Noma Disease and its Impact on Living in an Internally Displaced Persons' Camp in Northeast Nigeria

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INTRODUCTION

Noma disease (*Cancrum oris*) is a gangrenous stomatitis that affects the oral and para-oral features of the face and affects mainly children. Noma disease is a severe and aggressive gangrenous gingivitis that mainly affects the oral and facial muscles of its victims, often leaving them with severe facial disfigurement and is fatal in 80% to 90% of cases (Coupe et al., 2013). Noma disease has a global incidence of about 30,000 to 40,000 cases annually and a disability-adjusted life-years (DALY) of about 1 to 10 million (Srour et al., 2017). Other estimates of Noma disease incidence put the figures up to 140,000 cases annually. The variable estimates are a result of the limited understanding of the global burden of the disease (Farley et al., 2020).

This multi-faceted study examines Noma prevalence among IDPs in Borno and Adamawa States, North-eastern (NE) Nigeria. – a region that has been facing the Boko Haram insurgency for over a decade. The research uses a multistage targeted cluster sampling technique to identify three study sites: the Noma referral centre in northeast Nigeria, an Internally Displaced Persons (IDP) camp and a host community for IDPs. Collectively, these three sites with different statuses represent the living and social dynamics of displaced persons in the region. Due to the social and situational complexities of IDPs in northeast Nigeria, this study was carried out in three parts (a case-control and a cross-sectional study). This is also to represent all the perspectives from which Noma can be studied within the IDP population.

A total of 215 participants collected from three sites in two NE states were enrolled in this three-part study. The three study sites include the Dental and Maxillofacial Surgery Department of the University of Maiduguri Teaching Hospital in Maiduguri, Borno state and Fufore IDP camp in Fufore LGA and Malkohi host community in Yola North LGA of Adamawa state. The results indicate an indirect relationship between having Noma disease and being an IDP, with a negative spearman's correlation test score of -381.The prevalence of Noma amongst the sampled population is estimated to be 6.40% and the odds of having Noma disease as an IDP in the sampled population is 5.5 while the odds of having Noma among non-IDPs is 1.09. While the findings suggest that there is no apparent association between being an IDP and the outcome (Noma), the prevalence among such a vulnerable population is relatively high and therefore calls for greater surveillance of Noma disease in the larger IDP population. The objective: of the study was to investigate the prevalence of Noma disease among IDPs in Adamawa and Borno states of Northeast Nigeria.

MATERIALS AND METHODS

In the absence of reliable secondary data, physical oral examinations of the study participants were carried out. In this case, legally authorized consents were obtained from the legitimate authorities, including IDP camp directors, the National Emergency Management Agency (NEMA), and community leaders.

Participants were conveniently sampled in this study through a targeted cluster to identify and reach accessible sites with as much as diverse as possible. Thus, the participants were derived from an IDP camp, a host community for IDPs, registry-based and active Noma cases from the dental and maxillofacial surgery department of the university of Maiduguri Teaching Hospital, and a host of controls both the IDP population (positive controls) and the non IDPs (negative controls). The following maps show the geographical location of the study sites.

Secondary data collection involved retrieving documented cases of Noma from the registry of the Dental and Maxillofacial Surgery Department of the University of Maiduguri teaching hospital. While primary data collection is done through physical oral screening of study subjects at Fufore IDP camp in Fufore LGA and Malkohi host community in Yola North LGA of Adamawa statement. All data analysis computed with International Business Machines Corporation's Statistical Package for the Social Sciences (IBM SPSS)

Table 1: Participants Distribution

Location	Participants
Borno (UMTH Active Cases)	2
Borno (UMTH Records)	12
Adamawa (Fufore IDP Camp)	100
Adamawa (Malkohi Host Community)	90
Maiduguri controls (non-IDPs)	11
Total	215

RESULTS

Part 1: Case Control Results

A total of 36 children were enrolled in the case-control study. From this sample, 23 are internally displaced children (cases), while 13 non IDPs (controls) were enrolled in the case control study. Part 3: Cross-sectional Study Results

In this we part, determine the prevalence of Noma disease among the sampled population and to find possible correlations between being and IDP and having Noma disease. Prevalence rate = 13/203X100= 6.40%

Table 2: Odds Estimates

	IDP	Non IDP
Noma	11	2
No Noma	12	11
Odds Noma/IDP	5.5	

Odds Noma/Non IDP	1.09	
Odds Ratio (OR)	5.5	

Table 3: Prevalence Estimations

Noma Cases	13
Non-Cases	190
Sample Population	203

CONCLUSION

This research found considerable evidence that Noma is affecting IDPs in NE Nigeria, achieving its objective. However, access to IDP camps and resources to deploy a team for adequate coverage of accessible camps are limits. These two restrictions directly affect the low sample size and result inference.

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