

Caries Experience and Treatment Needs among Residents of an Internally Displaced Persons Camp in Edo State, Nigeria.

***OKUONGHAE OE, **AKHIGBEMEN O,
***ONAGAUMAH JJ, **UDOBI L
ENABULELE JE, *AZODO CC**

**Department of Preventive Dentistry,
University of Benin Teaching Hospital*

***Department of Restorative Dentistry,
University of Benin Teaching Hospital*

****Department of Periodontics,
University of Benin Teaching Hospital*

Correspondence

*Dr OE Okuonghae
Department of Preventive Dentistry,
University of Benin Teaching Hospital
Benin City
Email address: elosticker@gmail.com*

ABSTRACT

Background: Internally displaced persons (IDPs). are considered vulnerable as they are at a higher risk of disparity in oral health care and bear a disproportionate burden of oral diseases.

Objective: To evaluate the prevalence of dental caries, the treatment needs, and the dental caries severity among internally displaced persons living in a camp.

Methods: An analysis of secondary data obtained at an oral health outreach carried out among adults and children residing in an Internally Displaced Persons' Camp at Uhogua village forest reserve, Edo State, Nigeria as part of the World Oral Health Day by the Edo state branch of Nigeria Dental Association. Data retrieved were age, gender, decayed teeth, missing, and treatment done. The prevalence, severity, and treatment need with regard to dental caries were calculated before and after intervention. IBM SPSS version 26.0 was used for descriptive and inferential analysis at 95% confidence interval with a p-value set at < 0.05 significance.

Results: A total of 83 patient records were retrieved with an age range of 3-43 and a mean age of 15.01+ 6.9. with the majority within the age group of 10-20years (65.1%). Male had a slightly higher representation of 43 (51.8%) with a male-female ratio of 1.1:1. Caries prevalence was 33.7% with females having higher prevalence (53.9%). The mean Decayed, Missing, and Filled Teeth (mDMFT) for adults was 0.45, while the mean dmft for children with primary teeth was 0.44. The mean dmft in females (0.55) was statistically significantly higher than that recorded in males (0.27). The treatment need was calculated before and after intervention with the mean treatment need before intervention 32.5+ 5.2 and the mean treatment need after intervention 20.7+ 4.4 showing a slight reduction in treatment need after intervention.

Conclusion: The study shows that the IDPs had a dental caries prevalence of 33.7% suggesting that persons living in IDP camps need more attention to dental health services. Recommended strategies to further reduce the dental caries prevalence and experience will be instituting oral health education programs and the creation of dental safety net clinics at the camp which will increase access to preventive oral health services for this group. The IDPs benefited from free oral health care services.

Key words: Internally displaced persons, dental caries, treatment needs

INTRODUCTION

The act of terrorism has become persistent in the Northern part of Nigeria resulting in significant impact in various aspect of the economy and one of such is the displaced people crisis within the country resulting in persons referred to as Internally displaced persons (IDPs) (Nnawuihe & Otakhoigbogie, 2021; Arheiam et al. 2023). These persons are considered vulnerable as they are at a higher risk of disparity in oral health care and bear a disproportionate burden of oral diseases (Umezudike et al., 2019)

One of the most prevalent diseases of the oral cavity is dental caries, which when untreated can cause pain, swelling and facial infections, among other consequences which can affect the overall quality of life (Razan et al., 2022). There is a need to assess the caries experience, treatment need and dental caries severity among these group. The objective of this study is to evaluate the prevalence of dental caries, the treatment needs and the dental caries severity among internally displaced persons living in a camp.

MATERIALS AND METHODS

This was a descriptive cross-sectional study utilizing secondary data obtained at an oral health outreach carried out among adults and children residing in an internally displaced persons' camp at Uhogua village forest reserve, Edo State, Nigeria as part of the World Oral Health Day by the Edo state branch of Nigeria Dental Association.

Data retrieved from the secondary data were age, gender, decayed teeth, missing teeth, and treatment done during the outreach.

Caries experience, also known as dental morbidity was determined by using the rate of decayed, filled and missing teeth due to caries. i.e dmft or DMFT indices. Caries prevalence, which refers to the percentage of affected individuals, was coded for analysis as "no caries" if DMFT = 0 and "with caries" if DMFT > 0. Caries severity, which refers to the classification of caries according to its severity, was coded as "no caries" if DMFT + dmft = 0, "low severity" if DMFT + dmft ≤ 3, "medium severity" if DMFT + dmft = between 4 and 6, and "high severity" if DMFT + dmft ≥ 7 as done in a previous study (Velez-Leon et al., 2022).

Treatment needs was obtained using the following formula from a previous study:

$$\frac{\text{Decayed teeth}}{\text{decayed teeth} + \text{filled teeth}} \times 100$$

Caries prevalence, caries severity, and treatment need with regards to dental caries were calculated before and after intervention.

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All data retrieved was analysed using IBM SPSS version 26.0. Statistical analysis was done using descriptive and inferential analysis at 95% confidence interval with a p-value set at < 0.05 significance.

RESULTS

A total of 83 patient records were retrieved with males representing 43 (51.8%) with a male-female ratio of 1:0.93. The age range of persons seen was 3-43years with a mean age of 15.01± 6.9years, of which majority of the patients being 10-20 years (65.1%) followed by >18 years above (22.9%) and those less than 10 years of age were the least represented (Table 1). The mean DMFT was 0.45± 0.19, while the mean dmft was 0.44 ± 0.10. Table 2 shows that the mean dmft for females (0.55±1.19) was higher than the mean dmft for males (0.27±0.65) however this was not statistically significant (p= 0.41). There was no statistically significant association between gender and mean DMFT with males having a mean DMFT of 44±0.87 which was slightly lower than that of the females (45±0.95) (Table 2). Caries prevalence for the study population was 33.7% with 55 (66.3%) being caries free (Figure 1). Age and gender of the patients did not have any statistically significant relationship with caries prevalence (p= 0.08 and 0.48 respectively). However, those aged 10 -18years and females (53.9%) had higher caries prevalence (Table 3). With regards to Caries severity, no Caries was recorded in 66.3% of cases. There was no case of severe caries while low caries and medium caries were observed in 31.3% and 2.4% of the cases respectively (Figure 2). Table 4 shows that there was no statistically significant association between age group and caries severity (p=0.49). Similarly, there was no statistically significant association between gender and caries severity (p=0.39). The treatment need was calculated before and after intervention with the mean treatment need before intervention 32.5± 5.2 and the mean treatment need after intervention 20.7± 4.4 showing a slight reduction in treatment need after intervention, with p value of 0.001 which was statistically significant (Table 5).

Table 1: Distribution of participants by age group and gender

Characteristics	Frequency	Percentage
Gender		
Male	43	51.8
Female	40	48.2
Age Group		
<10 Years	10	12.0
10 – 18 years	54	65.1
>18 years and above	19	22.9
Total	83	100.0

Table 2: Association between mean DMFT, dmft and gender

	Gender	N	Mean	SD	SE	p-value
DMFT	Male	41	0.44	0.87	0.14	0.97
	Female	38	0.45	0.95	0.15	
Dmft	Male	11	0.27	0.65	0.2	0.41
	Female	20	0.55	1.19	0.27	

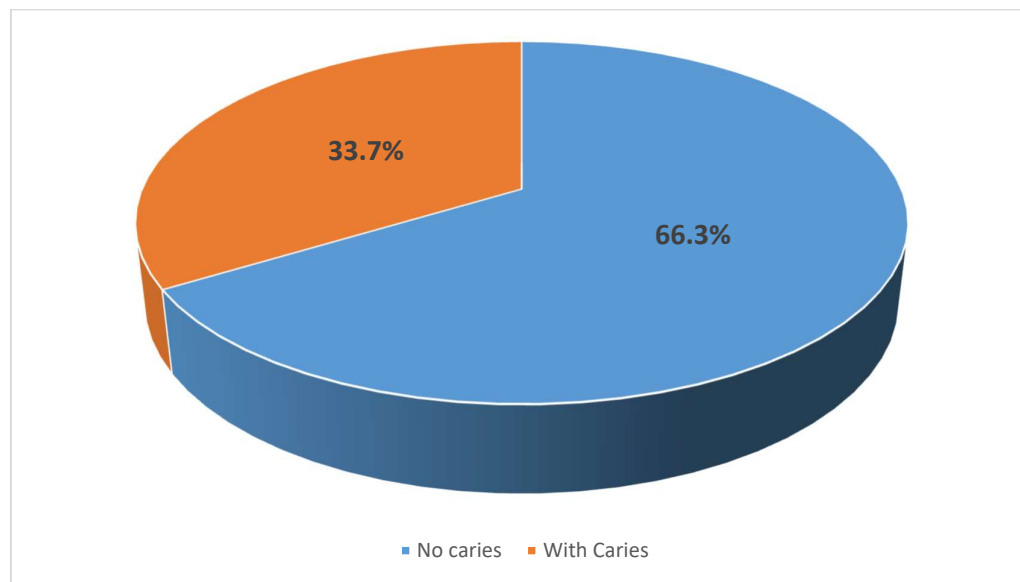


Figure 1: Prevalence of dental caries amongst the participants

Table 3: Association between Gender and Age group distribution with caries prevalence.

CHARACTERISTICS	Caries Prevalence		Total n (%)
	No Caries n (%)	With Caries n (%)	
Gender			P=0.48
Male	30 (54.4)	13 (46.4)	43 (100.0)
Female	25 (45.5)	15 (53.6)	40 (100.0)
Age group (years)			P=0.08
< 10	4 (40.0)	6 (60.0)	10 (100.0)
10-18	40 (74.1)	14 (25.9)	54 (100.0)
>18year and above	11(57.9)	8 (42.1)	19 (100.0)

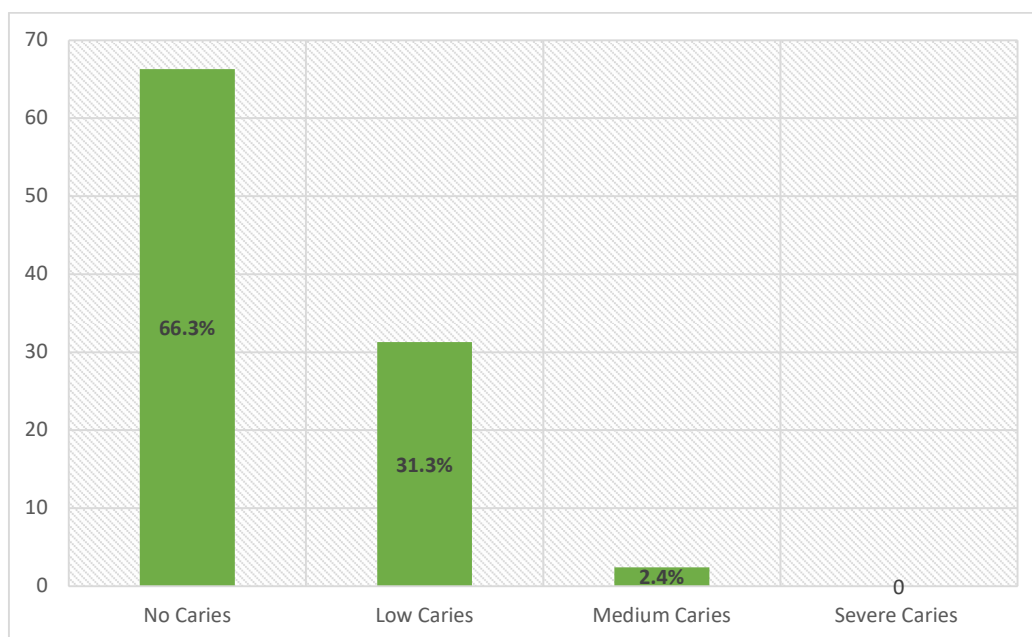


Figure 2: Distribution of caries Severity among the participants

Table 4: Association between Gender, Age group and Caries Severity

CHARACTERISTICS	Caries Severity			Total
	No Caries n (%)	Low caries n (%)	Medium Caries n (%)	
Gender				P=0.39*
Male	30 (69.8)	13 (30.2)	0 (0.0)	43 (100.0)
Female	25 (62.5)	13 (32.5)	2 (0.05)	40 (100.0)
Age group (years)				P=0.49*
< 10	4 (40.0)	5 (50.0)	1(10.0)	10 (100.0)
10-18	40 (74.1)	14 (25.9)	0 (0.0)	54 (100.0)
>18year and above	11(57.9)	7 (36.8)	1(0.05)	19 (100.0)

* Fisher's Exact Test

Table 5: Association between Treatment need before and Treatment need after

Characteristics	N	Mean	SD	SE	p-value
Treatment need Before	83	32.53	47.13	5.17	
Treatment need After	83	20.68	40.04	4.39	0.001

DISCUSSION

Dental caries is a multifactorial biofilm disease that commonly has its onset in childhood (Hurlbutt & Young, 2014). Global data have shown that it still remains a problem of public health significance as increased life expectancy and longer retention of teeth have translated into an increased burden of the disease (Lawal & Alade, 2017). Oral health is a very important indicator to a person's general health status and overall quality of life.² Knowledge of the current state of oral health in one community has a great role in addition to its impact on any treatment or preventive interventions that can be widely adopted, whether in educational

curricula and teaching strategies or even in oral health awareness programs (Nakre & Harikiran, 2013). There is a dearth of literature on the oral health status of internally displaced people (IDP) in Nigeria, despite the numerous publications on oral health among the general population (Umezudike et al., 2019).

The prevalence rate of dental caries among the IDPs in the index study was 33.7% with mean DMFT/dmft ratio of 1.0 which is within the overall prevalence rate of 4-40% and DMFT/dmft index of 0.5-3.5 in Nigeria.^{2,9} The prevalence rate in this study is similar to the findings by Okoye & Ekwueme. among rural dwellers in Enugu, South-

East Nigeria and Ogbeide et al in Sokoto state, North-East Nigeria (Okoye & Ekwueme, 2011; Ogbeide et al., 2022). The prevalence rate was reported to be 35.5% and 35.6% in these studies respectively (Okoye & Ekwueme, 2011; Ogbeide et al., 2022).

The caries prevalence rate from the index study was higher than 20.3% among IDPs in Lagos, South-West Nigeria and 22.1% in rural communities in South-South, Nigeria (Nnawuihe & Otakhoigbogie, 2012; Azodo & Amenaghawon, 2013). The observed differences in the caries prevalence across the various studies may be attributable to the disparity in the type and degree of impairment, study design and the level of oral health care to which the special needs population are exposed to.

Females were more affected than males in this study with mean DMFT score of 0.45 vs 0.44 and mean dmft score of 0.55 vs 0.27. This finding was not statistically significant possibly due to the small sample size, but a similar trend has been reported in larger studies by Okeigbemen, Udoye et al and Daneshkazemi &, Davari (Okeigbemen, 2004; Udoye et al. 2008; Daneshkazemi &, Davari, 2005) The higher prevalence of dental caries seen among females in this study may be attributed to earlier eruption of teeth in females, hence longer exposure of teeth to the cariogenic oral environment, easier access to food supplies by women and frequent snacking during food preparation and pregnancy.

In addition, more than two-third of the respondents with dental caries were below 18 years of age. This is in line with studies by Van Chuyne et al and Nnawuihe et al. (Van Cheyne et al., 2021; Nnawuihe et al., 2022) and also supported by reports from WHO that children and young adults are more vulnerable. The higher preponderance of caries in females and children is in tandem with the National population commission's report in which 80% of the 3.3 million IDPs in Nigeria are women and also from the opinion that during conflicts, women and children are more likely to be displaced from their homes as men are major actors in conflicts as combatants and more likely to be killed. (Umeizudike et al., 2019; Akseer et al., 2020) The high prevalence of dental caries in females and the younger age group raises some concern considering the fact that women and children are already vulnerable population groups ((UNHCR, 2017). Generally, vulnerable people are reported to have less access to general health-care services. Furthermore, people in IDP camps face precarious health conditions related to their living conditions

and have poor access to health services (Umeizudike et al., 2019).

The prevalence rate of dental caries from the index study raises a red flag and quite worrisome as a previous larger study done by Ukachi & Otakhoigbogie, few years ago among the same study population had reported a lower prevalence rate of 19.7% (Nnawuihe & Otakhoigbogie, 2012) The increasing prevalence of dental caries is in tandem with the WHO report that the incidence of dental caries is expected to increase in many developing countries in Africa due to the epidemiologic transition and the growing consumption of sugars and inadequate exposure to fluorides (Peterson, 2004). Some factors driving high caries rates include less than satisfactory oral hygiene practices, unhealthy dietary habits and poor access to dental care. Moreover, despite this disturbing trend, higher prevalence rates have been reported in other countries. Selivany et al. in Iraq reported a prevalence of 86.5%, (Selivany et al/. 2017), Altun et al. in Turkey reported 84.6% (Altun et al., 2010), Mokhtar et al. in Malaysia reported 54.9% (Mokhtar et al., 2016) and Shaikh et al in Pakistan reported (77.8%) (Shaikh et al., 2014).

The mean treatment needs before intervention in this study was 32.5 ± 5.2 . Similar finding of 30.6 was reported by Umeizudike et al among IDPs in Lagos (Umeizudike et al., 2019). A similar value of 34.3% was reported by Lawal et al among females in Ibadan (Lawal & Alade, 2017).

CONCLUSION

In conclusion, the IDPs in the index study had a caries prevalence of 33.7% and a mean DMFT of 0.45 which were relatively high, in comparison with the initial report among the same study group in the same location, it showed nearly a two-fold increase. Dental caries was more in males than females and among individuals below 18 years old.

RECOMMENDATIONS

Recommended strategies to further reduce the dental caries prevalence and experience will be by instituting oral health education programs and creation of dental safety net clinics at the camp which will increase access to preventive oral health service for this group. The IDPs benefited from free oral health-care services. The government and Non-governmental organisations (NGOs) should provide regular and free oral health-care services to IDPs who represent a vulnerable group through community outreaches to mitigate their high unmet treatment needs and improve their oral health quality of life.

REFERENCES

- Akseer N, Wright J, Tasic H (2020). Women, children and adolescents in conflict countries: an assessment of inequalities in intervention coverage and survival. *BMJ Global Health*; 5:e002214
- Arheiam A, Alhashani A, Kwidir T, Bosif Y, Ballo L, Tantawi ME (2023). Untreated dental caries among Libyan children during and after the war and in internally displaced person camps. *Community Dent Oral Epidemiol*; 51(4):636-643.
- Altun C, Guven G, Akgun OM, Akkurt MD, Basak F, Akbulut E (2010). Oral health status of disabled individuals attending special schools. *Eur J Dent*; 4:361-366.
- Azodo CC, Amenaghawon OP (2013). Oral hygiene status and practices among rural dwellers. *Eur J Gen Dent*; 2:42-45
- Daneshkazemi AR, Davari A (2005). Assessment of DMFT and enamel hypoplasia among Junior High School Children in Iran. *J Contemp Dent Pract*; 6:85-92.
- Hurlbutt M, Young DA (2014). A best practices approach to caries management. *J Evid Based Dent Pract*; 14: 77-86
- Lawal F, Alade O (2017). Dental caries experience and treatment needs of an adult female population in Nigeria. *Afr Health Sci*; 17(3): 905-911
- Mokhtar SM, Jalil LA, Noor NM (2016). Dental Status and Treatment Needs of Special Needs Children in Negeri Sembilan, Malaysia. *World J Res Rev*; 2(6): 64-70
- Nakre PD, Harikiran AG (2013). Effectiveness of oral health education programs: A systematic review. *J Int Soc Prev Community Dent*; 3(2): 103-115.
- Nnawuihe UC, Otakhoigbogie U (2021). Oral disease burden amongst residents of an internally displaced persons camp in Nigeria. *Nig J Dent Res*; 6(2):109-115.
- Nnawuihe UC, Sofola OO, Okeigbemen SA (2022). Dental caries experience and associated factors in a Nigerian rural adult population, a cross-sectional study. *Afr J Oral Health*; 11(1):21-37
- Ogbeide ME, Ogbemor GB, Okeigbemen SA, Taiwo AO (2022). Prevalence of dental caries among children and young adults with disabilities attending a special needs school in Sokoto, Nigeria. *Nig J Dent Res*; 7(2): 123-131
- Okeigbemen SA (2004). The prevalence of dental caries among 12 to 15-year-old school children in Nigeria: report of a local survey and campaign. *Oral Health Prev Dent*; 2(1):27-31
- Okoye L, Ekwueme O (2011). Prevalence of dental caries in a Nigerian rural community: a preliminary local survey. *Ann Med Health Sci Res*; 1(2) :187-95.
- Peterson PE (2004). Improvement of oral health in Africa in the 21st century - the role of the WHO Global Oral Health Programme. *Afr J Oral Health*; 1(1): 2-16
- Razan OT, Nada HM, Isam MA, Elhadi MA (2022). Oral Health Status among Refugees and Internally Displaced Children (3-11 Years Old) from Western Kordofan State, Sudan. *Saudi J Oral Dent Res*; 7(5):142-146
- Selivany BJ, Mousa HD, Mohammed SA (2017). Oral Health Status among Internally Displaced People/North of Iraq. *J Dent Res* (96A): Poster #3712. Available from: <https://www.iadr.org>. [Last accessed on 2023 July 07].
- Shaikh I, Kalhoro F, Pirzado M, Memon A, Sahito M, Dahri W, Malhi P (2014). Prevalence of dental caries among students of khairpur district. *Pak Oral Dental J*; 34(4): 680-683.
- The UN Refugee Agency (UNHCR (2017)). Nigeria Situation; p. 1-51. Available from: <http://www.unhcr.org/597704b87.pdf>. [Last accessed on 2024 May 07]
- Udoye C, Aguwa E, Chikezie R, Ezeokenwa M, Jerry-Oji O, Okpaji C (2008). Prevalence and distribution of caries in the 12-15 year urban school children in Enugu, Nigeria. *Internet J Dent Sci*; 7(2): 1-5
- Umezudike KA, Dedeke AA, Nzomiwu CL, Ekowmenhenhen UI (2019). Oral health status and treatment needs of internally displaced persons. *Sahel Med J*; 22:207-213
- Van Chuyen N, Van Du V, Van Ba N (2021). The prevalence of dental caries and associated factors among secondary school children in rural highland Vietnam. *BMC Oral Health*; 21: 349.
- Velez-Leon EM, Albaladejo-Martinez A, Cuenca-Leon K, Encalada-Verdugo L, Armas-Vega A, Melo M (2022). Caries experience and Treatment Needs in Urban and Rural Environments in School-Age Children from Three Provinces of Ecuador: A Cross-sectional Study. *Dentistry J*:10;185.