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Current Status and Burden of Malaria in Pregnancy among Women in Some Selected Internally Displaced persons Camps in Maiduguri, Borno State

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ABSTRACT

Malaria is a major cause of morbidity and mortality among displaced populations in sub-Saharan Africa, accounting for an estimated 30 million women living in malaria endemic area become pregnant each year. Recent literature indicates that over 140 million people in Nigeria with 97% of the population are at risk from malaria infection. To assess the current status and burden of malaria in pregnancy among women in IDPs camps in Maiduguri, a cross sectional study on the relationship between pregnancy and malaria parasitaemia was conducted among pregnant IDPs women in Maiduguri. Of the 100 pregnant women enrolled in the study and screened for malaria infection, 40 (40%) were examined in Dalori camp, 37 (37%) were examined in Bakasi and 23 (23%) were examined in Aji ganaram camp. The prevalence of malaria infection among pregnant women based on different IDPs camps reveals that, 42(42.0%) out of the 100 pregnant women examined in all the three camps were infected with malaria parasitaemia. In Dalori camp 19(47.5%) out of 40 women examined were infected, while in Aji ganaram camp 16(43.2%) out of 37 women examined were infected, likewise in Bakasi 7(30.4%) out of 23 women examined were infected respectively. There is no statistically significant difference between camps and malaria infection ($p>0.5$). Similarly, the prevalence of malaria infection based on age group. Of the sample examined 68 (68%) out of the 100 women examined were infected with malaria parasitaemia, the age group of <15 years had the lowest malaria infection rate with 2 (2.0%) and there was significantly higher prevalence rate of malaria infection recorded in age group of 15-45 years old women with 66(66.0%). %). However, prevalence of malaria parasitaemia based on marital status in study population reveals that 51(51.0%) out of 100 women examined were infected with malaria infection. There was significantly higher prevalence among widows with 29(54.7%), followed by 18 (48.6), and followed by 4(40.0%) in single (not married women) respectively. Chi-square analysis shows significant difference between widows, married, single and infection rate ($p>0.05$).The study showed a strong correlation between age, marital status and malaria infection among pregnant women in IDPs camps. The morbidity and mortality burden of malaria in the study population among pregnant women in internally displaced persons camps could be reduced drastically by proper prevention strategies, good dietary feeding, good shelter and improving diagnosis.

KEY WORDS: pregnancy, malaria, IDPs camps, current status, burden, women, some selected.

INTRODUCTION

Malaria is a major cause of morbidity and mortality among displaced populations in sub-Saharan Africa, accounting for an estimated 30 million women living in malaria endemic area become pregnant each year (WHO, 2013). Thus for these women malaria is a catastrophic to themselves and the newly born babies with up to 2 million mortality each year due to malaria in pregnancy (WHO, 2003). The complications experienced by malaria patient during pregnancy depend on the transmission intensity, level of immunity and geographical location. Besides, adverse effects of malaria parasitaemia during pregnancy include

preterm delivery, still birth, maternal anaemia, low birth weight(Chaponda *et al.2015).*Also other complications include intra-uterine growth retardation among internally displaced population (McGregor, et al., 1983, McGregor, 1984, Bader, et al., 2010, Yatich, 2010).In Nigeria over 140 million people representing (97%) of the population are at risk from malaria with approximately 50% of the adult population suffering from at least one case of the disease annually (DFID, 2011). According to UNHCR (2016) approximately 20 million refugees and ~40 internally displaced persons (IDP) flee their homes due to violent conflicts and natural disasters globally. These IDPS fleeing their homes due to insurgency are hard reach and mostly lack primary health facilities, prompt medical attention and limited access to quality shelter thus malaria prevention, diagnosis, and treatment efforts may be outpace and compromised as result transmission is elevated(Brooks, et al., 2017, Birganie, 2010, Spencer, 2004).Internally displaced population in camps required immediate attention on their well-being and public health issues due increased rates of infectious diseases such as malaria and malnutrition; thus majority of risk factors that promote dissemination of communicable disease work in synergy during displacement in camp due insurgency(Lam, 2015). Despite tremendous efforts by non-governmental organizations and international community by providing shelter, food, portable drinking and health care facilities for the internally displaced persons camps their efforts has been outpace by the sporadic attack by insurgents in the study area (Guerrier, et al., 2009, Owoaje, et al., 2016, IOM, 2016). The vulnerability of the displaced persons to malaria infection has strong correlation between socio-economic status and disease prevalence due to their exposure to infected mosquitoes within the vicinity of the IDPs camps and overcrowding (Ronald et al., 2006, Bates et al., 2004).

MATERIALS AND METHODS

Study Area

The cross-sectional study was undertaken in four selected internally displaced persons camps in Maiduguri, Borno state viz: Dalori camp, Bakasi, and Aji Ganaram camp.

Sampling Method

A total of 100 volunteered pregnant women between 17 and 45 years of age that was seen in the IDPs camps were eligible to be part of the study. The consent of the experimental subjects (pregnant women) was sought prior to their participation in the study. Vivid socio demographic characteristics (occupation, education level, duration of pregnancy in months) were obtained by administering questionnaire to each subject prior to enrolment.

Blood Sample Collection and Parasitological Examination

A standard laboratory procedure were adopted for the blood sample collection by pricking the finger after swabbing with 70% alcohol according the technique outlined by WHO (2003). Thick and thin blood films were prepared using dust and grease free clean glass slide as described by Cheesbrough (2006). The blood films were stained with Giemsa stain pH 7.2 for 10-20 min and examined under the light microscope using 100x oil immersion objective lens (WHO, 2015).

Calculation of parasite density

Subsequently, the Parasite density was estimated from parasites counted against RBCs on the thin film as below:
Parasite density per µL = Number of parasites counted × RBC count per µL ÷ Number of RBCs counted
Whereas, Parasite density estimation from parasites counted against WBCs on the thick film:
Parasite density per µL = Number of parasites counted × WBC count per µL ÷ Number of WBCs counted and subsequently tabulated.
Then, the result are compared as described by WHO (2015) standard as WBC (800 WBC/µL) and/or RBC (5.0x106/µL).

Data analysis

Data were analyzed using IBM Statistical Package for Social (SPSS) version 20 (SPSS, Inc., Chicago, IL, USA).whereas, Chi-square test was carried out to assess the association between variable$p<0.05$ was considered level of significance.

Results

Of the 100 pregnant women enrolled in the study and screened for malaria infection, 40 (40%) were examined in Dalori camp, 37 (37%) were examined in Bakasi and 23 (23%) were examined in Aji ganaram camp as shown in Table 1.The prevalence of malaria infection among pregnant women based on different IDPs camps reveals that,42(42.0%) out of the 100 pregnant women examined in all the three camps were infected with malaria parasitaemia. In Dalori camp 19(47.5%) out of 40 women examined were infected, while in Aji ganaram camp 16(43.2%) out of 37 women examined were infected, likewise in Bakasi 7(30.4%) out

of 23 women examined were infected respectively as shown in Table 2. There is no statistically significant difference between camps and malaria infection(p>0.5).Similarly, Table 3 shows the prevalence of malaria infection based on age group. Of the sample examined 68 (68%) out of the 100 women examined were infected with malaria parasitaemia, the age group of <15 years had the lowest malaria infection rate with 2 (2.0%) and there was significantly higher prevalence rate of malaria infection recorded in age group of 15-45 years old women with 66(66.0%).However, prevalence of malaria parasitaemia based on marital status in study populationin Table 4 reveals that 51(51.0%) out of 100 women examined were infected with malaria infection. There was significantly higher prevalence among widows with 29(54.7%), followed by 18 (48.6), and followed by 4(40.0%) in single (not married women) respectively. Chi-square analysis shows significant difference between widows, married, single and infection rate (p>0.05).

Discussion

Recent literature indicates that over 140 million people in Nigeria with 97% of the population are at risk from malaria infection. The prevalence of malaria recorded in this study was (42.0%) and this is found to be lower than previous values reported from Eastern Sudan where the prevalence of malaria among pregnant woman was 17.4% (Adam, *et al.*, 2005). This high prevalence of malaria could be attributed to the poor standard of living conditions in camps, inaccessibility of portable drinking water, overcrowding, food insecurity & poor nutritional status and lack of access to primary health care services in the IDPs camps (Augusta, et al., 2017).It is also noteworthy that most of the malaria cases in the camps were usually unattended due to poor health facilities and thus, cases are managed at home without reaching the hospital due illiteracy. The prevalence of malaria infection was statistically higher among adults (15-45 years) than younger one with (15 years), which suggests that age served as an important factor in the causation of malaria internally displaced persons. This is due to several reasons underlie situation of the conflict and insurgency in the study population such as gregarious population movements from high endemic area via across borders (Bassey, et al., 2007). This is also in line with a previous study in Zambia (Masaninga, et al., 2012), which reported a higher parasitaemia in old age pregnant women (15-45 years) than <15 years. Likewise, the prevalence of malaria infection was statistically higher among widows than married and singled women. The widows and singled women are vulnerable malaria infection due to lack proper dietary feeding supplied by the husbands as a tradition which attributed to low immunity. However, when a chi-square test was performed, it was found to be statistically significant. Recent studies carried out in sub-Saharan Africa between 2000 and 2011, reported that the prevalence of malaria in pregnant women attending antenatal clinics was 29.5% in East and Southern Africa and 35% in West and Central Africa (Batool, 2015).

In conclusion the study showed a strong correlation between age, marital status and malaria infection among pregnant women in IDPs camps. The morbidity and mortality burden of malaria in the study population among pregnant women in internally displaced persons camps could be reduced drastically by proper prevention strategies, good dietary feeding, good shelter and improving diagnosis.

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Table1. Distribution of experimental subject (pregnant women) population according to IDPs camps

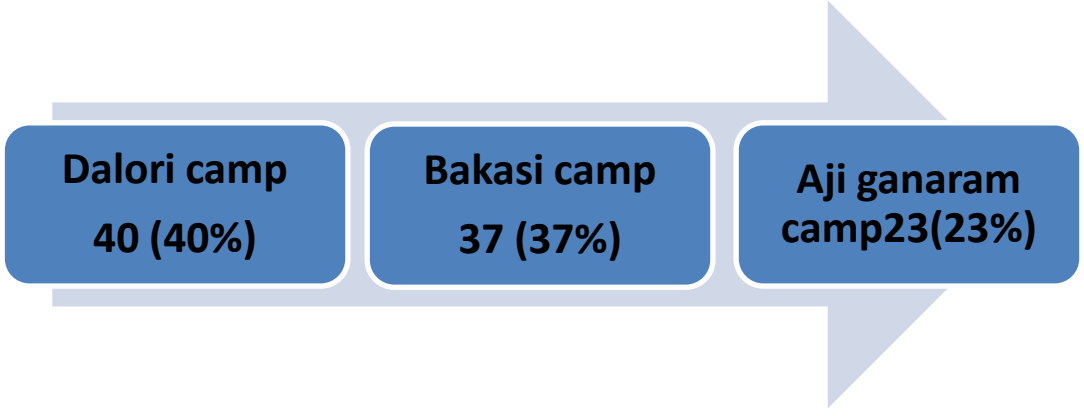

Table2. Prevalence of Malaria infection rate according to different IDPs camps

IDPs camp	No. examined	No. % Infected
Dalori camp	40	19 (47.5)
Aji ganaram camp	37	16(43.2)
Bakasi camp	23	7(30.4)
Total	100	42(42.0)

Table3. Prevalence of malaria infection based on Age distribution of study population

Parameters	prevalence of	of malaria parasitaemia			
Age	Infected		Not infected	Total	
(years)	No.	%	No. %	No.	%
<15 years	2	(2.0)	0 (0.0)	2	(2)
15-45 years	66	(66)	32 (32)	9	(98)
Total	68	(68)	32 (32)	100(100)	

Table 4. Prevalence of malaria parasitaemia based on marital status in study population.

Marital status	No. Examined	No. Infected (%)
Married	37	18 (48.6)
Widow	53	29 (54.7)
Single	10	4 (40)
Total	100	51 (51.0)

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