

IMPROVING THE QUALITY OF LIFE OF PREGNANT WOMEN USING THE INTERMITTENT PREVENTIVE TREATMENT WITH SULPHADOXINE PYRIMETHAMINE (IPT-SP): EXPERIENCES FROM DANGME WEST DISTRICT, GHANA

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ABSTRACT

The impact of intermittent preventive treatment (IPTp) as a strategy for malaria control and the extent to which it improves the quality of life of pregnant women and outcome of pregnancy in the Dangme West district, Ghana was assessed by conducting a cross-sectional descriptive study. One hundred (100) pregnant women were selected by multi-stage cluster sampling from 21 communities. The study utilized both qualitative and quantitative methods in assessing the impact of IPTp. In addition to the above, data was also collected through desk top reviews of HCFs' records, the district's health annual reports, published and unpublished literature, textbooks, etc. IPTp strategy is doing very well as a strategy for malaria control and management in pregnancy in the district. The outcome of pregnancy has improved significantly but due to late assumption of antenatal care many women do not get the requisite dosage to realise the full potential of the IPTp therapy. Community participation should be enhanced to realise the full potential of the IPT-SP strategy.

Keywords: *IPT-SP, Pregnant women, Malaria control, Dangme West*

INTRODUCTION

Malaria is a major hazard for all pregnant women exposed to the parasite. Being pregnant makes women more vulnerable to infection, and far more likely to develop full malaria symptoms even if they would normally have a good level of resistance to the disease. It is estimated that malaria causes at least 10,000 maternal deaths a year in sub-Saharan Africa (IRIN, 2011). Although, malaria is frequently asymptomatic in pregnancy, infection results in maternal anaemia, abortion, stillbirth, intrauterine growth retardation, puerperal pyrexia, prema-

ture labour and low birth weight (Hommerich *et al.*, 2007; Malaria Control Program, 2008). Prompt and effective treatment is clearly important, but has been tricky, especially for women in the first three months of pregnancy (IRIN, 2011). These effects mutually aggravate conditions of obstetric, social and medical issues, requiring multidisciplinary and multidimensional solutions.

Malaria is accredited to be a major cause of poverty and low productivity especially in poor countries (Ijumba *et al.*, 2004). Ghana is a hyper-endemic malaria zone and pregnant women

and children below five years constitute the main risk groups for malaria (Ahiabile, 2007). Every pregnancy that takes place in Ghana is at risk of malaria; malaria contributes up to 13.8% of out-patient attendance, 10.6% of hospital admissions and accounting for 9.4% of maternal deaths (National Malaria Control Program, 2008).

Control strategies for malaria in pregnancy are formulated in relation to the epidemiological pattern of infection with current emphasis in stable transmission areas on intermittent preventive treatment with Sulphadoxine-Pyrimethamine (IPT-SP), iron and folate supplements, deworming, the use of insecticide-treated nets (ITNs) and case management. Starting from 16 weeks of pregnancy, three doses are usually given sequentially at an interval of four weeks using the direct observation therapy (DOT) (Ghana Health Service (GHS), 2005). IPT-SP is effective in preventing maternal and placental malaria as well as improving pregnancy outcomes (Schulman *et al.*, 1999; Njagi, 2002; Falade, 2007). An alternative measure for those who cannot take SP include sleeping under ITNs throughout pregnancy, undertaking indoor residual spraying with Pyrethroid insecticide, avoiding staying outside in the night and using mosquito repellents (GHS, 2005). The Roll Back Malaria (RBM) baseline study (2001) noted that although majority of pregnant women (69.8%) attended antenatal clinic (ANC) at public health care facilities (HCF), less than half (34.6%) took malaria chemoprophylaxis and only 11.6% took it appropriately (GHS, 2005).

Successful implementation of the IPT-SP strategy, Mubyazi *et al.* (2005) acknowledged depends on proper planning and support to the training of health staff and sustained sensitization of pregnant women at Health care facilities (HCF) and at community levels about the benefits of IPT-SP to mothers and their unborn babies. The use of SP in first pregnancies in relatively high malaria transmission areas is effective though there is little evidence that its efficacy decreases as the number of pregnancies

increases (Ghana Malaria Program (GMP), 2006). Tarimo (2007) acknowledged that severe malarial anaemia is still a health problem in pregnancy, conceivably due to low coverage of IPT-SP because of erratic availability of SP and a major timing gap for IPT-SP which should be corrected.

Studies have shown that placental malaria and maternal anaemia declined substantially and birth weight increased after the implementation of IPT-SP and that these effects can further be increased by improving IPT-SP coverage and adherence but additional anti malarial measures are needed to prevent malaria in pregnancy (Hommerich *et al.*, 2007; van Eijik *et al.*, 2007). In Burkina Faso, several delivery approaches were used to ensure effective implementation; delivery of IPT-SP at health centres during antenatal care visits, community based distribution delivery approach and pregnant women were reached by traditional birth attendants or representatives of village women's associations (RWAs) (Coulibaly, 2010). In Ghana more than half (54.4%) of those who received the first dose of SP, took the third dose and uptake in all the regions increased except Western and Volta regions that registered figures below 50% (NMCP, 2009).

Ghana's Roll Back Malaria (RBM) Partnership strategy, involves multi-sectoral and intersectoral partnerships working together on an agreed plan with the goal of reducing deaths and illnesses caused by malaria by 50% by 2010 (GMP, 2005). Progress has been made in improving access to prompt and effective treatment, supply of ITNs and using IPT with SP (GMP, 2005). IPT for pregnant women has now been extended to all districts, but to what extent has this strategy improved the life of pregnant women and their unborn babies? Malaria is hyper-endemic in Dangme West district, and like any other rural district in Ghana, reported malaria cases at the OPD have consistently risen over a period of five years (2002-2006), with a percentage rate of reported cases of febrile cases presumed as malaria at fifty one percent (51%). Though there has been

many activities regarding the control of malaria, it still accounts for the highest reported cases in the out-patient attendance and for the past five years, it has been among the first five-top communicable diseases in the district. Malaria in pregnancy has been equally an issue in the district with 575 (1.9%) reported cases for 2005 alone (District Health Administration (DHA) Annual report, 2006). Available data at the National Malaria Control Program (NMCP) suggests that the Global Fund has committed a total of US\$8,552,684.05 and US\$29,987,776 in two grants explicitly, round two (2) and round four (4) respectively to the district for malaria control. However, malaria infection remains hyper-endemic in the district. To what extent does the utilization of the funds for management and control of malaria contributed to the improvement of the quality of lives of pregnant women and the outcome of pregnancy among women in the Dangme West District?

The purpose of this study is to assess the impact of intermittent preventive treatment in pregnancy (IPTp) as a strategy for malaria control in the Dangme West district. The objectives are to explore the extent to which IPTp improves the quality of life of pregnant women and their unborn babies, and explore how the community as a whole assist in the management and control of malaria in the Dangme West district.

PROBLEM STATEMENT

Ghana's Roll Back Malaria (RBM) Partnership strategy, involves multi sectoral and intersectoral partnerships working together on an agreed plan with the goal of reducing deaths and illnesses caused by malaria by 50% by 2010 (GMP, 2005). Progress has been made in improving access to prompt and effective treatment, supply of ITNs and using IPT with SP (GMP, 2005). IPT for pregnant women has now been extended to all districts, but to what extent has this strategy improved the life of pregnant women and their unborn babies?

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Ghana, reported malaria cases at the OPD have consistently risen over a period of five years (2002-2006), with a percentage rate of reported cases of febrile cases presumed as malaria at fifty one percent (51%). Though there has been many activities regarding the control of malaria, it still accounts for the highest reported cases in the out-patient attendance and for the past five years, it has been among the first five top communicable diseases in the district. Malaria in pregnancy has been equally an issue in the district with 575 (1.9%) reported cases for 2005 alone (District Health Administration (DHA) Annual report, 2006). Available data at the National Malaria Control Program (NMCP) suggests that the Global Fund has committed a total of US\$8,552,684.05 and US\$29,987,776 in two grants explicitly, round two (2) and round four (4) respectively to the district for malaria control. However, malaria infection remains hyper-endemic in the district. To what extent does the utilization of the funds for management and control of malaria contribute to the improvement of the quality of lives of pregnant women and the outcome of pregnancy among women in the Dangme West District?

MATERIALS AND METHODS

Study Setting

The Dangme-West district is the largest (about 1700 square kilometres) in the Greater Accra region of Ghana with Dodowa as its capital. The district according to GSS(2000) is extremely poor and predominantly rural with both poor socio-economic and infrastructural development (Kpabitey, 1996). It is sparsely populated with most inhabitants living in scattered small communities with less than 2000 people. Inhabitants are mainly subsistence farmers, fishermen and petty traders, with some being artisans and civil servants. The district was selected because it is among the first 20 districts that implemented the RBM program supported by the Global Fund.

Study Design

The study employed cross-sectional descriptive design to assess the impact of IPT-SP as a strat-

egy for malaria control. Both quantitative and qualitative methods were used to gather data for the study.

Study Population

The study population for the survey was all pregnant women and/or postnatal mothers who utilize healthcare services and resides in the Dangme West District. The sample size was calculated using the formula by Daniel (1999) and Cochran (1977).

Thus:

$$n = \frac{Z^2 1 - \frac{\alpha}{2} - p(1 - p^1)}{d^2} \times deff$$

Where: n = sample size

Z = z score at $1 - \alpha/2$ confidence level

P = the estimate of the proportion of the population that has a particular characteristic.

d = largest difference of the estimated proportion that could be accepted in the research

deff = design effect which is always between 1 – 2.

Using the above model, the study assumed that at least 80% of all pregnant women will visit the ante-natal clinic during pregnancy, so p = 80%. The margin of error was assumed to be 10%. Confidence interval was assumed to be 90% and a population of 5014 (expected pregnancy using a growth rate of 4.4 percent). The sample size calculated was 86.5.

Data Collection

Quantitative data was generated by using structured questionnaire with both closed and open-ended questions to collect data from pregnant women in their homes. Data was gathered mainly by research assistants who were trained for two days. Role plays were used to translate the questionnaire into vernacular (Dangme). Alterations were made to some of the questions during the training session. The research assistants then went to the communities with a list

of potential respondents (their names and house numbers), generated from the demographic surveillance system of the Health Research Unit (HRU) of the Ghana Health Service. All the respondents were traced to their homes for the interviews.

Qualitative data was mainly collected from health care providers in their HCFs to explore further the efficacy of IPT-SP and outcome of pregnancy. In-depth interviews were carried out using interview schedules to ensure consistency. The interviews were written down (verbatim) during the process. The birth weight of babies was also recorded for a period of ten years. Additionally, there was desk review of annual District Health Directorate (DHD) reports and documents for the past five years (2002 – 2006) to enrich information for the study.

Sampling Technique

Multistage cluster sampling was used to select pregnant women and postnatal mothers for the study. Twenty-one communities were conveniently selected from all the four sub-districts because of the vast nature and terrain of the district and inadequate finance, with the assistance of the District Director of Nursing Services. At least five easily accessible communities were selected from each of the sub-districts.

Using the Demographic Surveillance System of the HRU of the Ghana Health Service, a sample of one hundred and twenty pregnant women was randomly generated from the communities. However, one hundred (100) pregnant and postnatal women could be traced and interviewed for the study. Inclusion criteria were that the woman should either be at least six months pregnant or have delivered at most two months earlier. Ten experienced research assistants and one supervisor were recruited from the HRU and trained for data collection.

Data Analysis

Analysis of data was both qualitative and quantitative using the SPSS 12.0.1 for Windows,

(2003) and Epi-info™ version 3.3.2 for windows, (2005). Qualitative data was analyzed manually by grouping, themes, sub-themes and trends after collating all data. After the questionnaires have been checked for consistency, they were coded and entered primarily into both Epi-info and SPSS. Descriptive statistics was used to analyse the quantitative data and presented by cross tabulation, simple frequency tables, means, bar charts.

Validity and Reliability

After training, the questionnaire was piloted in the Dodowa (district capital) township to check the validity of the questions. To ensure data quality, due consideration was given to research objectives in designing the instruments. The supervisor functioned as a field editor and helped minimize human errors by periodically checking research instruments for consistency. For reliability purposes, some completed questionnaires were picked at random and re-administered by the field supervisor to the same

respondents. Data editing and verification were run before data entry into the computer to ensure that errors were minimized before analysis.

Ethical Consideration

An introductory letter from the School of Public Health given to the District Health Directorate for permission to use the district as a study setting. At the district, formal consent was sought from all those who were involved in the study particularly from the chiefs and opinion leaders of the selected communities and the district assembly. Participation was purely voluntary and respondents were given the option to refrain from participating after informed consent. Confidentiality and anonymity was maintained throughout the study.

RESULTS

Table 1 describes demographic characteristics of pregnant women (n=100) who participated in the study. Largely the educational back-

Table 1: Demographic Characteristics of Pregnant Women Studied

Occupation	Age group					Total
	15–20	21–25	26–30	31–35	36–40	
Unemployed	14	12	4	0	0	30
Farmer	2	1	0	0	1	4
Fishmonger	0	0	0	0	1	1
Trader	8	18	15	6	0	47
Civil servant	0	1	1	1	0	3
Artisan	1	7	3	3	1	15
Gestational age/time after delivery (months)						
6	3	7	0	1	1	12
7	3	7	5	3	0	18
8	2	8	4	3	1	18
9	7	8	7	1	0	23
10	9	7	7	2	1	26
11	1	2	0	0	0	3
Educational attainment						
SSS/"O" & "A" Level	3	0	4	1	0	8
JSS/Middle school	12	24	14	8	3	61
Primary	8	11	3	0	0	22
No education	2	4	2	1	0	9
Total	25	39	23	10	3	100

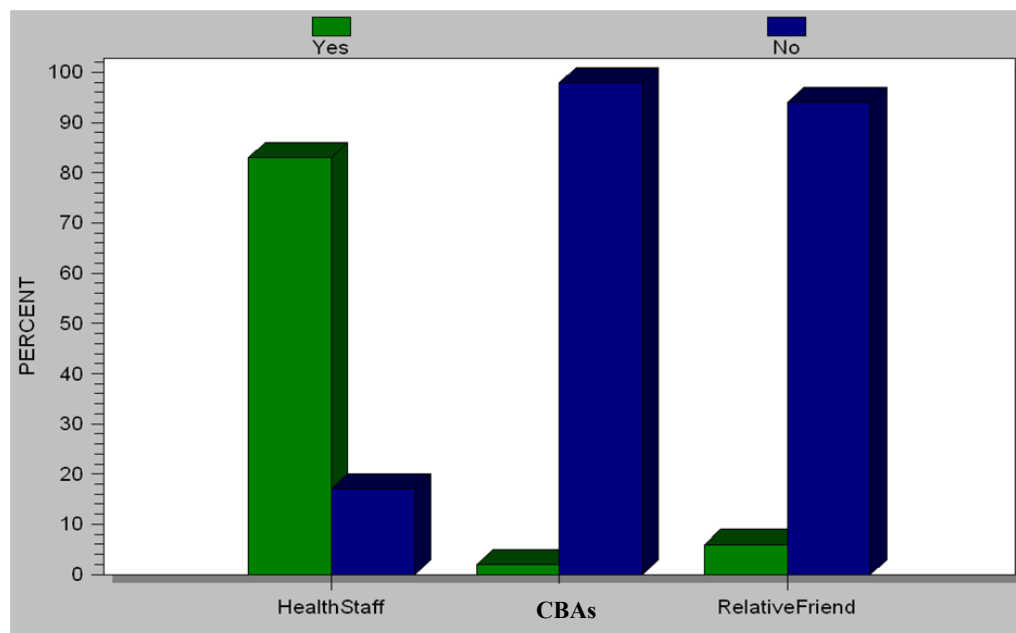


Fig. 1: Source of Information on IPT-SP

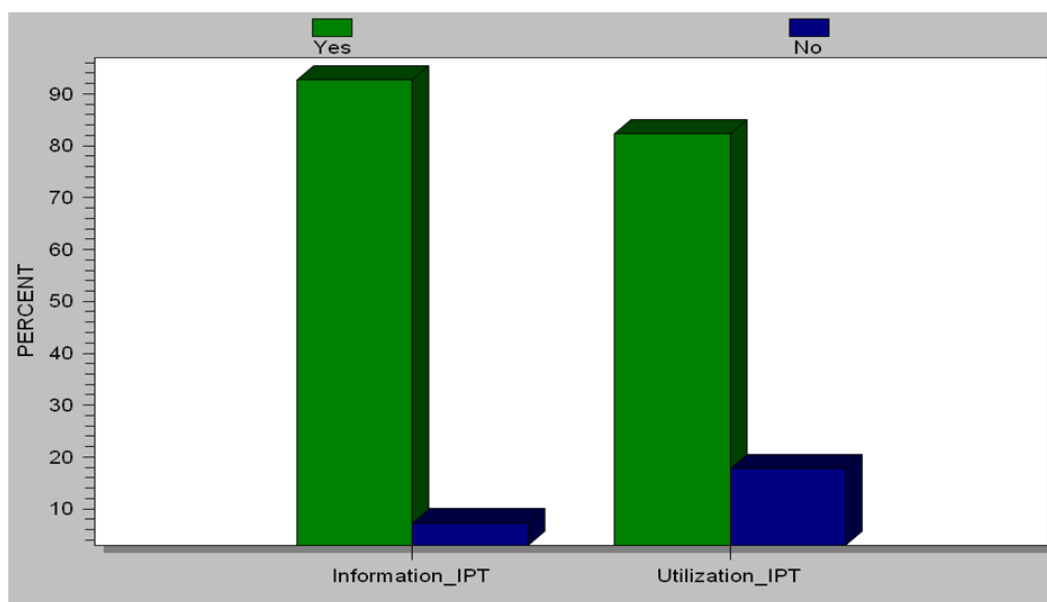
ground of the women was low, just 8% had secondary education. Knowledge of IPT-SP was massive in the district, out of 100 pregnant women, 91 had knowledge on IPT-SP with only 9 who have not heard about IPT-SP. Of those who have heard of IPT-SP, 83 (91%) heard it from the HCF with less than a tenth of them hearing the information from relatives/friends (6.6%) and the community-based attendants (CBAs) (2.2%) (Figure 1).

Pregnant women were asked to give the name of the drug used for IPT-SP. Out of one hundred (100) pregnant women, more than half (64.0%) were able to give the correct name, 28.0% did not know the name whereas 8.0% gave the name as either folic acid or iron tablets (Table 2). Whereas 79 pregnant women representing 79.0% have taken SP before, a great proportion (86.8%) of those who have heard about SP did actually take the drug. Out of 100 pregnant women, 79 did take SP and 16 representing 20.2% did develop adverse effects while 21% did not take SP (Figure 3).

Out of 100 pregnant women, uptake of IPT 1 was 25.7%, IPT 1 & IPT 2 was 35.1% and IPT 1, IPT 2 & IPT 3 was 39.2% respectively (Figure 4). Figure 5 depicts uptake of IPT-SP and age of pregnancy/time after delivery. Out of 19 pregnant women who took IPT1, 31.6% (6) were postnatal women (9 - 11 months), while 13 (68.4%) were from the 6 – 8 months group. Out of 26 pregnant women who took IPT1 & IPT2, 14 (53.8%) were from 9 – 11 months category. Furthermore, out of 79% women who took IPT-SP, 28.6% (20) were from 9 – 11 months category and 25% did not have all the three doses of IPT-SP. But from the distribution only 3 women (4.1%) were able to complete the course at the requisite time. The chi-square was 25.782 with a p-value of 0.004, f-statistics of 13.461 with p-value of 0.000, and coefficient of correlation of 0.397. Level of significance is $p < 0.05$. This shows there is significance between age of pregnancy and uptake of IPT-SP. There is also a positive correlation between age of pregnancy and uptake of IPT-SP.

Table 2: Name of Drug Used for IPT-SP as Given by the Women

Drugs	Frequency	Percent
Sulphurdioxine Pyrimethamine	64	64
Folic acid + iron tablets	4	4
Folic acid	3	3
Iron tablet	1	1
Don't know	28	28
Total	100	100

**Fig. 2: Information on IPT and Utilization of IPT-SP**

Qualitative data suggested reasons for not taking IPT-SP ranged from non attendance, misconceptions, absence of a laboratory in the Dangme Health centre, etc. Below are some reasons recounted by some pregnant women:

Because I was on folic acid and iron tablets;
Because it was not good for me, whenever I took it I vomited;
I was at ANC four times but did not know why the nurses did not give me SP;
I was not given because in my fifth month I was asked to go to Madina for laboratory investigation;

I went to the HCF once and was asked to go to the laboratory, I did not go because I had no money but as I am well I did not attend ANC again.

Finally, out of 100 pregnant women, 11 percent did not take SP because they did not attend ANC. The pregnant women made good remarks about IPT-SP. SP generally, ensured quality of life through-out pregnancy, most women remarked that they felt strong and healthy during pregnancy when SP was administered to them. Below are some remarks given by pregnant women concerning SP.

After taking the drug I felt like throwing up but I realized it reduced the rate at which I developed malaria;

During this pregnancy I couldn't eat well but after taking the SP I could eat well;

I used to fall sick in previous pregnancies but this have ceased because of SP;

My baby was strong and healthy at birth and SP prevented her from developing malaria;

I was strong, healthy and had good appetite through-out pregnancy after taking SP;

I used to be sick but not malaria with the introduction of SP I felt relieved;

SP prevented me from developing malaria and made me active throughout pregnancy;

The pregnant women generally had commendable comments regarding SP; apart from the

Table 3: Adverse Effects Developed by Pregnant Women

Adverse effects	Frequency	Percent
Vomiting	8	37.8
Nausea	5	21.7
Itching	4	17.4
Skin rashes	1	4.3
Dizziness	2	8.7
Malaise	1	4.3
Palpitation	2	8.7
Total	23	100

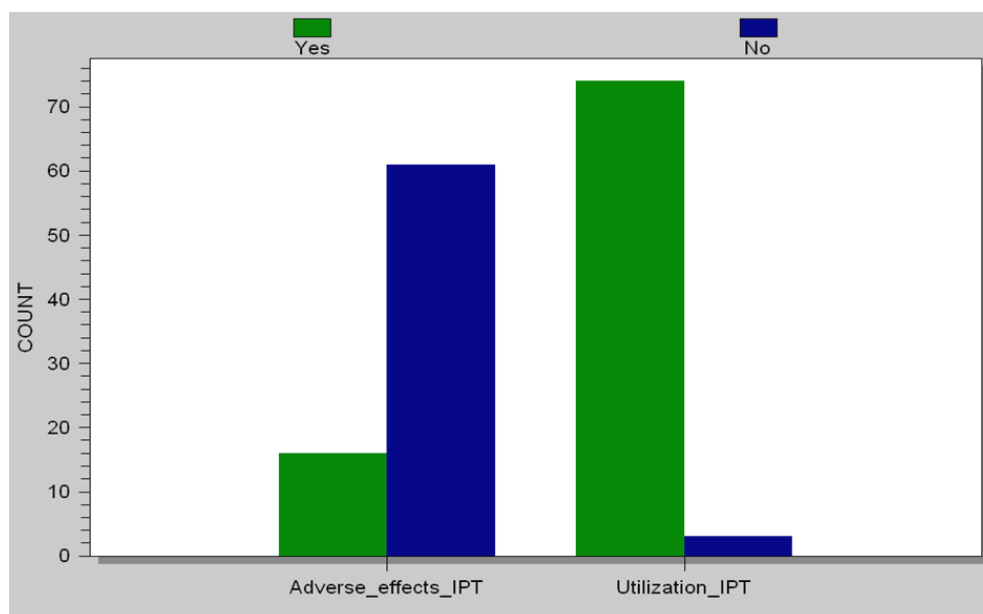


Fig. 3: Utilization and Adverse Effects of IPT-SP

Table 4: Frequency of Development of Malaria during Pregnancy in Relation to Uptake of SP

Was it after taking the SP?	Did you develop malaria during this pregnancy?						Total
	0	1	2	3	4	6	
Yes	1	3	0	2	0	0	6
Row %	16.7	50.0	0.0	33.3	0.0	0.0	100.0
Col %	16.7	17.6	0.0	22.2	0.0	0.0	13.0
No	5	14	9	7	4	1	40
Row %	12.5	35.0	22.5	17.5	10.0	2.5	100.0
Col %	83.3	82.4	100.0	77.8	100.0	100.0	87.0
Total	6	17	9	9	4	1	46
Row %	13.0	37.0	19.6	19.6	8.7	2.2	100.0
Col %	100.0	100.0	100.0	100.0	100.0	100.0	100.0

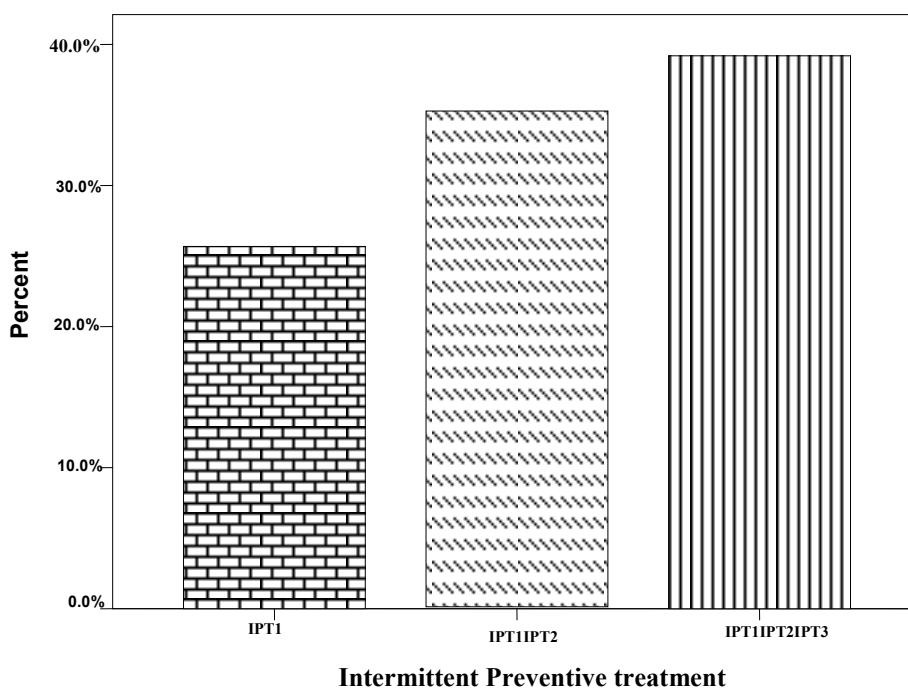


Fig. 4: Uptake of IPT-SP

20.3% who have not realized the attributes of SP, 81.5% openly recommended SP. Out of 100 pregnant women, 73 (92.4%) declared they will take additional doses of SP whereas 6 (7.6%) declined to take additional doses of SP. Out of 16 pregnant women who developed adverse effects, 10 (62.5%) declared they will take additional doses of SP, whereas 6 (37.5%)

said they will not take any additional doses. Out of the 73 pregnant women who were prepared to take additional doses of IPTp-SP, 63 (86.3%) did not develop any adverse effects (Figure 6). The adverse effects recounted by the pregnant women were basically vomiting, nausea, itching, dizziness, malaise and palpitations. Table 3 depicts the minor adverse effects suf-

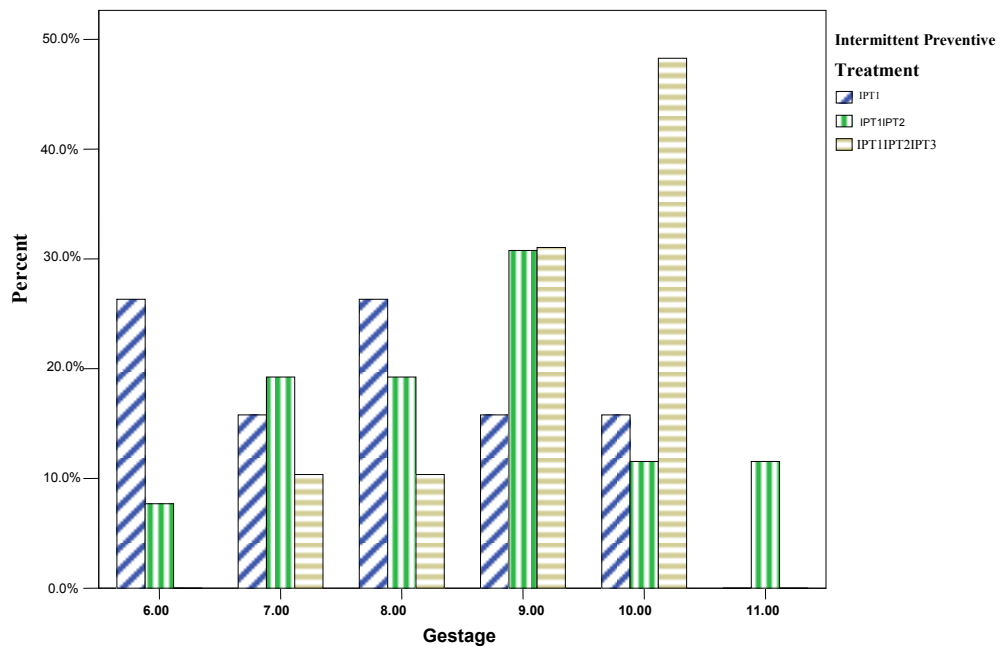


Fig. 5: Uptake of IPT-SP versus Gestational Age/Time after Delivery (mths)

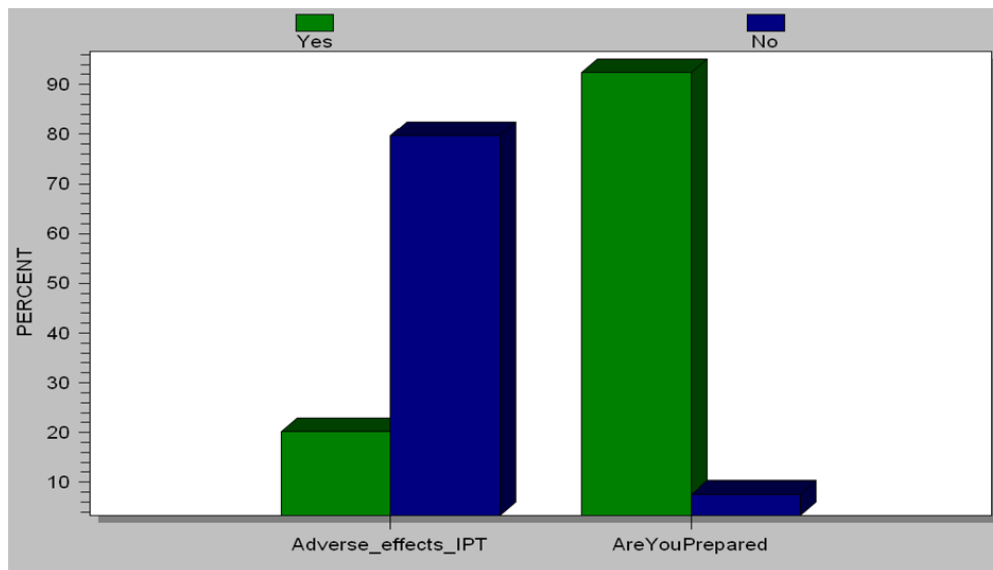


Fig. 6: Adverse Effects and Willingness to Take More Doses

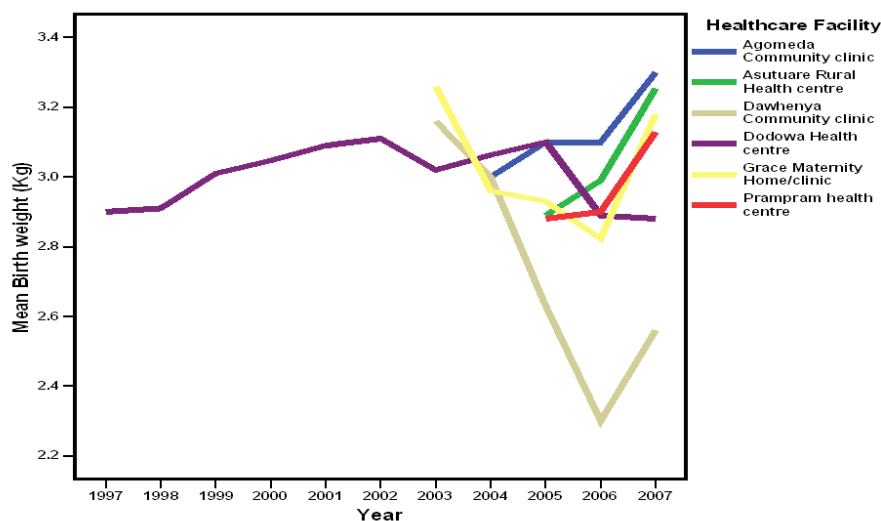


Fig. 7: Average Birth Weights of Babies Before and After the Inception of SP

ferred by the pregnant women. The pregnant women acknowledged that even though they did report to the clinic nothing was done for them. One did say that she was asked to stop taking SP and another was given Piriton tablets.

Out of the 46 pregnant women who developed malaria, 6 (13%) did develop malaria after taking the SP; 3 (50.0%) of them had it once whilst 2 (33.3%) had it thrice. Seventeen (17) (37.0%) had just one episode but 39.2% (18) developed between 2 - 3 episodes of malaria. The chi-square is 3.1556 with a p-value of 0.6760, indicating that there are variations for all the categories (Table 4). Drugs used in the management of malaria during pregnancy are listed in Table 5 and Amodiaquine is the favourite choice. As can be seen mono-therapy is still prevailing, with 21 (60%) respondents receiving mono-therapy. Chloroquine (8.5%) is still being used for the management of malaria just as the use of concoctions (20.0%); the role played by traditional medicine is really essential in any rural setting in Ghana where poverty is ubiquitous.

Qualitative data from health care providers also confirmed the benefits of SP to pregnant

women. For instance, Miss Bee in Osudoku sub-district declared:

There has been increased antenatal attendance and clients looked healthier throughout their pregnancies. Complications such as post partum haemorrhage (PPH) have reduced and babies have been delivered at term with normal birth weights.

Miss Dee in Ningo sub-district added:

Pregnant women who have taken SP did not normally develop malaria. Malaria has reduced considerably and so was reaction to Artesunate-Amodiaquine. Babies born to mothers who were given SP did not as a rule develop malaria within the first three months at least.

In Dodowa, Miss Gee remarked:

SP prevents pregnant women from getting malaria. Their babies after birth did not develop malaria for at least six months and their birth weights too are good.

Qualitative data from above suggests that since the inception of SP, babies have generally been born at term with normal birth weights; labour have also been normal with shorter time of placenta separation; complications such as PPH have reduced as compared to those who did not take SP. Additionally, there has been a reduction in incidence of still-births since SP prevents malaria in pregnancy; thus, clients looked healthier throughout the period of pregnancy. There has also been increased antenatal attendance and babies born to mothers who were given SP did not usually develop malaria within the first six months of life. Figure 7 depicts the average birth weight of babies before and after the introduction of SP in the HCFs and clearly it could be observed that birth weight have appreciated. Appreciation of birth weight can however be accounted for by other confounding factors such as improved diet, easy access to professional care, education, etc.

DISCUSSION

Giving of IPT-SP did significantly improve the quality of life of pregnant women and their unborn children as further reported by other studies (GMP, 2006; Mubyazi, 2005). Qualitative data indicated that outcome of childbirth have generally improved in the district; almost all babies were born at term with increasing birth weights devoid of problems normally associated with childbirth as confirmed in other studies (Schulman *et al.*, 1999; Njagi, 2002; Falade, 2007). Healthcare managers acknowledged increase in ANC attendance and reduction in the incidence of still births. They also declared that babies born to mothers who have taken SP did not usually develop malaria during the first six months of life. This was commendable and more research work needs to be done to affirm this assertion.

A review of the yearly average birth weights for a period of 10 years in some HCFs clearly showed an initial decline of birth weights which gradually peaked over time though; this could be due to some factors other than IPT-SP. The average birth weights ranged between 2.9

in 1997 when IPT-SP policy has not been initiated to 3.3 in 2007 with the full implementation of the policy in all HCFs. Though the increase in weight could be due to other confounding factors such as improvement in nutrition, etc, the fact that there has been a consistent increase in all the HCFs over the period, suggests that SP prevents malaria thereby improving placental perfusion hence, the resultant increase in birth weights.

Information on IPTp was very extensive among the pregnant women, only 9 percent have not heard about IPTp and information was received mostly from the HCFs, whereas just a small percentage heard it from friends and CBAs. This confirmed the chit system facilitated by the CBAs which ensured that all pregnant women within the communities participated in IPTp. The CBAs visit pregnant women in the communities who have absented themselves from ANC and give the women a note to attend ANC. The midwives, in turn give to the women a note for the CBAs after antenatal care. Thus, the successful implementation of the IPTp strategy depended not only on proper planning, support and training of healthcare providers but also sustained sensitization of pregnant women both at the facility and community levels as confirmed also by previous studies (Mubyazi, 2005; Bopp, 1994; Ofosu-Amaah, 1983).

Findings in the present study suggested that majority (64 percent) of the women were quite familiar with the name of the drug being used for IPTp, that is, Sulphurdioxine Pyrimethamine (SP). Again, one fifth (21.0%) of those who took SP did develop adverse effects. Fairly a large percentage (62.5%) of those who developed adverse effects declared they would take additional doses. The relative risk of utilization and adverse effects was 0.8125, signifying a protective effect for using SP. The adverse effects were mainly minor symptoms common to many pregnant women who did not demand any therapy thus; many women would use the drug despite their reaction to it. The relative risk was 0.6250, signifying a positive relationship between adverse effects and willingness to

take additional doses of SP, thus SP have a protective effect on pregnancy especially the outcome.

According to IPT-SP policy by six months the pregnant woman should have all the 3 doses starting at 16 weeks and ending before 36 weeks, but none of them received all the three doses by the sixth month period. Only 4.1% received all the 3 doses by the seventh month but altogether almost two fifths (39.2%) received all the 3 doses before delivery. Eighteen percent (18%) did receive 2 doses of IPT-SP at the time of delivery whereas 8.1 percent had just a dose. At eight months 6.8% had just a single dose, meaning they would have their babies with single dose of IPT-SP. In all about 41.7% would not receive all the three doses of IPTp. This figure was just too high for malaria control in pregnancy and great care should be taken in planning such that community participation can be enhanced to strengthen and sustain the programme as suggested by Mubyaziet *al.* (2005). Since administration of SP correlates with early attendance, pregnant women should be encouraged to start attending ANC early so that SP can be given at the recommended time. The relationship between IPT-SP and gestational age is very significant and moderately positive.

Reason for not taking IPTp is mainly non attendance of ANC, a tenth of the pregnant women were defaulters. Taking of folic acid was given as a reason for not being given SP but the two drugs can be used concurrently without complications (GMP, 2006), other reasons are simply due to transfer to neighbouring communities for laboratory confirmation of malaria. Advantages of SP recounted by the pregnant women are indeed significant; many of them confirmed that even though there were few insignificant problems initially, the fact that the drug sustained them throughout pregnancy with good health and appetite was great and all the problems were totally ignored. Many of them actually acknowledged that the drug prevented them from developing malaria throughout pregnancy and their babies were born strong and

healthy thus, efficacy of SP is undeniably strong. Findings illustrated gradual resistance to SP; 13% of those who developed malaria did take SP, 50% had it once whilst 33.3% had it thrice and the coefficient of correlation was 0.14 signifying a feeble positive relationship. Treatment given for malaria isn't definite; it is a combination of mono and dual therapy which consisted mostly of Artesunate-Amodiaquine though Chloroquine is also being used disregarding the national protocol of quinine for pregnant women.

CONCLUSIONS AND RECOMMENDATIONS

IPT-SP no doubt enhances quality of life of pregnant women and the outcome of pregnancy. In promoting NMCP strategies therefore, BCC, counselling and home visiting, together with community participation should be encouraged to enhance effective utilization of the strategy by the recipients. IPTp no doubt is an effective strategy which should be enhanced by encouraging pregnant women to attend ANC early so that the full dose can be given accordingly. The use of CBAs should be strengthened to enhance community participation in the malaria management and control process. Chemical sellers should also be brought into the program to ensure effectiveness of all the strategies.

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