

Utilization of Intermittent Preventive Therapy (IPTP), Insecticide Treated Bednets (ITNs) And Other Protective Measures By Pregnant Women In Owerri, Imo-State, Nigeria

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Abstract - *This study was conducted with 305 pregnant women between the ages of 15 and 40 years, who attended antenatal clinic at the study centre and had live babies after delivery. Positive malaria parasitemia was 40(33.33%) for those who used antimalarials for prophylaxis, 70(43.75%) for those who used them for therapeutic treatment and 10(40%) for those who used none of the above. Those who used insecticide treated nets (ITNs) only were 30(9.8%), insecticide sprays (IS) only 75(24.6%), mosquito coils (MC) only 5(1.6%), ITN & IS 25(8.2%), ITN & MC 0(0%), IS & MC 35(11.5%) and 135(44.3%) for those whose used no protective measure at all, respectively. Plasmodium falciparum was the only species of malaria parasite that was observed in all the examined blood samples. The study has shown that even with the level of awareness and health education given of recent to the use of intermittent preventive therapy and protective measures by pregnant women, most of them still do not comply with their usage as directed.*

Keywords: *Antimalarials, Insecticide Treated Bed Nets, Intermittent Preventive Therapy, Malaria Parasitaemia, Pregnant Women*

INTRODUCTION

Malaria infection during pregnancy is a major public health problem in tropical as well as sub-tropical regions throughout the world, more especially in endemic areas, with pregnant women being the main group of adults at risk of infection [9]. Pregnancy is known to cause a lot of physiological changes that affect the way the Plasmodium parasite invades its host [1] and more so normal immune responses are usually lowered during pregnancy [3]. This suppression is believed to account for the woman's increased risk of malaria infection [4].

Many deleterious effects have been observed to be associated with malaria infection both in the mothers and their unborn children. Malaria per se is a far more abortifacient than any drug, predisposing pregnant women to the toxaeias of pregnancy such as preeclampsia, eclampsia and nephritic toxemia [14]. Some other effects include decline in immunity, interrupted pregnancy, maternal and/ or fetal death, anaemia in the mothers, preterm labours, stillbirths and intra-uterine growth retardation [10].

Other consequences of malaria during pregnancy for the newborn include congenital infection and increased infant mortality linked either to preterm-low birth weight or intra uterine growth retardation-low birth weight [8].

The occurrence of these problems underscores the importance of malaria prevention in pregnancy and this situation has also heightened the global concern for this disease.

Nevertheless, malaria during pregnancy is potentially the most controllable part of the global malaria problem [9]. It is of note that, there is no effective vaccine or mass chemoprophylaxis against malaria, thus there is need for proper know-how and use of preventive methods [2].

In line with this, World Health Organization (WHO) has recommended a three-prong approach to the control of malaria during pregnancy and this involves the use of intermittent preventive therapy in pregnancy (IPTp) & insecticide treated bed nets (ITNs) as well as effective case management of clinical infections [8].

Initially, chloroquine was the drug of choice for IPTp until the resistance of malaria to it became unmanageable. Its use gave way to the use of sulfadoxine-pyrimethamine (SP) which was proved to be more superior and highly efficacious than chloroquine prophylaxis and so WHO recommended that pregnant women living in high transmission areas in Africa receive intermittent preventive treatment (IPTp) with an effective antimalarial agent such as sulfadoxine-pyrimethamine (SP) at least two sessions following the first fetal movements [13].

However, with the advent of Plasmodium falciparum malaria's resistance to SP, a shift has been made to more effective antimalarial, particularly Artemisinin combination therapy (ACT) [1].

[3], in her work noted that measures used to prevent and control malaria via vector control in addition to use of insecticide-treated bed nets, include avoidance of mosquito bites through the selection of healthy sites for houses, screening of windows and doors with mosquito nets, and use of mosquito repellants; preventing the breeding of mosquitoes; and the destruction of adult mosquitoes by regular effective spraying. Even in most rural areas, traditional preventive measures such as burning of leaves e.g. *Occimum gratissimum* are employed to control the vectors.

This study was therefore undertaken to find out the level of compliance of pregnant women to the use of these malaria preventive and control measures.

OBJECTIVES OF THE STUDY

The study was undertaken to find out the level of compliance of pregnant women to the use of Insecticide Treated Bednets (ITNs) and other protective measures.

MATERIALS AND METHODS

Study Area

The study subjects were pregnant women who attended antenatal clinic and delivered their newborn babies at the General hospital, Owerri within the study period. These subjects were between the ages of 15 and 40. Their consent was also sought and obtained before they were recruited into the study.

Collection Of Samples

Blood samples were collected from these women immediately after delivery with sterile syringes, and put into EDTA bottles for laboratory investigations.

Laboratory Protocol

Thick and thin blood films were made from each of the collected blood samples and were stained with 10% freshly prepared Giemsa stain for about 10 minutes after they have air-dried. They were examined using immersion oil with the x100 objective of a light microscope after staining. Malaria diagnosis was based on the identification of the asexual stages of *P. falciparum*.

Administration Of Questionnaires

Questionnaires were also administered to the women involved in the study to ascertain the type of protective measure used or treatment procedure observed by them during pregnancy.

Data Analysis

The generated data were analyzed using simple percentages and Chi-square test at the 5% confidence limit.

RESULTS

Table 1 shows that positive malaria parasitemia is 40(33.33%) for prophylactic treatment (i.e. the use of IPTp), 70(43.75) % for therapeutic treatment (Case management) and 10(40%) for no treatment at all. The association between malaria parasitemia and the various modes of treatment was however statistically insignificant ($P > 0.05$).

Furthermore, Table 2 shows the percentage distribution of the women according to the type of protective measure used. Those who used insecticide treated nets (ITNs) only were 30(9.8%), indoor insecticide residual sprays (IRS) only 75(24.6%), mosquito coils (MC) only 5(1.6%), ITN & IRS 25(8.2%), ITN & MC 0(0%), IRS & MC 35(11.5%) and 135(44.3%) for those whose used no protective measure at all, respectively.

Table 1: Prevalence of malaria parasite infection in the mothers according to the various modes of treatment.

Type of treatment	Number examined	Number infected	Percentage infected
Prophylactic	120	40	33.33
Therapeutic	160	70	43.75
None	25	10	40.00
Total	305	120	39.3

Table 2: Percentage distribution of the women According to the type of protective measure used

Type of protective measure	Number	Percentage
ITN only	30	9.8
IRS only	75	24.6
MC only	5	1.6
ITN/IRS	25	8.2
ITN/MC	0	0
IRS/MC	35	11.5
None	135	44.3
Total	305	100

Key: ITN = Insecticide treated nets

IRS = Indoor insecticide residual sprays

MC = Mosquito coils

DISCUSSION

This study revealed that those who received antimalarial prophylaxis (intermittent preventive treatment in pregnancy) had the lowest percentage parasitemia of 33.33%, whereas those who had the infection and were treated had the highest percentage of parasitemia of 43.75% whereas those who had no treatment at all but recorded positive malaria parasitemia were about 40.0% though the association between malaria parasitemia and the various modes of treatment was not statistically significant ($P > 0.05$). This shows that prophylaxis with appropriate drugs offers greater protection against malaria in pregnancy than chemotherapy. This agrees with what was documented by [8] that intermittent preventive therapy has been shown to be superior to case management in the prevention of malaria in pregnancy. [7], however noted that most women who took antimalarials for prophylaxis still showed evidence of malaria parasitemia because antimalarials for prophylaxis seem to be more protective for the placental parasitization which is what predisposes to congenital malaria.

However, the level of parasitemia for all the groups gives an indication that there was treatment failure. This could be explained based on the fact that IPTp was not administered to these women at the hospital and most of them for economic reasons may not purchase the drugs and most of those who purchased these drugs might not have adhered to the prescription.

It was also observed in this study, that a greater percentage of the women used no protective measure at all, in spite of the level of popularity given to the use of these protective measures, particularly ITNs. In

doing that, they expose themselves and their babies to the dangerous effects of malaria.

However, researches have been carried out to find out the possible reasons for the failure in the use of ITNs. One of such was carried out by [12], and they discovered that among the reasons were excessive heat experienced while under the bed net, inadequate accommodation to hang the bed nets, the whole house is netted and nets caused itching. Other reasons they discovered are that many do not like bed nets and some others said they heard that ITNs killed people. About 24% of their respondents had no reason at all for not using ITNs.

The findings of the work carried out by [6] also lends credence to the findings of this study as they noted that pregnant women who do not know how to use or hang the bed nets, as well as those who do not know the benefit accruing from the use of the nets are less likely to make use of the ITNs. They also noted that the higher one gets in educational qualification the less likely it is for such a person to make use of the ITNs. According to [5], education may affect the level of awareness with regards to ITNs, but it does not influence their usage.

Malaria in pregnancy is a problem which warrants increased research and investment and, the delivery of cost-effective malaria-prevention services to pregnant women will require working with antenatal care services. Though implementation of the WHO guidelines is burdened by the problems complicating health service delivery particularly in developing countries, it is essential that all stakeholders combine efforts to ensure successful implementation in the deployment of the various tools for achieving effective malaria control in order to achieve a reduction in the burden of malaria in pregnancy. Effective educational outreach programs and mass literacy campaigns on the transmission, treatment and prevention of malaria will go a long way in reducing this ugly trend. Women of child bearing age in rural areas should be considered primarily in this campaign.

LIMITATIONS

Some challenges were observed during the course of the study, among which are time constraints and the unwillingness of most of the women to give their consent, because of the prejudice attached to divulging personal information to a seeming outsider.

CONCLUSION AND RECOMMENDATION

This study has been able to establish the fact that many pregnant women do not protect themselves from malaria parasite infection with protective measures such as ITNs and IPTp, in spite of the popularity given to the use of these protective measures, particularly the ITNs which in most centres are distributed free of charge to these pregnant women.

The use of insecticide treated nets as well as other protective measures by pregnant women should be significantly encouraged and intermittent preventive therapy in pregnancy (IPTp) during antenatal care should be strictly adhered to, in order to reduce the incidence of this dangerous disease. Concise efforts should be made by stakeholders to provide these antimalarials for these pregnant women, to prevent situations where they don't take these medications due to lack of money to purchase them. Where these antimalarials cannot be given completely without charge, their prices could be subsidized. Health education on this subject matter must however be intensified. Increased knowledge on the benefits attributable to the use of ITNs and IPTp may possibly contribute to an improvement in their usage by these pregnant women. It is quite obvious that the current mobilization techniques are not giving the desired result. There is a dire need of exploring other methods so as to get to the target population.

There is also need to make the nets readily available and without charges to encourage people to make use of them.

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