



## UPTAKE OF INTERMITTENT PREVENTIVE TREATMENT OF MALARIA AMONG PREGNANT WOMEN ATTENDING SELECTED PRIMARY HEALTHCARE CENTERS IN OGUN STATE, NIGERIA

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**ABSTRACT:** *Background: Malaria in pregnancy is a major public health concern and one of the leading causes of maternal morbidity and mortality which poses intrauterine and maternal complications during pregnancy. This study assessed the uptake of intermittent preventive treatment of malaria among pregnant women attending primary health care centers in Ikenne Local Government Area. Methods: A quantitative descriptive survey design was employed for this study; researcher-structured questionnaires were used for data collection and a multi-stage sampling technique was used to select one hundred and fifty-one mothers from the primary health centers. Result: It showed that the majority (62.5%) of the participants had average knowledge of malaria in pregnancy, and 54.6% of the participants utilized IPTP. The study found no significant relationship between respondents' knowledge of malaria in pregnancy and the uptake of IPTP ( $p$ -value =  $0.888 > 0.05$ ). Moreover, findings revealed no significant relationship between the time of antenatal initiation and the uptake of intermittent preventive treatment of malaria in pregnancy  $p$ -value =  $0.281 > 0.05$  ( $F$ ,  $X^2 = 1.163$ ). In the same vein, no significant relationship was further revealed between the level of education and the uptake of intermittent preventive treatment of malaria in pregnancy  $p$ -value =  $0.842 > 0.05$  ( $F$ ,  $X^2 = 0.040$ ). Conclusion: Generally, in Nigeria, the uptake of intermittent preventive treatment for malaria is still low irrespective of the level of the mother's knowledge. Therefore, an increase in awareness and education of women on IPTp with direct observation under uptake was hereby recommended.*

**KEYWORDS:** Intermittent Preventive Treatment, Malaria, Pregnant Women, Uptake.



## INTRODUCTION

Malaria is a vector-borne disease caused by the plasmodium parasite transmission through the bites of infected female *Anopheles* mosquitoes. Though the disease is preventable and curable, there were 219 million cases in 2017 and 435,000 deaths worldwide with children under five years of age and pregnant women being the most affected (WHO, 2018). Malaria infection in pregnancy is of public health significance as it harmfully affects the pregnant woman, her fetus, and the newborn baby (WHO, 2017).

Prevention of malaria during pregnancy includes the use of intermittent preventive treatment during pregnancy (IPTp) with sulfadoxine/pyrimethamine (SP) and sleeping under an insecticide-treated bed net (ITN). IPTp-SP is defined as the provision of treatment doses of SP to asymptomatic individuals living in malaria-endemic regions, regardless of malaria parasitemia status, and the current recommendation is that at least 2 doses of SP should be administered after the first trimester during antenatal care (ANC) (WHO, 2004).

Balami, Said, Zulkefli, Bachok, and Audu (2020) found that sixty-five percent of the respondents were aware of IPTp, and 34.7% believed that IPTp could be harmful to their pregnancies. Over half of the respondents (52.9%) believed that taking all their IPTp medicines was very good for their pregnancies, while 45.0% felt that taking their IPTp medicines was very pleasant. The study concluded that knowledge of IPTp, as well as its uptake, were suboptimal in this study.

According to Nigeria Demographic and Health Survey 2018, the percentage of women who received at least one dose of SP was 63.6% (72.6% urban and rural 58%) but the proportion of women who took at least three doses of SP was reported as 16.6% (urban 20.7% and rural 14%). WHO (2022) updated its recommendations for 3 key malaria prevention strategies, of which intermittent preventive treatment of malaria in pregnancy (IPTp) is one when given to young children and pregnant women who are most vulnerable to malaria. Preventive chemotherapy is a safe, effective and cost-effective strategy for reducing the disease burden and saving lives. Despite the availability of IPTp, the uptake is still low in Nigeria among pregnant women. Many studies had showed the impacts of malaria in pregnancy but very few researchers have espoused the uptake of prevention and management of malaria during pregnancy. As a result of this insufficient information on the uptake of prevention and management of malaria in pregnancy, this study hereby assessed the level of uptake of intermittent preventive treatment malaria among pregnant women attending the antenatal clinic in Ikenne Local Government Area, Ogun State. Hence. This study assessed:

- i. the knowledge of pregnant women on intermittent preventive treatment of malaria in pregnancy among pregnant women attending primary health care centers in Ikenne Local Government Area
- ii. the attitude of pregnant women towards the uptake of intermittent preventive treatment of malaria in pregnancy among pregnant women attending primary health care centers in Ikenne Local Government Area
- iii. the uptake of intermittent preventive treatment of malaria in pregnancy among pregnant women attending primary health care centers in Ikenne Local Government Area
- iv. the antenatal clinic initiation time by the pregnant women attending primary health care centers in Ikenne Local Government Area



- v. That there is no significant relationship between the knowledge of malaria and the uptake of intermittent preventive treatment of malaria in pregnancy
- vi. That there is no significant relationship between the time of antenatal initiation and the uptake of intermittent preventive treatment of malaria in pregnancy.

This study adopted the health belief model (HBM). A social psychological health behavior change model was developed to explain and predict health-related behaviors particularly related to the uptake of health services. It was established in the 1950s by social psychologists at the U.S. Public Health Service and remains a relevant theory in health behavior research. The HBM suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, and self-efficacy explain engagement (or lack of engagement) in health-promoting behavior. A stimulus, or cue to action, must also be present to trigger the health-promoting behavior.

## MATERIALS AND METHODS

This study employed a descriptive survey design type. The study was conducted within primary health care centers in Ikenne Local Government Area, Ogun State, Nigeria. A multi-stage sampling technique was employed to select 151 pregnant women in their third trimester of gestational age of 27 weeks to 36 weeks attending the antenatal clinic of primary health care centers in Ikenne Local Government Area.

### Instrumentation

Data was collected using a self-developed questionnaire. The questionnaire comprises five sections. Sections A to E were used as the tools for collecting information from pregnant women. **Section A** assessed the socio-demographic data (8 items) indicating personal information about the subjects. **Section B** assessed knowledge of pregnant women on intermittent preventive treatment of malaria in pregnancy consisting of 10 variables and contains questions about the woman's knowledge of IPTp and its dose using a dichotomous scale of Yes and No. The scoring system was also performed to assess the pregnant women's knowledge of malaria in pregnancy and IPTp with both high and low knowledge scores, low knowledge = <30, moderate knowledge = 30–60%, and high knowledge = 70%. **Section C** assessed the attitude of the pregnant women towards the uptake of intermittent preventive treatment of malaria in pregnancy and consists of 12 variables using a Likert scale of SA, A, UN, D, and SD. **Section D** assessed the uptake of IPTp among the pregnant women and it contains 6 variables. **Section E** assessed antenatal initiation time by the pregnant women.

The questionnaire was tested for both face and content validity, and reliability for knowledge of pregnant women about the intermittent preventive treatment of malaria in pregnancy was 0.811. The attitude of pregnant women towards the uptake of intermittent preventive treatment was 0.756. Uptake of intermittent preventive treatment of malaria among pregnant women was 0.846 and initiation time for antenatal clinic by the pregnant women was 0.731 using Cronbach alpha coefficient.

### Method of Data Analysis



The collected data were coded into the computer using the statistical software Statistical Package for the Social Sciences (SPSS) version 23. The research questions were answered using descriptive statistics (percentages, mean score, and frequency counts) while inferential statistics of Pearson correlation and chi-square were used to test the two hypotheses at 0.05 level of significance.

## RESULTS

### *Socio-demographic Data*

Table 3 reveals the age spectrum of the respondents across 15–45 years with a mean age of 30 years. Many participants were between 26 and 35 years 78 (51.7%) while the oldest group of participants (36–45 years) were relatively few, 15 (9.9%). Many of the respondents were secondary school leavers 73 (48.3%) and more than half of the respondents practice Christianity (63.6%). Concerning ethnicity, the majority were Yoruba, 83 (55%), while the least of the respondents were from other tribes, 7 (4.6%). In addition, married participants were predominantly represented in this study, 97 (64%). On the other hand, many of the participants were mothers of two children, 58 (38.4%) and 62.9% of the respondents were in their second trimester.

**Table 1: Socio-demographic data of the midwives**

Variables		Frequency	Percentage (%)
Age Mean age: 30 years $\pm$ 0.636	15–25years	58	38.4
	26–35years	78	51.7
	36–45years	15	9.9
	<b>Total</b>	<b>151</b>	<b>100.0</b>
Level of education	Didn't go to school	15	9.9
	Primary school only	23	15.2
	Secondary school	73	48.3
	Higher institution	35	23.2
	Others	5	3.3
<b>Total</b>	<b>151</b>	<b>100.0</b>	
Religion	Christianity	96	63.6
	Islam	41	27.2
	Traditionalist	13	8.6
	Others	1	.7
<b>Total</b>	<b>151</b>	<b>100.0</b>	
Parity	1 Child	46	30.5
	2 Children	58	38.4
	3 children and above	47	31.1
	<b>Total</b>	<b>151</b>	<b>100.0</b>
Gestational age	Second trimester	95	62.9
	Third trimester	56	37.0
	<b>Total</b>	<b>151</b>	<b>100.0</b>



Occupation	Housewife	36	23.8
	Trader	56	37.1
	Civil servant	27	17.9
	Teacher	12	7.9
	Others	20	13.2
	<b>Total</b>	<b>151</b>	<b>100.0</b>
Primary health care center	Ilishan	51	33.8
	Ikenne	58	38.4
	Iperu	42	27.8
	<b>Total</b>	<b>151</b>	<b>100.0</b>

### Answer to Research Questions

*What is the level of knowledge of pregnant women about the intermittent preventive treatment of malaria in pregnancy?*

**Table 4a: Level of knowledge of pregnant women towards the intermittent preventive treatment of malaria in pregnancy using weighted percentage based on correct responses**

Value	Levels	Score
Weighted percentage = 39.6%	Below average low	<30
	Average	30–60%
	Above Average	70%

The reported knowledge scale summary above indicates the level of knowledge of pregnant women towards the intermittent preventive treatment of malaria in pregnancy with a weighted percentage of 39.6%. Therefore, this implies that most of the respondents had average knowledge of the intermittent preventive treatment of malaria in pregnancy.

**Table 4b: Knowledge of pregnant women towards the intermittent preventive treatment of malaria in pregnancy (N=151)**

S/N	Variables	No	Yes
1	Have you ever heard of intermittent preventive treatment of malaria in pregnancy IPTp	60(39.7%)	91(60.3%)
2	IPTp reduces my risk of having malaria during pregnancy	68(45%)	83(55%)
3	IPTp is received in only one dose	105(60.5%)	46(30.5%)
4	IPTp is given whether or not I test positive for the malaria parasite	84(55.6%)	67(44.4%)
5	IPTp is given starting from the first trimester of pregnancy	96(63.6%)	55(36.4%)



6	Sulfadoxine pyrimethamine fansidar is the recommended drug for IPTp	98(64.9%)	53(35.1%)
7	IPTp should be used in the health care centers under the supervision of the health care workers	68(45%)	83(55%)
8	IPTp can be used by everyone	113(74.8%)	38(25.2%)
9	Five tablets of drugs are given during IPTp administration	109(72.2%)	42(27.8%)
10	IPTp is harmful to my baby in utero	111(73.5%)	40(26.7%)

Table 4b shows the knowledge of respondents on intermittent preventive treatment of malaria pregnancy. The result shows that the majority of the respondents have heard about intermittent preventive treatment (60.3%). Although it reduces the risk of having malaria in pregnancy (55%) and acknowledges that IPTp is not limited to receiving only one dose (60.5%). In addition, more than half of the respondents disagreed that IPTp relies on the test of the malaria parasite (55.6%); also against that IPTp sulfadoxine-pyrimethamine fansidar is the recommended drug for IPTp (64%) but it should be noted that IPTp should be used in health care centers under the supervision of a health worker (55%).

*What is the attitude of pregnant women towards the uptake of intermittent preventive treatment of malaria in pregnancy?*

**Table 5: Attitude of pregnant women toward the uptake of intermittent preventive treatment of malaria in pregnancy**

Items	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
I don't need to go to the primary health care centers for the course of IPTp administration during pregnancy	50(33.1%)	22(14.6%)	30(19.9%)	33(21.9%)	16(10.6%)
I can get IPTp anywhere and not necessarily under the supervision of the health care workers	25(16.6%)	28(18.5%)	42(27.8%)	34(22.5%)	22(14.6%)
I think it is dangerous not to take the complete dose of IPTp administration	35(23.2%)	43(28.5%)	39(25.8%)	25(16.6%)	9(6%)
I feel IPTp is very important for me and my baby	50(33.1%)	49(32.5%)	29(19.2%)	16(10.6%)	7(4.6%)





Think it is very pleasant to take all medicine given to me for preventive treatment of malaria during pregnancy	47(31.1%)	49(32.5%)	32(21.2%)	19(12.6%)	4(2.6%)
Have to be positive to malaria parasite before I adhere to the course of treatment	19(12.6%)	28(18.5%)	49(32.5%)	44(29.1%)	11(7.3%)
After taking the first dose of IPTp it's not necessary to go back to the health care center to complete the dose	37(24.5%)	15(9.9%)	28(18.5%)	42(27.8%)	29(19.2%)
Think taking the drugs given to me during the courses of treatment can cause complications	20(13.2%)	20(13.2%)	33(21.9%)	50(33.1%)	28(18.5%)
I prefer using herbal medicine to treat myself if I have malaria	35(23.2%)	25(16.6%)	29(19.2%)	36(23.8%)	26(17.2%)
I am afraid to take drugs during pregnancy	30(19.9%)	37(24.5%)	36(23.8%)	33(21.9%)	15(9.9%)

Table 5 shows the attitude of pregnant women toward the uptake of intermittent treatment prevention. The result reveals that the majority of the participants disbelieved that they do not need to go to the primary health care centers for the course of IPTp administration during pregnancy (52.3%) and disagree that IPTp can be gotten anywhere (64.9%), but most concurred that it is dangerous not to take the complete doses of IPTp (51.7%) and it is seen as important to mothers and their babies (65.3%). In addition, 65.6% of the respondents were against the belief that after the first dose IPTp, it is not necessary to go back to the health care center; they also disagreed to preferring using herbal medicine to treat oneself (60.3%) but (55%) of the respondents disagreed to being afraid of taken drugs during pregnancy. Meanwhile, more than half of the respondents were scared of testing positive for malaria parasites (57%) but more than half of the pregnant women disagreed with being afraid to take drugs during pregnancy (55.6%).



*What is the level of utilization of intermittent preventive treatment of malaria in pregnancy?*

**Table 6a: Level of utilization or utilization scale summary**

Value	Levels	Score
Weighted percentage = 54.6%	Below average (low)	30%
	Average (moderate)	60%
	Above average (high)	70%

The above table indicates the level of utilization of intermittent preventive treatment among pregnant women with a weighted percentage of 54.6%. Therefore, this implied that most respondents moderately utilize intermittent preventive treatment of malaria in pregnancy.

**Table 6b: Utilization of intermittent preventive treatment of malaria in pregnancy**

S/N	Variables		F	%
1	How many doses of IPTp have you received	1 dose	45	29.8
		2 dose	38	25.2
		3 doses*	53	35.1
		4 doses and above	15	9.9
2	Do you receive IPTp under directly observed treatment	Yes*	107	70.9
		No	44	29.1
3	Is there any time you didn't take the drugs given to you in the clinic	Yes*	74	49.0
		No	77	51.0
4	How many tablets are given	1 tablet	14	9.3
		Tablet	31	20.5
		3 tablets*	67	44.4
		4 tablets	23	15.2
		5 tablets	16	10.6
5	Do you always keep your appointment for IPTp administration	Yes*	87	57.6
		No	15	9.9
		Sometimes	49	32.5
6	Did you complete your IPTp dose in your last pregnancy	Yes*	95	62.9
		No	56	37.1

Table 6b reveals the utilization of intermittent preventive treatment of malaria in pregnancy. The result shows that many of the pregnant women used 3 doses (35.1%) under a directly observed treatment (70.9%). Moreover, half of the respondents take the drug consistently (51%) and keep always to the appointment of IPTp administration (57.6%). However, many of the respondents were given 3 tablets (44.4%), and more than half completed their IPTp dose in their last pregnancy (62.9%).





## Test of Hypothesis

*H<sub>01</sub>: There is no significant relationship between the knowledge of malaria and the uptake of intermittent preventive treatment of malaria in pregnancy.*

**Table 7: Relationship between knowledge of malaria and the uptake of intermittent preventive treatment of malaria in pregnancy**

Variables	Mean(x)	SD	P. coefficients(r)	Sig.
Knowledge of malaria in pregnancy	23.5	±2.28	-0.012	0.888
Uptake of intermittent preventive treatment of malaria in pregnancy	2.80	±0.68		
Pearson coefficients = -.012; Remarks; Accept the null hypothesis [N=151]				

\*. correlation is significant at the 0.05 level (2-tailed).

Table 7 above reveals a non-significant relationship between the respondent's knowledge of malaria in pregnancy and uptake of intermittent preventive treatment of malaria in pregnancy ( $r = -0.012$ ;  $p = 0.888 > 0.05$ ). The hypothesis which stated that "there is no significant relationship between respondents' knowledge of malaria in pregnancy and the uptake of intermittent preventive treatment" was accepted by these findings.

*H<sub>02</sub>: There is no significant relationship between the time of antenatal initiation and the uptake of intermittent preventive treatment of malaria in pregnancy.*

**Table 8: Relationship between the time of initiation and uptake of intermittent preventive treatment of malaria in pregnancy**

		Utilization			Total	X <sup>2</sup> 1.163	Df 1	P-value 0.281
		Low	Average	High				
Time of initiation	First trimester		15(1.5%)	21(13.9%)	36(23.8%)			
	Second trimester		22(14.6%)	43(28.5%)	65(43%)			
	Third trimester		16(10.5%)	34(22.5%)	50(33.1%)			
	<b>Total</b>		<b>53(35%)</b>	<b>98(65%)</b>	<b>151(100%)</b>			

Table 8 shows a non-significant association between the time of initiation and uptake of intermittent preventive treatment of malaria in pregnancy with a p-value of  $0.281 > 0.05$  ( $X^2 = 1.163$ ). Therefore, the null hypothesis is accepted.



## DISCUSSION

This study showed that most of the respondents had low knowledge of intermittent preventive treatment for malaria during pregnancy. Regarding this low knowledge, most of the respondents 35.1% did not know that sulfadoxine-pyrimethamine (fansidar) is the recommended drug for IPTp administration. This result is in line with a finding led by WHO (2018) which provides a policy of providing IPT-SP from the early second trimester of pregnancy and then at each scheduled ANC visit until the time of delivery, provided that the doses are given at least one year apart.

Moreso, the finding revealed that the majority of the respondents had a poor attitude towards intermittent preventive treatment of malaria in pregnancy. This correlates with the study conducted by Adefisoye (2019), which showed that the attitude of pregnant women towards IPTp was not too favorable. This might be a result of a lack of sufficient infrastructure and education on preventive treatment.

The study further found from Table 6 that the respondents averagely utilize intermittent preventive treatment of malaria in pregnancy. This result contradicts the finding led by Steven Azizi (2020) who found that there is low uptake of optimal SP doses in Malawi, and this seems to be associated with the number of ANC visits.

## CONCLUSION

Prevention and management of malaria in pregnancy through IPTp is averagely sensitized among pregnant women due to their low knowledge which led to poor attitudes of pregnant women towards the strategies. As a result of this, this study suggests the government should supply or create other costless means to prevent malaria, like good drainage systems, proper training of healthcare workers on the administration of IPTp, and provision of insecticide-treated mosquito nets to prevent the breeds of mosquitoes in their environment.

## CONFLICT OF INTEREST

No conflict of interest was declared by the authors.

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