

Full Length Research Paper

Knowledge and practices of intermittent preventive treatment of malaria in pregnancy among health workers in a southwest local government area of Nigeria

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Abstract

Intermittent Preventive Treatment of malaria in pregnancy (IPTp) is effective in preventing malaria in pregnancy but health workers' knowledge and compliance with its guidelines have not been fully explored. This cross-sectional study was therefore designed to assess the level of knowledge and practice of IPTp among health workers in Ibadan North Local Government Area (LGA) Nigeria. Consenting 208 health workers and purposively selected 122 pregnant women who accessed the antenatal services were recruited for survey and exit interview respectively. Quantitative data were analyzed using descriptive statistics and t-test while qualitative data was analysed by content analysis. Mean age of health workers was 27.0±7.6 years and overall mean knowledge score was 3.1±1.9 out of a maximum of 6.0 points. Only 24.5% health workers could adequately explain the concept of IPTp and 23.1% of health workers reportedly observed pregnant women take Sulphadoxine Pyrimethamine (SP) directly. Exit interview revealed that only 13.1% of the pregnant women reportedly were directly observed by the health workers while taking their SP. Knowledge was significantly associated with practice of IPTp ($p<0.05$). Health education strategies such as continuing education within the context of IPTp and supportive supervision of health workers are needed to improve compliance.

Keywords: Malaria in pregnancy, knowledge, practice, intermittent preventive treatment, health workers.

INTRODUCTION

Malaria in pregnancy remains a major public health problem in sub-Saharan Africa (Ndyomugenyia et al., 2009). The physiological changes of pregnancy and the pathological changes due to malaria have a synergistic effect on the course of each other, thus making life difficult for the mother, the child and the treating physician. Maternal malaria which often results in maternal anaemia, intra-uterine growth retardation, intrauterine death, stillbirth, premature delivery, low birth weight (LBW), perinatal and neonatal morbidity and mortality (Bremner et al., 2004; Shulman et al., 1996;

Steketee et al., 1996) and postpartum morbidity (Vallely et al., 2005) is caused mainly by *plasmodium falciparum*. Malaria infection is significant in Africa where its fatality is a far greater problem than in most parts of the world.

Based on WHO's fact sheet it has been established that pregnancy quadruples a woman's risk to malaria illness and doubles her risk of death. Malaria alone increases the risk of maternal anemia up to 15%, increases the risk of preterm up to 36%, intrauterine growth retardation up to 70%, low birth weight up to 14% and infant death up to 8%. Maternal anemia contributes significantly to maternal mortality causing an estimated 10,000 deaths per year (Marchesini and Crawley, 2004).

In areas of high or moderate transmission, most malaria infections in pregnant women are asymptomatic and infected women do not present for treatment. In such

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areas, the World Health Organization recommended a combination of interventions to prevent malaria in pregnancy including insecticide-treated bednets (ITNs), intermittent preventive treatment in pregnancy (IPTp) and effective case management and treatment (Nahlen, 2000; WHO, 2004).

Intermittent Preventive Treatment of Malaria in pregnancy (IPTp) provides significant protection against maternal anemia and low birth weight, and reduces significantly the risk of abortion, still birth, pre-term deliveries and maternal mortality. Studies in Kenya (Parise et al., 1998; Shulman et al., 1999) and Malawi (Schultz et al., 1994; Verhoeff et al., 1998) have shown that IPTp using SP when delivered as part of antenatal care significantly reduces the prevalence of maternal anemia, placental parasitemia and the incidence of low birth weight. Many countries in sub-Saharan Africa including Nigeria have introduced SP-IPTp into national malaria control programmes (Verhoeff et al., 1998; Hill and Kazembe, 2006).

The Federal Government of Nigeria through the Federal Ministry of Health demonstrated a strong political will and commitment in adopting IPTp with SP as the National strategy for malaria control in pregnancy (Federal Ministry of Health, 2005). Following the national guidelines and strategies for Malaria Prevention and Control during pregnancy promulgated by the Federal Ministry of Health, there has been inadequate documentation on the implementation of IPTp as part of this strategy. Most studies assessed the use of IPTp among pregnant women; with relatively few among the health workers. In order to successfully prevent malaria in pregnancy there is a need to monitor the implementation of the three-pronged approach (of which Intermittent Preventive Treatment is an essential part) in preventing malaria in pregnancy. This study therefore was aimed at assessing the knowledge and practice of health workers to Intermittent Preventive Treatment of Malaria in pregnancy.

METHODOLOGY

Study Design

A cross sectional descriptive study design was used in documenting the knowledge and practice of health workers in the use of intermittent preventive treatment of malaria in pregnancy in Ibadan North Local Government Area of Oyo State.

Description of Study Area

Ibadan is situated in the southwestern part of Nigeria. It has an estimated population of 3,847,472 with an estimated growing population rate of 3% per year. Ibadan

occupies a landmass of 3,123.30km², 15% of which falls within the urban sector while the remaining 85% represents the rural sector of Ibadan. The city is made up of a heterogeneous population of different ethnic groups, culture and way of life. The city is made up of people from all walks of life. It is a major commercial, industrial, and administrative centre and is a marketplace for cocoa and other local agricultural produce. Industries include chemicals, electronics, plastics, craft, and motor vehicle assembly; many small businesses, including flour-milling, leather-working, and furniture-making also flourish in the city.

Ibadan North Local Government area is one of the urban local government areas in Ibadan metropolis. It has a total of 197 health facilities, 3 Tertiary health facilities, 7 Secondary health facilities, 10 Primary health care facilities, 7 Non-governmental health facilities, and 170 Private owned health facilities. These cater for a total population of 300,937 people and cares for a female reproductive population of 150,210. Of the 197 health facilities, 37 are maternity hospitals.

Study Population and sampling

The study population consisted of health workers in the randomly selected 41 health facilities out of the 197 who consented to participate in the study and excluded health workers who declined participation in the study.

A list of all registered Health Facilities in the Local Government area was used as the sampling frame for this study. Health Facilities offering antenatal services formed the sampling unit. A simple random sampling technique (balloting) was used to select maternity hospitals/clinics and Primary health Care (PHC) centers. A total of 37 maternity hospitals and 4 PHC centers were selected and all the 208 health workers who consented to participate were surveyed.

One hundred and twenty-two pregnant women who accessed the ante natal services during the period of data collection were approached as they were exiting the ANC services to be interviewed. The goal of the interview was to validate the health workers' responses to their practice items on the questionnaire.

Data Instruments

Qualitative (exit interview guide) and quantitative (semi structured questionnaire) instruments were adopted for data collection. The pretested semi-structured questionnaire collected information on demographic data of the respondents, knowledge and practice of respondents to IPTp. The questionnaire was designed in English and was self administered.

Exit interviews were conducted for pregnant women in order to verify health workers' reported practice and

compliance with IPTp administration guidelines. The pretested exit interview guide contained questions on whether the pregnant women took the anti-malaria drug in front of the health worker, whether they were told when next to come for another dose, what to do if they reacted to the anti-malaria drug, whether the given dose was recorded on their ante-natal card, whether there had been health talks on preventing malaria in pregnancy, and if so what was discussed. The exit interview guide was translated into Yoruba language, the local language of the study area and back translated into English to ensure validity of the questions. The interview was conducted in Yoruba language.

Data Collection

Trainings were conducted for research assistants to ensure proper understanding and administration of the instruments. The self administered questionnaire was administered to the health workers on days that the ante natal clinic was not run and the completed copies were retrieved back from the respondents immediately after completion. Exit interviews for pregnant women were done on antenatal clinic days as they exit the service point. The data collection process took a period of eight weeks and each exit interview lasted between 20 minutes to 45 minutes for each pregnant woman.

Data Analysis

A coding guide was developed to facilitate data entry. Filled questionnaires were coded and entered into a computer data base using the Statistical Package for Social Sciences (SPSS) software. Knowledge of IPTp among health workers was assessed based on the following criteria: definition of IPTp, anti-malarial drug approved for IPTp, stipulated time for administering IPTp, correct dosage of anti-malaria drugs within the IPTp guideline, mode of IPTp administration and content of IPTp policy. Frequency distribution, means, standard deviation and percentages were computed for all variables. Data collected from the exit interviews were analyzed using content analysis.

Ethical Consideration

Approval was sought from the local Government Authorities through the Medical Health Officers to use the health facilities and hospitals for the study. The study instruments contained an informed consent clause to respect the voluntary participation of the respondents and protect individual identity. Informed verbal consent was obtained from all the participants after explaining the objectives of the study to them and ascertaining full

understanding of the study. Respondents had the choice to give or withdraw their consent freely. Confidentiality of each respondent was maintained during and after the collection of data, code numbers in place of names were assigned to each respondent's questionnaire.

RESULTS

Demographic Characteristics of Health workers

The respondents consisted of 200 (96.2%) female and 8(38.5%) male health workers and mean age was 27 ± 7.6 years. Academic qualifications of respondents revealed that 63 (31.8%) had basic nursing certificate, 32 (16.2%) had both nursing/midwifery certificate and 12 (6.1%) had bachelor's degree in nursing. Others are presented in table 1.

Knowledge of Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp)

Table 2 presents the data on the level of knowledge of IPTp among health workers. One hundred and fifty-seven (75.5%) health workers attempted to define IPTp. Only 51 (32.5%) correctly defined IPTp as a prophylactic treatment of malaria during pregnancy. In addition, 75.5% correctly named Sulphadoxine Pyrimethamine as the approved anti-malarial drug, 78.0% correctly mentioned the second trimester as the gestational age at the first dose of IPTp while 133 (63.9%) health workers stated the correct number of doses.

One hundred and eight health workers claimed to know what the policy on Intermittent Preventive Treatment of Malaria in pregnancy says. Of these 15.7% stated that the policy talks about second trimester as the time for the first dose, 21.3% stated that Sulphadoxine Pyrimethmine should be given to pregnant women after quickening and a second dose given after four weeks, 26.9% stated that pregnant women should be given drug under direct observation, while 3.1% stated that malaria should be treated regularly. Different sources of knowledge and information are shown in Figure 1.

A total of 178 health workers enumerated brand names of drugs approved for IPTp. One hundred and twenty-two (68.5%) health workers correctly named Fansidar, Primalar and Malareich as brand names for IPTp and 56 (31.5%) health workers got it wrong.

Practice of Intermittent Preventive Treatment of Malaria

Intermittent Preventive Treatment of malaria was being implemented in 88 (46.3%) of the health facilities surveyed. Practices related to IPTp included informing

Table 1. Demographic characteristics of Health Workers

| Demographic variables | Frequency (N) | Percentage |
|--|----------------------|-------------------|
| Gender | | |
| Male | 8 | 3.8 |
| Female | 200 | 96.2 |
| Total | 208 | 100.0 |
| Marital Status | | |
| Single | 96 | 46.2 |
| Married | 112 | 53.8 |
| Total | 208 | 100.0 |
| Qualification | | |
| Community Health Officer | 1 | 0.5 |
| Registered Midwifery | 4 | 2.0 |
| Junior Community Health Extension Worker | 6 | 3.0 |
| Senior Community Health Extension Worker | 7 | 3.5 |
| B.sc Nursing | 16 | 6.1 |
| Registered Nurse & Midwifery | 32 | 16.2 |
| Registered Nurse | 63 | 31.8 |
| Secondary School leaving Certificate | 79 | 36.9 |
| Total | 208 | 100.0 |
| Religion | | |
| Muslims | 42 | 20.2 |
| Christians | 166 | 79.6 |
| Total | 208 | 100.0 |

Table 2. Health Workers' Knowledge of Intermittent Preventive Treatment of Malaria in Pregnancy (IPTp)

| Health Workers' Knowledge of IPTp | Frequency (N) | Percentage (%) |
|---|----------------------|-----------------------|
| Definition of IPTp | | |
| Correct response (Prophylactic treatment of malaria during pregnancy) | 51 | 24.5 |
| Incorrect response | 106 | 51.0 |
| No Response | 51 | 24.5 |
| Total | 208 | 100.0 |
| Anti-malarial drug approved for IPTp | | |
| Correct response (Sulphadoxine Pyrimethamine) | 142 | 68.3 |
| Incorrect response | 46 | 22.1 |
| No response | 20 | 9.6 |
| Total | 208 | 100.0 |
| Stipulated time for administrating IPTp | | |
| Correct response (Second trimester) | 141 | 67.8 |
| Incorrect response | 39 | 18.7 |
| No response | 28 | 13.5 |
| Total | 208 | 100.0 |
| Content of IPTp Policy | | |
| Correct response (Sulphadoxine Pyrimethamine should be given to pregnant women after quickening and a second dose after four weeks) | 23 | 11.1 |
| Correct response (Pregnant women should be given anti-malaria drug under direct observation) | 29 | 13.9 |
| Incorrect response | 56 | 26.9 |
| No response | 100 | 48.1 |
| Total | 208 | 100.0 |

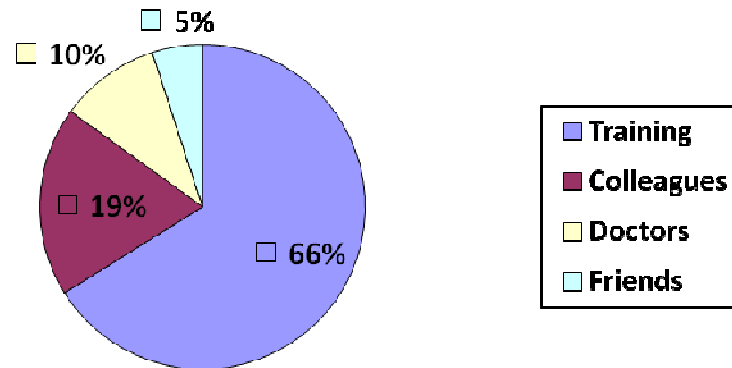


Figure 1. Health workers' source of Intermittent Preventive Treatment knowledge

Table 3. Health workers compliance with IPTp treatment guidelines

| Compliance with IPTp treatment guideline | Frequency (N) | Percentage (%) |
|---|---------------|----------------|
| Pregnant women are informed on the next anti-malaria dose | | |
| Yes | 180 | 86.5 |
| No | 28 | 13.5 |
| Total | 208 | 100.0 |
| IPTp guideline posters are displayed at health facilities | | |
| Yes | 55 | 26.4 |
| No | 153 | 73.6 |
| Total | 208 | 100.0 |
| Pregnant women are advised to come to the clinic if there are reactions to anti-malaria drug | | |
| Yes | 184 | 88.5 |
| No | 24 | 11.5 |
| Total | 208 | 100.0 |
| Proper documentation of dosage of anti-malaria drug given | | |
| Yes | 180 | 86.5 |
| No | 28 | 13.5 |
| Total | 208 | 100.0 |

Table 4. Respondents' level of knowledge and practice of Intermittent Preventive Treatment of Malaria in Pregnancy

| Respondents' Knowledge of IPTp | Practice of IPTp | | X ² | P values |
|--------------------------------|------------------|------------|----------------|----------|
| | Adequate | Inadequate | | |
| Low | 29 | 124 | 5.540 | 0.01 |
| High | 19 | 36 | | |

pregnant women of the next dose (86.5%), informing pregnant women to report any reaction to the drug (88.5%), documentation of dispensed doses in the patient card (86.5%) and display of IPTp guideline poster (26.4%) (Table 3). Community outreach programmes

were the major source of sensitization on IPTp. Knowledge was found to influence practice of IPTp as those who were more knowledgeable had better practice (Table 4).

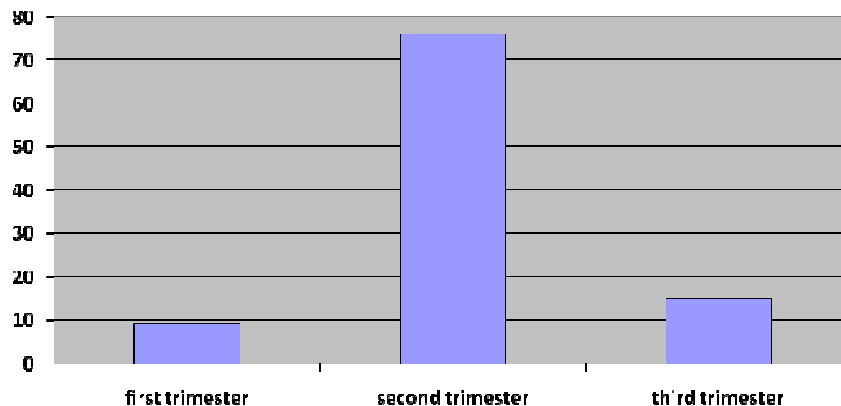


Figure 2. Period in pregnancy when respondents received first dose of IPTP

Health workers suggestions for better implementation of IPTp

One hundred and seventy (90.9%) health workers acquiesced to the need to promote IPTp during pregnancy and 144 (69.2%) health workers were able to give suggestions for better IPTp implementation. Suggestions proffered included availability of IPTp drug at all times (23.6%), increased awareness (14.6%), introduction of IPTp to all antenatal clinics nationwide (9.0%), and strict compliance with IPTp guideline (3.5%).

Exit Interview with Pregnant Women

Most (82.0%) of the pregnant women interviewed had received anti-malaria drug in their current pregnancy. Nine percent of these reportedly received their first dose of anti-malaria drug during the first trimester. Others are shown on Figure 2.

Frequency of anti-malaria drug received showed that 62.3% of the pregnant women had received it only once in the current pregnancy, 21.9% twice, 8.5% three times, 6.1% four times, and 1.2% had received anti-malaria drugs five times in her current pregnancy. Type of anti-malaria drug received as reported by 80 of the 82 pregnant women who received anti malaria drugs were Fansidar, (38.8%), Amalar (27.5%), Chloroquine (22.5%), Daraprim (8.7%) and Amodoxine (2.5%). About half (52.4%) of the pregnant women out of the 82 that took the drug said they took the anti-malaria drug in front of the health workers. One of the pregnant women said the health workers were "strict about it and insist that you take it in front of them".

Reasons given by those who did not take the drugs in front of the health workers included

"The nurses usually give us to take home", "I took it home because I needed to eat", "I took it home because I bought it outside the clinic", "The nurse told me to take it home"

Majority (85.5%) of the pregnant women interviewed reported that the health workers informed them of the time for the next dose and asked them to come back for it and that they were also asked to return to the clinic if they had any reactions. They also reported that the dose of anti-malaria drug was written on their ante-natal card.

Almost all (94.3%) pregnant women interviewed said that malaria was a topic often discussed during ante-natal health talks. Some of the recapped topics on malaria during health talks were:

"We were told to eat balanced diet and check our BP from time to time, we were also told to keep our environment clean to prevent mosquitoes and to use nets on our doors and windows, to flit our bedrooms and sleep under mosquito bed nets".

Some (63.7%) said that they were told the kind of food to eat and to exercise, while others said,

"We were also taught about personal hygiene. We were taught that malaria in pregnancy is not good and we were told why we should to try and prevent it. We were told that malaria in pregnancy is very dangerous and that it can cause miscarriage. We were told to come to the clinic if there were any complaints, and also to take our drugs and visit antenatal clinic regularly. We should take a lot of rest to avoid stress, wear loose clothes and attend clinic always. We should get rid of all stagnant water around the house and clear the bushes. We were told that exposing the body to mosquito can cause malaria. We were told that medical checkup is important, and we should attend antenatal regularly and report to the hospital if there are any problems".

DISCUSSION

The high preponderance of the female sex among respondents corroborates the findings of Tranbarger (2003) where less than 6% of registered nurses studied were males. The poor knowledge of IPTp documented by this study had earlier been documented by Onyeaso

and Fawole (2007) who reported knowledge gaps of malaria prevention strategies in pregnancy among healthcare providers studied. This knowledge gap may be due to lack of personal and institutional updates on new interventions in preventing malaria during pregnancy in the country. It may also be as a result of lack of budgetary support in making available copies of the National IPTp guideline and strategic documents available within health facilities. Most of the respondents' definition of IPTp revolved around known preventive measures of malaria during pregnancy, without specifically stating any of the IPTp guidelines, such as SP anti-malaria drugs to be given as directly observed treatment (DOT), first dose of SP should be given after quickening, awareness creation among pregnant women through health talks to mention a few. Furthermore from the exit interview conducted, it was evident that health workers were still using chloroquine despite the evidence against the use of the drug due to resistance and reduced efficacy (Onyeaso and Fawole, 2007; Kayentao et al., 2005).

Compliance with IPTp guideline was poor as verified by the exit interview with pregnant where health workers administered different types of anti-malaria drug, not necessarily SP, at varying stages of their pregnancy instead of during the prescribed period (second trimester and a month after) as well as it not been given under supervision. This corroborates the findings of Akinleye et al (2009). This poor compliance is not peculiar to the region of the country where the study was carried out as poor knowledge of malaria in pregnancy and management practice has been documented in eastern and northern parts of Nigeria (Enato et al., 2007; Galadanci et al., 2007). This finding may not be unconnected with the perceptions of both the providers and the patients as reported in Tanzania (Mubyazi et al., 2005) and Uganda (Mbonye et al., 2006) where both the pregnant women and health providers believed that antimalaria drug when taken in pregnancy could harm both the mother and the unborn child.

The findings of this study have several implications for the planning and implementation of prevention of malaria in pregnancy programmes. Health promotion and education can therefore be used to bridge the gap between knowledge and practices among health workers on the implementation of Intermittent Preventive Treatment of malaria during pregnancy. This could be in the form of regular training seminars on new interventions which should be supported by supervisory visits, monitoring and evaluation to ensure proper implementation.

CONCLUSION

This study had documented that the practice of IPTp falls short of implementing standards thereby highlighting

areas for intervention. These areas are poor knowledge of IPTp and poor compliance to the directly observed treatment scheme. Lack of knowledge was found to be the main barrier to practice of appropriate dispensing behaviour. Health promotion and education interventions targeting health workers' knowledge needs to be put in place as well as removing potential constraints such as drug stock out, infrastructural challenges and ill equipped facilities.

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