UNIVERSITY OF CAPE COAST

COMPLIANCE TO INTERMITTENT PREVENTIVE TREATMENT OF MALARIA AMONG PREGNANT WOMEN IN THE TWIFO PRASO HEALTH DISTRICT

BY

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JUNE, 2012

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Name: Drah Hannah Owusua

Signature: ..... Date: 12-07-2012

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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ABSTRACT

Two main opposing views about compliance in medical health are: firstly it is not possible to ever have the entire clients to comply completely with regimens requirements, and secondly, through education or some other means it is possible to have clients comply. The possibility of clients complying with regimens however increases with strong partnership between clients and health care professionals. This study assessed the factors leading to the low patronage of SP-based IPT of malaria by pregnant women in the Twifo Praso Health District.

Data were collected from 135 women who patronised SP-based IPT of malaria in pregnancy in the Twifo Praso Health District. In addition, five health workers were interviewed. The Spearman's Correlation technique was used to find the association between household income and the number of antenatal care (ANC) visits.

Eighty-three percent of the clients knew they were susceptible to malaria, and its devastating effects and of the availability of SP-based IPT, yet only a few (26 percent) took the recommended three doses. Some of the women however were not provided with detailed information on the drug, and 50 percent visited ANC late due to inadequate funds.

The Ghana Malaria Control Programme needs to involve all stakeholders in decision-making. Health workers should be given intensive training on the administration of the drug whilst both individuals and communities should be sensitized on malaria and its related issues.

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The people mentioned in this work are not liable for any shortcoming and errors that might exist in this work. Any shortcomings and errors remain mine.

DEDICATION

To my husband, John.

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LIST OF ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
ANC	-	Antenatal Care
CHPS	-	Community-based Health Planning and Services
CSM	-	Common Sense Model
FGD	-	Focus Group Discussion
GHS	-	Ghana Health Service
GSS	-	Ghana Statistical Service
HIV	-	Human Immune-deficiency Virus
IDI	-	In-depth Interview
IPT	-	Intermittent Preventive Treatment
ITN	-	Insecticide Treated Net
JSS	-	Junior Secondary School
MOH	-	Ministry of Health
MICS	-	Multiple Indicator Cluster Survey
MIDA	-	Millennium Development Authority
RBM	-	Roll Back Malaria
SP	-	Sulphadoxine Pyrimethamine
SPSS	-	Statistical Package for Service Solution
STI	-	Sexual Transmitted Infection
TOPP	-	Twifo Oil Palm Plantation
UNICEF	-	United Nations International Children's Emergency Fund

USAID	-	United States Agency for International Development
WHO	-	World Health Organisation

CHAPTER ONE

INTRODUCTION

Background to the study

Malaria has been one of the most prevalent human diseases that has plagued societies (Sachs & Malaney, 2002; cited in Enato & Okhamafe, 2005). The World Health Organisation (WHO, 2000) reports that one half of the over 2,400 million people of the world's population suffering from malaria are in Sub Saharan Africa where the incidence of the disease has become a major public health problem and a negative factor in the socio-economic development in the sub-region (Enato & Okhamafe, 2005). In Ghana, malaria is one of the leading causes of morbidity and mortality, especially among pregnant women and children under five years (Ghana Statistical Service, Ministry of Health, Multiple Indicator Cluster Survey, United State Agency for International Development, Millennium Development Authority & United Nations International Children's Emergency Fund, 2007).

In view of the worldwide malaria problem, the Roll Back Malaria (RBM) global partnership was instituted in 1998, first to halve malaria-associated mortality by 2010, and second to eradicate it totally by 2015 (Michaud, Masive, Lu & Munay, 2007). The main aim of RBM was to provide insecticide treated net (ITN) to at least 60 percent of all children in Africa and to pregnant women with Intermittent Preventive Treatment (Michaud et al., 2007). On 25th April 2000, Heads of State and Government from 44 malaria endemic African countries met at Abuja in Nigeria to deliberate on the incidence of the disease. At that RBM summit, attention was focused on malaria prevention and control (Enato & Okhamafe, 2005). Africa

Malaria Day, which is celebrated each year on 25th April, focuses attention on the challenges and responses of malaria.

In September 2000, the United Nations General Assembly issued the Millennium Development Goals, which consisted of eight goals of social and economic development (Greenwood, 2004). The goals were to eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women and to reduce child mortality. Others were to improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development. The sixth of these goals has the main objective to halt and possibly eradicate the incidence of malaria among other diseases (Greenwood, 2004).

Since 1999, Ghana has been involved in the international efforts to control malaria under the Roll Back Malaria initiative (Ghana Statistical Service, 2004). In 2003, The Ministry of Health and the Ghana National Malaria Control Programme adopted the Intermittent Preventive Treatment (IPT) to control malaria among pregnant women using sulphadoxine pyrimethamine (SP), also known as Fansider, Palidar or Malafan (Ghana Statistical Service, 2004). This policy required that from the second trimester of pregnancy, pregnant women were expected to receive three doses of sulphadoxine pyrimethamine at monthly intervals (Ghana Health Service, 2003). This replaced the former policy of giving a full dose of chloroquine for treatment at first antenatal visit to be followed by two tablets per week till six weeks post partum (Ghana Health Service, 2003).

Inspite of the measures that have been taken to curb the disease, the control of malaria among pregnant African women through antenatal care (ANC) has been particularly challenging. Enato and Okhamafe (2005) have observed that antenatal care services traditionally delivered from health facilities along with other health promotion and preventive programmes such as vaccination and under five clinics have often suffered from problems of accessibility, affordability, and client satisfaction. Thus, Enato and Okhamafe (2005) noted that in such circumstances pregnant women, when seeking health care during pregnancy, often opt for some alternative services provided at the community level where female relatives and traditional birth attendants play a major role.

Although Steketee, Wirima and Campbell (1996) have observed that the preventive and control recommendations for malaria endemic areas have promoted the use of antimalarial chemoprophylaxis (chloroquine and sulphadoxine pyrimethamine intermittent preventive treatment), however, the concept of using antimalarial drugs to prevent malaria is not wide spread. Enato, Okhamafe and Okpere, (2005) have further observed that most pregnant women in high transmission areas are asymptomatic, and are more aware and worried about the side effects of antimalarial drugs than about the deleterious effects of malaria infection on them and their babies and these have led to low compliance.

In Sub-Sahara Africa, a number of studies have been done on the factors affecting the prevention and treatment of malaria among pregnant women. A study by Mbonye (2005) in Uganda among pregnant adolescents has shown that even though pregnant adolescents recognise the importance of

seeking preventive care against malaria attack, they are constrained by the stigma associated with adolescent pregnancy, and the unprofessional attitude of health workers. Ghebreyesus (2000) found in Ethiopia that workload of women left them little time to make use of Community Health Workers' services for malaria prevention and treatment. The study further observed that men dominated in decision-making, while women were not in the habit of expressing their needs since they were perceived as sexually disloyal if they visited a male health worker.

In a related study in Nigeria, Dike (2006) observed that higher levels of formal education were associated with improved knowledge and practices among pregnant women in relation to appropriate prevention and treatment strategies. In Ghana, Tolhurst and Nyonator (2005) have observed that women who lack economic support from male relatives, or who disagree with husbands or family elders about seeking appropriate treatment, face difficulties in accessing health care for children suffering from malaria.

In Africa only a few studies have investigated the factors affecting compliance to SP- based IPT of malaria (Launiala & Honkasalo, 2007). One of the few studies (Enato & Okhamafe, 2005) observed that even with the introduction of SP- based IPT, a logistically simpler intervention than weekly chemoprophylaxis, low coverage and compliance, remain a problem. Rogerson, Chaluluka and Kanjala (2001) observed in Malawi that the majority of pregnant women obtained one dose of SP, while only 30 percent obtained the recommended two doses. On the other hand, Launiala and Honkasalo (2007) observed in rural Malawi that unclear directives about IPT with SP by nurses, timing of SP- 1, periodic shortages of SP, and women's limited

understanding of IPT-SP were factors influencing compliance to IPT; others were tendency for late enrolment and nurse's under-performance. Similarly, van Eijk (2004) has indicated that in parts of Kenya shortage of sulphadoxine pyrimethamine is the cause of low compliance to IPT among pregnant women.

Statement of the problem

Pregnant women in Ghana and elsewhere in the tropics are at risk from malaria attack which is responsible for a substantial number of maternal and perinatal morbidity and mortality (WHO, 2001). For example, in 2006 anaemia and malaria-related diseases accounted for about 21 percent of maternal deaths in Ghana (GHS, 2006). Moreover, malaria in pregnancy may result in a number of maternal, foetal, and infant complications that include severe maternal illness, anaemia, foetal distress, premature labour, low birth weight in infants, and stillbirths (Steketee, Nahle, Parise & Menendez, 2001; Philips-Howard, 1999). In 1991, 8 percent of pregnant women in Ghana were severely anaemic and 60 percent were moderately anaemic at the time of registration (Ministry of Health, 1999). Ghana Health Service observed in 2006 that about 29 percent of pregnant women in Ghana were anaemic at the time of registration and 24 percent were anaemic during the 36th week. Furthermore, in 2005, low birth weight was 7 percent; it declined slightly to 6 percent in 2006, while still birth rate was 2.4 percent in 2005 and 2.2 percent in 2006 (Ghana Health Service, 2006).

In 2003, the Ministry of Health and the Ghana National Malaria Control Programme adopted IPT to control malaria outbreak among pregnant women using sulphadoxine pyrimethamine (SP) (GSS, 2004). It was realised

that IPT could significantly reduce maternal anaemia, low birth weight in infants, and placenta malaria infection at delivery (van Eijk, Blokland & Shutsker, 2005) However, this important intervention experienced low compliance in the country as indicated in Table 1.

Table 1: Pregnant women who accessed IPT in 2005-2007 in Ghana

Year	ANC Registrants	IPT1	%	IPT2	%	IPT3	%
2005	332, 760	171,201	51.4	89,112	26.8	43,872	13.2
2006	549,800	361,786	65.8	230,269	41.9	140,666	25.6
2007	603,789	443,126	73.4	321,166	53.2	210,112	34.8

Source: Ghana Health Service, 2007

Table 1 shows that in 2005, 51 percent pregnant women accessed IPT1, about 27 percent accessed IPT2 and 13 percent, IPT3. In 2006, the percentage of pregnant women who accessed IPT1 increased to 66 percent. However, it decreased to 42 percent for IPT2 and 26 percent for IPT3. The same trend occurred in 2007 with 73 percent, 53 percent and 35 percent pregnant women accessing IPT1, 2 and 3 respectively. Low compliance to IPT was also experienced in the Central Region as indicated in Table 2.

In 2005, 54 percent pregnant women accessed IPT1, 30 percent accessed IPT2, while 16 percent accessed IPT3. In 2006, 60 percent pregnant women accessed IPT1. This decreased to 36 percent for IPT2, and 20 percent for IPT3. Similar trend was observed in 2007 when 68 percent pregnant women accessed IPT1, 39 percent IPT2, and 22 percent accessed IPT3. In the

Twifo Praso Health District in the Central Region, the problem of low compliance remained the same.

Table 2: Pregnant women who accessed IPT in 2005–2007 in the Central Region

Year	ANC Registrants	IPT1	%	IPT2	%	IPT3	%
2005	70733	13395	54.1	7518	30.3	3862	15.6
2006	72220	43670	60.0	26078	36.1	14669	20.3
2007	74636	50433	67.6	28967	38.8	16657	22.3

Source: Ghana Health Service, 2007

In 2005, 49 percent of pregnant women accessed IPT1, 32 percent; IPT2 while 20 percent accessed IPT3 (Figure 1). In 2006, 87 percent, 47 percent, and 28 percent of pregnant women accessed IPT1, 2 and 3 respectively. In 2007, 73 percent of pregnant women accessed IPT1, 43 percent accessed IPT2, while 22 percent accessed IPT3.

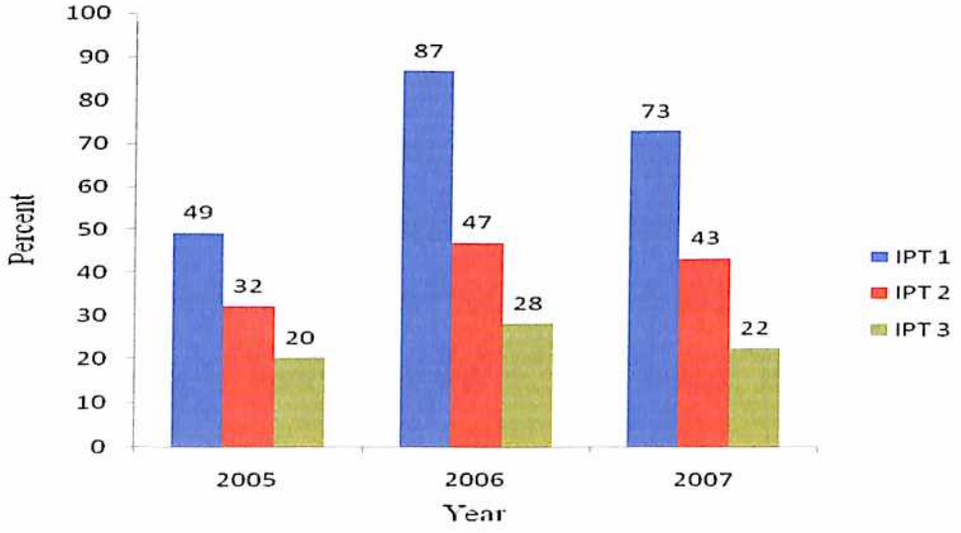

Figure 1: Pregnant women who accessed IPT in 2005-2007 in the Twifo Praso Health District

Source: Ghana Health Service, 2007

It is not clear if the low compliance to IPT among pregnant women in the Twifo Praso Health District is due to lack of awareness of the existence of the programme and its importance, or if it is due to the inaccessibility of this intervention to these clients. The level of satisfaction clients derives from IPT intervention and from the alternative interventions they resort to are also not known. Moreover, it is not known how well equipped service providers are, neither are the socio-economic and cultural factors that affect client's decision to patronise IPT known. The uncertainty about the factors that have been responsible for the low compliance to IPT therefore needs to be unraveled. This study attempts to investigate the factors responsible for the low compliance to SP based IPT of malaria in the Twifo Praso Health District.

Objectives of the study

The main objective of the study was to assess the factors leading to the low patronage of SP-based IPT of malaria by pregnant women in the Twifo Praso Health District. The specific objectives were to:

1. Identify the individual factors that influence patronage of IPT by pregnant women in the Twifo Praso Health District;
2. Identify the community factors that influence patronage of IPT by pregnant women in the Twifo Praso Health District.
3. Analyse institutional factors that influence the use of IPT by clients; and
4. Assess the use of alternative interventions to IPT by pregnant women;

Research hypotheses

The study was guided by the following hypotheses:

1. There is no significant relationship between the level of income of pregnant women and the number of antenatal visits.
2. There is no significant relationship between the level of education of pregnant women and their knowledge about malaria.

Rationale of the study

Pregnant women are at risk of malaria, which has been responsible for substantial number of maternal and perinatal morbidity and mortality (WHO, 2001). In Ghana, malaria is one of the leading causes of morbidity and mortality especially among pregnant women and children under the age of five years (Ghana Statistical Service et al., 2007). Intermittent preventive treatment with sulphadoxine pyrimethamine for malaria prevention and treatment in pregnancy can significantly reduce maternal anaemia, low birth weight in infants, and placenta malaria infection at delivery (Van Eijk, Ayisi & Kuile, 2004). However, preliminary investigation of data available shows that there has been low compliance to IPT with sulphadoxine pyrimethamine in Ghana (Ghana Health Service, 2007). This probably has contributed to the high incidence of severe maternal illness, anaemia, premature labour, stillbirths and placenta malaria and abortions in the country. Moreover, anaemia which is caused by malaria and poor diet can lead to increase in perinatal mortality (Ghana Health Service, 2005).

The problems that confront IPT use should, therefore, be addressed because they have far-reaching implications for the national economy. In that

regard, it is important to study and understand the factors responsible for the low IPT compliance in the Twifo Praso Health District. Such a study, it is hoped, will provide useful findings for health policy makers to address the health concerns of pregnant women.

This study will be particularly relevant to all stake holders who are concerned with providing quality health care to the pregnant women in Ghana. It has the potential to unearth the major obstacles pregnant women in the study area face in accessing quality antenatal care including SP-based IPT.

Finally, The Ministry of Health and the Ghana National Malaria Control Programme adopted the IPT to control malaria among pregnant women using sulphadoxine pyrimethamine (GSS, 2004). However, this important intervention experienced low compliance in the country (GHS, 2007). This study will identify some of the challenges thwarting the success of the programme and offer practical recommendations on how the programme could achieve its aim.

Chapter organisation

The study is divided into six chapters. Chapter One provides the introduction to the study. This includes the background to issues on malaria, the statement of the problem, objectives, research hypotheses and the rationale of the study. Chapter Two covers models, theories and some conceptual issues on compliance and health care. Research methodology is in Chapter Three. Socio-demographic background of the respondents and factors affecting the use of IPT are analysed in Chapter Four whilst Chapter Five describes the institutional and alternative interventions influencing the health seeking

behaviour of pregnant women. Chapter Six provides the summary of findings, conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The focus of this chapter is to review the various efforts that have been made to prevent and treat malaria, and to evaluate some models and theories on compliance to health care for application in this study. Groups of people who are at highest risk of malaria infection are infants and children between one and five years, pregnant women, non-immune people and people living with HIV/AIDS (WHO, 2007). Payne and Hahn (2000) have observed that prevention of illness makes more sense than dealing with it through episodic health (medical) care. Payne and Hahn (2000) further observed that when the levels of risk in a patient has been identified, health practitioners try to lower those risk levels through patient education, lifestyle modification and if necessary, medical intervention. As the patient continues to comply with the guidelines, the risk level reduces.

Various efforts have been made by international and local organisations to prevent and treat malaria in endemic areas since the early years of the twentieth century. In recent times, particular emphasis has been placed on pregnant women and children (Michaud et al., 2007).

Malaria prevention in endemic areas

Anti-malarial drugs have been used in various ways to prevent malaria in the resident populations of endemic areas for nearly hundred years with the primary aim to interrupt transmission (Harrison 1978; cited in Greenwood, 2004). The idea of treating symptomatic cases with effective anti-

malaria drugs to reduce transmission and to provide indirect protection to the population as a whole dates back to Robert Knock and the early years of the 20th century (Harrison 1978; cited in Greenwood, 2004). Quinine was used extensively in Italy and in Africa during the first part of the 20th century but was later recognised by Celli to have little or no effect on gametocytes even though he advocated extensive use of the drug (Harrison 1978; cited in Greenwood, 2004).

Consequently, mefloquine was replaced by mefloquine-artesunate, a drug which killed gametocytes as well as asexual parasites, as first-line treatment of patients with symptomatic malaria. Mefloquine-artesunate was found to reduce the incidence of *Plasmodium falciparum* infection substantially (Nosten, van Yugt, Price, Luxemburger, Thway & Brockman, 2000). The introduction of artemisinins in Vietnam (Hung, de Vries, Giao, Nam, Binh, Chong, Quoc, Thanh, Hung, & Kager , 2002) and in South Africa (Barnes, Durrheim, Jackson, Mehta, Tsoka, Diamini, Qwabe, Bredenkamp, Nesttleship, Mthembu, Mthembu & Sharp, 2003) again resulted in a rapid decrease in the overall incidence of falciparum malaria. The introduction of artemisinins was associated with the introduction of other malaria control measures such as insecticide treated nets (ITNs) in Vietnam and household residual spraying in South Africa (Greenwood, 2004). Although artemisinin-based combination therapy proved effective on the overall level of malaria transmission control in these low transmission areas, it was not without flaws.

In the highly endemic areas of Africa, because most malaria infections are asymptomatic and go untreated (Von Seidlein, Walraven, Miligan, Alexander, Manneh, Doherty, Deen, Coleman, Jawara, Lindsay, Drakeley, De

Martin, Olliaro, Bennett, Schimm, Okunoye, Targett, McAdam, Doherty, Greenwood & Pinder, 2003), any significant reduction in the transmission of the disease can be achieved only if asymptomatic as well as symptomatic subjects are treated. According to Greenwood (2004), detecting symptomatic subjects require a major surveillance, and this result in the development of the concept of mass drug administration (MDA). In mass drug administration, the whole population known to contain a number of asymptomatic subjects is treated without determining who is infected. Eight-aminoquinolines was discovered after quinine and this made mass drug administration more promising; trials were carried out to study the potential role of this class of drug in interrupting transmission in an endemic area in a rubber plantation in Liberia in 1930, and in other parts of Africa and Asia in the 1960s and 1970s (Von Seidlein & Greenwood, 2003). However, the result of the trial showed that even though there was a marked reduction in parasite prevalence, transmission was not interrupted (Greenwood, 2004).

In the 1970s, an ambitious attempt was undertaken to interrupt malaria transmission in Garki, in northern Nigeria, by spraying households with a residual insecticide combined with several rounds of mass drug administration with sulfalene-pyrimethamine. In this exercise, it was noted that parasites and spleen rates decreased, but transmission was not interrupted and the intervention was considered a failure (Molineaux & Gramiccia, 1980; cited in Greenwood, 2004). Similar interventions were carried out in Nicaragua in 1981, The Gambia and on the Island of Aneityum, Vanuatu.

The intervention carried out on the Island of Aneityum was a success where eight rounds of mass drug administration with chloroquine-SP-

primaquine combined with the introduction of Insecticide Treated Nets and environmental control measures led to the elimination of *falciparum* infection from the island (Kaneko, Taleo, Kalkoa, Yamar, Kobayakawa, & Bjorkman, 2000). Mass drug administration became associated with the problem of giving medication to people in the form of tablets sometimes under supervision, to ensure that effective dose was given even if large population was covered on repeated bases, this task was demanding.

In the attempt to solve this problem, Pinotti devised the concept of drug delivery through the use of medicated salt (Pinotti, 1954; cited in Greenwood, 2004). Medicated salt, though found to be effective in reducing the incidence of clinical episode of malaria, resulted in the rapid emergence of resistance (Gigliol, Rutten & Ramjattan, 1967, Meuwissen, 1964; cited in Greenwood, 2004). Consequently, the use of medicated salt to control malaria was stopped.

Chemoprophylaxis in children

In 1956, a control trial of children who were given chloroquine weekly from birth until the age of two years in The Gambia showed that those who were given chemoprophylaxis had fewer malaria infections, grew better, and had higher mean hemoglobin and a lower gamma globulin concentration than those children outside the control group (McGregor, Gilles, Walter, Davies & Pearson, 1956; cited in Greenwood, 2004). In the early 1980s, a large trial of chemoprophylaxis in children under the age five years was conducted in The Gambia (Greenwood, Greenwood, Bradley, Snow, Byass, Hayes, & Hatib N'Jie, 1988). In the trial, health workers gave chemoprophylaxis with

Maloprim to more than 700 children over a period of five years. The result was that mortality in children who received prophylaxis was reduced by 35 percent; the children had fewer clinical attacks of malaria and a higher mean packed cell volume than those children outside the control group (Allen, Snow, Menon & Greenwood, 1990).

Chemoprophylaxis in pregnant women

In 1964, the first trial of chemoprophylaxis in pregnant women was undertaken in western Nigeria (Morley, Wooland, & Cuthbertson, 1964: cited in Greenwood, 2004). It was noted that chemoprophylaxis with pyrimethamine led to a substantial increase in birth weight in primigravidai and in grand-multiparous women. Subsequent studies conducted elsewhere in Africa confirmed the positive effect of chemoprophylaxis on birth weight (Garner & Gulmezoglu, 2001), and on maternal hemoglobin levels (Greenwood, Greenwood, Snow, Byass, Bennett & Hatib N'Jie, 1989).

Drugs that were used for chemoprophylaxis in pregnancy included chloroquine, pyrimethamine, proguanil maloprin and mefloquine. Due to the positive result of the trials of chemoprophylaxis conducted in several African countries, the World Health Organisation recommended that all pregnant women resident in areas of moderate or high malaria transmission should receive chemoprophylaxis with chloroquine throughout the second and third trimesters of pregnancy (Greenwood, 2004).

In spite of the impressive result obtained from the use of chemoprophylaxis, it was never recommended for children resident in malaria endemic countries while the recommendation for pregnant women was rarely

implemented. Reasons for the objection included sustainability, safety, and impairment of the development of natural immunity (Greenwood, 2004).

Sustaining compliance with prophylaxis was a difficult but not an insurmountable challenge (Greenwood, 2004). High levels of coverage with chemoprophylaxis in young children were sustained in The Gambia over a period of five years (Allen et al., 1990). Village health workers, who received no financial support from the public health services and limited help from their communities, did this. Allen et al. (1990) observed that higher levels of coverage could have been achieved if the village health workers were paid.

Greenwood et al. (1989) also observed that even though a high proportion of pregnant women attended antenatal care at least once during pregnancy, only a few attended regularly to make possible the distribution of weekly chemoprophylaxis. Consequently, Greenwood et al. (1989) suggested that, the approach of controlling malaria among pregnant women could be carried out successfully by an alternative delivery system for example by traditional birth attendants as was being done in The Gambia.

Drugs given on a regular basis to large number of children or pregnant women must be safe. David, Marbiah, Lovtren and Greenwood (1997) observed that even though trials of chemoprophylaxis in children had no adverse effect in The Gambia, chemoprophylaxis with Maloprim trials in Sierra Leone resulted in hyperpigmented skin lesions, which disappeared when the drug administration was stopped. David et al. (1997) observed further that even though few data existed on the safety of chemoprophylaxis in pregnant women due to studies that had involved relatively small number of

women, itching was one of the main reasons why chemoprophylaxis with chloroquine was unpopular among pregnant women.

A major concern over the use of chemoprophylaxis in young children was the fear that it would impair the development of natural immunity. For example Greenwood, David, Otoo-Forbes, Allen, Allonso, Armstrong-Schellenberg, Byass, Hurwitz, Menon, and Snow, (1995), observed that children who received chemoprophylaxis for 1-5 years experienced increase in clinical attacks of malaria and deaths. Staalsoe, Megnekou, Fievet Ricke, Zornig, Leke, Taylor Deloron and Hviid, (2001) observed in Tanzania and Kenya that chemoprophylaxis could interfere with antibodies that fought against malaria virus in primigravidae. Greenwood, Menedez, Alonzo, Jaffa, Langerock, Lalat, Todd, M'Boge, Francis and Greenwood, (1994) noted that if chemoprophylaxis was restricted to first or second pregnancies, it could increase the risk of malaria in subsequent pregnancies. They observed further that there was no reduction in birth weight or hemoglobin level in secundigravidae who received chemoprophylaxis during their first pregnancy.

The difficulty in sustaining chemoprophylaxis in pregnant women called for a further study. In this study (Schultz & Steketee, 1994), the treatment of malaria with sulphadoxine pyrimethamine (SP), given twice during pregnancy was compared with weekly chemoprophylaxis with chloroquine in Malawi. The study revealed that low birth weight in infants of pregnant women who received IPT with SP was significantly lower than that in women who received chemoprophylaxis with chloroquine.

Rogerson et al. (2000) confirmed the effectiveness of IPT with SP even when only one dose was given in Malawi. In a related study, Shulman,

Dorman, Cutts, Kawuonda, Bulmer, Peshu and Marsh, (1999) observed that IPT with SP given two or three times during pregnancy effectively reduced the prevalence of severe anaemia in primigravidae and secundigravidae in Kenya. However, Parise, Ayisi, Nahlen, Schult, Robert, Misore, Muga, Oloo, and Steketee, (1998) observed that women infected with human immunodeficiency virus (HIV) required more than two or three doses of IPT to prevent infection of the placenta.

Based on these results, the World Health Organisation (WHO) recommended that IPT with SP, given at each antenatal clinic attendance after quickening, should replace chemoprophylaxis with chloroquine as the preferred chemotherapeutic method for the prevention of malaria in pregnancy (Greenwood, 2004).

Compliance

Compliance in medical context is basically adherence to a drug regimen, for example taking medications correctly and on time. It encompasses the patient's active participation in his or her own health care: that is, seeking medical advice, keeping appointments, following recommendations concerning lifestyles as well as following medical regimens (Berg, Lorraine, Evangelista, Jacqueline & Dunbar-Jacob, 2006). Berg et al. (2006) have therefore concluded that compliance is an umbrella term for all behaviour consistent with health care recommendations.

Views on compliance

There are two schools of thought in the compliance literature (Berg et al., 2006). One school supports the notion that it is impossible to ever have all clients completely complying with medical regimens. Another school of thought suggests that it is possible through education or some other means to have clients comply with their regimen requirements. Berg et al. (2006) argue that these contradictory schools of thought probably resulted from how the health plan was formulated.

According to Berg et al. (2006) if the plan was formulated through a partnership between clients and health care professionals, the possibility of the client "adhering" to the plan was increased. However, if exclusively an expert provider created the plan, without any input by the client, the client might or might not "comply". However, compliance is said to be often a quick-fix solution to a social problem, and it does not require the target to agree with the advocacy. Treating the patient as a decision maker is a fundamental step away from the compliance model. To accomplish maximum compliance, The WHO (2003) has suggested adopting the 5 "As". The 5 "As" are assess, advise, agree, assist and arrange (Berg et al., 2006).

Components of compliance

Dunbar-Jacob (1993) was one of those who described the relevance of compliance to the total wellness-illness continuum. Dunbar-Jacob (1993) considered compliance to be self-care behaviours that individuals undertake to promote health, prevent illness, or follow recommendations for treatment and rehabilitation of diagnosed illness. However, Berg et al. (2006) have stated

that compliance is more than self-care behaviour; it is a behaviour that is often shared, because clients cannot always implement their medical regimens without the participation of others, even though the delineation of responsibilities is not clear. For example, Berg et al. (2006) have noted that misunderstanding about the assumption of responsibility when there is a change in the dependence or independence status of a client often leads to noncompliance. Strauss, Corbin, Fagerhaugh and Glaser (1984) have noted that family members often influence clients to adhere to medical regimens. In addition, Corbin and Strauss (1984) noted that coordination and collaboration between couples are necessary to carry out the workload of medical regimen to manage chronic disease.

Non-compliance

In medical health, not adhering to drug regimen constitutes noncompliance. Noncompliance is, therefore, the failure of a patient to take medications; this includes missed doses, stopping therapy too soon, taking too much medication and taking a drug for the wrong reason, especially if one takes multiple drugs and gets confused about their purpose. Others are improper timing of drug administration, especially with complex regimens and not having prescription filled (Dunbar-Jacob, 1993).

Cramer, Scheye, Prevey and Mattson (1989) have noted that physicians often make decisions about the effectiveness of treatment without regard to whether the client is actually following the treatment. Sackett and Snow (1979) have also noted that this often leads to discrepancy between an ordered treatment and the treatment carried out by the client. Creer and

Levstek (1996) and Dunbar-Jacob (1993) questioned the extent to which we "blame" the "patient" for compliance behaviour. Part of the responsibility, they assert, belongs to health care providers.

Trostle (1997) argued that there is too much emphasis placed on the authority physicians have in recommending health care regimens. Trostle (1997) therefore cautioned that attempts to motivate clients to comply could be considered coercive and manipulative. Dunbar-Jacob (1993) have observed that non-compliance is influenced by many factors including demographic factors, psychological factors and social support, past health behaviour, somatic factors, and health beliefs.

Models and theories of compliance

Goldstein, DePue, Kazura and Niaural (1998) observed that, client satisfaction is the underlying concept of theories that guide compliance. DiMatteo, Sherbourne, Hays and Ordway (1993) have noted that client satisfaction involves the relationship that exists between the provider, office staff, practice protocol and the client, and also on the information given to the clients. Many compliance research frameworks have focused on client belief while other models have focused on self-management or self-regulation oriented models. The Health Belief Model is an example of client belief models.

The health belief model

The Health Belief model was developed to explain health related behaviours, especially preventive health behaviours based on certain beliefs

and attitudes (Becker & Mainan, 1975 cited in Berg et al., 2006). The health belief model proposes that the likelihood of an individual taking recommended health action is based on (1) perceived susceptibility, (2) the perceived severity of illness, (3) the individual reckoning of the likelihood that taking a specific recommended action will prevent a negative health condition (perceived benefits), and (4) perceived barriers to adhering to recommendations. An added concept, "cues to action", would activate the individual and motivate him or her to act.

The Health Belief Model could be used to explain the relationships of attitudes and behaviours to compliance because it has a more predictive power in explaining compliance for preventive health behaviours (Dunbar-Jacob, 1990). However, though health beliefs and compliance are modestly correlated, when measured concurrently, it is generally accepted that health beliefs do not predict compliance (Dunbar-Jacob, 1990).

The health promotion model

The Health Promotion Model is a nursing model that evolved from the Health Belief Model (Pender, 1996). Pender (1996) conceptualised health as a goal and believed that only the desire to be healthy leads to engagement of health promotion activities. Pender (1996) organised the concepts under the framework into individual characteristics and experiences, behaviour-specific cognitions and effects, and behaviour outcomes. Pender observed further that though these components indirectly affect health behaviours; however, cognitive-perceptual factors are the primary motivating mechanisms for acquisition and maintenance of health promoting behaviours. The cognitive-

perceptual elements according to Pender include items such as importance of health and perceptions of control of health, self-efficacy, definition of health, health status, benefits of engaging in health promoting behaviours and barriers to health promoting behaviours. The Health Promotion Model could be used to assess health promotion behaviours. The model, however, focused more on achievement of higher levels of well-being and self-actualisation rather than health protection.

Common sense model

The Common Sense Model (CSM) was used by Leventhal, Meyer, and Nerenz (1980) in a discussion of individual beliefs about illness. The model postulates that the manner an individual tackles illness-related events determines how that individual copes and complies with treatment. Studies that used the CSM demonstrate that subjects consistently look for symptoms which match their view of the illness (Baumann, Cameron, Zimmerman & Leventhal, 1989). Berg et al. (2006) have observed that studies that use this model are conducted primarily on individuals with asymptomatic cases, and there are no data available to determine whether the theory has any value in other populations. Though the model could be used to assess individual behaviour about illness, it fails to explain other participatory behaviours, hence it was not considered for this study.

Self-regulatory theory

This theory sees the client as an active participant in the process of managing health behaviours. The theory explains that illness beliefs center around five components which are identity, time-line, cause, consequences,

and cure or control (Chritensen, Wiebe, Edwards & Michels, 1996). The theory is useful in assessing variety of chronic illness management (Chritensen et al., 1996). The theory is appealing because it takes into account client illness beliefs; however, it concentrates too much on clients.

The theory of reasoned action and the theory of planned behaviour

The Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1985), state that individuals engage in health behaviours that are intentionally based on attitudes toward a particular behaviour and social influence. The Theory of Planned Behaviour adds a component called "perceived behavioural control" to the model. Perceived behavioural control captures the extent to which a person has control over any given behaviour. These two theories (Reasoned Action and Planned Behaviour) state that preventive behaviours such as engaging in exercise programmes, condom use, and smoking cessation (Chan & Fishbein, 1993) are desired behaviours where intention has been found to be an important component. These theories are useful in explaining individual health behaviours as well as control health behaviours; however, they fail to comment on the real severity of an illness, perceived susceptibility, and barriers to following recommendation.

Social learning theory (Social cognitive theory)

This theory attempts to predict behaviour that is dictated by outcome and efficiency expectancies. It brings together environment, cognition and emotion in the understanding of health behaviour change (Schwarzer, 1992).

The theory identifies three necessary pre-requisites to altering health behaviour; these are: a recognition that a life-style component can be harmful, the recognition that a change in behaviour would be beneficial, and the recognition that one has the ability to adopt a new behaviour (self-efficacy) (Schwarzer, 1992).

The Theory emphasises that to effect any change, the individual must be able to self-monitor and self-regulate his or her health behaviour. This aspect of self-regulation has led to a variety of self-management strategies to cope with illness. Furthermore, the component of self-efficacy defined as the client's expectations or confidence in his or her ability to perform a recommended action, has also promoted research to test efficacy-enhancing strategies important in health behaviour change (Berg et al., 2006). Self-efficacy has also been found to be an important predictor of self-management behaviours useful for the treatment of diseases (Chesney, Ickovics, Chambers & Gifford, 2000). The Theory however dwells solely on the individual to the neglect of other shared behaviours and cannot be used in this study.

Transtheoretical model of change (Stages of change)

Prochaska and DiClement (1983) developed the Transtheoretical Model of Change, which encompasses other theories to examine and predict the process of change (Berg et al., 2006). The model has three constructs: the stages of change, process of change, and levels of change. The model's underlying premise proposes that people are at different stages in their intentional desire to adopt certain health behaviours with or without

assistance. The Transtheoretical Model of Change also proposes that interventions should be matched with each categorical stage of change.

The model incorporates self-efficacy and decision-making as key factors in the process of change, although these factors have impacts at the different stages of change which are (1) Pre-contemplation: no intention of changing behaviour; (2) Contemplation: considering future action; (3) Pre-action: have a timetable for action; (4) Action involved in behaviour change; and (5) Maintenance after change is adopted: relapse is a possibility (Berg et al., 2006).

The stage model of health was initially applied to the treatment of addictive behaviours and, although widely discussed, has not been generally accepted for adherence behaviours in other chronic illnesses. Therefore, more research with this model is needed before it could actively be used as an intervention of choice (Berg et al., 2006). Though the model includes decision-making as an aspect that allows others to participate in health seeking behaviour of the individual, it does not include barriers to health care hence cannot be used in this study.

Self-management

Self-management model refers to the performance of preventive or therapeutic health care activities, often in collaboration with health care professionals (Berg et al., 2006); it involves learning new skills and behaviours. The Self Management model states that initiation of new behaviours relies on the assumptions that the individual must be motivated to change; only the individual can modify his or her own behaviour, and that

difficult behaviours often cannot be monitored by anyone except the individual (Berg et al., 2006).

The model translates these assumptions into tree steps. First is self-monitoring which involves deliberate attention to one's own behaviour. Second is self-evaluation in which the required behaviour and the actual behaviour are compared and evaluated. The third, which is self-reinforcement, motivates the individual to correct any discrepancies in behaviour to produce change (Berg et al., 2006). Self-Management states further that if the individual causes a discrepancy in the self-evaluation phase, there is sufficient motivation to produce change; but this is dependent on reinforcement from the individual's emotional and cognitive reactions during self-evaluation.

Self-Management can serve as a fundamental basis for the tasks associated with chronic disease (Berg et al., 2006). It recognises the individual and the health care professional to control symptoms and other diseases. However, it does not consider other participatory members such as family members, friends and community members. It does not also consider barriers to the individual's health seeking behaviour. Hence it cannot be employed in this study.

Models on health care

Grossman's one-part model

Grossman's one part model has become the bases for the development of other models. The model considers health as a commodity which has an inherited stock and which undergoes investment and depreciation (Ortiz, 2007). The model describes health as a commodity which one possesses and

maintains through investment till depreciation sets in. Investment here means seeking health care. The model highlights on health seeking behaviour and maintenance of patient's health. However, it fails to explain the care choice of patients whether traditional or modern health care provider. It does not also explain the determinants of the first visit to the health care facility and the subsequent ones. Furthermore, it does not explain how regular the patient seeks health care (Ortiz, 2007).

Ortiz two-part model

Ortiz (2007) developed a two-part model in which the desire for the first antenatal care visit by a pregnant woman depends on environmental factors, health insurance and attention, financing, personal information and relevant gynaecological history. The second part of the model uses the very determinants of the first consultation as the determinants of the subsequent consultations. It explains subsequent consultations in terms of the number of consultations that the pregnant woman should have undergone and the number of consultations she actually makes. It calculates the number of times a pregnant woman absents herself from seeking health care by looking at the difference between the number of consultation she should undergo and the number of consultations she actually seeks. The model attributes the number of times a pregnant woman absents herself from seeking health care to some environmental, personal information, insurance and gynaecological factors Ortiz (2007).

The model indicates that location (urban or rural) and literacy have no effect on demand for antennal care. On the other hand wealth, marriage, stable

union and age at delivery have positive effect on demand for antenatal care. The model further indicates that a mother's educational attainment is a very important determinant on demand for antenatal care while a father's educational attainment has no effect. Whereas the model concentrates more on the influence of environmental and socio-economic factors, it does not consider cultural factors such as ethnicity and religion. It does not also look at cost, parity and permission from homes to attend antenatal care as well as other service provider and institutional factors that motivate pregnant women to seek antenatal care. Hence the model cannot be employed in this study.

The economic choice model

The economic choice model was developed by Overbosch, Nsowah-Nuamah, ven den Boom, and Damnyag (2002). The model suggests that when a pregnant woman's standard of living and other personal features are known and supportive, she weighs the cost of visiting the antenatal care against the utility-gain she expects from it, and takes a decision to pay a visit. The utility that she expects to get depends on her knowledge of the availability of modern health care and on how to use it, on the perceived quality of offered antenatal care and on her perceived need for it. The cost of antenatal care includes all expenses incurred while receiving antenatal care. Standard of living includes the occupation of the pregnant woman, her husband's occupation and educational level, ownership of durable goods and household amenities such as water source and toilet facility. Other personal features include religion, unwanted or mistimed pregnancy and gynaecological history.

The pregnant woman then makes three choices: first she decides whether or not to demand antenatal care from a modern health care provider; then she decides on what type of provider she will visit, and finally she decides on how often she will go for antenatal care. Three types of modern health care provider are distinguished; these are doctors, nurses or medical assistants, and midwifes.

The number of visits is divided into two options: either insufficient visits or sufficient visits. The lowest level of the decision making; frequency choice (Figure. 2), have seven alternatives: (1) indicates no modern care alternative; (2) and (3) indicate insufficient and sufficient antenatal care visits to a doctor. Similarly, alternatives (4) and (5) indicate insufficient and sufficient visits to a nurse or medical assistant while alternatives (6) and (7) show the antenatal care alternatives to a midwife. At the next decision-making level, which is provider choice, the alternatives are (2) for doctor (3) for nurse or medical assistant, and (4) for midwife. At the next level: care choice, (1) indicates no modern care alternative, while (2) indicate antenatal care from a modern health care provider.

Conceptual framework for the study

The economic choice model by Overbosch et al. (2002) (Figure. 2) has been adapted for the study. The model presents the most appropriate framework for deciding on the factors that influence women's decision to seek antenatal care. The framework was modified by adding socio-cultural and economic factors such as stigma attached to adolescent pregnancy, and economic support. These have been added because they are the background

variables which indirectly influence a pregnant woman's decision to seek health care. Some variables from Ortiz's two-part model such as area of residence and wealth have been added to the socio-cultural and economic factors. These variables, it was hoped, would help to explain how pregnant women together with their families take decisions to visit an ANC.

The Economic choice Model is preferred over the other models such as Groomsman's one-part model and Ortiz's two-part model because it has a three level decision tree which shows a pregnant woman's decision to make a choice between modern or traditional care, type of health care provider and frequency of attendance. The framework also considers the utility (satisfaction) that the pregnant woman derives from attending antenatal care by considering the cost. The methodology, instruments and targeted respondents employed in this study were based on the content of the above framework.

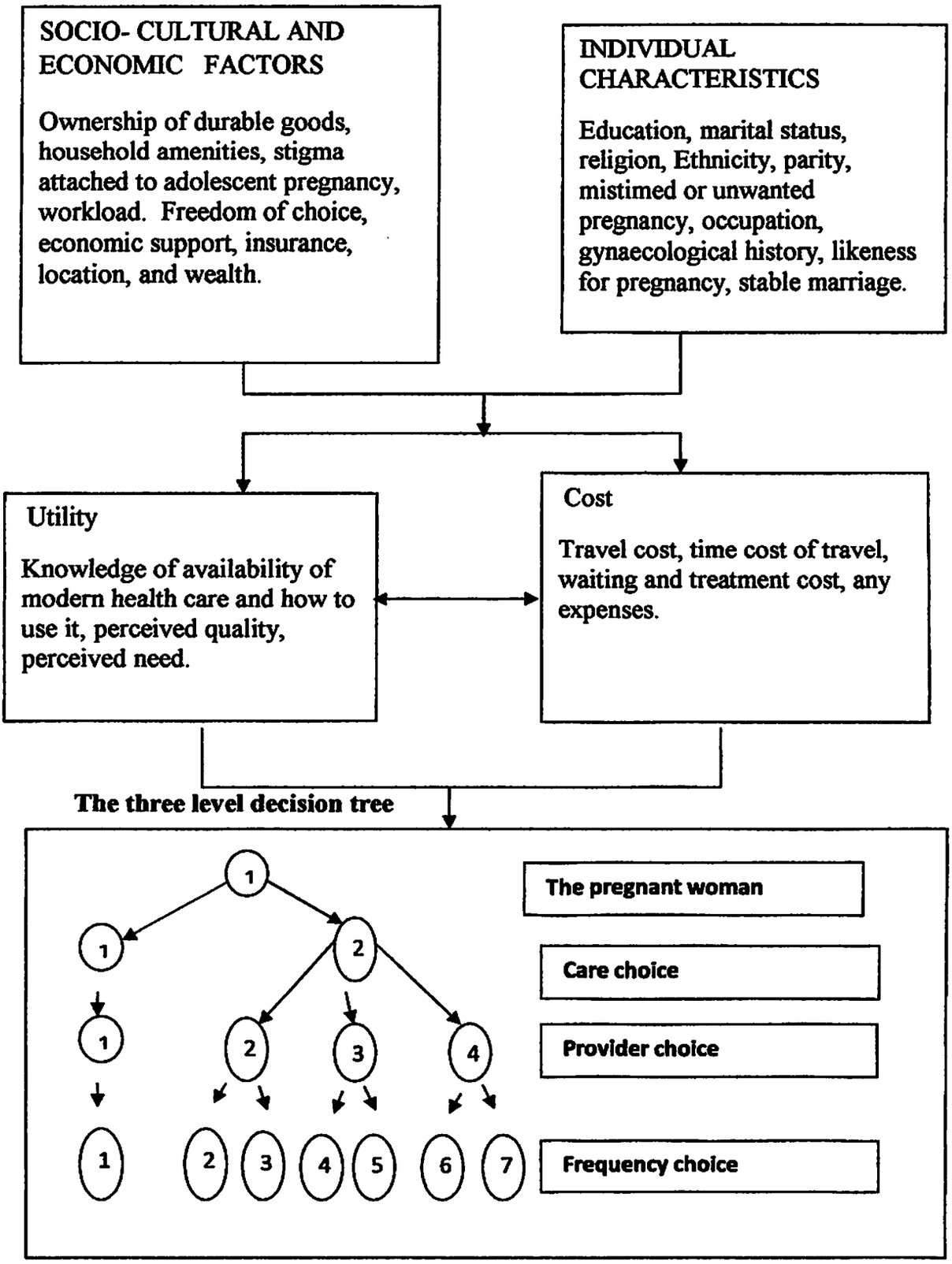

Figure 2: The economic choice model

Source: Adapted from Overbosch et al. 2002

CHAPTER THREE

METHODOLOGY

Introduction

This chapter describes the study area, the target population, the research design, the determination of sample size, sampling procedure and the research instruments. It also provides pre-field activities, fieldwork, data management and analysis, problems encountered in the field and how they were solved.

Study area

The study area is the Twifo Praso Health District of the Central Region of Ghana (Figure 3). Located in the mid-western part of the Central Region, the district is bounded in the west by Wassa Mpohor District, in the north by Upper Denkyira, in the east by the Assin North and South districts and in the south by the Abura-Asebu-Kwaman-Kese, Cape Coast and Komenda- Edina-Equafo- Abirem Districts. Twifo Praso, the district capital is the main commercial town. Twifo Praso Health District is predominantly rural with 176 communities. Rainfall is double maxima and this together with a number of stagnant waters, creates conducive environment for mosquitoes to breed.

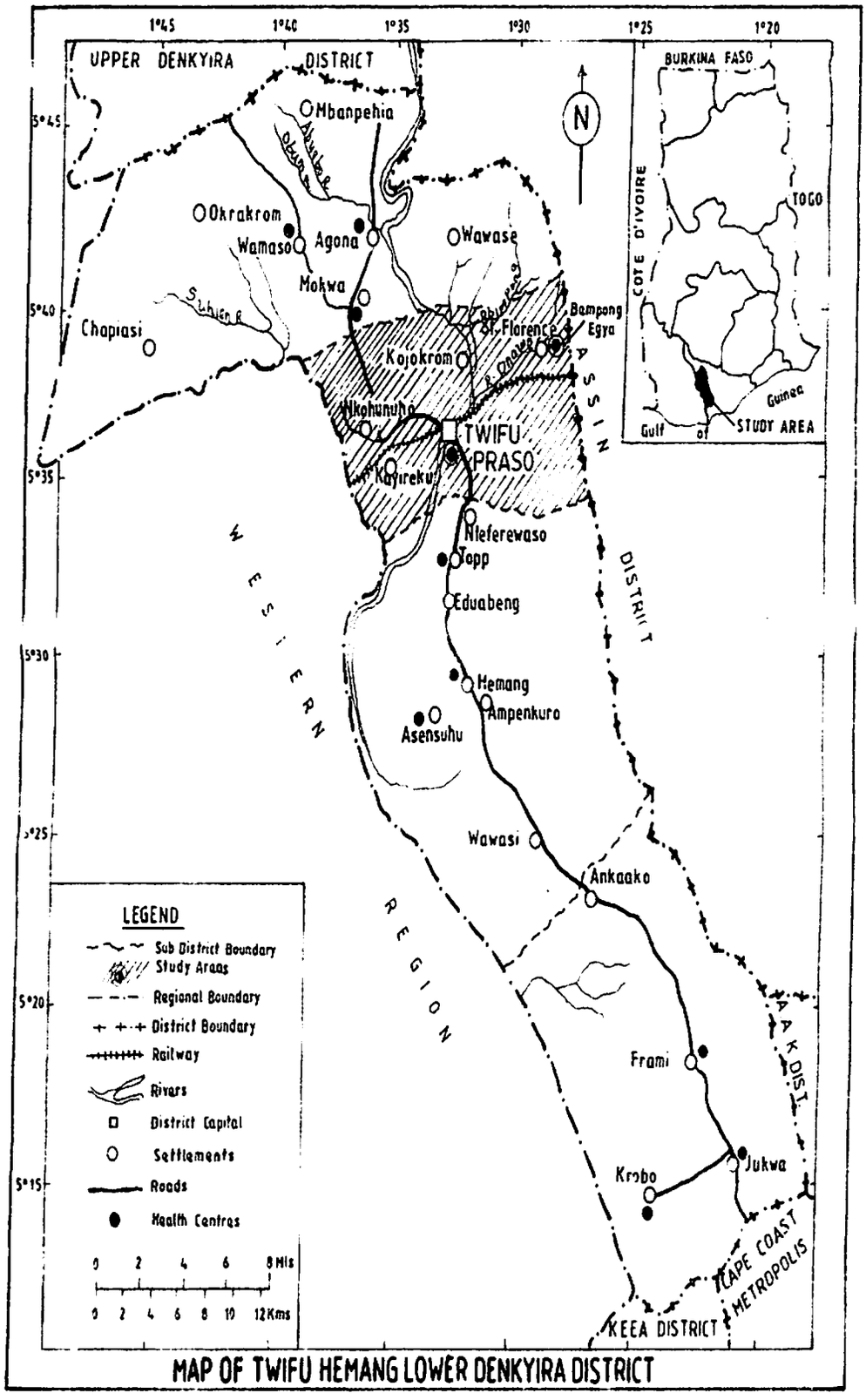

Figure 3: Map of Twifo Hemang Lower Denkyira District showing the study area

Source: GIS, Remote Sensing and Cartography Laboratory, UCC

The population of the district was 95, 988 in 1984 but increased to 107,797 in 2000. The current growth rate is estimated to be 2.2 percent which is less than the national growth rate of 2.6 percent. The sex ratio (ie male female) was 109:100 in 1970, 100:100 in 1984, and 99:100 in 2000 (Ghana Health Service, 2004). The declining proportion of males may be due to migration to the urban areas. The people of Twifo Praso Health District are Akans; the main language is Twi. The Twifo people have matrilineal inheritance, and both men and women inherit property. Marriage is neolocal.

The Cape Coast–Twifo Praso trunk road is the only first class road in the district. There are settlements along the trunk road. Feeder roads link other settlements to the trunk road but some of these, however, become unusable during the rainfall season. There are three modern health facilities in the district. These are the Praso Hospital, Kayireku CHPS Zone, and St Florence Maternity Home at Bempong Egya (See Figure 3).

Farming, which is mostly done on subsistence basis, is the dominant occupation in the district. Oil palm, cocoa and citrus fruits are the main cash crops. In addition, food crops like cassava, plantain and cocoyam are produced for local consumption and for sale. Farmers supplement their income by engaging in activities such as palm wine tapping, akpeteshie distilling, and animal husbandry. These occupations are done on small scale, and do not bring much income. Apart from the formal civil and public sector establishments, private enterprises are quite few in the district. The only industry in the district is the agro-based Twifo Oil Palm Plantation Limited (TOPP) (Fig 3) which processes palm fruits into palm oil and which offer limited employment to the local people (Ghana Health Service, 2004).

Research design

This was an exploratory study undertaken to provide baseline information that will help define the exact problems to provide appropriate data collection methods and the various sources of data for future studies (Neumann, 2000). Even though an exploratory research is flexible, investigative and open, it may be time consuming, expensive and generally difficult to generalize the findings. Both quantitative and qualitative techniques were employed for the study. Quantitative techniques were used to select respondents from the pregnant women for interview. Qualitative techniques were also used to select and solicit information from certain pregnant women who were not interviewed, health workers at the District Health Directorate and from the nurses in charge of IPT of malaria in the three health facilities in Twifo Praso Health District.

Data and sources

Both primary and secondary data were sourced for the study. The primary data were generated from individual questionnaires, in-depth interviews (IDI) and focus group discussions (FGDs). The secondary information was gathered from published books, journals and articles such as the 2003 Ghana Demographic and Health Survey and the internet.

Target population

The target population for the study consisted of total registered pregnant women who patronised Sulphadoxine Pyrimethamine (SP) based Intermittent Preventive Treatment (IPT) of malaria between 2005-2007

(inclusive) in the Twifo Praso sub district, and who were between the ages of 15-49 years. In addition, key informants from the Twifo Hemang Lower Denkyira District Health Directorate, the health officer in charge of Twifo Praso Hospital, and health workers in charge of IPT in the various health centers in the study area were targeted for the study.

Sample size and sampling techniques

The desired sample size was calculated to be 135 using the Fisher, Lain, Skoickel and Townsend's (1998) formula (see Appendix D for the description of variables in the formula and the calculation).

A combination of non-probability and probability sampling methods were used to select respondents from the pregnant women. On the basis of health, the Twifo Praso Lower Denkyira District has been divided into four health districts by the Ministry of Health; these are Jukwa-Frame, Hemang, Twifo Praso, and the Mokwa health districts (Figure 3). Each sub district has three health facilities. The Twifo Praso Health district was purposively selected for the study because it has the District Hospital; it also serves as a referral point for pregnant women. Moreover, some of the pregnant women from the other Health districts attend antenatal care at the Twifo Praso Hospital. The Twifo Praso Health district has three health facilities at Kayireku, Bempong Egya and Twifo Praso. These accounted for 25 percent of the health facilities in the district.

The sample size was divided proportionately among the three health facilities in the study area. Hundred respondents were allocated to the Twifo Praso Hospital catchment area, 25 respondents to the Florence Maternity

catchment area and 10 respondents to the Kayireku CHPS Compound catchments area (Table 3). This distribution was based on proportions in the total of the lists collected from the various health facilities in the sub district.

Systematic random sampling technique was used to select the respondents from the lists collected from the various health facilities. The total number of pregnant women on each list was divided by the number of respondents expected to be interviewed from that catchment area. The dividend obtained was used as basis for the counting and selection of the respondents for each catchment area. The first person on each list was excluded from the selection. Every 45^{th}, 30^{th}, and 8^{th} person was selected from Twifo Praso Hospital list, Florence Maternity list, and Kayireku CHPS Compound list respectively. This was done till the total number of respondents expected to be interviewed from every catchment area was obtained. Locations of respondents were by their addresses obtained from the various Health Facilities.

Table 3: Sample size distribution of pregnant women by health facility

Health Facility	Registered pregnant women	(%)	No of sampled respondents	(%)
Twifo Praso Hospital	4540	84.5	100	74.1
Florence maternity	750	14.0	25	18.5
Kayireku CHPS Compound	82	1.5	10	7.4
Total	5372	100.0	135	100.0

Source: Field Survey, 2008

Snowballing was used to select three groups of pregnant women from the various catchments areas for focus group discussion. This group of respondents was obtained by locating a respondent who was not involved in the interview and through her, others were reached.

The last category of respondents comprised District Health Director, Senior Public Health Nurse, the Senior Medical Officer in charge of the Twifo Praso Hospital and the nurses in charge of the IPT in the various health facilities. Six Health Officers were purposively selected, four from Twifo Praso area, and a nurse each from Florence Maternity and Kayireku CHPS Compound. These Health Workers were selected because they had the requisite knowledge and were capable of providing in-depth information on intermittent preventive treatment of malaria among pregnant women in the district.

Research instruments

Three data collection techniques were used in this study; these were questionnaire, in-depth interview (IDI) and focus group discussion (FGD). The questionnaire was used to collect data from the pregnant women who patronised SP-based IPT in 2005-2007. Issues covered in the questionnaire for the pregnant women were captured under nine sections (Sections A to I See: Appendix A). Section A covered demographic and general background characteristics of the respondents. These included age of respondents, their educational background, the number of children ever born, marital status, and husbands' occupation. The second section covered issues relating to health problems in pregnancy, causes of health problems, methods of solving the

problems and how to prevent them in future pregnancy. Sections C and D were on issues of household decision-making and community factors that influence health seeking behaviour of pregnant women.

Questions on access to health facility formed Section E which comprised questions such as distance to health facility, time spent in a return trip, problems faced and how they were solved. Others were health talks on malaria, mode of communication and the level of understanding of the information received. Section F covered quality of services offered at the health facility, type of health care provider, reasons for such care provider, time spent at the facility and the general attitude of service providers. It also covered where SP-based IPT drug was taken, the side effects and the effectiveness of the drug. The last section explored the alternative interventions to intermittent preventive treatment of malaria that pregnant women resorted to. Issues explored included knowledge of the alternative drugs to sulphadoxine pyrimethamine based intermittent preventive treatment, used, and the reasons for using them.

A slight modification of the IDI guide for the health workers at Twifo Praso Health Directorate was administered to health workers at the health centres (Appendix B). This was because certain information needed could be better provided by the nurses at the health centres. The IDI guide for the health workers was divided into four sections. The first section covered issues concerning the general health of pregnant women. Specific issues included health problems that pregnant women faced in the district, why they faced the problems, how they were solved and what had to be done to avoid such problems. The second section dealt with general issues on malaria. It involved

questions such as which group is vulnerable to malaria infection, what interventions were put in place by the government to help prevent and treat malaria, and how successful the interventions had been (if any). Section C covered questions on how pregnant women got to know of IPT, the measures put in place to create awareness, how the awareness creation was carried on, and the outcome of it. The last section (Section D) sought information on the kind of training given to health workers in charge of the IPT, how the training was funded, and how the IPT was obtained, the challenges faced in the acquisition and the administration of the IPT, and how these challenges could be solved (Appendix B).

The focus group discussion guide (Appendix C) was organised into four sections. The first section sought information on the general health of pregnant women. There were questions on the health problems faced by pregnant women in the community, why they faced these problems and how the problems were solved. Others were what could be done to avoid the problems and who had to provide the solution. The second section dealt with malaria related issues which involved questions on malaria- how it could be prevented, the interventions that government had put in place to help prevent and treat malaria, and how pregnant women knew of it. Community factors constituted the third section; questions asked were on the activities in the communities that prevented pregnant women from seeking health care. The last section covered institutional factors; the information sought included how pregnant women recovered when they had malaria, where people went to when they had malaria, why they used the facilities available, and how they assessed the services they received.

Reconnaissance survey

Before the main survey, preliminary visits were made to the Twifo Praso District Health Directorate, the Twifo Praso Hospital, and the Kayireku CHPS Compound, and to the St Florence Maternity at Bimpong Egya. The aims of the visits were to familiarise with the area and the staff, to collect the list and addresses of registered pregnant women, and to find out the easiest means of reaching the villages in the catchments areas of the various health facilities which constituted the study area.

Official permission was first sought from the chiefs, elders, and from the Assemblyman or the Unit Committee member before the interview commenced. The intention was to gain the support and co-operation of the members of the communities through these opinion leaders. The visits were also meant to establish good rapport with the officers in charge of the IPT of malaria prior to the interview. Introductory letters from the head of Geography and Tourism Department were obtained and distributed to key informants. Appropriate schedules were then arrived at with each key informant for the interviews. The visits were again intended to look for, and to arrange with some residents of Twifo Praso, Kayireku, and Bimpong Egya who could serve as contact persons.

Training of field assistants

Three field assistants who were graduates, from the Department of Population and Health, with knowledge on malaria related issues were recruited. A three-day training was organised for them on the objectives of the study, the content of the instruments, ethical matters and translation of the

instruments from English into the Twi language. The field assistants were also trained to serve as moderators for the focus group discussions. The researcher herself conducted all the in-depth interviews. The intention behind this was to minimise, as much as possible, any inconsistencies that might arise as a result of using more than one interviewer for the in-depth exercise.

Pre-test

After the training, the questionnaires were pre- tested on ten pregnant women who were randomly selected from the list of registered pregnant women who patronised SP-based IPT at the Dunkwa Hospital in Upper Denkyira District. The medical officer in charge of the Dunkwa Hospital was also interviewed. The choice of this district was due to the fact that it is also predominantly rural with the same socio-cultural and economic conditions as the Twifo Praso Health District. During the pre-testing of the instrument, it was noted that the options provided for some questions were either inadequate or inappropriate; hence all necessary corrections were made before embarking on the actual fieldwork.

Actual field work

The fieldwork began on September 16, 2008 and ended on November 16, December 2008. The objectives of the study and the consent form were explained to the sampled respondents before the instruments were administered. Three separate discussions (two groups for age 15-29 and one group for age 30-49) were held in the catchment areas of the three health facilities. The rational for the age groupings was to ensure that women of

close age range constituted a group. Appropriate schedules were then arrived at with each group. Since most of them were farmers who went to farm early and who came home late, the discussions were done before the questionnaires were administered. The idea was that the discussants would explain the purpose of the research to other members of the community so that maximum co-operation could be achieved during the individual interviews.

The discussants from the St Florence Maternity catchment area comprised 11 women aged between 30-49 years. At Kayireku CHPS Compound, 10 women aged between 30- 49 years constituted the discussants. In the Twifo Praso Hospital catchment area, 8 discussants (15-29 years) were selected from three villages. The discussion at St Florence Maternity catchment area was postponed twice before it could eventually come on.

The questionnaires were administered at each village at a time to ensure proper supervision and co-ordination since some of the villages were far apart and movement of vehicles between them was not regular except on market days. A total of 135 respondents (Table 4), 100 from the Twifo Praso catchment areas, 25 from the St Florence Maternity catchment areas and 10 from Kayireku CHPS Compound catchment area were interviewed. At the Twifo Praso Hospital catchment area, questionnaires were administered in 10 villages. At the St Florence Maternity catchments area, 5 villages were covered and in Kayireku CHPS Compound catchments area, 2 villages were covered. In all 17 villages were covered, and 135 questionnaires were administered giving a response rate of 100 percent.

Table 4: Respondents and response rate

Catchment areas of health facilities	Villages covered	Proposed sample size	Total respondents interviewed	Response Rate
Twifo Praso Hospital	10	100	100	100
Florence marternity	5	25	25	100
Kayireku CHPS Cpd	2	10	10	100
Total	17	135	135	100

Source: Fieldwork, 2008

Data management

The procedure for analysis followed a structured format comprising editing, coding, and developing a frame of analysis followed by the actual analysis. These steps were strictly adhered to in order to ensure that the data were properly cleaned to obtain quality results.

Data collected from the field were checked for completeness of contents and for internal consistency in the responses. All the in-depth interviews were conducted in the English language. This made the transcription less difficult since there was no need to translate the items into the English language before transcription. The focus group discussions however were conducted in the Twi language and the result later translated into the English language before transcription.

Templates for the questionnaires were laid after the data collection using the Statistical Product for Service Solution (SPSS) version fifteen software (formally Statistical Package for Social Sciences). The data were

subsequently coded after the data cleaning exercise. Responses for the open-ended questions were tallied to check the frequency of particular responses.

Data analysis

The analysis covered two sections: the socio demographic characteristics of the respondents, and the main issues involved in the compliance of SP-based IPT of malaria. "N" in the analysis refers to the frequency or the number of individual respondents who provided responses to the question being analysed in the cross tabulated tables. Frequencies, percentages, diagrams (pie charts and graphs), cross tabulations and other descriptive statistics were used to present the result of the analysis. The Microsoft Office Excel Programme was used to draw all the Bar and Pie Charts. The Chi Square and Spearman's Colerration techniques were used to test the hypotheses. The open-ended questions the IDI and the FGD were categorised and similar responses analysed manually.

Challenges from the field

The data collection exercise encountered some challenges. The Twifo Praso Health District is one of the poorly developed in the country. The District Hospital was only raised to the status of a Hospital in 2003 through the effort of the present Medical Officer in charge of the Hospital (Doctor John Annan). Prior to this period, complex health problems that could not be treated by the then Medical Assistant were referred to either the St Xavier Hospital at Assin Fosu or to the Central Hospital in Cape Coast. As at the time of the fieldwork, the hospital had no proper storeroom for record keeping. It

was, therefore, difficult to locate the address books of pregnant women for the year 2005 and 2006. The midwife in charge had to search for these books for about a week before she could locate them in a wooden structure. As a result, the administrator of the hospital ordered that all old documents should be packed and kept in the storeroom where drugs and other items were kept for easy location. This made it possible to get access to the necessary records.

The data collection exercise took place few months before the 2008 Ghana's General Elections. As a result, there was suspicion among people in some of the settlements visited; they felt that the inquiry was a political endeavour to win elections. The problem was however solved after much explanation (to them) that the research was purely an academic exercise.

Road network in the district is poor. Apart from the Cape Coast-Twifo Praso trunk road, which is an all whether (road), the other road networks become almost impassable during the rainy season. Commuting between villages that were not on the main trunk road during the days when there were no market and hence no vehicle became a problem. Vehicles that used the feeder roads spent long hours to convey passengers to their destinations and back. Long distances such as eight kilometers for example were covered on foot from Benpongso to Gamanfom and Tsifodze to Cannan. Some villages such as Gamanfom and Paaso could only be reached on foot.

Twifo Praso Health District is predominantly rural and the majority of the respondents are farmers. Some of the respondents had to be visited more than once. This caused delay in the data collection. Secondly, some of the respondents did not know their age and hence had to guess. Some of the respondents could not also tell readily the doses of IPT they took. In such

cases they were helped to recall the number of doses through a series of leads such as the time of first attendance, the number of visits made, and the type (name) of tablets chewed at the health facility. Some of the respondents, therefore, could not answer all the questions.

Three nurses were purposively selected for interview on IPT of malaria: one from Twifo Praso, one from Kayireku, and one from Bemnpong Egya. The nurse from Kayireku could not be interviewed because throughout the interview, she was at a workshop outside her station and was not willing to direct me (the researcher) to where she could be located for the interview.

Summary

All the 135 respondents reached were interviewed: these were 100 respondents from the Twifo Praso Hospital catchment area, 25 respondents from the Florence Maternity catchment area and 10 respondents from the Kayireku CHIPS Compound catchments area. In addition, five Health Officers including two nurses and a medical doctor were interviewed.

Among the many problems encountered was the difficulty in getting the addresses of the respondents from the Twifo Praso Hospital. Another problem was the initial suspicion among some of the inhabitants because the data collection was done few weeks prior to the 2008 Ghana's General Elections. Furthermore, the absences of some respondents delayed data collection. However, there was maximum co-operation from respondents resulting in a response rate of 100 percent for household survey.

CHAPTER FOUR

CHARACTERISTICS OF RESPONDENTS, INDIVIDUAL AND COMMUNITY ISSUES

Introduction

Background characteristics of women in the reproductive age group as well as individual and community factors play important role on how pregnant women comply with interventions pertaining to their health. These characteristics include age, marital status, number of children ever born and living, education, occupation, income, and religion.

Ghana Statistical Service (2004) has noted that education helps individuals to make informed decisions that impact their health and well-being. Elo (1992) has observed that the husband's educational level and his occupation have positive influence on antenatal care use.

The number of previous pregnancies could also influence compliance to health care interventions within the antenatal care system. Raghupathy (1996: cited in Overbosch et al., 2002) have concluded that higher number of previous pregnancies results in less use of antenatal care. On the other hand, McCaw-Binns, Grenade and Ashley (1995) and Magadi, Madise and Rodrigues (2000) have noted that higher number of previous pregnancies is associated with early attendance to antenatal care. This they attributed to complications experienced during earlier pregnancies.

Other personal features such as religion could influence the attitudes of women towards pregnancy and modern health care. Background characteristics combine in varying degrees to influence the way women comply with interventions implemented for them. The purpose of this chapter

is two-fold: the first is to outline the background characteristics of pregnant women who patronised SP- based IPT, which subsequently forms the basis for the analysis of issues of compliance in the next chapter, and the second is to analyse the issue of individual and community factors as they relate to compliance.

Socio-demographic background

Age distribution of respondents

Age and sex are important variables in analysing demographic trends (GSS, 2004). The ages of the women interviewed ranged from 15 to 49 years with a mean of 26 years. Out of the 135 respondents interviewed, 73 percent were aged less than 30 years while 27 percent were more than 30 years (Table 5).

Table 5: Age distribution of respondents

Age group	Age distribution of respondents	
	Frequency	Percentage (%)
Less than 20	15	11.1
20 - 24	35	25.9
25 – 29	48	35.6
30 – 34	20	14.8
35 and above	17	12.6
Total	135	100.0

Source: Fieldwork, 2008

The largest proportion of respondents interviewed (36 percent) were in the age group of 25-29 while the lowest proportion (4 percent) were in the age group of 40 years and above. Overall, 87 percent of the women interviewed were between the ages of 15 years and 34 years. The age distribution of the respondents indicates that a higher proportion of the respondents were young and within their reproductive ages (Table 5).

Marital status

Marriage is known to be a very important factor that could determine the pregnant woman's ability and willingness to access health care. A married woman is likely to access more health interventions than an unmarried woman in the same community with similar characteristics. This is because married woman are likely to get some kind of support to aid them seek for health care. Table 6 shows that 70 percent of the respondents were married, 15 percent were never married, and 10 percent were separated while five percent were widowed. Seventy percent of the women interviewed were married and were living with their husbands while 20 percent were without husbands.

Table 6: Marital status of respondents

Marital status	Frequency	Percentage (%)
Never married	20	14.8
Married	95	70.4
Separated/Widow	20	14.8
Total	135	100.0

Source: Fieldwork, 2008

Children ever born alive

The number of children ever born alive could determine a woman's experience in pregnancy and pregnancy related problems (Magadi et al., 2000) This may in turn determine her response to health care interventions in the antenatal care system. About one percent of the women had no previous experience with child bearing. More than two-thirds (about 72 percent) had one to three children while less than a third (28 percent) had three children and above (Figure 4).

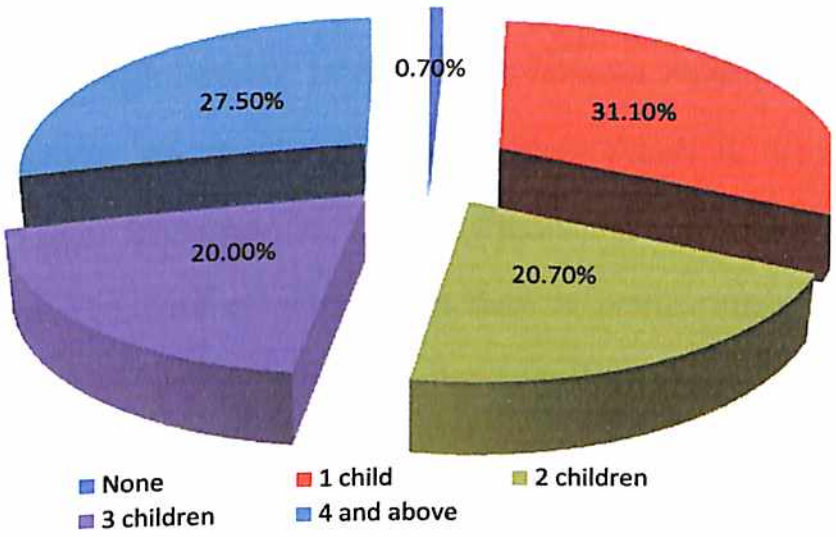

Figure 4: Children ever born alive

Source: Fieldwork, 2008

The average number of children born by the women was two. More than two thirds of the respondents (68.2) had two or more children and might have acquired some experience which could negatively or positively affect their response to health care interventions.

Educational level of pregnant women

Education helps individuals to make informed decisions that impact their health and well-being (GSS, 2004). Women's education, for instance, is considered as the most influential investment that can be made in a developing world (Ashford, 2001). It has been observed that the level of education is closely associated with the health of women and children, and with the reproductive health behaviours of women and men (GSS, 2004).

The proportion of respondents (68 percent) who had had formal education was higher than those (32 percent) without formal education. About 50 percent of the women had attended Middle School or Junior Secondary School (Junior High School), 16 percent had attended Primary School and only 3.0 percent had attended Senior Secondary School or some higher institution (Table 7). However the Level of education in general, was low and this could have implications on health care since the positive effects of formal education begin to manifest themselves after the basic level (GSS, 2002).

Table 7: Educational level of pregnant women

Categories	Frequency	Percentage (%)
None	43	31.9
Primary	21	15.5
Middle /JSS	67	49.6
Higher	4	3.0
Total	135	100.0

Source: Fieldwork, 2008

Husband's occupation

Occupation, whether formal or informal may be a means by which one earns income and may partly determines quality of life. Table 8 indicates that the highest proportion of the interviewed women's husbands (68 percent) were in the informal sector, 19 percent were in the formal sector while 14 percent were unemployed. The husbands who were in the informal sector were mainly in peasant farming- which does not earn much income. This coupled with those whose husbands were unemployed could have adverse implications on access of health care in the study area.

Table 8: Husband's occupation

Categories	Frequency	Percentage (%)
Informal	73	67.6
Formal	20	18.5
Unemployed	15	13.9
Total	108	100.0

Source: Fieldwork, 2008

Income of respondents

Each pregnant woman was asked to mention how much income she earned per month. Forty-eight percent said they earned less than GH¢100 (about US$6) per month while 3.0 percent said they earned between GH¢301 and GH¢400 (between US$ 18.8 and US$ 25). Nine percent, however, earned income of more than GH¢400 a month (Figure 5). On the average, all the respondents earned an income of GH¢143 (US$ 8.9) per month. This amount

certainly could not carter well for families with even a minimum number of two people hence some necessities had to be forgotten.

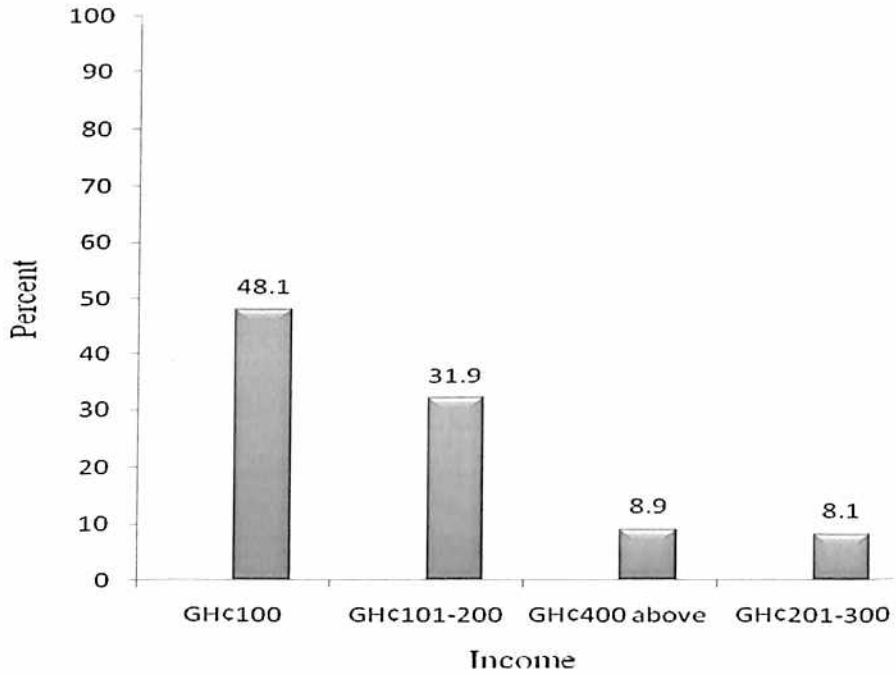

Figure 5: Income of respondents

Source: Fieldwork, 2008

Religious affiliation

Customs such as religious belief could influence the attitudes of women towards pregnancy and modern health care. Figure 6 shows that Christianity was the dominant religion professed by 87 percent of the respondents and these were mostly Pentecostals. Adherents of the Islamic religion accounted for about seven percent of the respondents whilst about five percent belonged to traditional religion. About one percent however said they belonged to no religious group. The religious background of the respondents is consistent with the 2000 Ghana Population and Housing

Census which identified Christians as the dominant religion (68.8 percent) followed by Islam (15.9) and traditional religion with 8.5 percent adherents.

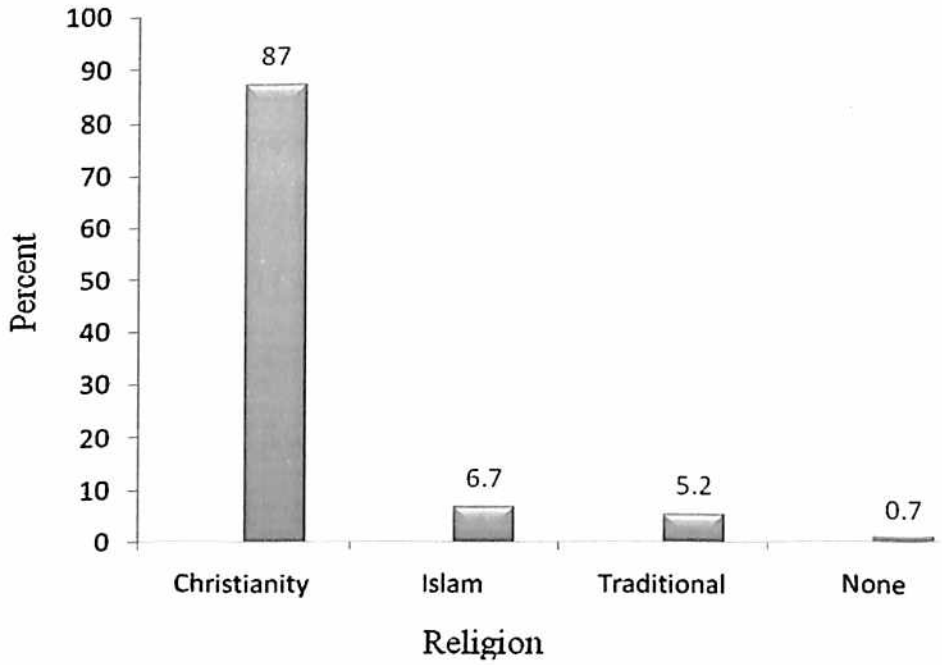

Figure 6: Religious affiliation of respondents

Source: Fieldwork, 2008

Health problems faced in pregnancy

Women in developing countries often face serious health risks during pregnancy, either themselves or their children (Overbosch et al., 2002). Consequently, Ghana has implemented a number of interventions including antenatal care to improve the health of pregnant women and their babies and to reduce maternal mortality (MOH, 1999b). A pregnant woman is therefore required to make her first antenatal care visit in the first trimester (MOH, 1999a) and to report to the health facility anytime she feels unwell or has any complications. Table 9 presents the health problems faced by the interviewed pregnant women.

Table 9: Health problems faced in pregnancy by age

Age of respondents	Health problems faced in pregnancy					
	Pain, cough, rashes (%)	Dizziness, anaemia, weakness, malaria (%)	Conceptional bleeding, swollen feet, seizures (%)	STI (%)	Total (%)	N
14-19	20.0	46.7	0.0	33,3	100	15
20-24	11.4	60.0	2.9	25.7	100	35
25-29	4.2	62.5	4.2	29.1	100	48
30-34	5.0	70.0	5.0	20.0	100	20
35+	5.9	64.7	17.6	11.8	100	17
Total	8.1	61.5	5.2	25.2	100	135

Source: Fieldwork, 2008

Among the health problems experienced by the women, malaria and malaria related diseases was the highest (62 percent) followed by STI (25 percent), whilst eight percent reported experiencing pain, cough and rashes. Only a few (five percent) had conceptional bleeding, swollen feet and seizures. With the exception of the women within the age group 14-19 years, 60 percent or more of the women in the other age groups reported experiencing malaria. Irrespective of age, malaria was a major health problem experienced.

Reasons for the health problems

The women faced health problems during pregnancy for a number of reasons. Figure 7 provides the problems faced. The majority (92 percent) of the women attributed their health problems to pregnancy; three percent

attributed it to eating too much starchy foods, and another three percent mentioned tedious work, while two percent said their health problems were chronic. The implication is that the women knew that pregnancy exposed them to the various health problems. The District Health Director when interviewed had this to say:

> *Every pregnant woman is susceptible to diseases. This susceptibility is due to the fact that the pregnant woman needs highly nutritious food enough to maintain two people. But people cannot even get food enough for one. When it happens like that the foetus uses the little nutrient found in the body to grow and the pregnant woman is left with no nutrient to develop her immune system. Weak immune system therefore renders the woman susceptible to all kinds of diseases. Pregnant women have to eat enough nutritious food to maintain and protect themselves and their babies from diseases.*

The District Director thus confirmed that pregnant women are susceptible to diseases and that the diseases faced by the pregnant women in the district were due to poor nutrition that stemed from lack of funds and its consequent weak immune system.

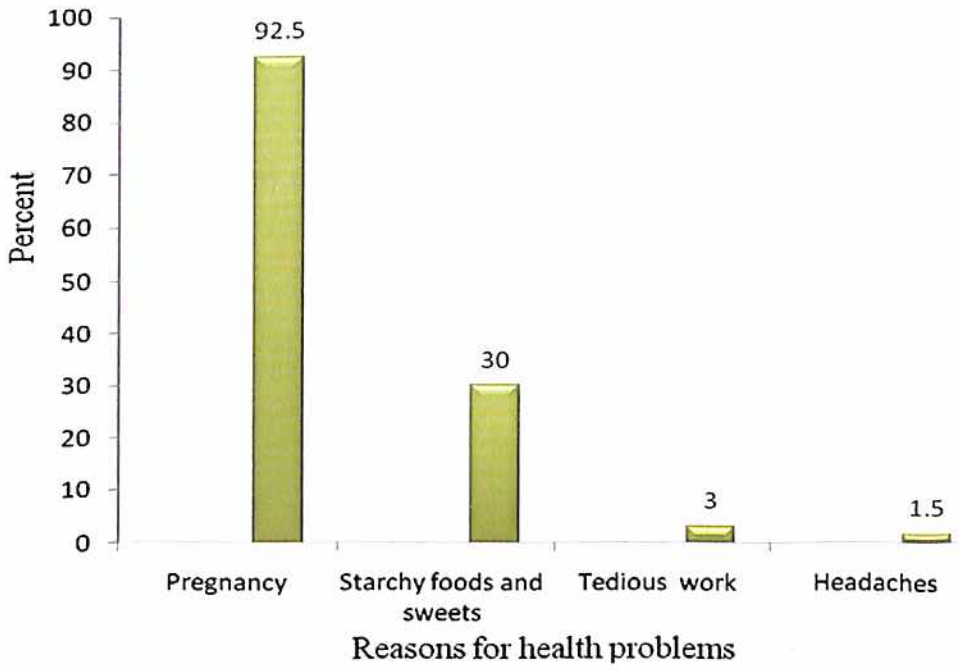

Figure 7: Reasons for health problems in pregnancy

Source: Fieldwork, 2008

Treatment of health problems

The antenatal period presented opportunities for the pregnant women to be told of a number of interventions that might be vital to both their health and the well being of their infants (WHO, 2003). In Ghana a pregnant woman is required to report to the health facility anytime she feels unwell or has any complications in other to avoid maternal and child morbidity and mortality (GSS, 2004).

The respondents managed the health problems they faced during pregnancy in various ways. From the responses (Table 10), the highest proportion (75 percent) resorted to medical treatment, a little more than a tenth (11 percent) sought for traditional treatment, 9 percent took to self-

medication whilst a few (five percent) combined both medical treatment and traditional treatment.

Table 10: Treatment of health problems

Age	Modes of solving health problems					
	Sought medical care (%)	Took traditional medicine (%)	Self-medication (%)	Medical care and traditional medicine (%)	Total (%)	N
15-19	58.3	8.3	25.0	8.3	100	12
20-24	73.3	10.0	6.7	10.0	100	30
25-29	79.1	11.6	9.3	0.0	100	43
30-34	78.9	5.3	10.5	5.3	100	19
35 and above	71.4	21.4	0.0	7.2	100	14
Total	74.6	11.0	9.3	5.1	100	118

Source: Fieldwork, 2008

Nearly four-fifth (79 percent) of the respondents in the age group 20-34 sought for medical care as against 58 percent of those aged 15-19. About a fifth (21 percent) of the women aged 35 years and above used traditional medicine, whiles a little less than a tenth (8 percent) (1) in the age group (14-19) resorted to the same care. With regard to self-medication, a quarter (25 percent) of the women aged 15-19 years self-medicated. The youth, (25-34) years were more likely to seek for medical care, older women (35 years and above) were more likely to resort to traditional treatment while the teenagers were more likely to absent themselves from seeking for medical care and self-medicate.

Knowledge of the causes of malaria

Mosquitoes are generally known to be the cause of malaria. Among the four common mosquito parasites *(Plasmodium vivax, Plasmodium malariae, Plasmodium ovale and Plasmodium falciparum)* that cause malaria, *Plasmodium falciparum* is the most deadly, and is the most common in sub-Saharan Africa (Greenwood, 1999). The majority of the women (96 percent) said mosquitoes cause malaria whilst a few (4 percent) mentioned the other causes (Table 11).

Table 11: Causes of malaria by level of education

Level of education	Causes of malaria				
	Dirt (%)	Housefly (%)	Mosquitoes (%)	Total (%)	N
None	2.3	0.0	97.7	100	43
Primary	0.0	0.0	100.0	100	21
Middle/JSS/Higher	4.2	2.8	93.0	100	71
Total	3.0	1.5	95.5	100	135

Source: Fieldwork, 2008

Knowledge of the causes of malaria was high among pregnant women irrespective of the level of education. Formal education, therefore, plays no role in the pregnant women's knowledge of the causes of malaria.

Knowledge of susceptible group by level of education

Biologically, the groups of people that are at the highest risk of malaria are infants and young children (from six months to five years), pregnant women, non-immune people and people living with HIV/AIDS

because of their decreased immunity (WHO, 2007). Knowledge of risk of a group of people to a particular disease may encourage adherence to a recommended preventive action. About two thirds (65percent) of the respondents knew the groups of people that were at highest risk of malaria whiles one third (35 percent) did not know (Table 12). About 78 percent of the respondents with no formal education gave pregnant women and children under five years as the most vulnerable group, whiles 63 percent of those with Middle or JSS or Higher education said the same (Table 12). Education appeared to have no marked influence on the knowledge pregnant women had about the group of people who were more susceptible to malaria. This was because with or without education, knowledge of susceptible group was high as indicated by 78 percent of women with no education and 63 percent of those with some level of education who mentioned women and children as most susceptible.

Table 12: Knowledge of susceptible group by level of education

Level of education	Vulnerable group					
	Pregnant women and children under five years (%)	Newborn babies (%)	Children up to 15 years (%)	The youth (%)	Total (%)	N
None	77.5	20.0	2.5	0.0	100	40
Primary	47.4	21.1	31.6	0.0	100	19
Middle/JSS/ Higher	62.9	16.1	12.9	8.1	100	62
Total	65.3	18.2	12.4	4.1	100	121

Source: Fieldwork, 2008

Knowledge of the effects of malaria

Pregnant women infected with malaria have increased risk of abortion, stillbirth, premature delivery, and low birth-weight in infants (Duffy & Fried, 2005, Reuben, 1993). To know their knowledge of the effects of malaria on them, the respondents were asked about what happened to pregnant women who were attacked by malaria. A little over four-fifth (81 percent) mentioned stillbirth, a little less than a tenth (eight percent) mentioned dizziness, seven percent mentioned abortion, and four percent mentioned maternal mortality (Figure 8). In all about 92 percent knew of the deleterious effects of malaria on them while 8 percent were not well informed. Knowledge of the effects of malaria among the respondents was high.

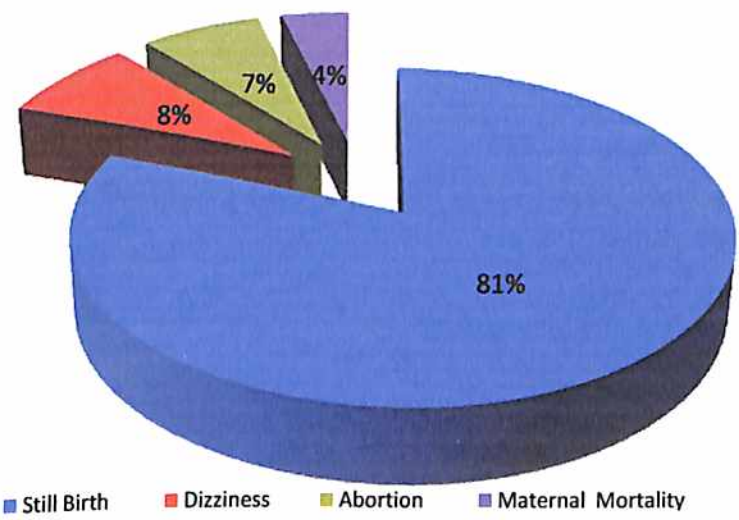

Figure 8: Knowledge of the effects of malaria among pregnant women

Source: Fieldwork, 2008

Pregnant women's knowledge of malaria prevention

It is more sensible to prevent illness than to deal with it through episodic health (medical) care (Payne & Hahn, 2000). The interviewed

women provided the following answers on how they could prevent malaria. Seventy- two percent said malaria could be prevented using SP-based IPT; 21 percent said the use of ITN, whilst 8 percent said eating healthy foods could prevent the disease (Figure 9). In all 92 percent of the pregnant women said malaria could be prevented by IPT and ITN. Pregnant women's knowledge of malaria prevention was high.

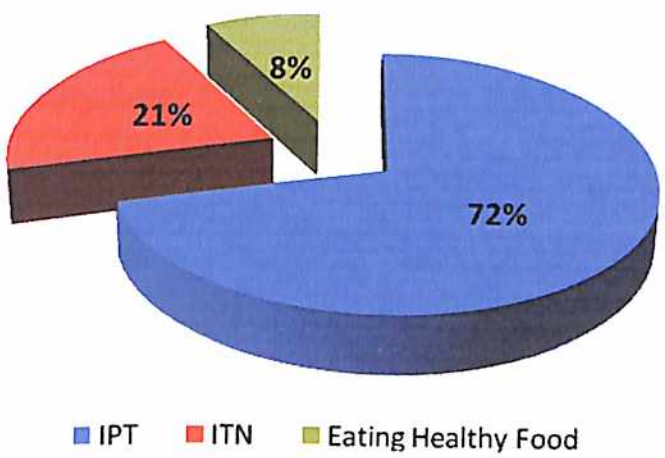

Figure 9: Pregnant Women's Knowledge of malaria prevention

Source: Fieldwork, 2008

Awareness of SP-based IPT and sources of awareness

Acquiring knowledge about an intervention is an important step toward using the intervention in a timely and effective manner (GSS, 2004). Interview with the women on whether they were aware of Intermittent Preventive Treatment of malaria intervention (as one of the components of antenatal care) provided the following responses: All the women said they were aware of the intervention. About 92 percent mentioned health workers as their source; four percent said they read of it from a leaflet or brochure,

while three and two percent mentioned television and radio respectively (Table 13). The implication here is that the pregnant women were aware of the intervention and the major source of awareness was from health workers.

Table 13: Awareness of SP-based IPT and sources of awareness

Sources of awareness	Frequency	Percentage (%)
Television	4	3.0
Radio	2	1.5
Leaflet or brochure	5	3.7
Health worker	124	91.8
Total	135	100.0

Source: Fieldwork, 2008

Requirements of SP-based IPT

One of the strategies that the Ministry of Health and the Ghana National Malaria Control Programme have adopted to control malaria among pregnant women is the Intermittent Preventive Treatment with sulphadoxine pyremithamine (GHS, 2003b). This policy requires that from the second trimester of pregnancy, pregnant women are expected to receive three doses of sulphadoxine pyremithamine at monthly intervals. The pregnant women who patronised SP-based Intermittent Preventive Treatment of malaria between 2005 and 2007 were asked whether they were told of the time in pregnancy to patronise IPT, the intervals within which to take it and the number of doses to take. These questions were asked to find out whether the requirements in the intervention were made known to the beneficiaries.

In Table 14, about four fifth of the respondents (77 percent) knew when to start patronising the intervention whiles one fifth did not know. In all, 23 percent did not know the time in pregnancy to patronise IPT.

With regard to the intervals within which to patronise IPT, 56 percent of the respondents said they were told of the intervals, while 44 percent said they were not told (Table 14).

Table 14: Requirements of SP-based IPT

Item	Frequency	Percentage (%)
Time in pregnancy to patronise IPT		
First trimester	20	14.9
Second trimester	104	77.0
Third trimester	11	8.1
Informed of the intervals to patronise IPT		
Yes	73	56.2
No	57	43.8
Recommended number of doses to take		
One dose	20	14.8
Two doses	50	37.0
Three doses	65	48.2

Source: Fieldwork, 2008

Respondents were further asked of the dosages of SP-based IPT prescribed for them. Less than half (48 percent) said they were told to patronise three doses; 37 percent said two doses, while 15 percent said only one dose (Table 14). The results contradict the Ministry of Health and Ghana Malaria Control Programme's policy of three doses within the antenatal care

system. It is likely that the messages given to the pregnant women were not clear as was observed by Launiala and Honkasalo (2007).

SP-based IPT doses patronised by residence

The extent to which people patronise an intervention may be informed by their place of residence - whether the place is rural or urban. Table 15 indicates that pregnant women who patronised three doses of SP-based IPT of malaria from Twifo Praso were more (31 percent) than those who did the same from the other areas: Bempong Egya (12 percent) and Kayireku (10 percent), the two rural areas. This may be due to easy access to transport and other facilities since Twifo Praso is relatively urban. Residence therefore played a role in the patronage of SP-IPT of malaria

Table 15: SP-based IPT doses patronised by residence

Residence	SP-based IPT patronised by residence				
	One dosage (%)	Two dosages (%)	Three dosages (%)	Total (%)	N
Twifo Praso	42.0	27.0	31.0	100	100
Bempong Egya	60.0	28.0	12.0	100	25
Kayireku	50.0	40.0	10.0	100	10
Total	46.0	28.1	25.9	100	135

Source: Fieldwork, 2008

Reasons for IPT doses patronised

The main reasons given for the observed trends in IPT update by the women were: late and incomplete reporting (44.4 percent), reported early but were not given all the doses (39.3 percent), and fell sick in the course of the pregnancy (eight percent) (Figure 10). The late and incomplete reporting for the doses was confirmed by the officer in charge of the Twifo Praso District Hospital as follows:

> *The pregnant women do not report to hospital early. They allow themselves to be frightened and deceived by the numerous herbalists and spiritualists around. Some of them are deceived into thinking that if they visit the hospital instead of seeking spiritual assistance, they may die. They therefore stay at home for a long time without visiting health facilities and by the time they report, their conditions have deteriorated!*

According to the Senior Public Health Nurse at Twifo Praso:

> *When a woman is attacked by malaria in the course of pregnancy, we stop giving her IPT and rather give her quinine, depending on the maturity of the pregnancy.*

In a discussion at one of the settlements, a woman remarked:

> *As for me I visit the antenatal care early when I get pregnant but fall sick in the course of my pregnancy. If the pregnancy becomes static without growing and I go off (faint) the midwives stop giving me medicine and it takes a long time before the pregnancy begin to grow*

again so I do not take IPT again till I give birth.

This confirms some of the responses made by the respondents that they fell sick and could not take all the dose

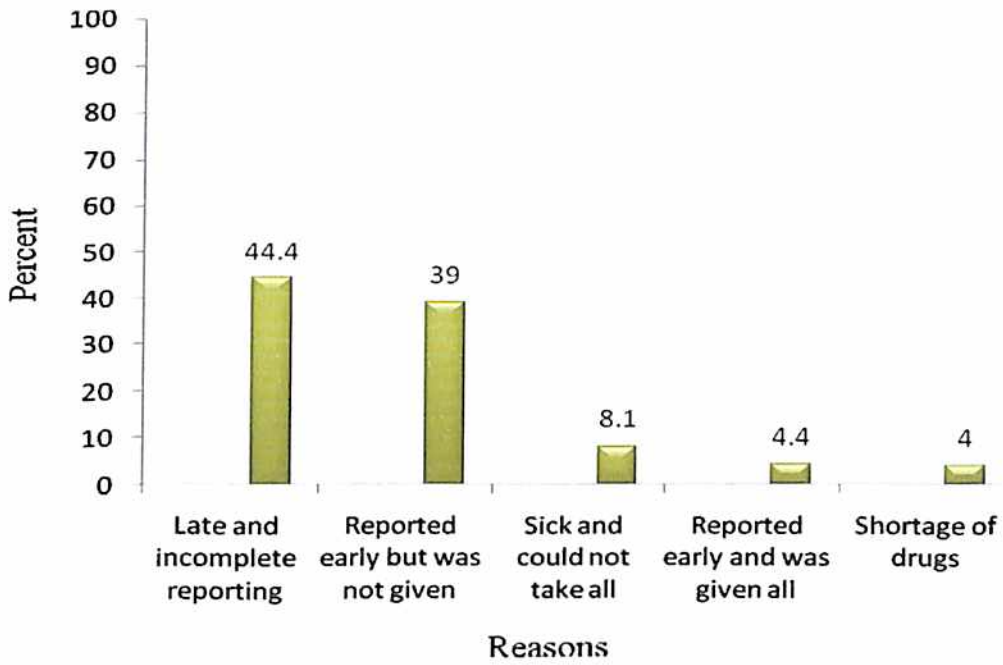

Figure 10: Reasons for IPT doses patronised

Source: Fieldwork, 2008

Health care decision-making

Decision-making is one of the most important aspects in health seeking behaviour. The women were asked who in their family usually took the final decision when seeking for health care. From the responses (Table 16), husbands (50 percent) were the major final decision makers, followed by self (36 percent), parents (11 percent) and in-laws (3 percent).

A little less than half (46 percent) of those within the age group 20-24 years and exactly half (50 percent) of those aged 25-29 years mentioned their husbands as the final decision makers. A little over half (65 percent) of the women, aged 35 years and above said their husbands were the final decision

makers (Table 16). It appears that irrespective of the age of pregnant women, men dominated in decision-making.

Table 16: Health care decision-making by age

Age of respondents	Final decision maker					
	Self	Husband	Parents	In- laws	Total (%)	N
15-19	33.3	46.7	13.3	6.7	100	15
20-24	40.0	45.7	11.4	2.9	100	35
25-29	31.3	50.0	14.6	4.2	100	48
30-34	40.0	50.0	10.0	0.0	100	20
35+	35.3	64.7	0.0	0.0	100	17
Total	35.6	50.4	11.1	3.0	100	135

Source: Fieldwork, 2008

Choice of health care

Men sometimes dominate in decision-making, which do not allow women to express their needs, and make their own health care choices (Ghebreyesus, 2000). This observation is evident in Figure 11. Some 55 percent of the women mentioned their husbands as the choice makers, 28 percent made their own choices, and 12 percent their parents.

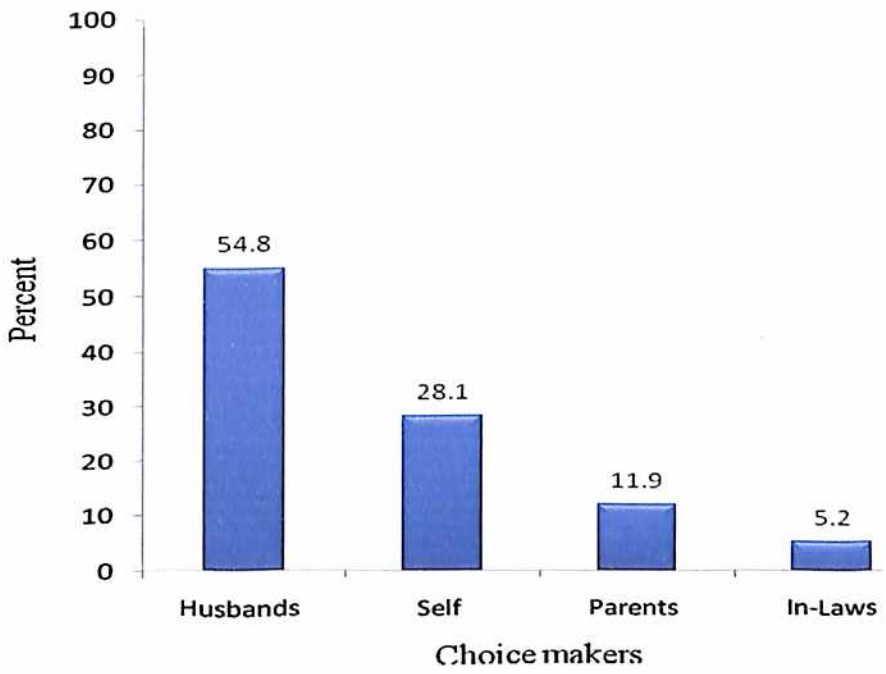

Figure 11: Choice of health care

Source: Fieldwork, 2008

Payment of health care bills

Compliance to medical regimens is a behaviour that is often shared because clients cannot always implement their medical regimens without the participation of others (Berg et al., 2006). To know how compliance behaviours of the pregnant women were shared, the respondents were made to mention those who paid their health care bills.

Very few (about four percent) paid their own health care bills. A high proportion (74 percent) mentioned their husbands, a little less than a tenth (nine percent) their parents, while 13 percent mentioned their in-laws (Figure 12). Husbands were the major payers of the pregnant women's health care bills.

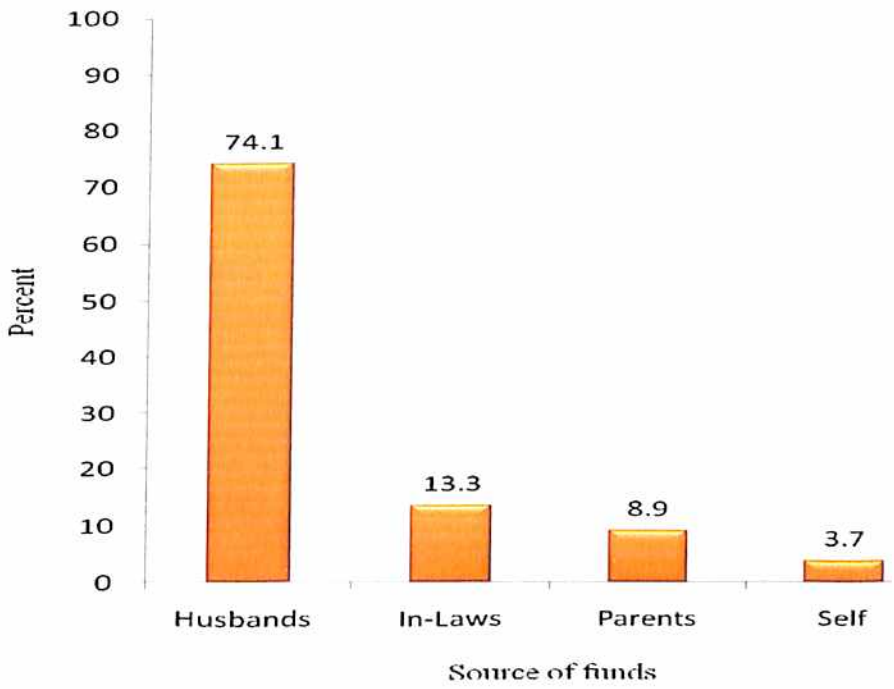

Figure 12: Source of funds for ANC bills

Source: Fieldwork, 2008

Type of health care provider visited

The majority of the antenatal care interventions known to be effective can be delivered by a midwife or nurse or by some lower 0evel health care workers such as auxiliary nurses or midwives, primary health care workers and community health workers (WHO, 2003). The majority of the women (92 percent) visited a midwife, whiles a few, six percent and two percent visited a nurse or a medical assistant and a doctor (Table 17). More than four fifth (80 percent) of the women with or without education visited a midwife. Irrespective of the pregnant women's educational background, a qualified health care provider (midwife) was the most visited.

Table 17: Type of health care provider visited by education and religion

	Type of medical health care provider visited				
	Doctor	Midwife	Nurse/medical assistant	Total (%)	N
Level of education					
None	0.0	97.4	2.6	100	38
Primary	5.6	83.3	11.1	100	18
Middle/JSS/Higher	1.6	92.0	6.4	100	62
Religious affiliation					
Christianity	2.0	93.1	4.9	100	102
Islam	0.0	75.0	25.0	100	8
Traditional religion	0.0	100.0	0.0	100	7
No religion	0.0	100.0	0.0	100	1

Source: Fieldwork, 2008

Table 17 shows that pregnant women who were Christians visited all the health care providers mentioned (doctor, midwife and nurse or medical assistant) while those belonging to Islamic religion visited midwife, a nurse or a medical assistant; those belonging to Traditional religion and those with no religion visited the midwife only. In all, midwife was the type of health care provider most pregnant women visited: Christians accounted for 93 percent, Islamic religion 75 percent and Traditional religion 100 percent.

Timing of first ANC visit by children ever born alive

For antenatal care to be more effective in preventing adverse pregnancy outcomes, it must be sought for early in the first trimester and continued through to delivery (GSS, 2004). The timing of ANC by the women is shown in Table 18. About half of the respondents (50.4 percent) received antenatal care early (in the first trimester), whiles a little less than half (49.6 percent) received it late (in the second and third trimesters) (Table 18). Late enrollment was likely to be one of the factors responsible for the low compliance to SP-based IPT of malaria. This is because the administration of the drug stops after seven months of pregnancy (GHS, 2004), and this may not enable the pregnant women take the recommended doses before delivery. The senior midwife in charge of antenatal care at the Twifo Praso Hospital when interviewed had this to say:

> *As for the pregnant women, most of them don't report early. They have allowed themselves to be frightened by the myriads of spiritualists (Awoyo priests) and the other numerous prophets around. These spiritualists put fear into the pregnant women telling them that the health problems they encounter are spiritual, which need spiritual solution. Some even go to the extent of telling them that if they fail to seek their spiritual assistance and rather visit antenatal care instead, they would die. Because of that they don't report early. They wait till their conditions have deteriorated before they report.*

The results shown in Table 18 indicate that about 60 percent of pregnant women with four children or more made their first antenatal care visits in the first trimester (1-3 months) as against 37 percent of pregnant women with one child. Parity therefore seemed to play a significant role in the timing of antenatal care: women with more children received antenatal care early probably because of the complications they experienced during earlier pregnancies.

Table 18: Timing of first ANC visit by parity

Number of children born alive	Time of first visit				
	1-3 months	4-6 months	7-9 months	Total (%)	N
One child	37.2	53.5	9.3	100	43
Two children	53.6	32.1	14.3	100	28
Three children	55.6	37.0	7.4	100	27
Four or more	59.5	32.4	8.1	100	37
Total	50.4	40.0	9.6	100	135

Source: Fieldwork, 2008

Reasons for the timing of first ANC visit

The respondents gave various reasons for the time they first visited antenatal care. Figure 13 shows that 46 percent lacked funds and maternity clothing, 36 percent said that was the time they realised they were pregnant and felt marked changes in their body; 8 percent did not know they were pregnant, while 10 percent said they encountered health problems. The issue

of finance and maternity clothing is worth noting. The District Hospital Medical Officer when interviewed had this to say:

> *The problem with the pregnant women is that they report late for antenatal care. Coupled with the late reporting is the fact that they don't pay regular visit to the health centre. When you asked them they tell you they don't have money and it is surprising because they are able to get money for expensive funeral clothing but not money for antenatal care. These women need to be educated on how to set their priorities right when they are pregnant.*

Lack of finance was therefore the main reason for late reporting among the respondents.

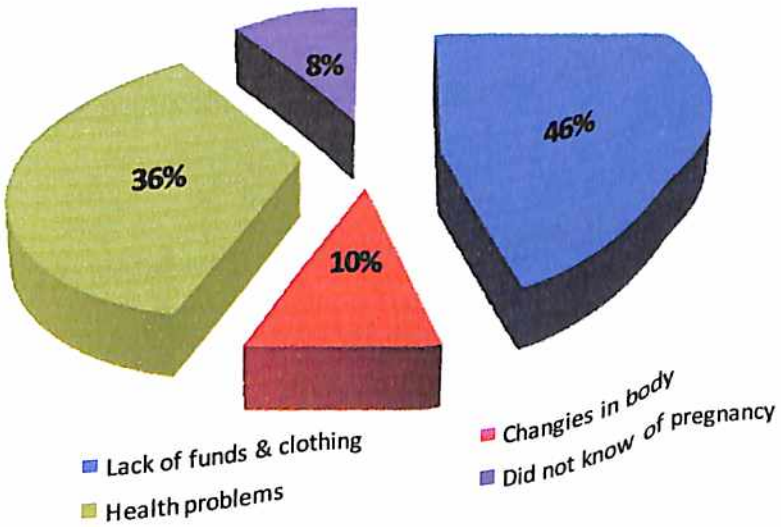

Figure 13: Reasons for the timing of first ANC visit

Source: Fieldwork, 2008

Number of ANC visits by residence

Expectant mothers are required to seek for antenatal care early in the first trimester and continue with monthly visits up to the seventh month of pregnancy. This should be followed by visits every two weeks to the eight month and then weekly until delivery (GSS, 2004). If the first antenatal visit is made at the third month of pregnancy, the pregnant woman should make a total of at least 12–13 visits during the duration of pregnancy. Based on this number of visits, the World Health Organisation has recommended a minimum of four visits which is enough for every pregnant woman to access any needed intervention (GSS, 2004).

Table 19 shows that even though a higher proportion of the women (54 percent) could make the recommended four visits, however, 46 percent could not make it (one to three visits). The median number of ANC visits was 3.0 while the average visit made was 3.3. This figure is consistent with that recommended by the Ghana Health Service in 2006.

Table 19: Number of ANC visits by residence

Residence	Number of antenatal care visits				
	1	2-3	4+	Total (%)	N
Twifo Praso	3.0	39.0	58.0	100	100
Bempong Egya	0.0	56.0	44.0	100	25
Kayireku	0.0	60.0	40.0	100	10
Total	2.2	43.7	54.1	100	135

Source: Fieldwork, 2008

More than half of the women from Twifo Praso (58 percent), a little over a third (44 percent) from Bempong Egya and two fifth (40 percent) from Kayireku made at least four antenatal visits during their pregnancy (Table 19). Town or the place of residence therefore seemed to play some role in the number of antenatal care visits made by the pregnant women in the study area. It is likely the differences in the number of visits by residence were probably due to accessibility.

Level of income and number of ANC visits

A number of background characteristics that influence the use of antenatal care have been cited in the literature. Husband's educational level and occupation have been found to have positive influence on antenatal care use. Raghupathy (1996) observed that previous pregnancies resulted in less use of antenatal care due to experience acquired in catering for pregnancy and delivery.

This test analysed the extent to which income influenced the number of antenatal care visits by the pregnant women in the study area. This was based on the premise that people's income could influence their health seeking behaviours. Thus people with high level-income may be encouraged to seek health care regularly while those with low-level income may not. The Pearson's Correlation was used to analyse how income influenced the number of visits to ANC because it is a very useful tool for analysing the interrelationship among two or more variables. Mean values (mid points) of incomes were used while raw values were used for the number of visits. By this form of measurement, the variables became ratio variables. A correlation

co-efficient of -.188 was obtained. This implied that there was a negative but weak association between income and the number of visits. Nevertheless, the finding was statistically significant at the 0.05 level. The P value of .029 was less than the minimal 0.05 thereby rendering the association significant.

The data available therefore suggests some negative but weak association between the two variables. Therefore, the null hypothesis of no relationship between income and the number of visits was rejected. The alternative hypothesis of the relationship between income and the number of visits was accepted because there was some association between income and the number of visits.

Community barriers to ANC attendance

Many things come together to influence a client's adherence to medical regimens. An examination of factors in the community that prevented the pregnant women from seeking health care, and that, which promoted their health seeking behaviour, are presented in Figure 14. Factors in the community that prevented pregnant women from seeking for medical care were finance (46 percent), belief in traditional medicine (19 percent) and pregnancy without legitimate husbands (19 percent). Twelve percent gave the stigma attached to teenage pregnancy, while nine percent said the negative attitudes of nurses were the factors that prevented them from seeking for medical care.

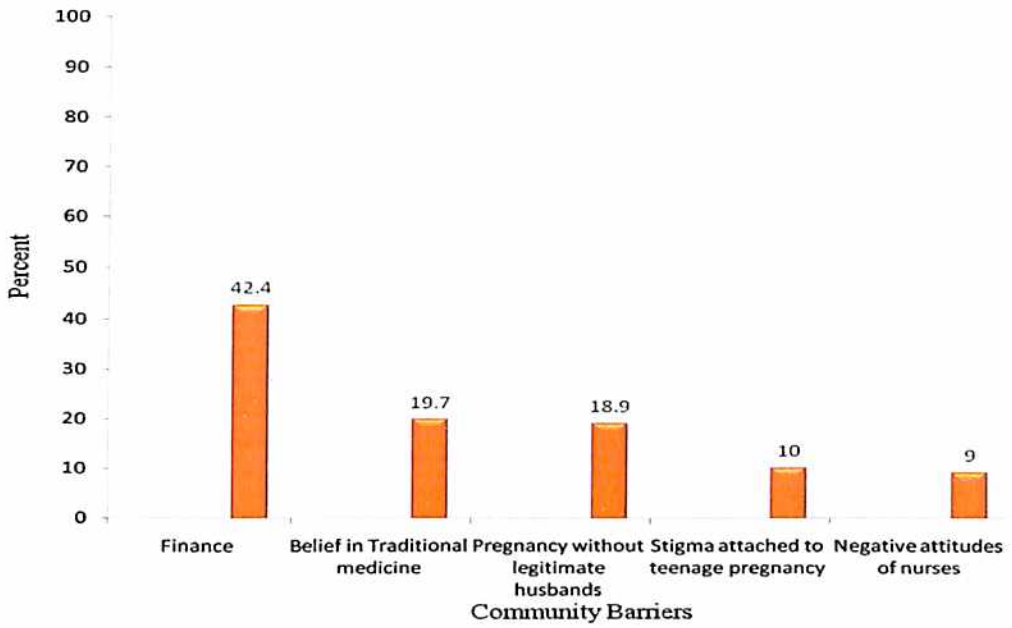

Figure 14: Community barriers to ANC attendance

Source: Fieldwork, 2008

Community motivating factors to ANC attendance

The major community factor that accounted for the active health seeking behaviour among the pregnant women was display of maternity clothing (50 percent). About 26 percent said people sought for medical care because they feared to be gossiped about that they had no money to visit ANC, 10 percent said easy delivery by pregnant women who visited health facilities regularly motivated others to seek for medical care while another 10 percent said community involvement promoted health seeking behaviour of pregnant women. A very few (4 percent) said fear of complications caused people to seek medical care (Table 20)

Table 20: Community motivating factors to ANC attendance

Factors that encouraged visits	Frequency	Percentage (%)
Dressing	49	50.0
Gossip	25	25.5
Easy delivery	10	10.2
Community involvement	10	10.2
Fear of complications	4	4.1
Total	98	100.0

Source: Fieldwork, 2008

Summary and conclusion

Malaria and its related diseases are the major health problems encountered by pregnant women in the Twifo Praso Health District.

Most women knew that pregnancy could make them susceptible to diseases of which malaria is the most common. All the women interviewed, were aware of the intervention (SP-based IPT) that had been put in place to curb malaria, however, patronage was low because of lack of funds and of less participatory roles by some stakeholders. Certain factors in the community also prevented pregnant women from seeking for medical care, and these were finance, belief in traditional medicine, and pregnancy without legitimate husbands. Others were stigma attached to teenage pregnancy, and negative attitudes of nurses.

Women in the Twifo Praso Health District are at risk of malaria infection and are aware of the intervention that can help keep them from the disease, however, certain individual and community factors prevent them from patronising the intervention.

CHAPTER FIVE

INSTITUTIONAL ISSUES AND ALTERNATIVE INTERVENTIONS TO INTERMITTENT PREVENTIVE TREATMENT OF MALARIA

Introduction

Malaria is endemic throughout Ghana and continues to be a major public health problem (GSS, 2004). In 1999, Ghana joined international effort to control malaria under the Roll Back Malaria (RBM) initiative (GSS, 2004). One of the objectives of the initiative was to ensure that at least 60 percent of all pregnant women who are at risk of malaria, especially those in their first pregnancies, have access to chemoprophylaxis or intermittent preventive treatment. In 2003, The Ministry of Health and the Ghana National Malaria Control Programme adopted the SP- based IPT to control malaria among pregnant women (GSS, 2004). In trying to adopt the method five different components of access were identified. These were the physical availability of services, distance and time to facility, economic and other costs associated with the use of the services, cultural and social cost, and quality of services offered (WHO, 2003). This chapter examines the access of pregnant women to western medical health care and the alternative interventions available to them in the Twifo Praso Health District.

Distance travelled, travel time and cost of travel

Twifo Hemang Lower Denkyira District is predominantly rural (GHS, 2005). In this rural area, distance to modern antenatal care providers can be quite long. Table 21 Shows that some of the pregnant women travelled for long distances to reach the nearest health facility for antenatal care. This is

represented by more than half (50.4 percent) of the respondents who travelled between 4.5-16 kilometers to health facility. Nearly 49.6 percent of the women however travelled for about four kilometers for the same purpose. The average distance travelled by the pregnant women to a health facility was 5.3 kilometers. In the situation where a pregnant woman was not able to get a vehicle (to visit health facility), she would not visit antenatal care, and that negatively affected compliance with ANC interventions and with SP-based IPT.

The women provided responses to the time they spent in making a return visit. Table 21 shows that even though about 67 percent of the respondents made a return visit in about six hours, 33 percent, however, spent six and a half to twelfth hours for a return visit. Distance and travel time most likely reduced pregnant women's demand for antenatal care and its consequent compliance to health interventions.

With regard to cost of a return trip, more than two thirds (77 percent) of the respondents spent about GH¢3 while less than a third (23 percent) spent GH¢3.5 or more. On the average, each pregnant woman spent GH¢3 (US$1.9) for a return trip (Table 21). The average income of the respondents was GH¢143 (US$89) per month. Spending GH¢3 out of this amount for just a return trip would have some effect (on the income of the respondents), hence, their subsequent visits.

Table 21: Distance travelled, travel time and cost of travel

	Frequency	Percentage (%)
Distance travelled		
0-4km	67	49.6
4.5-8km	40	29.7
8.5-12km	17	12.6
12.5-16km	11	8.1
Travel time		
3hours or less	33	24.5
3.5-6hours	57	42.2
6.5-9hours	38	28.1
9.5-12hours	7	5.2
Cost of travel		
Less than GH¢1	6	4.4
GH¢1.5-GH¢2	62	45.9
GH¢2.5-GH¢3	36	26.7
GH¢3.5-GH¢4	12	8.9
GH¢4.5-GH¢5	7	5.2
More than GH¢5	12	8.9

Source: Fieldwork, 2008

Access to transport

Some of the interviewed respondents faced transportation problems in accessing health care. More than halve of them (60 percent) had no problem,

however, 40 percent encountered one problem or the other. Twenty nine percent of the respondents explained that whenever it rained the road got flooded which made it difficult for them to travel to health centers. Other reasons were lack of vehicle (10 percent) and high cost of travel (1.5 percent) (Figure 15).

When asked how the problems they encountered influenced their visits, 33 percent said they get to the health facility very tired, about 30 percent said though they made the visit, but reached the health facility late, 24 percent did not pay a visit at all, while 13 percent postponed the visit to a later date (Figure 16). It is likely that those who postponed the visit did not make it at all. A total of 37 percent of the respondents with problems most likely did not make the visit and this probably affected compliance to antenatal care packages including prevention and treatment of malaria.

One Senior Medical Officer at Twifo Praso Hospital, in an interview, confirmed the absenteeism with this comment:

> *Some of the pregnant women do not pay regular visits. They visit today and tomorrow they will not come; but the fault is not entirely theirs. This is because sometimes it rains so heavily that the roads become flooded and vehicles are not able to use them. When it happens like that, those in the villages where the roads have been blocked do not visit the health facility. Another problem these people face is that when market is not in session, vehicles do not ply on the roads frequently; the women*

therefore find it difficult to get transport to visit the ANC.

The worse thing is that some don't come at all.

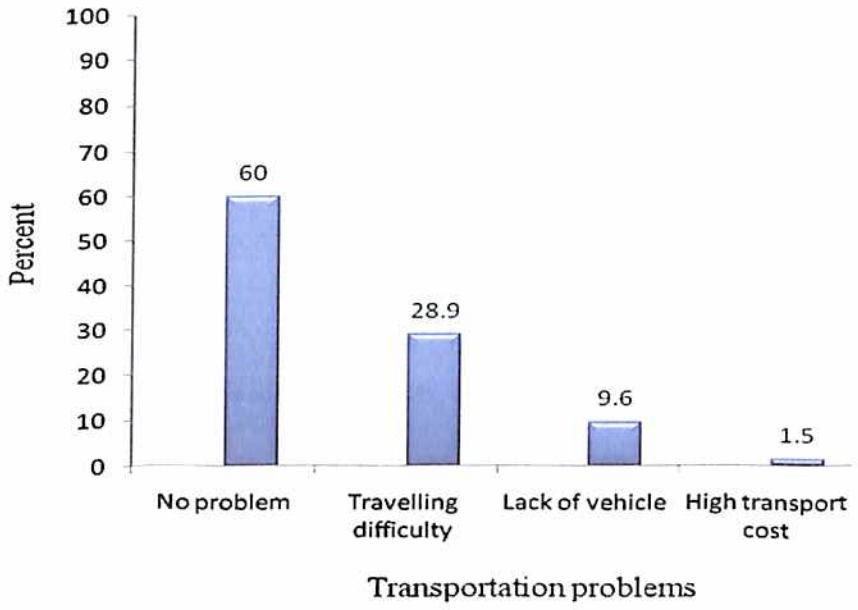

Figure 15: Access to transport

Source: Fieldwork, 2008

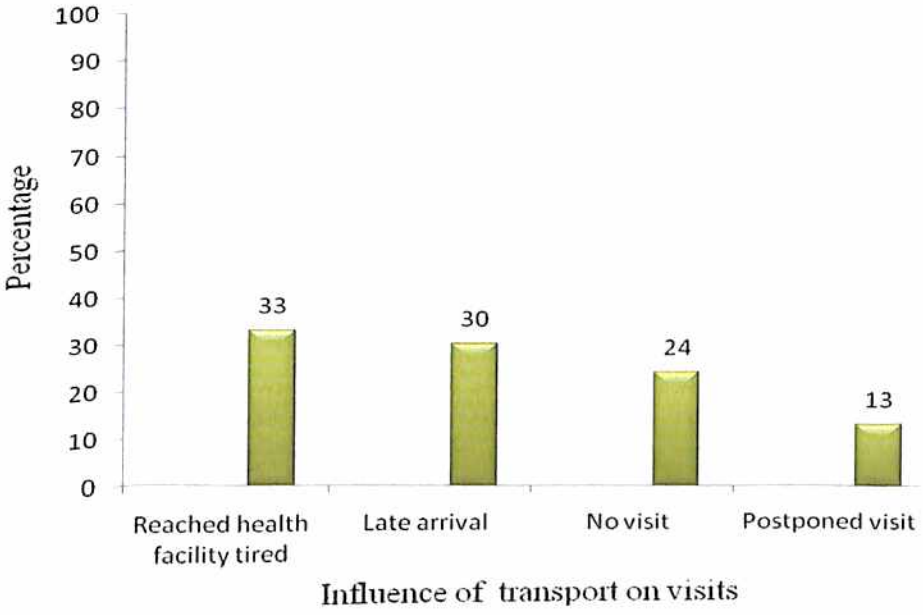

Figure 16: Influence of transport on visits

Source: Fieldwork, 2008

Quality of services offered by health facilities

Perceptions of the quality of services rendered to clients can influence the level of patronage, this is because consumers will pay or patronise a commodity or service whose price is equal to the satisfaction they will derive from it. Quality service includes relationship between clients and service providers, supervision, safety and effectiveness of prescribed regimens.

Attitude of the service providers

Among the variables associated with compliance, provider-client interactions are the most mentioned; this is because provider-client interaction can easily discourage patients from adhering to medical regimens and this can result in non compliance (Berg et al., 2006). The assessment of the service providers by the respondents presented in Table 22 shows that 55.6 percent described the attitude of the service providers as desirable, whilst 44.4 percent considered it as not desirable. In a discussion at Twifo Praso a woman said:

> *Some nurses are so impatient and use too many abusive words on us. Some would insult you only when you disobey them by not reporting early or not taking your drugs; but others would insult you for no apparent reason. I used to visit the Health Centre, but because the nurse there was always insulting and shouting at me, I stopped visiting the facility for months. My mother had to scold me before I went to the hospital (17 year old JHS drop out with no legitimate husband).*

Table 22: Attitude of service providers

Attitude	Frequency	Percentage (%)
Very good	20	14.8
Good	35	26.0
Satisfactory	20	14.8
Bad	30	22.2
Very bad	30	22.2
Total	135	100.0

Source: Fieldwork, 2008

Strategy for regular patronage

Very few (two percent) of the pregnant women were reminded by the health workers to take IPT any time they visited the health facility. About 60 percent said nurses in charge recorded the dates and the number of doses they took down to serve as a guide, while 40 percent said nothing was done by the nurses to ensure their regular patronage of the intervention (Table 23). Lack of proper record keeping as a guide to the respondents probably was partly responsible for the low compliance of SP-based IPT in the Twifo Praso Health District.

Table 23: Strategy for regular patronage

Strategy for ensuring regular patronage	Frequency	Percentage (%)
Midwives remindered us	2	1.6
Dates were recorded for us	76	59.8
Nothing	49	38.6
Total	127	100.0

Source: Fieldwork, 2008

Supervision of the SP-based IPT

All the women said they took their IPT drug at the health facility (Table 24). When asked why they took their drug at the health facility, 63.7 percent said the midwives supervised them, while 34.8 said the midwives feared that if they took the drug home they would probably throw it away hence they were forced to take it there. Consequently, almost all (98.5 percent) of them took their IPT drug under supervision as observed by one midwife who said that:

> *Some of the pregnant women throw the IPT drug away even at the hospital. Others pretend as if they have taken it and hide it in their mouths to be thrown away later. We have to observe them very closely and supervise them to the extent of providing water to those who don't have. In spite of all this strict supervision, some of them still throw the drug away. The drug creates a lot of discomfort for them and we always advise them to eat before they take it, which they do. What can be done to help them is probably to change the drug.*

Table 24: Supervision of the SP-based IPT

Reason	Frequency	Percentage
Supervised by midwife	86	63.7
I decided to take it	2	1.5
Fear of being thrown away	47	34.8
Total	135	100.0

Source: Fieldwork, 2008

Side effects of SP-based IPT

Drugs given on regular basis to children or pregnant women must be safe. Several women (44 percent) experienced nausea when they took the drug; however, 46 percent experienced no side effect. In all, 54 percent (of the respondents) experienced some side effects (Figure 17). An interview with the Senior Public Health Nurse at Twifo Praso Health Directorate confirmed the experience of side effect that:

> *The sulphadoxine pyrimethamine based Intermittent Preventive Treatment helps to protect pregnant women from malaria, but some complain of dizziness, vomiting and itching when they take it. Some become restless and have to lie down for a while before they recover. I cannot say for sure, but I believe some of them make deliberate efforts to avoid it. What can be done to save the situation is probably to add a drug that will neutralize the side effects or change the SP for them.*

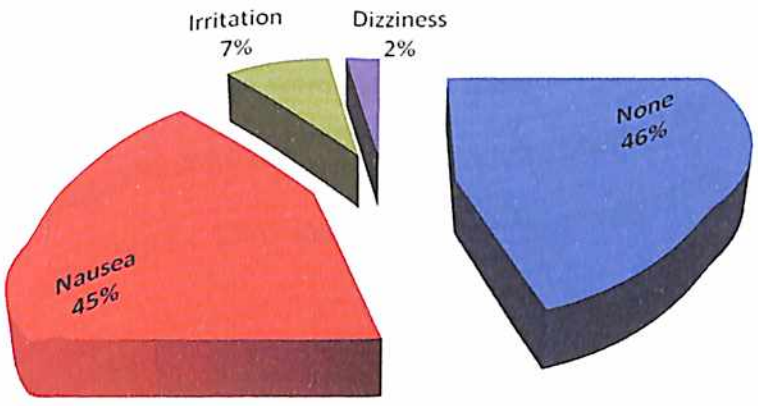

Figure 17: Side effects of SP-based IPT

Source: Fieldwork, 2008

Effectiveness of IPT

The effectiveness of a recommended regimen, whether orthodox or traditional, is very important in determining the completion of its full dosage by patients. The majority of the respondents (94 percent) found the SP-based IPT drug to be effective whiles a few (six percent) said it was not effective (Table 25). The six percent who said the SP-based IPT they took was not effective appear insignificant.

Table 25: Effectiveness of SP-based IPT

Effectiveness	Frequency	Percentage (%)
Very effective	14	10.4
Effective	100	74.1
Moderately effective	13	9.6
Not effective	8	5.9
Total	135	100.0

Source: Fieldwork, 2008

Alternative interventions to SP-based IPT

The respondents were made to respond to questions on knowledge of any alternative malaria drug to SP-based IPT, whether they had ever used any of the alternatives they knew, sources, and why they went in for the alternatives.

For malaria treatment, 32 percent said they knew of chloroquine; 34 percent said they knew of artesunate armodiaquine, while 33 percent said they knew of traditional medicine (Table 26). From the above, it is evident that the women had knowledge of traditional medicine for the prevention and treatment of malaria and were likely to use it if accessing medical intervention proved difficult.

Table 26: Knowledge of alternative interventions to SP-based IPT

Response	Frequency	Percentage (%)
Chloroquine	43	31.9
Artesunate armodiaquine	46	34.1
Traditional medicine	45	33.3
None	1	0.7
Total	135	100.0

Source: Fieldwork, 2008

Use of other preventive drug

The use of another drug or commodity as a substitute or compliment to the drug or commodity prescribed, may affect the use of the prescribed drug or commodity. Hence the prescribed drug or commodity must be protected to avoid competition.

Figure 18 shows that a little over a third (37 percent) of the respondents used artesunate armodiaquine; a third (33 percent) used chloroquine while slightly over a fifth (22 percent) used traditional medicine. A few (eight percent), however, used none of the alternatives. The majority of the women used other drugs including traditional medicine. This might have contributed to the low compliance to SP-based IPT in the study area.

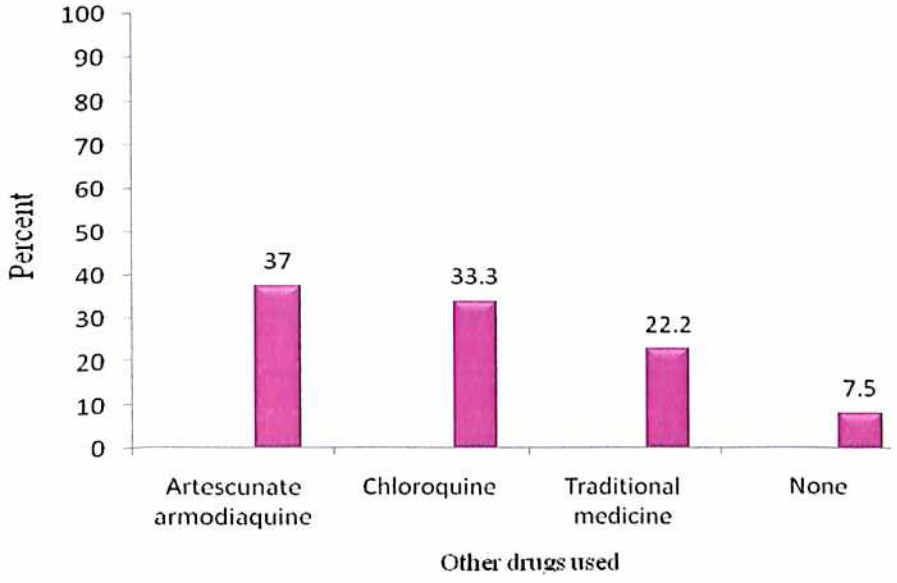

Figure 18: Preventive drugs used

Source: Fieldwork, 2008

Sources of preventive drug used

Patients are known to use medicine from family members, relations, traditional birth attendants, and sometimes self-medicate (Enato & okhamafe, 2005). Women at Twifo Praso Health district were asked the sources of the alternative medicine which they used. Some of them (44 percent) mentioned health facility, others (20 percent) got it from a pharmacist and yet others (12 percent) had it from a chemical drug seller. Over a fifth (24 percent) got their

other medicine from traditional birth attendants, elderly family members themselves (Table 27).

A significant proportion (24 percent) of the pregnant women got their alternative medicine from traditional birth attendants, elderly family members and themselves. This is the indication that pregnant women sometimes opt for alternative health care services provided at the community level where relatives and traditional birth attendants play a role. They therefore, forgo some of the services provided at the health facilities leading to low compliance.

Table 27: Sources of preventive drugs used

Source	Frequency	Percentage (%)
Health facility	55	44.0
Pharmacist	25	20.0
Chemical drug seller	15	12.0
Traditional birth attendants	15	12.0
Elderly family member	10	8.0
Self	5	4.0
Total	125	100.0

Source: Fieldwork, 2008

Reasons for alternative drugs used

The various answers given by respondents as the reasons why they went in for alternatives to the IPT are shown in Table 28. A larger proportion (43 percent) went in for alternatives because it was prescribed to them by their care providers. A large proportion (40 percent) had no money to visit the

health facility, while a small proportion (17 percent) used the alternative because they were attacked by malaria during the pregnancy. Lack of financial resource, as has already been identified, was one of the contributing factors to the low compliance to SP-based IPT in the study area.

Table 28: Reasons for alternative drugs used

Reason	Frequency	Percentage (%)
Care provider's prescription	57	43.2
Lack of money	53	40.1
Attacked by malaria	22	16.7
Total	132	100.0

Source: Fieldwork, 2008

Discussion

Health plays a major role in determining the level of productivity and the total development of the individual and of the nation. This is because healthy minds and bodies are the major engines in growth and development. However, man lives in an environment where pathogens which are disease causing organisms abound and man is the host. Diseases therefore afflict man and malaria is one of them.

In Ghana, malaria has been one of the leading causes of morbidity and mortality where the most vulnerable has been pregnant women and children under five years of age. Ghana has made efforts to control malaria under the Roll Back Malaria initiative. In 2003, The Ministry of Health and the Ghana National Malaria Control Programme adopted the IPT to control malaria

among pregnant women using sulphadoxine pyrimethamine also known as fansider. This policy required that from the second trimester of pregnancy, pregnant women were expected to receive three doses of the drug at monthly intervals. It was hoped, that this effort made by the Government of Ghana, if complied by the pregnant women would help to eradicate malaria by 2015.

However results from individual questionnaires, focus group discussions and in-depth interviews of women in parts of the Twifo Praso Health District of the Central Region raised some threats towards achieving this goal. Malaria being one of the leading causes of morbidity among pregnant women was evident in the study (see Table 9). About 65 percent of the women knew that the pregnancy itself could make them susceptible to diseases (Table 12) and all of them were aware of SP-based IPT of malaria (Table 13), nevertheless, only a few took the recommended three doses (Table 15). The question as to why the pregnant women knew the extent of their vulnerability to malaria and how to treat it but refused to patronise the intervention that had been put forward to curb the disease needs further analysis.

For instance, some of the women did not know when to patronise SP-based IPT of malaria during pregnancy, others did not know the interval after which the drug should be repeated and the number of times the drug should be administered (Table 14). These findings confirm what pertains in some developing countries such as Malawi in the reviewed literature where women's limited understanding of SP-based IPT among others have contributed to low compliance of the drug (Launiala & Honkasalo, 2007).

A key objective of maternal health programmes has been to ensure that women present themselves for ANC early in pregnancy in order to allow enough time for essential diagnosis and treatment regimens such as treatment of STI's and management of anaemia (WHO, 2003). The adoption of the SP-based IPT required that pregnant women should report early (in the first trimester) to enable them access the recommended doses. This was however contrary to the observation made in the study. About half of the pregnant women made their first ANC visit late (in the second and third trimesters) (Table 18). This make some of the women not to take all the recommended doses of SP-based IPT since timing of the first ANC visit determines the possible number of visits and consequently the interventions accessed. About 46 percent of the respondents attributed their late reporting to finance (Figure 13), some did not know they were pregnant while others said the time they visited ANC was the time they realised they were pregnant.

It is generally assumed that use of ANC must be lowest in the youngest and oldest age groups, because many of the younger pregnant women will be unmarried and unable or unwilling to use maternal health services and many of the older pregnant women will have ingrained cultural biases against formal health care (WHO, 2003). Eleven percent of the pregnant women were less than 20 years (Table 5). Some of the young females became pregnant without legitimate husbands (Table 6). This state has implications for their health – seeking behaviour since they may not have partners to support them. Most husbands were in subsistence farming while some were unemployed. The nature of husband's occupation (Table 8) and the

predominance of subsistence farming might have contributed to the husbands not having adequate resources to support their wives financially.

WHO (2003) observed that women living in urban areas are generally more likely to report four or more antenatal care visits. Similarly, urban women made more ANC visits than rural women (Table 19). This could have implications on the patronage of interventions in the study area since it is predominantly rural.

In the community, some factors discouraged the pregnant women from accessing medical care and these were finance, belief in traditional medicine and pregnancy without legitimate husbands, negative attitude towards teenage pregnancy and unprofessional attitude of nurses (Figure 14).

The study had shown that more than half of the respondents travelled over long distance and for long hours during their visits (Table 21). This, coupled with transportation problem (Figure 15), prevented some of them from attending antenatal care (Figure 16). This could have implications on the patronage of health care interventions such as failure to take the recommended doses of SP-based IPT.

The unprofessional attitudes of nurses (Table 22) and the fact that some said they were not reminded regularly to patronise the intervention (Table 23) is evidence that much effort was not put in by the health workers to ensure that pregnant women patronised SP-based IPT regularly. It was realised that the SP-based IPT drug had side effects, which could have implications on patronage as observed by Enato and Okhamafe (2005) that most pregnant women are more aware and worried about the side effects of antimalarial drugs than about the deleterious effects of malaria infection on

them and their babies. More than half of the respondents experienced side effects (nausea, vomiting, irritation and dizziness) (Figure 17) and six percent claimed that the drug was not effective (Table 25). The side effects experienced by the women and the ineffectiveness of the drug, were likely to discourage them from further patronage of the recommended doses.

About 93 percent of the respondents used alternative preventive drugs (Figure 18). The use of alternative intervention could have implications on the use of SP-based IPT for the prevention of malaria. Those Women who went for the alternative drugs- whether prescribed by a health worker or by themselves, certainly would not go for SP-based IPT; this therefore could reduce the intake of the recommended doses.

Accessibility to health facilities and the quality of services offered should be a matter of concern to the Ministry of Health and the Ghana Health Service. Herbal medicine, which is preferred by some pregnant women, should be incorporated into the health system in every district. Traditional birth attendants should be trained to administer the SP drug if possible.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter provides the summary of research findings, conclusions, and recommendations.

Summary

This study was undertaken to identify the individual and community factors that influence patronage of SP-based IPT by pregnant women in the Twifo Praso Health District in the Central Region of Ghana. It also analysed the institutional factors that influence the use of IPT by clients, and the use of alternative interventions to IPT by pregnant women in the district.

The Twifo Praso Health district was chosen out of the four districts at the Twifo Hemang Lower Denkyira District demarcated by the Ghana Health Service. This sub-district was chosen because it has the District Hospital and it serves as a referral point for pregnant women. Three data collection instruments comprising individual interview schedule, focus group discussion, and an in-depth interview guide were designed to gather primary data. The systematic random sampling, snowballing, and purposive sampling techniques were employed to sample the respondents. Using these sampling techniques, one hundred and sixty nine (169) respondents comprising one hundred and thirty five (135) individual respondents, five (5) key informants and twenty nine (29) focus group discussants were obtained.

Individual respondents provided data through questionnaires, while the key informants and focus group discussants responded to items in the in-depth

interview and focus group discussion guides respectively. Results from the individual interview schedules were analysed using the cross tabulation software of the Statistical Product for Service Solution (SPSS). Responses from the in-depth interviews and from the focus group discussions were hand recorded, categorised using tables and figures.

Main findings

Sixty two percent of the women were affected by malaria and its diseases during pregnancy. Other health problems were STI, pain, cough and rashes, conceptional bleeding, swollen feet and seizures. The majority knew that pregnancy itself could make them susceptible to diseases.

Almost 75 percent treated their health problems through the medical care they received, while 25 percent resorted to traditional medical care. The study found out that awareness of SP-based IPT among pregnant women was very high (100 percent) and sources of awareness were mostly from health workers.

Twenty three percent of the women did not know when to patronise SP-based IPT of malaria during pregnancy; about 44 percent did not know of the intervals after which SP-based IPT doses should be repeated and slightly over half (52 percent) did not know the number of times the drug should be administered. It was also observed that patronage of SP-based IPT was low.

Reasons associated with the low patronage were late and incomplete reporting, timely reporting but all dosage was not given, sick and could not take all, and early reporting with full patronage.

The average number of ANC visits was 3.3. This was equivalent to the national figure (3.3) recorded in 2006 but was below the WHO's recommended minimum of 4.0. It was also observed that urban women made more ANC visits than rural women. This probably was due to the fact that urban women had easy access to health facilities.

A negative but weak association was established between income and the number of ANC visits. Low incomes were associated with more visits while high incomes were associated with few visits. This was probably because the rich women could afford to buy medicines from drug stores and hence did not care about hospitals.

About 50 percent of the pregnant women made their first ANC visit late (in the second and third trimesters). Reasons given for the timing of the first ANC visit were lack of finance, realisation of pregnancy, ignorance of pregnancy and health problems.

Husbands, parents, and in-laws played major role in health care decision-making of pregnant women. However, the choice of health care type was generally done by pregnant women with less participatory role played by husbands, in-laws and parents. Husbands usually settled health care expenses; in-laws, parents, and pregnant women themselves contribute.

Ninety four percent of the pregnant women visited professional care providers; midwives were the most visited because they had been specially trained to take care of pregnant women.

Some factors in the communities that discouraged pregnant women from seeking conventional medical care were finance, belief in traditional medicine, pregnancy without legitimate husbands, stigma attached

to teenage pregnancy and negative attitude of nurses (Figure 14). Factors that urged pregnant women to go for conventional medical care were pregnant women dressed in maternity clothing, fear of being gossiped about, and role models. Others were community involvement and fear of complications.

Certain pregnant women refused to comply with the medical regimens because of the negative report about nurses, gossips, lack of maternity clothing and ineffective drugs.

Fifty two percent of the respondents travelled for 4-16 kilometers to visit an ANC. About 33 percent spent several hours (more than 6-12 hours) to make return visits. Transportation problems prevented some of the women (24 percent) from visiting an ANC or forced them to postpone their visits (13 percent).

Thirty nine percent of the women said no records were kept on their patronage of the intervention to serve as a strategy for regular patronage.

All the women took their SP drug at the health facility. When asked why, the majority (about 64 percent) said they were told and supervised by the nurses to do so. Some side effects respondents associated with SP-based IPT were nausea, vomiting, irritation and dizziness after taking their drugs, some (22.2 percent) reported using alternative traditional medicine for the prevention of malaria. Among reasons given for their action were lack of finance, care providers prescription and malaria attack.

Policy implications

Compliance with medical regimens by patients cannot be complete without the participation of others. There is therefore the need for stakeholders

to be sensitive to matters that border on health, especially malaria in pregnancy. Malaria and its related diseases are the major health problems encountered by pregnant women in the Twifo Praso Health District. This calls for efforts by the government and other stakeholders to combat the disease in order to avoid the devastating effects that may result. Malaria can cause anaemia, abortion and stillbirth, low birth weight in infants and infant mortality. For example, in 2005 and 2006, 40 percent of pregnant women in the Twifo Hemang Lower Denkyira District experienced high anaemia during pregnancy, 0.3 percent had stillbirth and 5.1 percent had low birth weight infants. All these were attributed to malaria in pregnancy.

Most women knew that pregnancy could make them susceptible to diseases of which malaria is the most common. All the women interviewed were aware of the intervention, however, patronage was low because of less participatory roles by some stakeholders. The on-going education on malaria and the importance of the SP-based IPT should be intensified to achieve high patronage of the drug.

Transportation problems negatively affected compliance to SP-based IPT hence policies should be implemented to solve such problems to avoid future decreases in the patronage of the intervention,

Most women experienced side effects, which probably contributed to the low patronage because women tend to worry about the side effects of drugs than the deleterious effects of diseases. The women should either be informed by health workers that it is normal to have these side effects, which are not detrimental to their health or to that of their babies or there should be outright change of the drug when side effects persist.

The fact that some pregnant women use alternative interventions to SP-based IPT shows the need for thorough investigation into the preference of alternative interventions. Evaluation of traditional medicine should be done in order to put in place the necessary measures to incorporate it into the orthodox health care system. When pregnant women resort to alternative interventions, they forgo the SP drug, which is specially designed to prevent malaria among them.

Validation of conceptual framework

The framework adopted for the study considered factors that influenced the pregnant women's decision to make use of antenatal care. It showed how the pregnant women decided to make use of the antenatal care after weighing its cost against the utility gain they expected from it when their standard of living and other personal features were known and supportive. The utility that they expected to get, depended on their knowledge of the availability of modern health care, and on how to use it, on the perceived quality of offered antenatal care, and on their perceived need for it.

According to the data gathered from the Twifo Praso Health District, the pregnant women were aware of the SP-based IPT of malaria, and knew they needed it because they were vulnerable to the disease. However, directives that were given to them on regimen characteristics, the relationship that existed between them and their service providers and the side effects of the drugs they took were not favourable. The cost of antenatal care included all the expenses they incurred while receiving antenatal care. These according

to the data gathered included transportation problems and how it influenced visits to ANC.

Standard of living included husband's occupation and religion. Whilst religion was supportive because all the religions of the respondents were those that allowed the use of medical care, husband's occupation was not because most of the husband's were either unemployed or were involved in peasant farming. Decisions as to the type of care provider and the number of antenatal visits were then made. The pregnant women's usage of the SP-based IPT of malaria was low, probably because, the utility they expected to get from it was not equal to the cost of accessing it. The current study thus, partially confirmed the Conceptual framework.

Conclusions

Malaria and its related diseases have been some of the major health problems confronting pregnant women in Ghana. The Ghana Health Service and the Ministry of Health have put forward interventions to curb the problem however, the interventions have not been fully embraced by the targets. Providing solutions to the low patronage requires examination of the factors responsible for this challenge.

Observations from the study indicate that the majority of pregnant women know that pregnancy makes them susceptible to diseases, especially, malaria and are highly aware of the SP-based IPT intervention, nevertheless, only a few take the recommended four doses. An average visit below the WHO's recommended was recorded; this was due to late reporting and to poverty. Other community factors such as belief in traditional medicine,

pregnancy without legitimate husbands, unprofessional attitude of nurses and teenage pregnancy were contributory factors.

Long distances and transportation problems were encountered. Unprofessional attitude of nurses, lack of guide to effective patronage, side effects experienced by more than half of the respondents and the ineffectiveness of drug were discouraging factors. Majority of the respondents used alternative preventive drugs in which herbal medicine formed part. These factors if not solved are likely to cause prolonged decreases in SP-based IPT coverage in the country.

Recommendations

It is very necessary for the Ministry of Health and the Ghana National Malaria Control Programme to involve all stakeholders - family, friends, the community, health workers and the government in combating malaria disease among pregnant women. This is because each stakeholder plays participatory role in the compliance of health care regimens.

There is the need for the Ministry of Health to intensify health education and sensitisation of beneficiaries and community members on the one hand, and addressing staff motivation factors and quality of care through training, supervision and monitoring of health service providers on the other. This requires significant investment in training. It is, therefore, important for the Government to involve all the possible fund raising options and lobbying towards making this a success.

The problem of teenage pregnancy has been an age old problem and this requires both the Government and the larger society to combat it. The Government should intensify education on teenage pregnancy and its effects

whiles mothers, teachers, traditional chiefs and elders also organise constant durbars to sensitise the populace. The problem of the nature of occupation and lack of finance depends largely on the individuals who have to sacrifice other things they cherish for education to enable them acquire the necessary skills for a better job and meaningful salary.

Even though the government has already helped with the building of a number of Community Health Planning and Services (CHPS) compounds, many settlements are without CHPS compounds. The Government, Ministry of Health and Ghana Health Service should provide more CHPS compounds especially in settlements that do not have the facility. In addition, the provision of transport (which is already in operation) should be extended to all settlements to enable rural dwellers have easy access to medical health care.

Apart from the alternative malaria drugs such as the artemisinin combination therapy which are already in the system, the government together with the other health working bodies should research more into plant medicine (herbal medicine). A centre for research into plant medicine should be attached to the District Hospital (the reference point) in order to include traditional medicine, which some women prefer, in the system.

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APPENDICES

APPENDIX A

INDIVIDUAL INTERVIEW SCHEDULE

COMPLIANCE TO INTERMITTENT PREVENTIVE TREATMENT OF MALARIA AMONG PREGNANT WOMEN IN THE TWIFO PRASO HEALTH DISTRICT

IDENTIFICATION OF PREGNANT WOMEN

SUB-DISTRICT.....

COMMUNITY.....

LOCALITY NAME.....

HOUSE NUMBER.....

INTERVIEWER VISITS

DATE	DAY	MONTH	YEAR
.....	.....	.....	.....

INTERVIEWER'S NAME.....

RESULT 1 Completed 4 Refused

2 Not at home 5 Partly Completed

3 Postponed 6 Incapacitated

NEXT VISIT Date Time

....

Informed consent

Good day, Gentleman/Lady. My name is ..... and a student from the University of Cape Coast. I am conducting a study on Compliance to Intermittent Preventive Treatment of Malaria among pregnant women in Twifo Hemang Lower Denkyira District. The purpose of this study is to identify factors leading to low patronage of Sulphadixine Pyrimethamine (SP) based Intermittent Preventive Treatment (IPT) of malaria popularly known as Fansidar. I would be most grateful if you could take part in the study by providing responses to the questions below. The study is primarily for academic work, and therefore you are assured of confidentiality and anonymity in any information that you provide – we will not share information you provide in the interview schedule with anyone. No information that could identify you or your household will be released. Participation in this study is voluntary and you can choose not to answer any individual or all of the questions. However, we hope that you will participate in this study since your views are important.

Do you agree to participate in this study?'' YES [ ] NO [ ]

I certify that I have read this statement to the respondent, that she fully understood its meaning and she agreed to participate in this study.

....

Interviewer's signature Respondent **signature/Initials**

SECTION A: GENERAL HEALTH

No.	Question	Response Options	
A1.	What health problems did you face during your pregnancy?	....	
A2.	Why did you face these problems?	....	
A3.	How did you solve the health problems?	....	
A4.	What will you do to make sure that you do not face these health problems when you are pregnant?	....	
A5.	What would you suggest to be done by the government to help prevent health problems in pregnancy?	....	

SECTION B: BACKGROUND DATA

No.	Question	Response Options	
B1.	Age (in completed years)	[ ] [ ]	
B2.	Marital Status	Never married.....1 Married .....2 Widow .....3 Separated .....4 Divorced 5	
B3..	Number of children born alive	[ ] [ ]	
B4.	Number of children still alive	[ ] [ ]	
B5.	What is the highest level of school you have attained?	None .....1 Primary .....2 Middle JSS.....3 Higher.....4	
B6.	What is your occupation?	Farming .....1 Fish mongering.....2 Petty Trading.....3 Seamstress.....4 Hairdresser .....5 Apprentice .....6 House wife.....7 Employed in the formal sector.....8	

		Unemployed .....9 Other (Specify).....10	
B7.	What is your husband's occupation if married?	Farming .....1 Fishing .....2 Tradesman .....3 Driver .....4 Craftsman.....5 Tailor .....6 Daily Labourer.....7 Unemployed .....8 Employed in the formal sector.....9 Other (Specify).....10	
B8.	What is your income per month?	Less than GH₵100.....1 GH₵101- GH₵200.....2 GH₵201- GH₵300.....3 GH₵301- GH₵400.....4 GH₵401-GH₵500.....5 GH₵501-GH₵600.....6 More than GH₵600.....7 Other (Specify).....8	→ Q. B8

B9.	What is your religion?	No religion.....1 Catholic .....2 Protestant .....3 Pentecostal .....4 Charismatic .....5 Islam .....6 Traditional .....7 Other (Specify).....8	

SECTION C:

HOUSEHOLD HEALTH SEEKING BEHAVIOUR

No.	Question	Response Option	Skip to
C1	Are you aware of SP-based IPT (Fansider, Palider or Malafan) of malaria for pregnant women?	Yes .....1 No .....2 →	D1
C2	If yes from what sources?	Television .....1 Radio .....2 Newspaper/Magazine.....3 Health poster.....4 Leaflet/Brochure.....5	

		Health worker.....6 Other (Specify).....7	
C3	Have you ever used IPT during pregnancy?	Yes .....1 No 2	→ D1
C4	If yes from what source?	Health facility.....1 Primary health care nurse.....2 A pharmacy.....3 A chemical store.....4 From a friend.....5 Other (Specify).....6	
C5	How many doses did you take?	[ ] [ ]	
C6	Why did you take that number of doses?	....	

SECTION D: HOUSEHOLD DECISION MAKING

No	Question	Response Option	Skip to
D1	What health facility do you know in this community?	....	
D2	Have you ever visited the facility before?	Yes .....1 No.....2	

D3	Who takes the final decision when seeking health care?	Self .....1 Husband .....2 Parents .....3 In-laws.....4 Siblings .....5 Other (Specify).....6	
D4	If not self why that person?	....	
D5	How many months pregnant were you when you first visited antenatal care?	[ ] [ ]	
D6	Why that time of first visit?	....	
D7	How many times did you visit antenatal care?	[ ] [ ]	
D8	Who chose the type of health care you used?	Self .....1 Husband .....2 Parents .....3 In-laws .....4 Siblings .....5 Employers .....6 Other (Specify).....7	
D9	What type of health	Modern health care.....1	

	care was chosen?	Traditional health care.....2	
D10	Why was that type of health care chosen?	....	
D11	Who paid for your health care bills?	Self .....1 Husband .....2 Parents .....3 In-laws .....4 Siblings .....5 Employers .....6 Others (Specify).....7	

SECTION E: COMMUNITY FACTORS INFLUENCING HEALTH SEEKING BEHAVIORS OF PREGNANT WOMEN

No	Question	Response Option	
E1	List in order of importance five things in your community that hindered ANC visits	1..... 2..... 3..... 4..... 5.....	
E2	List in order of importance five things in your community that promoted ANC visits	1..... 2..... 3..... 4..... 5.....	

E3	List in order of importance five behaviours among pregnant women in your community that prevented them from ANC visits	1..... 2..... 3..... 4..... 5.....	

SECTION F: ACCESS TO HEALTH CARE

No	Question	Response Option	Skip to
F1	What is the distance from your home to the health facility you visited?	[ ] [ ]	
F2	How long did it take you to make a return visit?	[ ] [ ]	
F3	How much did you spend on your return trip?	[ ] [ ]	
F4	What problems did you face on your journey to the health facility?	No vehicles .....1 Difficulty in getting transport..2 High transport cost .....3 No problem .....4 Other (Specify).....5	→ G1
F5	How did the problem influence your visit?	Discourage me from further visit.....	

		1 Postponed the visit.....2 Walked to the health facility.....3 Reached health facility late .....4 Other (Specify).....5	

SECTION G: HEALTH TALKS, INFORMATION AND COMMUNICATION

No	Question	Response Option	Skip to
G1	Did you receive health talks on malaria?	Yes .....1 No 2	→ G16
G2	If yes source?	District Health Management Team.....1 Midwife at the District Hospital.....2 A nurse at the local health facility.....3 Community Health Nurse.....4 Other (Specify).....5	
G3	Mode of communication	On television.....1 On radio.....2 Lecture/Seminar.....3 Brochure/Print materials.....4	

		Video show.....5 Other (Specify).....6	
G4	What language was used to educate you?	Twi .....1 Ewe .....2 Ga –Adangbe.....3 Dagbani .....4 Guan .....5 English.....6	
G5	Indicate the time spent in educating you	[ ] [ ]	
G6	Did you understand the health talks given you on malaria?	Yes .....1 No 2	
G7	If yes what causes malaria?	.....	
G8	How is it caused?	....	
G9	What groups of people are affected most?	.....	
G10	What are the effects of malaria in pregnancy?	....	

G11	How can pregnant women prevent malaria?	....	
G12	What time in pregnancy were you told to patronise IPT?	.....	
G13	How many times were you told to patronise IPT?	.....	
G14	Were you told of the intervals within which to take IPT?	Yes .....1 No.....2	
G15	Rank in order of understanding the education you received	Very well .....1 Well .....2 Quite well .....3 Not quite well .....4 Did not understand.....5	
G16	What was done to ensure your regular patronage?	Health workers reminded us.....1 We were empowered to remind them.....2 Dates were written for us.....3 Other (Specify).....4	

SECTION H: QUALITY OF SERVICES OFFERED

No	Question	Response Option	Skip to
H1	What type of health care provider did you visit?	Doctor .....1 Midwife .....2 Nurse/Medical Assistant .....3 Other (Specify).....4	
H2	Why such care provider?	....	
H3	Did you always meet your care provider?	Yes .....1 No 2	→ H5
H4	If no what were the reasons given?	....	
H5	How would you asses the attitude of your service provider?	Very good .....1 Good .....2 Satisfactory.....3 Bad .....4 Very bad.....5	

H6	Indicate the time you spent at the facility for treatment	.....	
H7	Why did you spend such a time there (give reasons)	....	
H8	Where did you take your SP-based IPT pills?	At the health facility.....1 At home.....2 Other (Specify).....3	
H9	Why did you take it there?	The nurse supervise me to take it...1 I decided to take it there.....2 Other (Specify).....3	
H10	How did you fell when you took the SP-based IPT?	Had stomach pains.....1 Had nausea.....2 Vomited .....3 Had irritation .....4 Dizziness .....5 Other (Specify).....6	
H11	How would you rate the effectiveness of SP-based IPT?	Very effective.....1 Effective .....2 Moderately effective.....3 Low effectiveness .....4 Very low effectiveness.....5	

SECTION I: ALTERNATIVE INTERVENTIONS TO SP-BASED IPT

No	Question	Response Option	
I1	What malaria prevention drug do you know apart from SP-based IPT?	Chloroquine .....1 Artesunate armodiaquine.....2 Traditional medicine .....3 Other (Specify) 4	
I2	What malaria treatment drug do you know apart from SP-based IPT?	Chloroquine .....1 Artesunate armodiaquine .....2 Traditional medicine .....3 Other (Specify) 4	
I3	Have you ever used any of these?	Yes .....1 No 2	
I4	If yes which one?	.....	
I5	Source?	Health facility .....1 Pharmacist .....2 Chemical drug seller .....3 Traditional birth attendant .....4 Elderly family member .....5 Self .....6 Other (Specify) 7	
I6	Why did you go in for alternative to SP-based IPT?	Health worker's prescription.....1 Shortage of the drug at health facility...2 Had side effect .....3 No money to visit health facility .....4 Other (Specify) 5	

I7	How was the out come of the alternative drug you took?	....	

Thank you very much for your time and cooperation

APPENDIX B

IN-DEPTH INTERVIEW GUIDE FOR HEALTH WORKERS

Warm up and Explanation

A. Introduction

Good day, Gentleman/Lady. My name is Hannah Owusua Drah. I am a student from the University of Cape Coast. I am conducting a study on Compliance to Intermittent Preventive Treatment of Malaria among pregnant women in Twifo Hemang Lower Denkyira District.

B. Reasons for the Study

I want to discuss with you issues concerning compliance to Intermittent Preventive Treatment of malaria among pregnant women with particular emphasis on your background characteristics, general health of pregnant women in this district and general issues on malaria. I will also discuss with you the level of awareness created by the institution as well as how equipped this institution is.

C Procedure and Consent

(Explain use of tape recorder)

This discussion is primarily for academic work, and therefore you are assured of confidentiality and anonymity in any information that you provide. I am interested in learning from you all your experiences and opinions about this topic. All your comments; both positive and negative are needed. To enable me record all comments, I grieve your indulgence to use a tape recorder to record the discussion. Information gathered from you will be combined with

those of other participants so that information provided by you will not be identified by your name. You may stop the discussion at any time that you want. I hope you will find the discussion interesting.

Do you agree to participate in this discussion?

Yes.....[ ] No.....[ ]

If yes Sign...../ Thumb Print.....

Date .....

DISCUSSION GUIDE

1 Background Characteristics of Interviewee

- What is your first name?
- Sex of respondent
- How old are you?
- What is your status in this facility?
- How long have you been working in this facility?
- What level of education have you completed? e.g. (Poly)
- What is your religion?
- What is your occupation

2 General Health of Pregnant Women

- What health problems do pregnant women face in this community?
- Why do they face these problems?
- How are these problems solved?
- What should be done to ensure that pregnant women do not face these health problems?

- Who should do that?

3 General Issues on Malaria and IPT

Who are the most vulnerable group for malaria in this community?

Why do you say so? (If pregnant women are not mentioned ask)

What interventions have the government put in place to help prevent malaria among pregnant women?

What interventions have the government put in place to help treat malaria among pregnant women?

How successful are these interventions in the prevention and treatment of malaria among pregnant women?

4 Intermittent Preventive Treatment Awareness Creation by the Institution

How do pregnant women get to know of IPT?

What are some of the measures you have put in place to ensure that pregnant women become aware of this intervention and its importance?

How was this awareness creation carried out?

What was the response?

What has been the outcome of this awareness creation?

5 Level of Equipment of the Institution

What training has the institution given to nurses and other service providers in charge of IPT?

How was it funded?

How was the training done?

Why was this training given to them?

How do you (service providers) get the SP-based IPT to administer?

What challenges do you face in the acquisition and administration of IPT? (Probe for the various challenges)

Why are these challenges?

What challenges do you face with your encounter with pregnant women? How can these challenges be solved?

Who should do what? – What should PREGNANT WOMEN, MINISTRY OF HEALTH/GHANA HEALTH SERVICE AND YOU AS A PERSON do to help solve these challenges?

Thank you for your participation

APPENDIX C

FOCUS GROUP DISCUSSION GUIDE FOR PREGNANT WOMEN

(2005-2007)

Warm up and Explanation

A Introduction

Good day, Gentleman/Lady. My name is Hannah Owusua Drah. I am a student from the University of Cape Coast. I am conducting a study on Compliance to Intermittent Preventive Treatment of Malaria among pregnant women in Twifo Hemang Lower Denkyira District.

B. **Reasons for the Study**

I want to discuss with you issues concerning compliance to Intermittent Preventive Treatment of malaria among pregnant women with particular emphasis on your background characteristics, general health of pregnant women in this district and general issues on malaria. I will also discuss with you the level of awareness created by the institution as well as how equipped this institution is.

C. **Procedure and Consent**

(Explain use of tape recorder)

This discussion is primarily for academic work, and therefore you are assured of confidentiality and anonymity in any information that you provide. I am interested in learning from you all your experiences and opinions about this topic. All your comments; both positive and negative are needed. To enable me record all comments, I grieve your indulgence to use a tape

recorder to record the discussion. Information gathered from you will be combined with those of other participants so that information provided by you will not be identified by your name. You may stop the discussion at any time that you want. I hope you will find the discussion interesting.

Do you agree to participate in this discussion?

Yes.....[ ] No.....[ ]

If yes Sign...../Thumb Print.....

Date .....

DISCUSSION GUIDE

1 General Health of Pregnant Women

What health problems do pregnant women face in this community?

Why do they face these problems?

How are the problems solved?

What should be done to make sure that pregnant women do not face these problems again?

Who should do that?

2 General Issues on Malaria

What do you (pregnant women) know about malaria?

What causes malaria? How is it caused? What category of people do consider to be most affected? Why are these people the most vulnerable? What become of pregnant women who become affected with malaria?

How can they prevent and treat malaria?

What interventions have the government put in place to help prevent malaria among pregnant women?

What interventions have the government put in place to help treat malaria among pregnant women?

How do pregnant women know of these interventions?

In your opinion why has the government instituted all these interventions?

3 Community Factors that Influence Pregnant Women's Health Seeking Behaviour

What do you consider to be the activities in this community that prevent pregnant women from seeking health care?

Why do you say so

How do we stop these activities?

What are the activities that encourage pregnant women to seek health care?

Why do you say so?

How do we promote these activities?

Who should do that?

4. Institutional Factors that Influence Pregnant Women's Health Seeking for Malaria

Prevention and Treatment

How do you prevent malaria?

How do you recover when you are affected with malaria?

Where do people go when they want to prevent malaria?

Where do people go when they have malaria?

Why do people use these facilities?

Which ones do you use?

Why do you use them?

How do you assess the services you received? (If not adequate ask)

How can these services be improved?

Thank you very much

APPENDIX D

CALCULATION OF SAMPLE SIZE

According to Fisher *et al* (1998), the desired sample size for population less than 10,000 is calculated by the equation

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

Where

n_f = the desired sample size (when population is less than 10,000),

n = the desired sample size (when population is greater than 10,000),

N = the estimate of the population size.

But to determine n_f, n would have to be calculated. According Fisher *et al* (1998) when the population is greater than 10,000 the sample size is determined by the equation:

$$n = \frac{z^2 pq}{d^2}$$

Where

n= the desired sample size (when the population is greater than 10,000),

z= the standard normal deviation, usually set at 1.96 (or more simply 2.0) which corresponds to 95 percent confidence level;

p= the proportion in the target population estimated to have particular characteristics. If there is no reasonable estimate, then 50 percent is used;

q=1.0-p; and

d= degree of accuracy desired, usually set at 0.05.

Assuming the target population that is aware of the sulphadoxine pyrimethamine based intermittent preventive treatment of malaria) is 90% which is equivalent to 0.9, the z statistic being 1.96 and desired accuracy at 0.05 percent, then the sample size for population greater than 10,000 is

$$n = \frac{(1.96)^2 (0.9)(0.1)}{0.05^2}$$

$$n = 138.29$$

But the population of Twifo Praso sub District pregnant women who patronized SP-based Intermittent Preventive Treatment of malaria (N) was 5,372. Substituting n=138.29 and N=5,372 into the formula when population is less than 10,000,

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

$$n_f = \frac{138.29}{1 + \frac{138.29}{5372}}$$

$$n_f = 135$$

APPENDIX E

INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST, GHANA

DEPARTMENT OF GEOGRAPHY & TOURISM

UNIVERSITY POST OFFICE, CAPE COAST, GHANA, WEST AFRICA

Our Ref.: GTD/SB/..... Your Ref.:..... Date: 15th September, 2015

Dear sir/Madam

TO WHOM IT MAY CONCERN

The holder of this letter.. Deah Hannah Owusua.....

is a (an) M.Phil Final Year student of Department of Geography & Tourism in the University of Cape Coast, Faculty of Social Sciences. ~~He~~/She is required to carry out a research study on a topic in Population

The research topic is:

Compliance to intermittent preventive treatment of Malaria among pregnant women in Twifu-Hemang Lower Denkyira District

I shall be very grateful if you will offer ~~him~~/her any facilities and help at your disposal by way of giving ~~him~~/her access to any information you think will be useful to ~~his~~/her work.

By this letter we have authorized the holder to approach you with assurance that you will help in anyway you can.

Thank you very much.

Yours faithfully,

Prof. A. M. Abane
Head.

DEPT. OF GEOGRAPHY & TOURISM
UNIVERSITY OF CAPE COAST

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