**Penerbit Akademia Baru**

Advanced Research in Applied Sciences and Engineering Technology

# Epidemiology of diseases among patients attending an out-patient primary health care clinic in a newly liberated town in North-eastern Nigeria

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| ARTICLE INFO | ABSTRACT |
|---|---|
| | Mafa local government area of Borno state was one of the many communities affected by the Boko Haram insurgency crisis in Nigeria. It had been deserted for almost three years after most of its residents had fled the town before it was later liberated. The town basically comprised of returnees and internally displaced persons from remote villages of Mafa. Such disasters are usually associated with several public health problems and the need for external support. This study aimed to determine the distribution of diseases among patients attending the only functional health centre in the town. A cross-sectional study was carried out over a two-week period at the Primary Health Care clinic in which a structured questionnaire was used to collect primary data. A total of 1,474 persons were included in the final analysis. Most of them were Kanuri and town dwellers. Among the general population, malaria, respiratory tract infection and diarrhoeal disease were the commonest ailments. While most patients presented with a single diagnosis, many also presented with multiple health problems. Apart from malaria which showed a higher occurrence among town dwellers and diarrhoeal disease which showed a higher occurrence among IDP camp dwellers, there was no significant difference in the other ailments between camp and town dwellers. This study points to a need to deploy more qualified health staff with an emphasis on health promotion through personal hygiene and environmental sanitation. |
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## 1. Introduction

The Boko Haram insurgency in North-eastern Nigeria has been characterised by numerous attacks; a large number of fatalities, massive displacements, rape, kidnappings, and enormous socio-economic loses to the region [1]. According to the Displacement Tracking and Registration report of the International Organisation for Migration (IOM), 1,899,830 individuals had been displaced as a result of the insurgency, with Borno state having the highest number of Internally Displaced Persons

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(IDPs) of all the states in Nigeria, numbering 1,506,170 [2]. Being internally displaced is associated with a number of health problems [3] which include: the spread of infectious diseases; malnutrition; limited access to health services and increased predisposition to sexual and reproductive health risks [4]. Findings from a systematic review had identified malaria, respiratory infections and diarrhoeal diseases as the most prevalent infectious diseases among IDPs in Africa [5]. In an IDP camp in Adamawa state of Northern Nigeria, diarrhoea was the leading health problem, followed by respiratory infection [6]. Psychological problems have also been identified as a very important health problem among post-disaster victims [7, 8]. Massive displacement is also likely to over burden the already inadequate health services of the host community [9]. Despite these numerous anticipated health challenges likely to be faced by such post-disaster victims, there exists inadequate data and research on their health needs and problems as noted by Owoaje et al. [5]. If effective health interventions are to be implemented, then their health problems need to be identified, along with their distribution, to allow for proper planning of resource deployment and health promotion activities for the IDPs and returnees in the affected area. The objective of this study was to determine the distribution of diseases among out-patients attending the Primary Health Care (PHC) clinic in Mafa Local Government Area (LGA).

## 2. Materials and Methods

This study was conducted in Mafa town of Mafa Local Government Area (LGA), which is located 45km away from Maiduguri, the Borno State capital. The total population of the LGA as at 2006 as reported by the National Population Commission was 103,600 [10]. The town had been displaced of almost all its residents for almost three years but was later liberated about six months before the study. As at the time of this study, a great number of the residents were still in Maiduguri as IDPs. The town also had two IDP camps, occupied mostly by persons from the remote villages of Mafa LGA. One of the camps has a single borehole while within town is supplied by three boreholes. The populace receive a monthly donation of food items by the World Food Programme (WFP). Ajari Clinic which was the study location, was the only functional health centre in town as at the time of this study. It is funded and supported as a collaboration between the United Nations Children Fund (UNICEF) and the Borno State Primary Health Care Development Agency (SPHCDA) and supported by supplies and ad-hoc staff from the Federal Ministry of Health under the Health and Nutrition Emergency Response Project (HNERP). It runs all the basic primary health care services.

This survey used a cross-sectional study design, and was carried out from 20th to 31st March, 2017. Out-patients who were attending the clinic made up the study population. Ante-natal care attendees, military personnel, and visitors (patients who were non-resident in Mafa town) were excluded from the study. Malnutrition patients were also excluded as they are triaged from the reception and do not present at the out-patient unit. To ensure all-inclusiveness of cases, all eligible patients attending the clinic during the study period were included. A structured questionnaire was used to collect information from the patients on their age; gender; ethnicity; type of residence in Mafa, and diagnosis during their clinical visits. Permission to conduct the research, and ethical clearance, was obtained from the UNICEF/SPHCDA Ajari clinic, Mafa town. Patients also had to give their own consent before the data collection was initiated. Data was analysed using Statistical Package for Social Sciences (SPSS) version 22, using frequency and percentage to summarise the data; and chi-squared tests to determine differences between groups.

## 3. Results

A total of 1,500 eligible respondents completed the survey, of which 1,474 were included for analysis as 26 questionnaires had incomplete data. A summary of their socio-demographic characteristics is presented in Table 1. Their ages ranged from three weeks to 90 years, and there were more females (59.6%) than males (40.4%). Most of them were of Kanuri ethnicity (72.9%) and a little over a quarter (27.1%) were IDPs.

**Table 1**
Socio-demographic characteristics of the respondents

| Socio-demographic characteristics | Frequency | Percentage |
|---|---|---|
| **Age group** | **n = 1474** | **%** |
| 0 to 28 days | 1 | 0.1 |
| > 28 days to 6 months | 73 | 5.0 |
| > 6 months to < 1 year | 90 | 6.1 |
| 1 to < 5 years | 479 | 32.5 |
| 5 to < 13 | 270 | 18.3 |
| 13 to < 40 | 374 | 25.4 |
| > 40 | 187 | 12.7 |
| Total | 1474 | 100 |
| **Gender** | **n = 1474** | **%** |
| Male | 595 | 40.4 |
| Female | 879 | 59.6 |
| Total | 1474 | 100 |
| **Ethnicity** | **n = 1474** | **%** |
| Kanuri | 1075 | 72.9 |
| Shuwa | 196 | 13.3 |
| Hausa | 140 | 9.5 |
| Gamargu | 17 | 1.2 |
| Others | 46 | 3.1 |
| Total | 1474 | 100 |
| **Type of residence in Mafa** | **n = 1474** | **%** |
| Returnee | 1063 | 72.1 |
| Internally displaced | 400 | 27.1 |
| Missing | 11 | 0.7 |
| Total | 1474 | 100 |

**Table 2**
Distribution of diseases by frequency among respondents

| Disease | Freq. (%) |
|---|---|
| Malaria | 409 (27.2) |
| Respiratory tract infection | 430 (29.2) |
| Conjunctivitis | 146 (9.9) |
| Diarrhoeal disease | 343 (23.3) |
| Chicken pox | 78 (5.3) |
| Fungal infection | 72 (4.9) |
| Otitis media | 30 (2.0) |
| Hypertension | 115 (7.8) |
| Peptic ulcer disease | 66 (4.5) |
| Others | 322 (21.8) |

Table 2 presents the distribution of diseases by frequency. Malaria (27.2%), respiratory tract infection (29.2%), and diarrhoeal disease (23.3%) accounted majorly for the burden of diseases

among the patients. Other diseases included: measles, helmenthiasis, schistosomiasis, urinary tract infection, trauma cases and others.

Table 3 shows the level multiplicity of health conditions per person. Most persons presented with singular health conditions (69.5%), but a few also presented with up to four different health conditions.

**Table 3**
Distribution of respondents by number of health conditions at the time of presentation

| Number of health conditions | Freq. (%) |
|---|---|
| Single diagnosis | 1024 (69.5) |
| Double diagnoses | 369 (25.0) |
| Triple diagnoses | 76 (5.2) |
| Four diagnoses | 5 (0.3) |

The distribution of illnesses among under five is presented in Table 4. Respiratory tract infection (44.6%) and diarrhoeal disease (39.7%) were the commonest illnesses among all the under five patients.

**Table 4**
Distribution of diseases among respondents under 5 years of age

| Disease | Freq. (%) |
|---|---|
| Malaria | 121 (18.8) |
| Respiratory tract infection | 287 (44.6) |
| Conjunctivitis | 84 (13.1) |
| Diarrhoeal disease | 255 (39.7) |
| Chicken pox | 39 (6.1) |
| Fungal infection | 19 (3.0) |
| Otitis media | 18 (2.8) |
| Others | 89 (13.8) |

Table 5 presents a comparison between returnees and IDPs in the types of illnesses they present with. Malaria appeared to be higher among town dwellers compared to IDPs while diarrhoeal disease was higher among IDPs.

**Table 5**
Comparison of health conditions by type of residence

| Disease | Type of residence | | $\chi^2$ | df | p |
|---|---|---|---|---|---|
| | Returnee Freq. (%) n = 1063 | IDP Freq. (%) n = 400 | | | |
| **Malaria** | | | 3.864 | 1 | 0.049* |
| Yes | 310 (29.2) | 96 (24.0) | | | |
| No | 753 (70.8) | 304 (76.0) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **RTI** | | | 3.518 | 1 | 0.061 |
| Yes | 295 (27.8) | 131 (32.8) | | | |
| No | 768 (72.2) | 269 (67.3) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Conjunctivitis** | | | 0.032 | 2 | 0.857 |
| Yes | 107 (10.1) | 39 (9.8) | | | |
| No | 956 (89.9) | 361 (90.3) | | | |
| Total | 1063 (100) | 400 (100) | | | |

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|---|---|---|---|---|---|
| **Diarrhoeal disease** | | | 27.362 | 1 | <0.001* |
| Yes | 208 (19.6) | 130 (32.5) | | | |
| No | 855 (80.4) | 270 (67.5) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Chicken pox** | | | | | |
| Yes | 60 (5.6) | 17 (4.3) | 1.13 | 1 | 0.287 |
| No | 1003 (94.4) | 383 (95.8) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Fungal infection** | | | 0.808 | 1 | 0.369 |
| Yes | 49 (4.6) | 23 (5.8) | | | |
| No | 1014 (95.4) | 377 (94.3) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Otitis media** | | | 0.554 | 1 | 0.457 |
| Yes | 20 (1.9) | 10 (2.5) | | | |
| No | 1043 (98.1) | 390 (97.5) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Hypertension** | | | 0.311 | 1 | 0.577 |
| Yes | 81 (7.6) | 34 (8.5) | | | |
| No | 982 (92.4) | 366 (91.5) | | | |
| Total | 1063 (100) | 400 (100) | | | |
| **Peptic ulcer disease** | | | 2.487 | 1 | 0.115 |
| Yes | 52 (4.9) | 12 (3.0) | | | |
| No | 1011 (95.1) | 388 (97.0) | | | |
| Total | 1063 (100) | 400 (100) | | | |

Note: (*) – significant $p < 0.05$

## 4. Discussion

As seen above, most of the ailments suffered by the patients are those related to personal and/or environmental hygiene. The poor personal and/or environmental hygiene could also be as a result of the water scarcity experienced in the locality. The results also point out the public health importance of non-communicable diseases like hypertension and the need for considering them in the planning of post-disaster health interventions. That patients could present with multiple health conditions points to the need for careful planning during drug procurement and supply to a post-disaster locality. Antibiotics with broader spectrum and with lower tendencies of conferring resistance should be given preference. During supplies, selection should also be made to minimise the inclusion of drugs with antagonistic effects.

Malaria was seen to be among the top health problems affecting the studied community, though to a lower extent compared to the general population in Nigeria where about 60% of all visits to a healthcare facility were on its account [11]. The higher prevalence of malaria among returnees compared to IDP camp dwellers could be explained by some factors. Maiduguri is an all-year-round malaria endemic city from which most returnees are arriving. Travel to, and from Maiduguri, is also majorly done by town dwellers (returnees) from where they are likely to contract the illness. Since the liberation of the town, there have been more frequent mosquito net distribution programmes in the camp than in town (3 against 1). As for diarrhoeal disease, the likely reason for its higher occurrence among IDPs is the greater water scarcity and poorer water quality in the camps. Many camp dwellers often go to town to join queues to fetch water, which explains their higher water scarcity. As for water quality, one of the three boreholes supplying the town which is also the major water supply, supplies clean water, while the only water source in the camp is dirty.

One limitation of this study was the absence of screening for psychological disorders, a very important problem in a post-disaster community which could have been present but missed in many patients. This study was conducted at a time when the climate was dry and dusty. It is likely there is

a seasonal variation in the distribution of diseases, which could for example be different during the rainy season. This points out the need for replicating this study at different seasons of the year to determine if a seasonal variation exists, and to ascertain the disease pattern if it does exist. The training and deployment of lay persons to provide basic health care for post-disaster communities has shown no significant impact [4] and as such, there exists the need to deploy more qualified health professionals to manage the large patient burden.

## 5. Conclusion

There is a high burden of communicable diseases among the studied population which points to the need for promoting personal hygiene and environmental sanitation. Further studies incorporating screening for psychological problems need to be conducted. Also to determine seasonal variation in disease preponderance, it is recommended that the same study be replicated at different seasons of the year.

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