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Oral health status and interventions for internally displaced people living in a camp-like setting in North-Central Nigeria

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ABSTRACT

Introduction

The conflict in North-Eastern Nigeria, which has lasted for over a decade and has been compounded by communal clashes and natural disasters, has resulted in the highest number of internally displaced persons (IDPs) in the West-Central African subregion. While oral health is integral to overall well-being, it is often overlooked in humanitarian interventions targeting IDPs.

Purpose

This study underscores the importance of oral health in the overall health of IDPs, advocating for its inclusion in intervention programs for this vulnerable population. The findings may also inform strategies for addressing oral health challenges among other at-risk groups.

Methods

This study analysed secondary data from a convenience sample of 119 individuals residing in an IDP camp in North-Central Nigeria who participated in a dental health outreach. Ethical approval was obtained from the Ethics Committee of Anglia Ruskin University, and camp authorities granted permission for treatment and data collection. Data were processed using SPSS (V.28.0.1.0 [142]), exploring associations between demographic factors, oral hygiene practices, access to dental care, and dental indices (OHI-S and DMFT). The original dataset facilitated immediate care provision during the outreach.

Results

The overall oral hygiene status of participants was fair, with a mean OHI-S score of 2.46. Age was significantly associated with OHI-S ($p < 0.001$). The prevalence of dental caries was 32.8%, with a mean DMFT score of 1.11 and an unmet treatment need of 93%. A significant association was found between prior contact with dental services and DMFT ($p < 0.001$). Although 90.8% of participants reported using a toothbrush, only 41.7% brushed their teeth at least twice daily. Access to dental care was notably poor, with 84% of participants reporting no previous contact with dental services. Despite a fair assessment of oral health status, the substantial unmet treatment need remains a major concern.

Conclusion

The findings highlight significant oral health disparities among IDPs in camp-like settings, particularly regarding disease burden and inadequate access to dental care. Addressing these challenges requires urgent oral health policy interventions, including community-based outreach programs and direct access to essential oral healthcare services. Additionally, promoting effective oral hygiene practices among IDPs is crucial for improving their overall health outcomes.

INTRODUCTION

Internally displaced persons (IDPs) are individuals or groups forced to flee their homes due to armed conflict, violence, human rights violations, or natural and human-made disasters, yet they remain within their country's borders (Office of the High Commissioner for Human Rights [OHCHR], 2023). The West and Central African region hosts approximately 13.4 million forcibly displaced people, with 8.1 million classified as IDPs (United Nations High Commissioner for Refugees [UNHCR], 2023). This figure has risen sharply, from just over 3 million in 2018 to over 8 million in 2023 (UNHCR, 2023).

In Nigeria, a country within this region, the International Organization for Migration (2023) estimates that 2,375,661 people are internally displaced, with 966,103 residing in camp-like settings and 1,409,558 living in host communities**.** The gender distribution is 45% male and 55% female**,** with 95% of IDPs citing conflict as the primary cause of displacement. Other causes include natural disasters, banditry, and farmer-herder clashes (International Organization for Migration, 2023). Additionally, 2,100,180 individuals have returned to their places of origin. Despite a 2% decrease in IDPs living in camps and a 4% decrease in those in host communities, there has been a 6% increase in returnees and a 3% rise in returnees from abroad (International Organization for Migration, 2023)**.**

International principles and conventions, such as those outlined by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA, 2004) and the Kampala Convention (2010), provide IDPs with broad-ranging rights. These include economic, social, cultural, civil, and political rights, as well as access to humanitarian aid, food, medicine, shelter, protection from violence, education, and freedom of movement. These frameworks also prohibit internal displacement. However, the domestication of these principles in Nigeria has been slow and inadequate. Akpoghome (2016) observed that Nigeria lacks a comprehensive policy to protect IDPs' rights and provide necessary support. While Nigeria introduced a policy on IDPs in 2021 (Federal Ministry of Humanitarian Affairs, Disaster Management, and Social Development, 2021), Umenweke and Orabueze (2023) argue that responsibilities remain unclear, as no binding legal framework supports these policies. They recommend that the Nigerian government enact legislation, establish legal institutions to protect IDPs, and take proactive measures to prevent displacement.

Oral health is an integral component of general health, with a bidirectional relationship between oral and systemic health (Fédération Dentaire Internationale [FDI], 2023). It encompasses the ability to speak, smile, chew, swallow, and express emotions confidently, free from discomfort and disease (FDI, 2023). Oral health is essential to physical and mental well-being, influencing physiological, social, and psychological functions that contribute to overall quality of life. Moreover, Kateeb and Lee (2023) emphasize that promoting oral health among refugees is a matter of health equity and human rights, aligning with the Sustainable Development Goals' (SDGs) core principle of "leaving no one behind."

Despite this, oral health service utilization in Nigeria remains suboptimal. According to Olusile et al. (2014), while many Nigerians acknowledge the importance of oral health, poor oral health-seeking behaviours persist, particularly among older adults and individuals with lower educational attainment in the northern region. This underscores the influence of sociodemographic factors on oral health service utilization and personal hygiene practices.

Regarding IDPs, limited research exists on their oral health status in Nigeria. Umeizudike et al. (2019) provided one of the few insights, highlighting oral health disparities among displaced persons from North-Eastern Nigeria living in a planned camp in South-Western Nigeria. Their study found high unmet treatment needs, poor oral health knowledge, low dental service utilization, and a low treatment index (Umeizudike et al., 2019).

The present study focuses on a similar group of IDPs who fled Borno and Adamawa States—both in North-Eastern Nigeria—at the height of unrest in 2015. They were subsequently resettled in a camp in Nasarawa State, North-Central Nigeria, by a faith-based organization (JmadReflects, 2016). At the time of reporting, the camp housed 70 families, totaling approximately 350 individuals, including 122 adults (62 men and 60 women) and 228 children. The adults primarily engaged in subsistence farming, while children attended a camp-run school

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facilitated by five volunteer teachers, with some enrolled in neighboring village schools (JmadReflects, 2016).

This study is justified on two key grounds. First, it utilizes secondary data originally collected for a needs assessment as part of an oral health outreach. This outreach provided immediate treatment, revealing the substantial unmet dental care needs of the camp's inhabitants. Second, findings from this study could contribute to knowledge on the oral health status of IDPs in Nigeria, addressing existing research gaps.

Aim and Objectives

Aim

To assess the oral health status of IDPs residing in the camp and propose appropriate interventions.

Objectives

1. To evaluate the oral hygiene practices of camp residents.
2. To examine camp residents' access to dental care services.
3. To assess the oral hygiene status and dental caries experience levels of camp members.

METHODS

Research Questions

1. What is the oral health status of the inhabitants of the IDP camp?
2. What oral health interventions would the inhabitants of the IDP camp require?

Study Design

This study employed a descriptive cross-sectional quantitative design, utilising anonymised secondary data obtained from dental screening records of adults and children. These records were collected in December 2019 during a dental health outreach at an internally displaced persons (IDP) camp in Nasarawa State, North-Central Nigeria. The primary objective of the outreach was to assess the oral health status of the camp residents, plan appropriate interventions to address identified treatment needs, and provide preventive oral health education.

According to Setia (2016), secondary data can be effectively used in cross-sectional studies to answer clinical-based questions through population-based surveys. This aligns with the objectives of this study and the research questions, particularly in identifying the prevalence of dental caries within the targeted population.

Sample/Participants

Sample Size

The secondary data used in this study was derived from a convenient sample **of** 119 individuals from the IDP camp who participated in the dental health outreach.

Description of the Sample

The study sample comprised 50 (42%) adults and 69 (58%) children, with a gender distribution of 44 (37%) males and 75 (63%) females. This convenience sample represented individuals who were present at the outreach and consented to participate in the dental screenings.

Description of Oral Health Indices Used

The Simplified Oral Hygiene Index (OHI-S) **and the** Decayed, Missing, and Filled Teeth (DMFT) index were used to assess oral health status.

- **OHI-S:** This index is commonly used in epidemiological studies to assess oral hygiene levels in individuals and communities. It comprises:
  - **Debris Index (DI):** Measures soft deposits, such as food particles and dental plaque, on tooth surfaces.
  - **Calculus Index (CI):** Observes the presence of dental calculus (tartar) on tooth surfaces.
  - The OHI-S scores are interpreted as follows: **0–1.2 (good oral hygiene), 1.3–3.0 (fair oral hygiene), and 3.1–6.0 (poor oral hygiene)** (World Health Organization [WHO], 2013).
- **DMFT Index:** This index is used in dentistry and public health to assess dental health status by counting the number of **decayed (D), missing (M), and filled (F) teeth** in an individual's mouth. The total DMFT score provides an insight into an individual's overall dental caries experience and treatment needs (WHO, 2013).

Data Analysis

Descriptive statistical analysis was conducted using SPSS version 28.0.1.0 (142). All statistical tests were performed at a 95% confidence interval, with a p-value < 0.05

considered statistically significant. Results were interpreted using frequency tables and charts. Additionally, a Chi-square test was conducted to determine measures of association between dependent and independent variables.

Ethics

Ethical approval for this study was granted by the Research and Ethics Committee of Anglia Ruskin University. The secondary data used in this study was collected during a dental outreach in December 2019 at the Kutara Tararadna Brethren Village IDP Camp, Luvu, Karu LGA, Nasarawa State, Nigeria. Local camp authorities granted permission for the researcher to conduct dental examinations, provide treatment, and record, store, and use clinical data for research purposes.

Parental or guardian consent was obtained for minors (children below 17 years old), who were required to be accompanied by an adult before examination and treatment. Additionally, all participants provided verbal informed consent, which was communicated in both English and Hausa to ensure clear understanding. At the end of each consultation, oral hygiene education was provided.

Respect for camp traditions was maintained throughout the outreach. The activities commenced with a Christian prayer, and every participant was treated with dignity and respect, beginning with customary greetings. The examination area ensured privacy, and all recorded data was coded to protect participant anonymity. The researcher holds the only digital copy of the dataset, stored securely as an SPSS file on the researcher's student-assigned Microsoft cloud storage.

Issues of Rigour

To ensure the rigour of this study, the AXIS tool for cross-sectional studies was used for critical appraisal (Downes et al., 2016). The OHI-S and DMFT indices are widely recognised and recommended for use in oral health surveys (WHO, 2013). Furthermore, during the original dental outreach, the researcher trained and calibrated the dental care professionals conducting the examinations. Multiple simulated scenarios were used to ensure consistency and reliability in screening procedures among all examiners.

RESULTS

Table 1:
Frequency and percentage distributions of the study variables

N = 119 **Variables**	**Frequency**	**Percentage**
Age		
Adults (17>)	50	42.0
Children (0 -16)	69	58.0
Sex		
Female	75	63.0
Male	44	37.0
Occupation		
Camp worker	3	2.5
Farmer	36	30.3
Housewife	1	0.8
Student	76	63.9
Unemployed	3	2.5
History of dental visit		
No	100	84.0
Yes	19	16.0
Reason for visit and treatment received		
Cleaning	3	2.5
Examination	4	3.4
Extraction	7	5.9
Extraction and Filling	1	0.8
Filling	1	0.8
No visit	100	84.0
Pain	3	2.5
Personal oral hygiene aids used		
Chewing sticks	1	0.8
Nothing	10	8.4
Toothbrush	108	90.8
Frequency of use of oral hygiene aids a day		
More than twice	8	6.7
Never	10	8.4
Once	58	48.7
Twice	43	36.1
Use of Toothpaste		
No	14	11.8
Yes	105	88.2
Simplified Oral Hygiene Index *(Categorized)*		
Good oral hygiene	13	10.9
Fair oral hygiene	75	63.0
Poor oral hygiene	28	23.5
Decayed teeth		
0	80	67.2
1	17	14.3
2	11	9.2
3	6	5.0
4	2	1.7
5	2	1.7
7	1	0.8
Missing Teeth		
0	109	91.6
1	3	2.5
2	1	0.8
3	5	4.2
24	1	0.8
Filled Teeth		
0	117	98.3
1	1	0.8
7	1	0.8
Decayed Missing and Filled Teeth Index *(Categorized)*		
DMFT Score Zero	77	64.7
DMFT Score One or More	42	35.3

Table 1 presents the frequency and percentage distributions of the study variables, including demographic characteristics, oral hygiene practices, and dental service utilisation.

Demographic Characteristics

The study comprised 119 participants. Age distribution showed that 50 (42.0%) were adults aged 17 years and above, while 69 (58.0%) were children aged 0–16 years. In terms of gender, 75 (63.0%) were female, and 44 (37.0%) were male. Regarding occupation, the majority of participants were students (76, 63.9%), followed by farmers (36, 30.3%), while a smaller proportion were camp workers (3, 2.5%), unemployed individuals (3, 2.5%), and housewives (1, 0.8%).

Oral Hygiene Practices

Most participants reported using toothbrushes (108, 90.8%) for oral hygiene, while 10 (8.4%) reported using nothing, and 1 (0.8%) used chewing sticks. The frequency of oral hygiene aid use varied: 58 (48.7%) used oral hygiene aids once daily, 43 (36.1%) used them twice daily, 8 (6.7%) used them more than twice daily, and 10 (8.4%) never used them. Additionally, 105 (88.2%) of participants reported using toothpaste, while 14 (11.8%) did not.

Dental Service Utilisation

A significant proportion of participants (100, 84.0%) had never visited a dental clinic, while only 19 (16.0%) had prior dental visits. The reasons cited for dental visits included cleaning (3, 2.5%), examination (4, 3.4%), extraction (7, 5.9%), extraction and filling (1, 0.8%), filling (1, 0.8%), and pain-related issues (3, 2.5%).

Oral Health Status

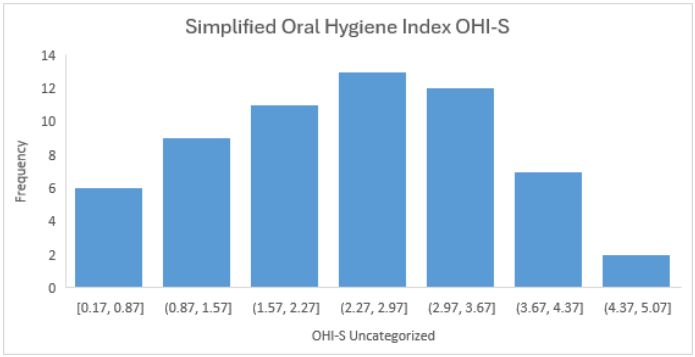
Two oral health indices were assessed: the Simplified Oral Hygiene Index (OHI-S) and the Decayed, Missing, and Filled Teeth (DMFT) index. The OHI-S categorisation revealed that 13 (10.9%) participants had good oral hygiene, 75 (63.0%) had fair oral hygiene, and 28 (23.5%) had poor oral hygiene. The DMFT index categorisation indicated that 77 (64.7%) participants had a DMFT score of zero, while 42 (35.3%) had a DMFT score of one or more.

Dental Caries and Tooth Loss

The distribution of decayed teeth (Figure 3) showed that 80 (67.2%) participants had no decayed teeth, while 17 (14.3%) had one decayed tooth, 11 (9.2%) had two, 6 (5.0%) had three, 2 (1.7%) had four, 2 (1.7%) had five, and 1 (0.8%) had seven decayed teeth. Missing teeth data revealed that 109 (91.6%) had no missing teeth, 3 (2.5%) had one missing tooth, 1 (0.8%) had two, 5 (4.2%) had three, and 1 (0.8%) had 24 missing teeth. Regarding filled teeth, 117 (98.3%) had no filled teeth, while 1 (0.8%) had one filled tooth, and another 1 (0.8%) had seven filled teeth.

Oral Hygiene and DMFT Scores

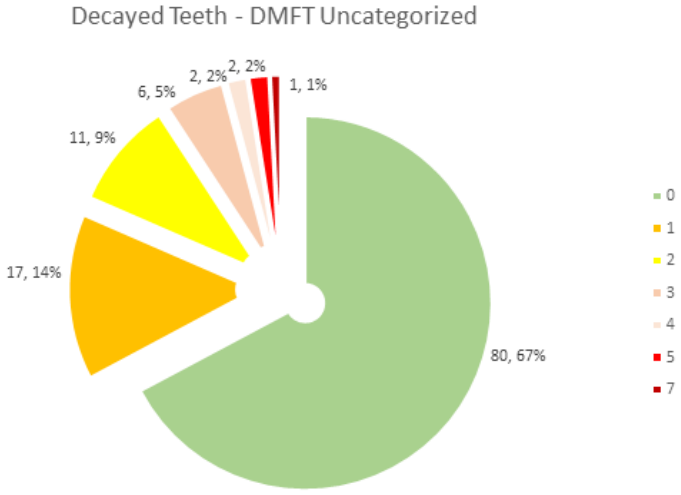
Figure 1:
The distribution of the OHI-S scores



***OHI-S** Scores of 0 – 1.2 - good oral hygiene, 1.3 – 3.0 – fair oral hygiene, and 3.1 – 6.0 - poor oral (WHO, 2013)*

Figure 1 illustrates the distribution of the OHI-S scores, with a mean score of 2.46, indicating fair oral hygiene. Figure 2 presents the DMFT score distribution, with a mean score of 1.11. **Figure 3** provides a pie chart representation of decayed teeth, further highlighting the prevalence of untreated caries among participants.

Figure 3:
Representation of decayed teeth



Statistical Associations

Table 2:
The Pearson chi-square test assessing associations between demographic characteristics, oral hygiene practices, and dental service utilisation with oral health status indicators

Variables	*95% CL, P < 0.001* Simplified Oral Hygiene Index (OHI-S)				Decayed Missing and Filled Teeth Index (DMFT)		
	Good	*Fair*	*Poor*		*≤0*	*>1*	
Age							
Adults (17>)	0 (0.0%)	31 (41.3%)	9 (32.1%)	$\chi^2 = 16.940$ $p < 0.001$*	32 (41.6%)	18 (42.9%)	$\chi^2 = 0.019$ $p < 0.891$
Children (0-16)	13 (100%)	44 (58.7%)	19 (67.9%)		45 (58.0%)	24 (57.1%)	
Sex							
Female	10 (76.9%)	46 (61.3%)	19 (67.9%)	$\chi^2 = 1.344$ $p = 0.511$	49 (63.6%)	26 (61.9%)	$\chi^2 = 0.035$ $p = 0.852$
Male	3 (23.1%)	29 (38.7%)	9 (32.1%)		28 (36.4%)	16 (38.1%)	
Occupation							
Camp Worker	0 (0.0%)	2 (2.7%)	1 (3.6%)	$\chi^2 = 16.617$ $p = 0.034$	2 (2.6%)	1 (2.4%)	$\chi^2 = 0.798$ $p = 0.939$
Farmer	0 (0.0%)	22 (29.3%)	14 (50.0%)		22 (28.6%)	14 (33.3%)	
Housewife	0 (0.0%)	0 (0.0%)	1 (3.6%)		1 (1.3%)	0 (0.0%)	
Student	12 (92.3%)	49 (65.3%)	12 (42.9%)		50 (64.9%)	26 (61.9%)	
Unemployed	1 (7.7%)	2 (2.7%)	0 (0.0%)		2 (2.6%)	1 (2.4%)	
History of dental visit							
No	12 (92.3%)	63 (84.0%)	23 (82.1%)	$\chi^2 = .737$ $p = 0.692$	71 (92.2%)	29 (69.0%)	$\chi^2 = 10.865$ $p < 0.001$*
Yes	1 (7.7%)	12 (16.0%)	5 (17.9%)		6 (7.8%)	13 (31.0%)	
Reasons for the visit and or treatment received							
Cleaning	1 (7.7%)	2 (2.7%)	0 (0.0%)	$\chi^2 = 10.734$ $p = 0.552$	2 (2.6%)		$\chi^2 = 14.870$ $p = 0.021$
Examination	0 (0.0%)	4 (5.3%)	0 (0.0%)		2 (2.6%)	2 (4.8%)	
Extraction	0 (0.0%)	3 (4.0%)	4 (14.3%)		1 (1.3%)	6 (14.3%)	
Extraction and Filling	0 (0.0%)	1 (1.3%)	0 (0.0%)		0 (0.0%)	1 (2.4%)	
Filling	0 (0.0%)	1 (1.3%)	0 (0.0%)		0 (0.0%)	1 (2.4%)	
No visit	12 (92.3%)	63 (84.0%)	23 (82.1%)		71 (92.2%)	29 (69.0%)	
Pain	0 (0.0%)	1 (1.3%)	1 (3.6%)		1 (1.3%)	2 (4.8%)	
Personal oral hygiene aids used							
Chewing Sticks	0 (0.0%)	1 (1.3%)	0 (0.0%)	$\chi^2 = 1.999$ $p = 0.736$	0 (0.0%)	1 (2.4%)	$\chi^2 = 1.981$ $p = 0.371$
Nothing	0 (0.0%)	7 (9.3%)	3 (10.7%)		6 (7.8%)	4 (9.5%)	
Toothbrush	13 (100.0%)	67 (89.3%)	25 (89.3%)		71 (92.2%)	37 (88.1%)	
Frequency of daily use of oral hygiene aids							
More than twice	1 (7.7%)	5 (6.7%)	2 (7.1%)	$\chi^2 = 3.088$ $p = 0.798$	6 (7.8%)	2 (4.8%)	$\chi^2 = 0.786$ $p = 0.853$
Never	0 (0.0%)	7 (9.3%)	3 (10.7%)		6 (7.8%)	4 (9.5%)	
Once	6 (46.2%)	39 (52.0%)	11 (39.3%)		36 (46.8%)	22 (52.4%)	
Twice	6 (46.2%)	24 (32.0%)	12 (42.9%)		29 (37.7%)	14 (33.3%)	
Use of Toothpaste							
No	0 (0.0%)	10 (13.3%)	4 (14.3%)	$\chi^2 = 2.027$ $p = 0.363$	7 (9.1%)	7 (16.7%)	$\chi^2 = 1.503$ $p = 0.220$
Yes	13 (100.0%)	65 (86.7%)	24 (85.7%)		70 (90.9%	35 (83.3%)	

Table 2 presents the results of the Pearson chi-square test assessing associations between demographic characteristics, oral hygiene practices, and dental service utilisation with oral health status indicators. A significant association was observed between age and OHI-S scores ($\chi^2 = 16.940$, $p < 0.001$), with children demonstrating better oral hygiene than adults. However, no significant association was found between age and DMFT scores ($\chi^2 = 0.019$, $p = 0.891$).

Gender was not significantly associated with either OHI-S ($\chi^2 = 1.344$, $p = 0.511$) or DMFT scores ($\chi^2 = 0.035$, $p = 0.852$). Occupation was significantly associated with OHI-S ($\chi^2 = 16.617$, $p = 0.034$), with students exhibiting better oral hygiene compared to other occupational groups. However, occupation was not significantly associated with DMFT scores ($\chi^2 = 0.798$, $p = 0.939$).

A history of dental visits showed no significant association with OHI-S ($\chi^2 = 0.737$, $p = 0.692$) but was significantly associated with DMFT scores ($\chi^2 = 10.865$, $p < 0.001$),

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suggesting that individuals with higher DMFT scores were more likely to have visited a dentist.

The reasons for dental visits were not significantly associated with OHI-S ($\chi^2 = 10.734$, $p = 0.552$) but showed a significant association with DMFT scores ($\chi^2 = 14.870$, $p = 0.021$), with extractions being the most common treatment received among individuals with high DMFT scores.

Personal oral hygiene practices, including the use of chewing sticks, toothbrushes, and toothpaste, showed no significant associations with either OHI-S or DMFT scores. Similarly, the frequency of oral hygiene aid use was not significantly associated with oral health indices.

These findings indicate that while certain demographic factors, such as age and occupation, influence oral hygiene status, the presence of dental caries (DMFT score) is primarily linked to a history of dental visits and the reasons for seeking dental care.

DISCUSSION

The findings of this study indicate that while the overall oral hygiene status of the participants was fair, the majority used personal oral hygiene aids—mainly toothbrushes—yet their frequency of use was suboptimal. Access to dental care among the participants was significantly low, and their experience with dental caries was slightly above the national average, with most cases remaining untreated. Additionally, one of the objectives of this study was to suggest interventions tailored to the unique needs of the participants. The findings suggest an urgent need for clinical intervention to address cases of untreated tooth decay and poor oral hygiene, along with associated conditions such as gingivitis and periodontitis. Furthermore, oral health education is essential to improve participants' knowledge of the importance of personal oral hygiene in maintaining overall oral health. To enhance access to care, long-term partnerships should be sought to provide sustainable dental care services to the camp.

Addressing Data Gaps in Oral Health Research

In line with the study's aims and research questions, it is crucial to acknowledge the assertion by El Tantawi et al. (2023) that one of the critical challenges to oral health in Africa is the scarcity of data, which is essential for evidence-based planning and policy development. This challenge is particularly evident in the lack of publications on the oral health of internally displaced persons (IDPs) in Nigeria. According to El Tantawi et al. (2023), the Sahel region of Africa—including northeastern Nigeria, where the participants in this study were displaced from—has been identified as one of the fastest-growing regions for humanitarian crises globally, with an average 25% increase in people requiring life-saving interventions between 2017 and 2022.

Oral Hygiene Practices

The study's first objective was to assess the oral hygiene practices of the participants. Findings revealed that most participants maintained an adequate personal oral hygiene routine, with 90.8% (n = 108) reporting the use of personal oral hygiene aids, and 0.8% (n = 1) using them consistently. These findings align with Umeizudike et al. (2019), who reported that 84% of their study participants used a toothbrush and toothpaste, while 8.5% used only a toothbrush. Regarding frequency, 48.7% (n = 58) of participants brushed at least once daily, while 36.1% (n = 43) brushed twice daily. These results are consistent with Umeizudike et al. (2019), who found that 54% of participants brushed once daily and 41.7% brushed twice daily. Furthermore, 88.2% (n = 105) of participants in this study reported using toothpaste, which aligns with the findings of Umeizudike et al. (2019), where 84% of participants used toothpaste with a toothbrush.

Compared to national averages, these results indicate a slightly higher use of personal oral hygiene aids than the national average of 79.2% (Olusile et al., 2014). However, the proportion of participants who brushed twice daily (35%) was consistent with national figures, while those who brushed once daily (52%) reflected poor oral hygiene habits (Olusile et al., 2014).

Challenges in Nigeria's Dental Health System

Amedari et al. (2022) highlighted significant gaps in Nigeria's dental health delivery system, particularly the absence of a preventive approach to oral health care, which remains focused on curative and rehabilitative services. Additionally, dental services are unevenly distributed between urban and rural areas and across the three tiers of healthcare—tertiary, secondary, and primary. At the primary healthcare level, oral health services are

nearly non-existent. Amedari et al. (2022) provided an example of a state where only one out of 17 primary healthcare facilities was capable of providing oral health services to a population exceeding 400,000 people.

Moreover, challenges such as workforce shortages, lack of up-to-date national surveys, inequitable distribution of dental products and technologies, inadequate oral health financing, weak leadership and governance, and insufficient community participation exacerbate the problem. Umenweke and Orabueze (2023) noted that the failure to implement a comprehensive national policy for IDPs has further hindered access to essential healthcare, including oral health services.

These systemic gaps are reflected in this study's findings on access to dental care. A total of 84% (n = 100) of participants had never been seen by a dental professional, while only 16% (n = 19) had previously accessed dental care. These results mirror the findings of Umeizudike et al. (2019), where 91% of participants had no prior dental contact. The low access rate in this study is also consistent with national data, which shows that only 26.4% of Nigerian adults have had at least one dental visit (Olusile et al., 2014).

Oral Hygiene Status and Caries Experience

The study's objective to determine the oral hygiene status of participants, using the Simplified Oral Hygiene Index (OHI-S), revealed a mean score of 2.46, indicating fair oral hygiene. Categorized scores showed that 10.99% (n = 13) of participants had good oral hygiene, 63% (n = 75) had fair oral hygiene, and 23.5% (n = 28) had poor oral hygiene. These findings contrast with Umeizudike et al. (2019), who reported higher percentages of participants with good oral hygiene (50.5%) and fair oral hygiene (44.6%). Although both studies reported differences, oral hygiene status was largely concentrated within the good and fair categories in both populations.

Regarding caries experience, 67.2% (n = 80) of participants had no dental caries, while 32.8% (n = 39) had between one and seven carious lesions. Furthermore, categorized decayed, missing, and filled teeth (DMFT) results showed that 64.7% (n = 77) scored zero on the index scale, while 35.3% (n = 42) scored more than one. The uncategorized DMFT data yielded a mean score of 1.11. When compared with national and international data, the caries prevalence of 32.8% in this study was higher than the 20.3% reported by Umeizudike et al. (2019), but comparable to their mean DMFT score of 0.7. However, higher DMFT scores were reported by Kazwini et al. (2021) (mean DMFT = 2.47) and Gilani et al. (2012) (mean DMFT = 3.92). Additionally, the prevalence of dental caries in this study slightly exceeded the upper limit of the national range (4%–30%) reported by Akpata (2004).

Associations Between Variables

This study found a significant association between age (independent variable) and oral hygiene status (OHI-S), with statistical significance at $p < 0.01$. Additionally, an association was found between previous dental visits and DMFT scores. These findings align with Umeizudike et al. (2019), who also observed a significant association between age and mean OHI-S, as well as between prior dental visits and DMFT scores, at $p < 0.05$.

Strengths and Limitations of the Study

Limitations

Several limitations were identified in this study. Firstly, the lack of control over data collection was evident in the absence of several key demographic variables, such as income and level of education, as well as variables related to oral hygiene practices, such as the duration of tooth brushing. This limitation may have constrained the ability to analyse potential associations between these variables and oral health outcomes.

Secondly, while the primary data effectively served its purpose of informing a cost-effective intervention, potential discrepancies and inaccuracies may have arisen due to inconsistencies in examiner calibration, which could have affected the reliability of the findings.

Thirdly, the sampling technique used in the primary data collection may have introduced selection bias, leading to underrepresentation of certain groups. For instance, research notes from the primary data collection indicated that many men in the community were absent due to farming activities. Consequently, the findings may not fully represent this subgroup, limiting the generalizability of the results.

Lastly, the overall diagnostic quality of the data was relatively low, as the primary objective was to rapidly screen for basic oral health conditions, such as dental caries. Although more complex conditions, such as periodontal abscesses, were observed and referred for treatment during the outreach, no actual data were collected for conditions like periodontitis, limiting the comprehensiveness of the study's findings.

Strengths of the Study

One of the key strengths of this study is its low cost and flexibility, which enabled an efficient assessment of the oral health status and oral hygiene practices of this vulnerable population. Additionally, the study provided insight into the extent of access to dental care services among internally displaced persons (IDPs).

Another strength lies in the ability to compare the findings with previous studies, particularly the study by Umeizudike et al. (2019), which remains the only available research on the oral health of IDPs in Nigeria. This comparative approach enhances the relevance and contextual validity of the study's results.

Finally, with some modifications, this study could serve as a simple framework for collecting oral health data to support targeted interventions for IDPs. Such a framework could facilitate evidence-based decision-making and improve the design of future oral health initiatives for displaced populations.

CONCLUSIONS

The findings of this study suggest that internally displaced persons living in camp-like settings experience significant oral health inequalities, particularly in terms of access to dental care. This underscores the urgent need for policies on IDPs and oral health that adequately address the unique challenges faced by this vulnerable group.

To effectively implement such policies, appropriate legislative measures and dedicated funding are required to correct the existing imbalances in oral healthcare provision. Investments should be directed towards infrastructure development, a robust national oral health survey, workforce expansion, education, and partnerships with key stakeholders. These efforts will facilitate evidence-based planning, enabling the development of both short- and long-term strategies to improve the accessibility and equitable distribution of dental care services across Nigeria, particularly for vulnerable populations such as the study participants.

Participants with severe oral health conditions received immediate dental care in 2019, and ongoing support has been provided in the form of oral hygiene education and supplies. However, sustained efforts are necessary. Collaborative partnerships across all levels of oral healthcare—tertiary, secondary, and primary—should be pursued, with particular attention given to primary healthcare facilities. Training primary healthcare providers in basic dental care and referral procedures would be beneficial, as they often serve as the first point of contact for displaced communities.

A repeat of this study, with improved data collection parameters and enhanced resources to allow for sustained engagement with the target population, is recommended to further refine the understanding of oral health challenges among IDPs and to develop more effective intervention strategies.

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