et al. [35], Gove and Hughes [18], and Evans et al. [12]. Overcrowding has also been associated with an increased incidence of diseases such as tuberculosis, meningococcal infections, and respiratory illnesses affecting both children and adults (as noted by the National Health Committee in 1998). Interestingly, the relationship between crowding and symptoms appears to be more pronounced for subjective crowding than objective crowding. IDPs who perceive overcrowding exhibit a higher prevalence of physical and psycho-physiological symptoms. Additionally, some IDPs in crowded shelters exhibit social withdrawal and increased aggressive behavior compared to those residing outside the camp. These findings align with Baum and Greenberg [21], who observed withdrawal as a primary response to crowding. Consequently, the presence of a mental health clinic in the camp likely serves to support IDPs experiencing these symptoms. Importantly, this finding underscores the need to enhance capacity-building efforts for psychotherapeutic interventions to mitigate mental health issues among IDPs.

Similarly, our study findings revealed that internally displaced persons (IDPs) residing in IDP camps exhibit significantly higher levels of dysfunctional behavior compared to their counterparts living outside the camps.

Specifically, personal maladjustment and a desire for change, negative self-concepts and expectations, low self-esteem, feelings of helplessness, belief in negative thoughts, and withdrawal syndromes were more prevalent among IDP residents within the camp environment. This observation is particularly instructive, considering the potential impact on mental health conditions often associated with such psychological states. Importantly, our results align with previous research by Baum and Greenberg [21], and Rodin [36], which emphasized that crowding exacerbates withdrawal syndromes, loss of control, and learned helplessness as anticipatory responses to high-density living. These effects persist as coping mechanisms in the face of ongoing overcrowding.

Lastly, our study findings indicate that internally displaced persons (IDPs) residing in camps report significantly higher levels of depressive symptoms compared to their counterparts living outside the camps. Specifically, IDPs living in crowded shelters reported more depression-related symptoms, including somatization, obsessive-compulsive tendencies, interpersonal sensitivity, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism, compared to IDPs residing outside the camp. This observation is not surprising, given the seemingly improved social support received by those living outside the camps from their various hosts. In contrast, residents within the camps face a different experience. Our findings align with Olukolajo et al [4] research, which revealed that most IDPs prefer seeking shelter with relatives rather than living in camps due to the assurance of freedom, care, and provision. Additionally, our results support Wilkinson's [37] assertion that crowding poses a potential threat to mental health, not just physical health. Indeed, overcrowding is associated with psychological symptoms, including depression.

Conclusion and Recommendations

In our study, we investigated the impact of overcrowding on the social and psycho-physical well-being of Internally Displaced Persons (IDPs) residing in temporary shelters. Our results confirmed that IDPs in crowded shelters reported higher health symptom distress compared to those in less crowded shelters. Notably, residents of the Dalori IDP camp experienced sleep disorders due to insufficient rest at night. Additionally, we observed elevated physical and psycho-physiological symptoms among IDPs in crowded shelters. These findings underscore the need for increased attention to the physical, emotional, and mental health of IDPs. We, therefore, recommend that Stakeholders should focus their attention on reducing overcrowding in camps through infrastructure improvements and psychotherapeutic interventions. Also, understanding IDPs' coping strategies can inform effective rehabilitation programs. While, media attention, government policies, and mental health support are crucial. Nonetheless, resettlement to their homes remains a lasting solution to overcrowding in IDP camps.

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TABLES AND FIGURES

Table 1: Mean and Standard Deviation of Health Symptoms, Sleep Disorder, and Distress Symptoms in Camp Shelters

Variables of Interest	Descriptive Statistics	Crowded Camp	Not Crowded Camp
Health Symptoms	Mean	49.772	24.000
	SD	1.072	2.789
Sleep Disorders	Mean	9.129	4.000
	SD	1.682	1.500
Psycho-physiological Disorders	Mean	7.981	2.444
	SD	2.688	1.236

Table 2: Mean and Standard Deviation of Dysfunctional Behaviours and Depressive Symptoms of IDPs in Camp

Variables of Interest	Descriptive Statistics	Population of Persons per Unit Space &Time Residents in Camp	Not Resident in Camp
Freq. of Automatic	Mean	70.09	40.25
Negative Response	SD	1.65	1.69
Degree of believability	Mean	70.54	31.00
in Negative Thoughts	SD	3.62	3.81
Reported Symptom	Mean	172.40	66.50
Distress	SD	5.91	4.79

Table 3: Independent t-test comparison of health symptoms by overcrowding

Health Symptoms	N	Mean	SD	Tcal	Df	Sig.	Pv
Crowded	54	49.722	7.072	10.713	61	.000	P<0. 01
Less Crowded	12	24.000	2.783				

Table 4: Independent t-test comparison of sleep disorders by overcrowding in shelters

Reported Sleep Disorders	N	Mean	SD	Tcal	df	Sig.	Pv
Crowded	54	9.129	1.682	8.583	61	.000	P<0. 01
Less Crowded	12	4.000	1.500				

Significant- p<0.05

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Table 5: Independent t-test comparison of distress symptoms by overcrowding in shelters

Symptoms	Overcrowding	N	Mean	SD	Tcal.	df	Sig	pv
Physical Distress	Crowded	54	7.759	3.565	5.648	61	.000	P<0.01
	Less Crowded	12	1.000	.000				
Psycho-physiological Distress	Crowded	54	7.981	2.688	6.042	61	.000	P<0.01
	Less Crowded	12	2.444	1.236				

Significant- p<0.05

Table 6: Independent t-test comparison of dysfunctional behaviour among IDPs

Variables	Resident (Camp)	N	Mean	SD	Tcal.	df	Sig	pv
Automatic Negative Statement	Resident	65	71.09	36.65	4.513*	88	.000	p<0.01
	Non-Resident	34	40.25	17.69				
Personal Maladjustment & Desire for Change	Resident	65	13.03	5.58	5.261*	88	.000	p<0.01
	Non-Resident	34	6.62	3.46				
Negative Self Concept & Negative Expectations	Resident	65	17.68	7.77	4.674*	88	.000	p<0.01
	Non-Resident	34	10.00	3.31				
Low Self-esteem	Resident	65	4.31	2.30	4.732*	88	.000	p<0.01
	Non-Resident	34	1.87	1.72				
Helplessness	Resident	65	4.95	2.27	4.820*	88	.000	p<0.01
	Non-Resident	34	2.62	1.01				
Believability in Negative Thoughts	Resident	65	70.54	33.62	5.224*	88	.000	p<0.01
	Non-Resident	34	31.50	23.81				

** Results is Significant at p<0.01*

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Table 7: Independent t-test comparison of depression symptoms by resident in camp

Variables	Resident in Camp	N	Mean	SD	Tcal.	df	Sig	pv
Symptom Distress	Resident	66	172.40	5.19	5.529*	70	.000	p<0.01
	Non-Resident	24	66.50	4.79				
Somatisation	Resident	66	22.45	12.11	4.830*	88	.000	p<0.01
	Non-Resident	24	9.37	8.88				
Obsessive	Resident	66	19.40	10.39	4.910*	88	.000	p<0.01
Compulsive	Non-Resident	24	8.00	7.64				
Interpersonal	Resident	66	16.68	10.42	4.768*	88	.000	p<0.01
Sensitivity	Non-Resident	24	6.00	5.52				
Depression	Resident	66	25.31	14.55	4.975*	88	.000	p<0.01
	Non-Resident	24	9.37	9.64				
Anxiety	Resident	63	23.19	1.70	3.628*	76	.000	p<0.01
	Non-Resident	15	11.80	6.46				
Hostility	Resident	57	13.28	6.91	3.408	76	.011	p<0.01
	Non-Resident	15	7.00	3.46				
Phobic Anxiety	Resident	57	12.23	6.82	2.619*	76	.011	p<0.01
	Non-Resident	15	7.40	4.22				
Paranoid Ideation	Resident	57	12.00	5.862	2.743*	73	.008	p<0.01
	Non-Resident	15	7.60	4.01				
Psychoticism	Resident	57	19.78	9.20	3.478*	70	.001	p<0.01
	Non-Resident	15	11.00	6.34				
Neuroticism	Resident	57	16.26	7.47	3.286*	70	.002	p<0.01
	Non-Resident	15	9.20	7.03				

** Result is Significant at p<0.01*

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