

Malaria prevalence and preventive measures among pregnant women in Obowo L.G.A Imo State, Nigeria

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ABSTRACT:

Malaria is a major public health concern among pregnant women. The study on Malaria prevalence and preventative measures was carried out among pregnant women in Obowo, L.G.A, Imo State, Nigeria. Thick and thin smear of venous blood samples of 200 pregnant women obtained using all aseptic means were prepared and stained and tested for malaria parasites. Results showed that 53.5% of 200 pregnant women examined had malaria infection. Pregnant women within the age group <30 years had significant higher ($P<0.05$) malaria prevalence rate (49.5%) than other age groups. However, pregnant women who were Farmers had the highest prevalence (36.4%) on the education-related infection women who were illiterates had significantly ($P<0.05$) higher infection. Primigravidae were the most infected people. Health Education for pregnant women on preventive measures is advocated.

Keywords: Malaria parasite, *Plasmodium falciparum*, Pregnant women

INTRODUCTION:

Malaria is a mosquito-borne disease of human caused by eukaryotic protists of the genus *Plasmodium* (Phylum *Apicomplexa*). Today approximately 40% of the world's population mostly those living in the world's poorest countries are at risk of malaria. Malaria is currently regarded as the most common and potentially the most serious infection occurring in pregnancy in many sub-saharan African countries ⁽¹⁾. The majority of malaria infections that occur in pregnancy are due to *P.falciparum*, and less commonly to other *Plasmodium* species. The prevalence of malaria in pregnancy varies considerably in different parts of Africa. In Ile Ife, ⁽²⁾, reported an incidence of 16% of *plasmodium* parasitemia. Other studies from various parts of Africa have documented high rates of malaria parasitemia among pregnant women ⁽³⁾. It is generally agreed that during pregnancy, women show an increased prevalence and intensity of malaria ⁽⁴⁾. The aim of this study was to determine Malaria prevalence and highlight preventive measures adopted by pregnant women in Obowo Local Government Area.

MATERIALS AND METHOD:

STUDY AREA:

The study was conducted in Four (4) selected communities each from two Local Government Areas (Obowo and Owerri North) in Imo state (Figure 1). Obowo LGA is found between Latitude $5^{\circ}10'N-5^{\circ}5'N$ and Longitude $6^{\circ}35' E-7^{\circ}28' E$ while Owerri North Latitude $5^{\circ}15' N-5^{\circ}34' N$ and Longitude $7^{\circ}15' E-7^{\circ}30' E$. The rainy season begins in April and lasts until October, with annual rainfall varying from 1,500mm to 2,200mm. An average annual temperature above $20^{\circ}C$ ($68^{\circ}F$) creates an annual relative humidity of 75% with humidity reaching 90% in the rainy season. The chief occupation of the local people is farming, but due to over-farming and high population density, the soil has greatly degraded. The cash crops include oil palm, raffia palm, groundnut, melon, rubber, and maize. Consumable crops such as yam, cassava, cocoyam and maize are also produced in large quantities. Their houses are made of brick walls with corrugated metal sheets/roofs, few live in mud houses with thatched roofs for those in rural areas. Source of water in these area include village stream, boreholes and roof catch water which are stored in buckets, cans etc. Refuse are heaped around

houses, schools, roads, and market square constituting complementing poor drainage systems as a result of this, the sanitation is poor. Hence, it can encourage the transmission or dissemination of parasites. They also cause flood during rainfalls and contribute to the breeding of mosquitoes leading to high malaria transmission rate and prevalence.

DATA COLLECTION:

Data collection includes blood collection and questionnaire administration. Blood samples of 200 pregnant women by were collected vein-puncture based on individual's consent. Blood samples were collected using (SWAB), cotton-wool dipped in 70% alcohol, tourniquet and disposal lancets and sterile syringe and needle which was used for thick and thin blood smears.

PROCESSING OF SPECIMEN /MICROSCOPY:

Malaria was diagnosed microscopically by staining thick and thin blood films on a glass slide to visualize malaria parasites. These stains include Gilems, Wright's or field's stain. A blood drop is stirred in a circular motion with the corner of the slide, taking care not to make the preparation too thick and allow to dry without fixative. After drying, the spot is stained with diluted giemsa for 20mins and washed by placing the films in buffered water for 3mins. The slide was allowed to air-dry in a vertical position and examination using a light microscope. Note: The stain was allowed to stand for about 30-45 mins after which it was washed with

buffered water of pH 7.2. Examination was done using x100 objective of the microscope and a drop of immersion oil for the ring form of plasmodium trophozoites⁽⁵⁾.

RESULTS:

The study was carried out in Obowo Local Government Area. A total of 200 pregnant women were examined and a total number of 107 pregnant women were positive to malaria giving an overall infection rate of 53.5%. Prevalence in relation to the different health centres in the study area (Table 1) showed that Umuariam Health Centre had the highest Prevalence. The difference were statistical significant ($p>0.05$). Pregnant women within the age of <30 years recorded the highest prevalence rate. The difference were statistical significant ($p>0.05$). Pregnant women whose occupations are Farmers recorded the highest prevalence rate. The difference were statistical significant ($p>0.05$). Pregnant women who were illiterates had the highest prevalence of 43.0%. The difference were statistical significant ($p>0.05$). Parity showed that pregnant women of the primigravidae status recorded the highest prevalence rate of 63.5%. The difference were statistical significant ($p>0.05$). Respondent's response to preventive measures of malaria in the study area showed that 32.5% of the respondents adopts Indoor Residual Spraying (IRS) as preventive measures followed by Insecticide-Treated Nets (26.5%) while Artemisinin-based combination Therapies (18.0%) was the least.

Table 1: Showing overall prevalence of malaria among pregnant women in the study Area

Health Centres	No Examined	No Infected	%
Umuariam	60	37	34.5
Avutu	24	18	16.8
Ikenazizi	48	22	20.5
Umuoke	26	14	13.0
Alike	42	16	14.9
Total	200	107	53.5

Table 2: Age related prevalence of malaria among pregnant women in the study Area

Age	No Examined	No Infected	%
<30	84	53	49.5
31-40	64	32	29.9
41-above	52	22	20.5
Total	200	107	53.5

Table 3: Showing the prevalence related to occupation of pregnant women in the study area.

Occupation	No Examined	No Infected	%
Business women	65	32	29.9
Civil servants	45	12	11.2
Artisans	52	24	22.4
Farmers	68	39	36.4
Total	200	107	53.5

Table 4: Prevalence of malaria in relation to educational status of pregnant women in the study area.

Educational status	No of Respondents	%
Educated	51	25.5
Semi educated	63	31.5
Illiterates	86	43.0
Total	200	53.5

Table 5: Prevalence related to parity status of malaria among pregnant women in the study area.

Parity	No Examined	No Infected	%
Primigravidae	91	68	63.5
Multigravidae	109	39	36.4
Total	200	107	53.5

Table 6: Respondents response to preventive measures of malaria in the study area.

Prevalence measures	No of respondents	% of respondents
Artemisinin-based combination Therapies(ACTs)	36	18.0
Insecticide-Treated Nets (ITNs)	53	26.5
Indoor Residual Spraying (IRS)	65	32.5
Sulfadoxine-pyrimethamin (SP)	46	23.0
TOTAL	200	53.5

DISCUSSION:

The overall prevalence of Malaria in Pregnancy in the area was 53.5% and the presence of these parasites found supports the earlier observation that malaria in pregnancy is a public health problem with pregnant women in the country ⁽⁶⁾.

The prevalence of 53.5% agrees with the work done by Ofoha ⁽⁷⁾ on the prevalence of malaria infection among pregnant women in Nwangele Imo State who recorded a prevalence of a similar prevalence rate. However, the prevalence is higher when compared with the works of in the same geopolitical zone southeast, Nigeria which

reported prevalence of 17.5%, (in Enugu Urban) Akanbi *et al.*, ⁽³⁾ Western Nigeria which reported 18.5%. The prevalence is however, low when compared with works other geopolitical zones. For example Uko *et al.*, ⁽⁸⁾ found prevalence rate of 72% infection among pregnant women in Osogbo, South West. The lower prevalence may be due to sample population and period of study (June-November) which encompasses both dry and rainy seasons. Observation of this study on the age prevalence (Table 2) showed that pregnant women <30 were heavily infected than other age group. These might be that women of <30 are not fully aware on malaria in

pregnancy compared to women of age group 41 and above who would have been educated on malaria in pregnancy. The younger women show high prevalence rate than the older women which is in line with a major risk factor for placental malaria, with the younger (first time mother) more likely to have placental malaria. Also Buffer, *et al.*,⁽⁹⁾ suggested that development of pregnancy associated immunity, that is production of antibodies that inhibit the adherence of placenta parasites to chondroitin sulphate (CSA) may be very important in women less than 30 years of age who have lower levels of acquired immunity. This result supports the existing knowledge that higher prevalence at higher ages is due to the existence of natural immunity to infectious disease including malaria Oduola *et al.*,⁽¹⁰⁾ which the pregnant women acquires as the age increases. The prevalence of malaria based on occupation (Table 3), showed that occupation is a factor that can influence the prevalence of malaria. It was observed that among farmers, petty traders, Business women and civil servants, women whose occupations are farmers had the highest prevalence. This could probably be due to exposure to malaria parasite in the environmental conditions and unhygiene lifestyle. Unlike women who are civil servants who perhaps have known what malaria in pregnancy is all about, Business women and farmers are also exposed to malaria due to their environment. It was observed that illiterate's pregnant women had the highest prevalence rate in this study (Table 5). This is probably because they are more exposed to malaria parasite due to bad environmental condition and their life styles.

It was discovered that prevalence in relation to gravity status of malaria, primigravidae women have the highest prevalence of 63.5% than the multigravidae (Table 5). According to World Health Organization⁽¹¹⁾, ACT has been shown to be effective both in sub-saharan Africa and also in areas with multi-drug resistance. WHO⁽¹¹⁾ also said that it is the first-line treatment for uncomplicated malaria in several countries. However, the benefits of Acts are their high efficacy, fast action and the reduced childhood of resistance developing, but the study proved that the use of repellent is higher among pregnant women. The study has revealed a relatively high prevalence of malaria among the study group which is suggestive of public health importance. The study further observed variation in prevalence rate of infected pregnant women were primigravidae, women had no significant difference with the multigravidae women.

CONCLUSION:

Malaria is still a major public health issue among pregnant women mainly due to illiteracy and non-compliance to using ITNs. Increasing awareness about

malaria preventive measures and early attendance of antenatal care services will help to reduce malaria and, consequently, its associated morbidities and mortalities.

COMPETING INTERESTS:

The authors declare that no conflict of interest would prejudice the impartiality of this scientific work.

AUTHORS' CONTRIBUTION:

All authors of this study have a complete contribution to data collection, data analysis, and manuscript writing.

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