

KNOWLEDGE, PRACTICES AND CHALLENGES OF INTERMITTENT MALARIA PREVENTIVE (IPT) TREATMENT DURING PREGNANCY IN GHANA

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ABSTRACT

Malaria contributes significantly to maternal morbidity and mortality rates in Ghana. The aim of the study was to investigate the knowledge, practices and challenges encountered in the implementation of sulphadoxine-pyrimethamine (SP) as a measure to prevent malaria occurrences among pregnant women.

A quantitative, descriptive, cross-sectional study was conducted. Convenience and purposive sampling techniques were utilised to select 88 women attending antenatal/postnatal clinics and 22 midwives working in these clinics in New Juabeng district in the Eastern Region of Ghana. Questionnaires were used to collect data and analysis was performed using the SPSS program.

The findings indicated that the majority of women and midwives knew how malaria is acquired. Most women (92%) knew about SP. The majority learnt about it at the antenatal clinic and some through radio and television programmes. While most women took SP under directly observed therapy, a few were allowed to take their drugs home. Midwives identified challenges such as women's failure to complete the SP regimen; some women receiving the first dose during advanced stages of their pregnancies whilst others received the first dose and never returned for subsequent doses.

The findings indicate that nurses' and midwives' education on malaria prevention during pregnancy should be enhanced.

KEYWORDS: Intermittent preventive treatment (IPT), intermittent preventive treatment during pregnancy (IPTp), malaria treatment during pregnancy, midwifery in Ghana, sulphadoxine-pyrimethamine (SP)

BACKGROUND INFORMATION

Malaria infection during pregnancy contributes to maternal morbidity and mortality, and adverse birth outcomes. Sub-Saharan Africa (SSA) is the world's hardest hit region by

malaria where malaria is estimated to cause 400 000 cases of severe maternal anaemia and from 7 500–200 000 infant deaths annually. Maternal anaemia contributes to an estimated 10 000 maternal deaths per year (CDC, 2009). Pregnant women are four times more likely to suffer from malaria than other adults (Roll Back Malaria Partnership, 2008).

In Ghana, malaria accounts for 9.4% of deaths among pregnant women, 13.8% of outpatient attendances and 10% of hospital admissions (GHS, 2005). A pregnant woman may be infected with malaria parasites contributing to maternal anaemia even in the absence of documented peripheral parasitaemia. When the parasites get into the placenta, they impede oxygen and nutrient transfer from the mother to the baby. Thus malaria in pregnancy is associated with complications such as maternal anaemia, spontaneous abortions/preterm births, pre-maturity and low birth weight (Cottrell et al., 2007). Low birth weight is reported to be the greatest risk for neonatal mortality and a contributor to infant mortality (CDC, 2009). Even though malaria has a devastating effect, it can be controlled or prevented. The control of malaria during pregnancy, using weekly chemoprophylaxis with chloroquine, has limited effectiveness due to poor compliance with the regimen as a result of the side-effects and increasing parasite resistance to chloroquine (WHO, 2004). The prevention of malaria during pregnancy depends on preventing infections and clearing parasitaemia when it occurs (WHO, 2004). In 1998, the WHO Expert Committee on malaria recommended Intermittent Preventive Treatment for pregnant women (IPTp) with SP in areas of moderate to high transmission rates (Roll Back Malaria, 2003).

To address the burden of malaria, the WHO (2004) recommends three interventions: intermittent preventive treatment for pregnant women (IPTp), the use of insecticide-treated nets (ITNs) and case management of malaria illness and anaemia. Each of these interventions is considered safe, effective, affordable and deliverable. Ghana has adopted IPT as part of a national policy for malaria control. The IPT of malaria during pregnancy is based on the assumption that pregnant women living in high malaria transmission areas have malaria parasites in their blood irrespective of whether they show signs of malaria or not. IPT in pregnancy involves giving a curative treatment of an effective anti-malaria drug at predetermined intervals (GHS, 2005) after quickening (16 weeks) to clear a presumed burden of parasites. The anti-malaria drug of choice for IPT in Ghana is SP (GHS, 2005; MOH, 2007). The first dose is taken after 16 weeks, then two subsequent doses at monthly intervals. Among others, SP has been documented to be effective in clearing placental parasites. Up to a maximum of three doses is recommended by the Ministry of Health, Ghana. It is given at the antenatal clinic (ANC) under supervision of a midwife/healthworker through directly observed therapy (DOT) (where the woman takes the drug in the presence of the healthcare provider). IPT with SP reduces placental malaria, low birth weight and maternal anaemia (Ter Kuile et al., 2007).

PROBLEM STATEMENT

Malaria is one of the most common reasons for hospital admissions in Ghana and its effects on pregnancy can be devastating. Although malaria in pregnancy is not a major cause of maternal mortality in Ghana, its percentage of 9.4% is unacceptable (GHS, 2005). Consequently, pregnant women are expected to be well managed and prevented from suffering episodes of malaria. A strategy adopted in Ghana to address malaria in pregnancy is that of IPTp. The full benefit of IPT can be achieved if health personnel and pregnant women understand and adhere to its administration. Even though the anti-malaria drug SP is the drug of choice to be administered under DOT, there is a paucity of data on its actual implementation in Ghana. There have been conflicting reports and challenges encountered by both health personnel and pregnant women alike. For example some pregnant women concealed the drug under their tongues without swallowing the pills. In a study conducted in Tanzania, the findings indicate that sometimes clinic staff permit women to take SP at home which gives room for women to throw away the tablets after leaving the clinic premises (Mubyazi et al., 2005). The study further reported that some women hesitated taking the drug at the clinics for fear of its side-effects. Some women collected the drugs but either hid them or threw them away. Others thought SP weakened their body. Furthermore, negative perceptions of SP had been reported among some communities, and this could impact negatively on the compliance rate (Mubyazi et al., 2005). Studies also indicate that IPTp was not delivered because SP was out of stock (Anders et al., 2008).

Much education had been embarked upon by the Ministry of Health, Ghana, on various malaria preventive methods such as IPTp and the use of ITNs. In view of the above, this study sought to investigate the knowledge and practices of midwives and pregnant women, and challenges faced by healthcare personnel who are implementers of the IPTp strategy in Ghana.

AIM OF THE STUDY

The aim of this study was to investigate the knowledge, practices and challenges about the administration of the Intermittent Preventive Treatment with sulphadoxine-pyrimethamine (IPT-Sp) strategy among pregnant women and midwives in maternity units in New Juabeng district in Ghana.

OBJECTIVES OF THE STUDY

The objectives of this study were to assess the level of knowledge of IPT among pregnant women and midwives; examine the procedures involved in the administration of IPT-Sp; identify challenges experienced by midwives with IPTP implementation and ascertain measures to prevent malaria in pregnancy.

SIGNIFICANCE OF THE STUDY

The study would bring to focus the level of knowledge and practices of pregnant women and midwives towards IPTp and the challenges encountered. It might direct policy makers as to how to enhance or modify the programme. The findings will also add to the existing literature and might provide an avenue for future research on malaria in pregnancy.

RESEARCH METHODOLOGY

Research design

The study was cross-sectional in nature. It was a quantitative, descriptive survey that intended to highlight the knowledge, practices and challenges encountered with the implementation of IPTp. A questionnaire was designed based on relevant literature.

Research setting

The study was conducted in the New Juabeng district which is the only municipality out of 21 districts in the Eastern Region of Ghana and covers a land area of 110 square kilometres. The 2004 Population and Housing Census put the population of the municipality at 154 998; a growth rate of 2.6% which was lower than the national average of 3.1%; females constituting 51.5% and males 48.5% of the population. The population density was 684 persons per square kilometer. The district had two main hospitals, one general hospital which was government owned and one private hospital which catered mainly for orthopaedic cases. There were two private maternity homes and eight maternal and child health and family planning units. The number of traditional birth attendants was 58. There were 31 midwives within the district.

Antenatal coverage was 86.1%; average number of visits per respondent was four. The coverage for supervised delivery was 65%, and the patronage of postnatal services was 48.4%. Maternal mortality for the period was 614.9/ 100 000 live births (Annual Reproductive and Child Health report, 2008).

Population

The study used two main study groups, women within the antenatal and postnatal period who had experienced IPT and midwives who provided antenatal and postnatal care services. The respondents were women who could speak English or Twi (the local language of the study area).

Sample size and sampling technique

Purposive sampling was employed to recruit the midwives (n=22) and convenience sampling to recruit the women within the antenatal/postnatal period (n=88).

Data collection

Two sets of questionnaires were designed. Section A focused on demographic details. Section B for the women's questionnaire covered their obstetric history and Section C examined their IPT knowledge. For the midwives, Section B examined their knowledge, practices and challenges of IPT administration.

Data were collected between September and November 2009. Questionnaires were self-administered. The eight centres within the New Juabeng district were selected. The researchers visited the clinics and after they had been introduced to the clients by the nurses, they greeted the clients and explained the purpose of the research, and the procedure to be followed. Interested respondents were further briefed on the significance of the study. Verbal consent was sought and respondents (n=88) were assisted to complete the questionnaire. The midwives were also contacted individually at the various facilities after the necessary permission had been granted. Although 28 midwives were contacted, four opted out and two did not return the questionnaires, amounting to 22 (79%) participating midwives.

Data analysis

Data that consisted of open-ended questions were grouped, analysed and described. The closed-ended questions were coded. Data were cleaned and analysed using the Statistical Package for Social Sciences (SPSS).

ETHICAL CONSIDERATIONS

Ethical considerations included gaining access to the research site, informed consent, not causing harm in terms of the questions asked, confidentiality and anonymity of respondents. The questions were examined by peers to ensure that they were not harmful to the respondents. Approval and permission was sought from the district director of health of the New Juabeng district, who sent letters of permission to the facilities within the district. The researchers further sought permission from the principal nursing officers at the eight maternal and child health centers. Verbal consent was obtained from each respondent. It was made clear that participation was voluntary and that they were free to withdraw from the study at any point without offering any explanations. Respondents were also assured of confidentiality and anonymity.

RESULTS

Analysis was based on data collected from 88 pregnant women attending antenatal/postnatal clinics and 22 midwives providing antenatal/postnatal care to women. The demographic details of women are presented in table I. Nearly half (48%) of the women were within the age range of 26-35 years but one was younger than 15 years. Regarding religious affiliations, the majority (89%; n=78) were Christians followed by Muslims

(10%; n=9). The women belonged to varying ethnic groups of which the Akans (40%; n=35) outnumbered the others. With respect to women’s occupations, many were self employed as traders. Of the working women, only one could tell exactly how much she earned per month. Of the women 51% (n=45) had obtained middle school/junior secondary school qualifications, 14% (n=12) had tertiary education whereas 6% (n=5) had no formal education.

Table I: Demographic details of women (n=88)

Variable	Frequency	Percent	Variable	Frequency	Percent
Age Group			Occupation		
Below 15	1	1%	Self employed	64	73%
15-25	33	38%	Government worker	14	16%
26-35	42	47%	Unemployed	10	11%
36-45	12	14%	Total	88	100%
Total	88	100%	Education		
Religion			Tertiary	12	14%
Christian	78	89%	Secondary /SSS	17	19%
Muslim	9	10%	Middle School / JSS	45	51%
Traditionalist	1	1%	Primary	9	10%
Total	88	100%	No formal education	5	6%
Ethnicity			Total	88	100%
Akan	35	40%			
Ga	9	10%			
Adangbe	9	10%			
Ewe	22	25%			
Hausa	9	10%			
Other	4	5%			
Total	88	100%			

Women’s levels of IPT knowledge

Most (86%; n=76) women indicated that malaria was acquired through mosquito bites. Others mentioned that it could be contracted through tiredness, heat from the sunshine, poor personal hygiene, and poor nutrition. The women indicated that malaria could lead to miscarriage, maternal anaemia, stillbirth, prematurity, low birth weight and death. Some of them did not give any answer and others also said they did not know.

The majority (92%; n=81) of the women mentioned that they had heard about SP whereas 8% (n=7) answered negatively. Most of them heard or learned about SP at the

antenatal clinic; and a smaller proportion from the radio and television. In their most recent pregnancies, 83% (n=73) said they had taken SP, 15% (n=13) had not, and the rest (2%; n=2) did not respond to the question. When women were asked at what gestational ages they initially took SP, 7% (n=6) said in the 1st trimester, 67% (n=59) mentioned 2nd trimester, 5% (n=4) said 3rd trimester, 9% (n=8) did not know and the question did not apply to 13% (n=11). With respect to the number of weeks' interval SP was supposed to be taken, the majority (59%; n=52) mentioned four weeks, 24% (n=21) did not know, 1% (n=1) said three weeks, 6% (n=5) said other and 10% (n=9) did not answer this question. When women were asked about the number of doses a woman was supposed to take during a particular pregnancy, 57% (n=50) mentioned three, 3% (n=3) said four, 26% (n=23) had no knowledge, 6% (n=5) indicated other and 8% (n=7) did not know.

As many as 80.0% (n=70) reportedly took SP at the antenatal clinic under direct supervision of nurses, 3% (n=3) took it at home and 1% (n=1) took it at the antenatal clinic without supervision. Regarding who served women with SP, 85% (n=75) indicated nurses/midwives, and 15% (n=13) indicated the question did not apply to them.

Women cited the following side-effects of SP: dizziness, vomiting, general bodily weakness, bitterness in the mouth, nausea, abdominal discomfort and yellowish discolouration of urine. Others indicated that they did not know, some said there were no side-effects, some did not answer the question or indicated the question did not apply to them. When the women were asked whether the nurses had explained the rationale for SP treatment to them, 65.0% (n=57) responded positively while 24% (n=21) responded negatively. The rest (11%; n=10) did not respond to the question.

With respect to the use of insecticide treated nets (ITNs), 46% (n=40) of the women mentioned the nurses demonstrated its use to them whilst 55% (n=48) said this was not done; 35.0% (n=31) used ITNs whereas 65% (n=57) did not. When asked if it was easy to acquire ITNs, 80% (n=70) said yes and 20% (n=18) said no. Women's responses about effective malaria control and prevention included maintaining environmental cleanliness, sleeping under ITNs, protecting oneself from the scorching sun, using insecticide sprays, taking SP and refraining from hanging clothes in rooms which serve as hiding places for mosquitoes.

Midwives' knowledge and practices of IPT

All midwives had been educated about and administered SP to pregnant women at the antenatal clinic. Of the 22 midwives, 95% (n=21) said SP was initially administered from 16 weeks (after quickening) gestation onwards and 5% (n=1) said "other" without specifying what this meant. They mentioned that SP was administered at four weekly intervals, and a total of three doses were required. The women were not charged for IPT. They had adequate supplies of SP and had never run out of stock.

With respect to whether SP had side-effects, 91% (n=20) of the midwives said yes, and 9% (n=2) said no. The side-effects mentioned were urticaria rashes, vomiting, nausea, dizziness, general bodily weakness, abdominal discomfort and restlessness. Other side-

effects mentioned were instant vulval itching developing into sores; Stevens-Johnson Syndrome with a burrow rash, and ulceration, lower abdominal pain and bleeding from the vagina. Side-effects were handled by referrals to medical officers, discontinuing SP and referrals, giving chlorpheniramine melete or hydrocortisone, according to symptoms. All midwives mentioned SP doses were recorded in the maternal health record books and antenatal registers/cards.

The midwives were asked about women's positive and negative comments about SP. It was reported SP prevented women from contracting malaria; it was effective and was better than chloroquine. Some of the negative comments included that women experienced malaise, weakness, restlessness and sleeplessness; and feared side-effects.

In relation to whether the use of ITN was demonstrated to women, almost all of them (95%, n=21) said yes whereas 5% (n=1) said no. With the exception of one, all the midwives reported that ITN was sold to mothers at a heavily subsidised amount in the range of GH¢1.50p - GH¢2 (Ghanaian currency). Eighty-two percent (n=18) of midwives indicated that ITNs were easily acquired by women.

When asked how many women reported per week with malaria, 27% (n=6) said rarely, another 27% (n=6) mentioned 10 women, 9% (n=2) each said one and two women respectively, and another 27% (n=6) did not know. Midwives indicated that pregnant women with malaria were treated during the 1st trimester with quinine while in the 2nd and 3rd trimesters artesunate amodiaquine were given (73%; n=16). However, 18% (n=4) mentioned that women were referred to hospitals or medical officers, and the rest (9%, n=2) provided no responses.

Midwives' challenges with IPT administration

Challenges midwives encountered with the administration of SP included incomplete SP treatment – some women reported during advanced stages of pregnancy and were unable to complete SP before delivery, whilst others came for their first doses but never reported for subsequent doses.

Some women were allergic to sulpha drugs or had reactions to SP during previous pregnancies and some were reluctant to chew SP. Women wanted to take SP home as they preferred to take it at night. Some women had no money to buy water to take the drugs. Some women experienced excessive vomiting/itching discontinued SP.

Women who experienced minor side effects needed to be counselled so that they would not refuse the subsequent doses. Women wanted to take SP with soft mineral/malt drinks, or with food. Women's homes were far away from the clinic and they worried about SP's side-effects on their way home.

Midwives' reported challenges to get women to use ITNs included that ITNs caused burning eyes, nightmares, perspiration and restrained mobility. Women lacked money to purchase ITNs.

DISCUSSION OF RESEARCH FINDINGS

The objectives of the study were to assess women's and midwives' IPT knowledge, examine the procedures of IPT-Sp administration, and identify measures and challenges concerning malaria prevention during pregnancy. Most women knew that mosquito bites caused malaria. Esse et al., (2008), in a study in Cote d'Ivoire also found that most people knew that malaria resulted from mosquito bites. However, a few of them stated that malaria could be contracted through tiredness, heat from sunshine, poor personal hygiene and poor nutrition. These factors could reduce one's immunity level aggravating the severity of malaria. Similarly, a study on the cultural perceptions of childhood malaria also found that 'too much work' and 'too much heat from sunshine' were the most frequently stated causes of malaria (Falade et al., 2005).

Most women were aware of the dangers of malaria during pregnancy. Other studies discovered that the majority of women had reasonable knowledge about malaria, its prevention and sequelae (RBM, 2003; Allaii et al., 2003; Esse et al., 2008).

Most women knew about SP through antenatal clinics and to a lesser extent from the radio and television. The majority of women knew the gestational age, number of doses and weekly intervals at which SP should be taken.

Financial constraints posed challenges to the implementation of the IPT and ITN in a study in rural southern Tanzania (Mrisho et al., 2009). In the current study, the women cited lack of funds to pay for ITNs and transportation as reasons why they did not visit the clinics subsequently to complete the SP treatment. Similar to the women in this study's statements ITNs produced too much heat. A study in northern Nigeria discovered that most people used ITNs and that almost 50% complained that ITNs generated too much heat. Other reasons given by the women for non-utilisation of ITNs were that it made them feel uncomfortable and caused nightmares or burning sensations of their eyes. Low utilisation of ITNs has also been documented amongst Kenyan women (Allaii et al., 2003).

Observing environmental hygiene, using ITNs and taking SP were mentioned as some of the measures that could help control or prevent malaria. The side-effects of SP that the midwives cited were similar to what the women mentioned. SP, when given as IPT has been associated with rare severe cutaneous reactions such as toxic epidermal necrosis and Stevens-Johnson syndrome (GHS, 2005). No evidence has been found of increased risk for serious cutaneous side effects in the newborn when SP has been administered in the second and third trimester (GHS, 2005). In relation to how side-effects were handled, SP administration was discontinued and women were referred to a medical officer for treatment. One of the negative comments midwives received was that women were afraid of SP's reactions. This could explain why some women refused to take SP.

Regarding treatment of malaria in pregnancy, in the first trimester, quinine was used whereas in the 2nd and 3rd trimesters, artesunate amodiaquine was administered. Artesunate

amodiaquine was not given in the 1st trimester in view of the negative consequences it might have on the developing foetus. In a review, Adam and Zaki (2006) establish that quinine is the drug of choice for severe malaria and has been reported to be safe in the first trimester as well. Further, it was mentioned that SP appears to be safe in the second and third trimesters of pregnancy.

Some of the challenges the midwives experienced with the administration of IPT were that some women did not receive the full recommended dose of SP as they attended antenatal clinic in late pregnancy or went for the initial dose and never bothered to go for the subsequent doses. In consistence with the above finding, most women reported to the ANC during the last trimester and this hindered the full implementation of all the required doses of the therapy (Sirima et al., 2006). They further stated that the late delivery of the first dose of IPT was likely to result in diminished effectiveness of the intervention. Others also presented varied problems as to why SP intake was hindered. This suggests that education on malaria in pregnancy, its prevention, treatment and complications need to be intensified for more effective implementation of the IPT.

The bottom line of the various control measures that were suggested was that good environmental sanitation should be observed. This could reduce the incidence of malaria in pregnancy, thereby improving birth outcomes and reducing maternal morbidity and mortality.

Of the women, 80% took SP under DOT whereas 20% did not. This finding is consistent with that of Mubyazi et al. (2005) where some women were allowed to swallow SP at home. There was no way that health personnel could ensure that women took the drug and this could defeat the purpose. Some women hid SP under their tongues (Mubyazi et al., 2005) with the intention of not taking it for fears of side-effects. Women cited examples of side-effects of SP such as dizziness, vomiting and abdominal discomfort.

Only about one-third of the women reportedly used ITNs, but these women's ITNs had holes and/or were not treated regularly with insecticides, limiting their usefulness to prevent mosquito bites.

CONCLUSION

All the nurses and most women knew about IPT treatment. Although the nurses reported adequate regular supplies of the required drugs which were administered free of charge to pregnant women, a number of challenges impacted negatively on the effective IPT treatment.

Not all women were willing to swallow the drugs under direct observation of the nurses/midwives. Some women feared, and/or encountered side-effects. The major challenges concerned women's late commencements of IPT that prevented completion of the treatment before their deliveries. Lack of funds prevented some women from returning to the clinic to take subsequent doses of IPT, and also prevented them from buying and using ITNs.

The regular supplies of free IPT drugs at the antenatal clinics did not ensure that pregnant women accessed and benefitted from this treatment.

RECOMMENDATIONS

Nurses/midwives should receive regular in-service IPT education. Effective records should be kept throughout Ghana of women who suffered from malaria during their pregnancies, who completed and who failed to complete their IPT. Their pregnancy outcomes should be correlated with these facts.

ITNs should be subsidised for pregnant women.

LIMITATIONS OF THE STUDY

Actual observations of women taking IPT and nurses administering IPT might have yielded more reliable data, but this was impossible due to time constraints. Future studies should compare groups of women who completed their IPT and those who did not do so in order to identify factors affecting IPT utilisation.

More in-depth data might have been obtained if personal interviews could have been conducted.

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