

Multilevel Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy by Pregnant Women Attending ANC Services in Birnin Kebbi, Kebbi State, North-West Nigeria

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Abstract

Malaria in pregnancy (MiP) is one among the serious public health concern in Nigeria, being a malaria endemic region. It accounts for significant number of mortality and morbidity in pregnant women. World Health Organization has recommended at least a dose of intermittent preventive treatment of Malaria in pregnancy (IPTp) with sulfadoxine-pyrimethamine [SP] for its control, but there are challenges to continuity of treatment especially in Northern Nigeria where a significant proportion who uptake the treatment does not complete the recommended dose. The aim of this study was to identify the barriers to completing the uptake of SP for IPTp by pregnant women attending ANC services in Birnin-Kebbi, Kebbi State, North-West Nigeria. The study adopted a cross-sectional study design and PHC Makera was purposively selected due to high ANC clients. From the facility ANC register, 109 pregnant women attending ANC and who defaulted in SP treatment were purposively selected and formed the study participants. Data was obtained using a semi-structured questionnaire. Findings from the study identified 4 levels of barriers to completing the uptake of SP for IPTp by pregnant women attending ANC services in the facility. The study found that individual level barriers accounted for most (71.5%) while the system level barrier accounted for the least (2%). The study concluded that the greatest barriers to completing the uptake of SP for IPTp by pregnant women attending ANC were individual level and economic barriers. The study therefore recommends enlightenment on MiP and Government to set policies that would boost the economic status of women and make them take health decisions that affects them without delays.

Keywords: *Ante-Natal Care, Barriers, Birnin Kebbi, Malaria, Sulfadoxine-Pyrimethamine (SP).*

Introduction

Malaria in pregnancy [MiP] is one of the major causes of maternal mortality and adverse pregnancy outcomes in Nigeria. It undermines the achievement of Sustainable Development Goal 3, which targets maternal mortality reduction and malaria eradication by 2030 [1]. An estimated 3.4 billion people, including pregnant women, are still at risk of malaria [1]. The brunt of the global malaria burden is borne by sub-Saharan Africa (SSA) [1, 2], where over 30 million women become pregnant annually in malaria endemic areas [2]. Pregnant women are the main adult group at risk for malaria

infection in endemic areas in SSA [2]. In Nigeria, nearly 110 million cases of malaria are clinically diagnosed per year. This makes malaria the most common cause of hospital attendance in all age groups, with estimated annual economic losses of over US\$ 835 million from cost of treatment and absenteeism from work and school [5]. It is estimated that malaria is responsible for about 11 % of overall maternal mortality in Nigeria [4, 5]. Malaria in pregnancy (MIP) can have serious health consequences for the woman, unborn child and newborn. The direct effect of MIP on the mother is severe anemia, resulting in an

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increased risk of maternal mortality. The indirect consequences of MIP are twofold: (i) intrauterine death/growth retardation of the foetus and (ii) low birth weight in the newborn with consequent higher risks of infant mortality and impaired child development [2].

A three-prong approach is recommended for the control of MiP in Nigeria: use of sulfadoxine-pyrimethamine for the intermittent preventive treatment of malaria in pregnancy (SP-IPTp), use of insecticide-treated bed nets (ITNs), and effective case management of malarial illness [2]. About 90 % of pregnant women in Nigeria attend some form of antenatal care (ANC) service [4]. This offers an immense opportunity to encourage women to utilize IPTp during ANC visits [4], particularly in Primary Health Care (PHC) facilities, which are the entry point into Nigeria's health care system. In 2005, the Federal Ministry of Health (FMOH) in Nigeria adopted the IPTp as a part of focused ANC [6]. Provision of SP, at no cost to recipients, through Directly Observed Treatment (DOT) supervised by a skilled healthcare provider in public and faith based/NGO ante natal facilities is one of the strategies used to achieve the target of 90 % of pregnant women receiving at least two doses of sulfadoxine-pyrimethamine (SP) in the second and third trimesters of pregnancy [4].

The current World Health Organization (WHO) IPTp guidelines require that the first dose of SP-IPTp be given as early as possible in the second trimester of gestation with subsequent doses given at least one month apart. The last dose can be administered up to the time of delivery without safety concerns [7]. According to the 2024 Nigeria Demographic and Health Survey (NDHS), 8 % of pregnant women reported the use of one dose of SP-IPTp [8]. Studies have reported low use of SP-IPTp in various regions of Nigeria [9–16] and SSA [17]. Some of the perceived barriers to SP-IPTp use include drug stock-outs in the health facilities, lack of provider knowledge of the IPTp protocol, women's belief that SP is

harmful to the foetus, and low levels of awareness of the use of IPTp as a malaria preventive measure [10, 15, 17, 18]. Various factors have been identified as predictors of SP-IPTp use in PHC facilities in different regions of Nigeria, all of which vary in seasonality, intensity and duration of malaria transmission [19]. Knowledge of prophylaxis for malaria prevention is associated with SP IPTp use in south-west Nigeria [20, 21], while advanced maternal age, higher education, higher parity, lower gestational age at registration for ANC, and use of ITNs are associated with use of SP-IPTp in northern Nigeria [14]. However, little is known about the barriers to completing the uptake of the SP-IPTp in accordance with the national treatment guidelines among women utilizing ANC services in PHC facilities in Northwest Nigeria. The aim of this research was to identify the multilevel barriers to completing the uptake of SP for intermittent preventive treatment of Malaria in pregnancy by pregnant women attending ANC services in Birnin Kebbi, Kebbi State, Northwest Nigeria.

Materials and Methods

Study Design and Settings

A cross-sectional study was conducted to assess the multilevel barriers to completing the uptake of SP for intermittent preventive treatment of Malaria in pregnancy by pregnant women attending ANC services in Birnin Kebbi Local government area of Kebbi State between September and December 2024. The total estimated population of the State is 6,892,988 with males accounting for 49.1% of the population, and females 50.9%. There are 21 Local Government Areas (LGAs) in the State. The state is one of the endemic malaria States in Nigeria where the newly introduced malaria vaccine is currently being piloted.

Sample Size Estimation

Using data of ANC attendance and SP-IPTp use in the study location- Primary health care Centre, Makera, Makera ward, Birnin Kebbi

LGA, the facility recorded ANC attendance of 304 in August 2024, the month before the study commenced. Out of the 304 ANC attendees, 109 had defaulted in the SP-IPTp would not complete the recommended dose. The 109 defaulters who would not complete the recommended dose formed the sample size for this study.

Sampling Technique

Multistage sampling was used to recruit 325 pregnant women attending ANC in PHC facilities. In the first stage, Purposive sampling was used to select Birnin Kebbi LGA as the LGA with the highest absolute numbers of ANC attendance in the State. In the second stage, PHC Makera was again purposively selected as the PHC with the highest number of ANC attendance in the LGA. Finally, the number of pregnant women recruited in the study were the 109 defaulters of SP-IPTp.

Data Collection and Quality Assurance

Data for the study were collected using a semi-structured questionnaire that gathered information on socio-demographic variables of study participants, and multilevel barriers to completing the uptake of SP for intermittent preventive treatment of Malaria in pregnancy among pregnant women attending ANC services in PHC Makera, Birin Kebbi LGA. The questionnaire was pre tested in a PHC facility that was not on the list of study sites in the main study-PHC Ambursa, Birnin Kebbi LGA, after which it was self-administered to the 109 study participants. Errors and inconsistencies in data collection, and data entry were greatly minimized since the questionnaire was self-administered.

Variables

Multilevel barriers to completing the uptake of SP for intermittent preventive treatment of Malaria in pregnancy among pregnant women attending ANC services in PHC Makera, Birin Kebbi LGA were identified as the study variables and are stated as follows;

System Barrier: Stock-out of SP in the facility during ANC visit, and long waiting time during clinic visits

Individual Level Barrier: No felt need for continuation of ANC visits and SP-IPTp/forgets ANC appointment(s) and hence miss SP dose(s), and refusal to receive SP during ANC visits may be due to perceived adverse effects of SP on pregnancy.

Household Barrier: Lack of autonomy or freedom to receive SP-IPTp during ANC without consulting a house hold member (usually household head).

Economic Barrier: Missed ANC visits and hence missed SP-IPTp dose due to cost (transport, fees, etc) associated with ANC visits.

Statistical Analysis

Statistical analyses were conducted using SPSS version 21. The categorical variables were presented in percentages, and the relationship between each of the variables and completion of SP-IPTp was analyzed using Chi-Square at 5 % significance level.

Ethical Clearance

Ethical approval for this study was obtained from the Kebbi State Research Ethics Committee. Permission to conduct the study was granted by the Officer In-Charge of PHC makera. The researcher the aim of the study to the pregnant women and then obtained written informed consent before enrolling the women in the study.

Results

Socio-demographic and Obstetric Characteristics of the Respondents

One-hundred and nine (109) pregnant women attending ANC in the selected PHC facility participated in the study. Table 1 summarises the socio-demographic and obstetric characteristics of the respondents. The mean age of the women was 25 ± 5.7 years, with more than half (58.7%) of the respondents in

the 18–25-year age category. The highest educational level of most of the respondents (52.2%) was primary education. Majority (55.9%) of the respondents have had 2–4

pregnancies, and majority (81.6%) of the respondents had no occupation as they were full-time housewives.

Table1. Socio-demographic and Obstetric Characteristics of Pregnant Women attending ANC in PHC Makera, Birnin Kebbi

Variable	n (%) (95% CI)
Age (years)	
18-25	64(58.7) (42.8–51.8)
26-35	29(26.6) (40.8–50.8)
36-45	16(14.7) (5.1–10.5)
Mean (SD) (95% CI)	25.2(5.7) (24.7–25.8)
Education	
None	23 (21.1) (4.7–10.0)
Primary	57 (52.2) (17.8–26.1)
Secondary	21 (19.2) (51.5–61.4)
Tertiary	8 (7.5) (11.4–18.6)
No of pregnancies	
1	33 (30.2) (13.7–20.1)
2-4	61 (55.9) (19.3–26.5)
≥5	15 (13.9) (17.2–24.1)
Occupation	
None	89 (81.6) (15.3–23.7)
Farming	0 (0.0) (10.1–17.0)
Trading	9 (8.2) (34.7–44.5)
Civil service	11 (10.0) (13.0–20.5)

Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy by Pregnant Women Attending ANC Services in PHC Makera, Birnin Kebbi

The bulk (71.5%) of the barrier towards completing the uptake of SP is the individual

level barrier as shown in Table2. Economic level barrier also constitutes a significant barrier (21.1%) to completing the uptake of SP among pregnant women in the study location. System level barrier accounted for the least level of barrier to completing uptake of SP among pregnant women in the study site.

Table2. Multilevel Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy among Pregnant Women Attending ANC in PHC Makera

Barrier level	n (%) (95% CI)
Individual	78 (71.5) (31.6–42.3)
Household	6 (5.5) (12.8–15.7)
System	2 (1.8) (10.3–14.1)
Economic	23 (21.1) (17.9–28.4)

Relationship between Demographic and Obstetric Variables and Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy by Pregnant Women Attending ANC Services in PHC Makera, Birnin Kebbi

There exists a positive and significant relationship between all the demographic and obstetric variables (Age bracket, Number of pregnancies, occupation, and education), and individual level barriers to completing the uptake of SP as shown in Table 3. For age, the barriers seem to more with younger women, and decrease with age ($F= 9.563$, $p = 0.00$). All demographic and obstetric variables had significant influence on household level barriers to completing the uptake of SP among study participants as shown in Table 4.

Relationship between demographic and obstetric characteristics of study participants and system barriers to completing the uptake of SP is depicted in Table 5. The result showed that none of the demographic and obstetric variable had significant influence on system barrier to completing the uptake of SP. The relationship between demographic and obstetric variables of study participants and economic barriers to completing uptake of SP as shown in Table 6 reveal that age, and number of pregnancies do not have any significant influence on economic barrier to completing uptake of SP ($F= 6.409$, $p = 0.055$, and $F= 4.911$, $p = 0.085$ respectively), while occupation, and education had significant influence on economic barrier to completing uptake of SP ($F= 5.634$, $p = 0.00$, and $F= 4.906$, $p = 0.00$ respectively).

Table3. Relationship between Demographic and Obstetric variables and Individual Level Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy among Pregnant Women Attending ANC in PHC Makera, Birnin Kebbi

Variable	Individual Barrier (%)	Assyp. sig	Value
Age (years)		.000*	9.563
18-25 (n=45)	57.7		
26-35 (n=21)	26.9		
36-45 (n=12)	15 .4		
No. of pregnancies		.000*	9.921
1(n=23)	29.5		
2-4 (n=44)	56.4		
≥ 5 (n=11)	14 .1		
Occupation		.000*	10.175
None (n=71)	91.0		
Farming (n=0)	0.0		
Trading (n=6)	7 .7		
Civil service (n=1)	1.3		
Education		.000*	11.941
None (n=11)	14.1		
Primary (n=49)	62.8		
Secondary (n=10)	12.8		
Tertiary (n=8)	10.3		

*Test Statistics: Chi-Square, Significant at p value<0.05**

Table 4. Relationship between Demographic and Obstetric Variables and Household Level Barriers to Completing the Uptake of SP for intermittent Preventive Treatment of Malaria in Pregnancy among Pregnant Women attending ANC in PHC Makera, Birnin Kebbi

Variable	Household barrier (%)	Assyp. sig	Value
Age (years)		.000*	6.114
18-25 (n=4)	66.6		
26-35 (n=1)	16.7		
36-45 (n=1)	16.7		
No. of pregnancies		.000*	5.092
1(n=4)	66.6		
2-4 (n=2)	33.3		
≥5 (n=0)	0.0		
Occupation		.000*	6.563
None (n=5)	83.3		
Farming (n=0)	0.0		
Trading (n=0)	0.0		
Civil service (n=1)	16.7		
Education		.000*	7.091
None (n=2)	33.3		
Primary (n=1)	16.7		
Secondary (n=3)	50.0		
Tertiary (n=0)	0.0		

*Test Statistics: Chi-Square, Significant at p value<0.05**

Table 5. Relationship between Demographic and Obstetric Variables and System Level Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy among Pregnant Women Attending ANC in PHC Makera, Birnin Kebbi

Variable	System Barrier (%)	Assyp. sig	Value
Age (years)		.075	3.127
18-25 (n=1)	50.0		
26-35 (n=1)	50.0		
36-45 (n=0)	0.0		
No. of pregnancies		.080	3.810
1(n=1)	50.0		
2-4 (n=1)	50.0		
≥5 (n=0)	0.0		
Occupation		.110	2.954
None (n=1)	50.0		
Farming (n=0)	0.0		
Trading (n=1)	50.0		
Civil service (n=0)	0.0		
Education		.092	3.559
None (n=1)	50.0		
Primary (n=0)	0.0		

Secondary (n=1)	50.0		
Tertiary (n=0)	0.0		

*Test Statistics: Chi-Square, Significant at p value<0.05**

Table 6. Relationship between Demographic and Obstetric Variables and Economic Level Barriers to Completing the Uptake of SP for Intermittent Preventive Treatment of Malaria in Pregnancy among Pregnant Women attending ANC in PHC Makera, Birnin Kebbi

Variable	Economic Barrier (%)	Assyp. sig	Value
Age (years)		.055	6.409
18-25 (n=14)	60.9		
26-35 (n=6)	26.1		
36-45 (n=3)	13 .0		
No. of pregnancies		.085	4.911
1(n=5)	21.7		
2-4 (n=14)	60.9		
≥5 (n=4)	17.4		
Occupation		.000*	5.634
None (n=12)	52.2		
Farming (n=0)	0.0		
Trading (n=2)	8.7		
Civil service (n=9)	39.1		
Education		.000*	4.906
None (n=9)	39.1		
Primary (n=7)	30.4		
Secondary (n=7)	30.4		
Tertiary (n=0)	0.0		

*Test Statistics: Chi-Square, Significant at p value<0.05**

Discussion

This study found that individual level barriers (No felt need for continuation of ANC visits and SP-IPTp/forgets ANC appointment(s) and hence miss SP dose(s), and refusal to receive/comply with DOT of SP during ANC visits may be due to perceived adverse effects of SP on pregnancy) accounted for the greatest (71.5%) barrier to completing uptake of SP among pregnant women attending ANC in PHC Makera, Birnin Kebbi Local Government area of Kebbi State. This finding corroborates results from Cross River State [15], South-west Nigeria [10, 18], and Northern Nigeria [14]. The study in Northern Nigeria attributed cultural factors as the reasons for

refusal of pregnant women to use SP without prior consent from their husbands. This often leads to poor compliance of the national guidelines of DOT, Poor compliance with national preventative treatment guide lines has been reported elsewhere in Kano, Northern [14] and south-west [10, 18] Nigeria. The reasons for poor implementation of DOT in these previous studies included: (i) the practice in which pregnant women received SP from ANC clinic but took them home in order to have a meal before taking the medicine and ends up never taking them. Individual level barriers stems mainly from individual women's beliefs and lack of understanding of IPT, and hence its low uptake and adherence. Many pregnant

women are reluctant to seek care for an illness they do not have. Those with symptoms of malaria often prefer to self-medicate through drug shops or herbs, though those who seek clinic-based treatment trust their providers and willingly accept medicine prescribed. This present study also found economic level barrier constituting a significant barrier (21.1%) to completing the uptake of SP among pregnant women in the study location. Poverty level in the Northern Nigeria is high, and women are the worst hit. Poverty is a major cause of ill health and a barrier to accessing and continuing health care services as transportation to distant health facilities for services uptake or continuity is a great challenge in most cases [14].

Conclusion

The findings of this study underscore the importance of identifying, assessing, and addressing individual, household, system, and economic barriers that impedes the completion of uptake of SP for IPTp. Low levels of awareness about the benefits of SP for IPTp, and non-compliance of PHC facilities to National guidelines such as insistence on DOT may hamper efforts to reduce maternal and child morbidity and mortality associated with malaria. Hence advocacy and Health education programs on the prevention of malaria are

needed. These programs should target mothers, women of childbearing age, heads of households, mother in-laws, traditional and religious leaders and a wide range of health providers. In addition, programs are needed to enhance the capacity of PHC facility staff to implement the IPTp National guidelines in line with global best practices.

Policy Implication of this Study

This study will help policymakers ensure proper implementation of the uptake of SP for IPTp in line with global best practices.

Conflict of Interest

The author declares no conflict of interest.

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