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Compliance To Intermittent Preventive Treatment of Malaria Among Pregnant Women Attending Antenatal Clinics in Nembe Local Government Area of Bayelsa State

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Abstract

Pregnant women are more susceptible to malaria infection because their immune response is suppressed by human chorionic Gonadotropin (HCG) and prolactin levels which are increased during pregnancy. The purpose of this study is to examine the compliance to intermittent preventive treatment (IPT) of malaria among pregnant women attending antenatal clinics in Nembe local government area. The descriptive study design was adopted with a population which consisted of 398 pregnant women. The sample size was 239 which was selected using the multi-stage sampling procedure. A structured questionnaire with reliability coefficient of 0.834 was used for data collection. Analysis was done with the aid of Statistical Package for Social Sciences (SPSS) version 27.0 using percentage, mean and chi-square at 0.05 level of significance. Findings showed that more 105 (47.50%) of the respondents had average level of knowledge of sulphadoxine-pyremethamine, about three quarter 164 (74.20%) had low level of compliance with intermittent preventive treatment of malaria. Not knowing the right time for first visit to ANC was a major factor influencing compliance to IPT with a mean value of 3.57±0.49, followed by fear of reaction with a mean value of 3.31±0.46, taking medication during pregnancy causes problem had 2.88±0.59. There was no statistically significant association between level of knowledge and compliance to IPT (χ^2 = 0.4.83, df = 2, p>0.05). The study concluded that compliance to IPT among study population was poor and recommends that a more extensive campaign should be used to sensitize the pregnant women on the benefits of IPT to help increase uptake and ensure improved outcomes.

Keywords: *Patient Compliance, Intermittent Preventive Treatment, Malaria in Pregnancy, Sulfadoxine-Pyrimethamine, Antenatal Care, Nigeria.*

Introduction

A person's actions can have a significant impact on their health, particularly their vulnerability to infectious diseases such as malaria. Health promotion and illness prevention are influenced by human behavior, which can increase or decrease risk depending on the situation. When it comes to healthy living, people aren't always willing to embrace certain behaviors or challenges since they could be uncomfortable, have negative side effects, or take a while to bear fruit (McCormack, 2017). According to Saowaluk et al. (2023), patients' compliance is defined as the practice of healthy (self-care) behaviors by following health recommendations. This practice reflects willing collaboration with health professionals and is influenced by factors such as the characteristics of the therapeutic regimen, the communication of health advice, and the attitude of the patents toward professional

recommendations. As a result, patients' quality of life will improve.

Many people have lost their lives to malaria, a protozoan illness that can be acute, chronic, or recurrent and causes fever. The bite of a female anopheles mosquito is the vector for its transmission from host to host. Anywhere there are susceptible human hosts, the illness can be acquired. Also, the parasites thrive in wet, humid areas, so people who live there are more likely to be attacked by mosquitoes. Due to the immune response being reduced by elevated prolactin levels and human chorionic gonadotropin (HCG) during pregnancy, pregnant women are more vulnerable to the infection (Frank et al., 2016).

Studies have shown that 85% of malaria cases occur in Sub-Saharan Africa, there were about 214 million malaria cases and 438,000 malaria deaths globally in 2015, (Omang et al., 2020). This study further reported that in Sub-Saharan Africa, 72% of pregnant woman had been infected with malaria parasite at some points in their pregnancy. Prevalence of malaria in Nigeria stood at 79.5%, in some regions such as South-West (Lagos) and South East (Enugu), reports have shown prevalence as high as 99% in Enugu and 52% in Lagos, (Omang et al., 2020). In the South-South region of Nigeria (Rivers and Bayelsa states), prevalence of malaria in the Niger Delta has been reported to be 11.2% and 12.56% in Bayelsa and Rivers State respectively (Chukwuocha et al., 2021).

There are several complications that can arise during a malaria pregnancy. These include anemia, a higher risk of parasiteamia in the second and third trimesters, a compromised placental barrier that reduces nutritional support and increases the risk of low birth weight (LBW), abortion, stillbirth, premature birth, and high infant morbidity and mortality (Frank et al., 2016). It is clear that malaria during pregnancy is a significant obstetrics, social, and medical issue necessitating a multimodal treatment strategy, since it is associated with an increased risk of pulmonary edema and postpartum hemorrhage (PPH). This is especially true when one considers the high rates of maternal mortality and morbidity caused by malaria. Intermittent preventative therapy during pregnancy (IPTp) is one of several methods that can thankfully avoid this.

Under the guidance of a medical professional, pregnant women on intermittent preventative treatment are given two doses of an effective antimalarial medicine, preferably sulfadoxine pyrimethamine (SP), throughout the second and third trimesters of their pregnancy. Intermittent preventative treatment of malaria during pregnancy (IPTp) has been linked to lower levels of maternal parasitaemia, higher rates of low birth weight and mean birth weight in infants in malaria endemic regions like Nigeria. Both the mother's hemoglobin levels and the baby's birth weight have improved dramatically, and it's safe, cheap, and effective (Onoja et al., 2022).

Reports have shown that there is an abysmally poor uptake of intermittentent preventive treatment of malaria in pregnancy with the use of sulphadoxine pyremethamine (IPTp-SP) especially among malaria-endemic countries, including Nigeria where most pregnant women receive intermittent preventive treatment of malaria (IPTp) at least once throughout their period of pregnancy while only 5% of them receive it up to three times (Onoja et al., 2022). This study seeks to assess compliance to intermittent preventive treatment of malaria with the use of sulphadoxine pyremethamine (IPTp-SP) among pregnant women attending selected primary health centres in Nembe Local Government Area, Bayelsa State.

Statement of the Problem

A high risk of maternal and foetal morbidity and death is linked to malaria during pregnancy. Multinational and interdisciplinary teams are needed to address this critical obstetric, social, and medical health issue (Frank, 2016). Pregnant women and children less than five years old are at increased risk of contracting malaria, which affects over 40% of the global population (Omang et al 2020). About 32 million pregnancies occur each year in the malaria-endemic region of Africa, which includes Nigeria. Malaria during pregnancy is responsible for the deaths of an average of 10,000 mothers and 200,000 infants (Onoja et al., 2020). Thirty million pregnant women in malaria-endemic Sub-Saharan African nations, including Nigeria, receive malaria every year due to the high incidence of malaria during pregnancy and the noticeable weak uptake of preventive anti-malarial medication (Omang et al, 2020).

Pregnancy lowers a woman's relative immunity to malaria, making her more susceptible to infection, making these women especially vulnerable to malaria (Frank et al., 2016). According to Omang et al. (2020), malaria during pregnancy can lead to various complications and problems such as spontaneous abortion, maternal anemia, placental pathologies, infant mortality and morbidity, intrauterine growth retardation, and low birth weight. As a result, malaria during pregnancy is responsible for approximately 20% of stillbirths and 11% of all maternal deaths. Therefore, pregnant women in the Nembe Local Government Area of Bayelsa State who visit prenatal clinics should be studied to find out how well they comply with intermittent preventative treatment of malaria.

Objectives of the Study

The specific objectives of the study are to:

1. find out how many pregnant women in the Nembe Local Government Area (LGA) who go to the

doctor actually take their malaria preventive pills during the course of their pregnancy.

2. determine which factors in the Nembe Local Government Area (LGA) affect pregnant women's adherence to intermittent preventative treatment of malaria during pregnancy (IPT-p).
3. to determine whether pregnant women in the Nembe Local Government Area who visit certain health care facilities are more likely to comply with intermittent preventative therapy for malaria if their gestational age is a factor.
4. to survey pregnant women in Nembe Local Government Area who visited specific health care facilities to find out if they were more likely to comply with intermittent preventive treatment for malaria based on their socio-demographic characteristics.

Methodology

The descriptive study design was adopted with a population which consisted of 398 pregnant women. The inclusion criterion was every pregnant woman registered for and attending ANC in the selected facilities in the LGA during the period of the Study; while the exclusion criterion was all pregnant women accessing health services in the PHC other than antenatal services.

The sample size was 239 which was determined using Taro Yamane's formula shown below: $n = N / 1 + N (e)^2$. At assumed 95% confidence level and p = 0.05. Where n is the sample size, N is the population size, and e is the level of precision. Applying the above, $n = 398 \div \lceil 1 + (398 \times (0.05)^2 \rfloor = 398/1.995 = 199$. Adding 20% non-compliance rate. n = 40 + 199 = 239. The sample multi-stage sampling procedure was adopted. At the first stage, the simple random sampling technique was used to select seven facilities. At the second stage, a proportionate sampling technique was used to determine the number selected from each facility as shown thus: Sabatoru = 39; Nembe Greek = 32, Ikensi = 26, Obioku = 27, Otumoama = 26, Ogbolomabiri = 40, and Bassambiri = 49, Total = 239. At the third stage, they systematic sampling technique was used to select the pregnant women to participate in the study.

"Knowledge and compliance to intermitted preventive treatment of malaria (IPTM)" is the name of the pre-tested semi-structured survey questionnaire that will be used to gather data. It has four parts and consists of thirty-five things. Nine items pertaining to socio-demographic data made up Section A. Eleven items testing ITP knowledge were included in Section B. Section D has seven questions on variables impacting respondents' compliance with the use of ITP, while Section C contains eight questions on respondents' compliance with the use of ITP. The reliability coefficient of the interviewer-administered item is 0.834. The analysis was conducted using SPSS version 27.0, which allows for the use of percentage, mean, and chi-square at a significance level of 0.05.

Results

The results of the study are shown below:

Table 1: Compliance to IPT among the respondents

Items	Responses	Frequency (n = 221)	Percentage
IPT will make me gain weight	Yes	148	67.00
	No	73	33.00
Young women don't need take IPT, it is not safe for my baby and I	Yes	48	21.70
	No	173	78.30
Malaria drugs should be taken only when you are ill	Yes	157	71.00
	No	64	29.00
I did not take it because I am scared it will affect my baby this gestational age	Yes	144	65.20
	No	77	34.80
I did not feel like taking it	Yes	152	68.80
	No	69	31.20
Somebody advised me not to take it	Yes	47	21.30
	No	174	78.70
I took the medications before the health care personnel	Yes	56	25.30
	No	165	74.70
I took the recommended two doses of IPT	Yes	57	25.80

Table 1 reveals that 148 (67.00%) respondents said that IPT will make them gain weight; 48 (21.70%) said that they don't need to take IPT, it is not safe for their baby and them; 157 (71.00%) stated that malaria drugs should be taken only when you are ill; 144 (65.20%) said that they did not take it because they are scared it will affect their baby at this gestational age; 152

(68.80%) responded that they did not feel like taking it; 174 (78.70%) stated that nobody advised them not to take it; 165 (78.70%) said that they did not take the medications before the health care personnel; 164 (74.20%) did not take the recommended two doses of IPT while only 57 (25.80%) took the recommended dose of IPT.

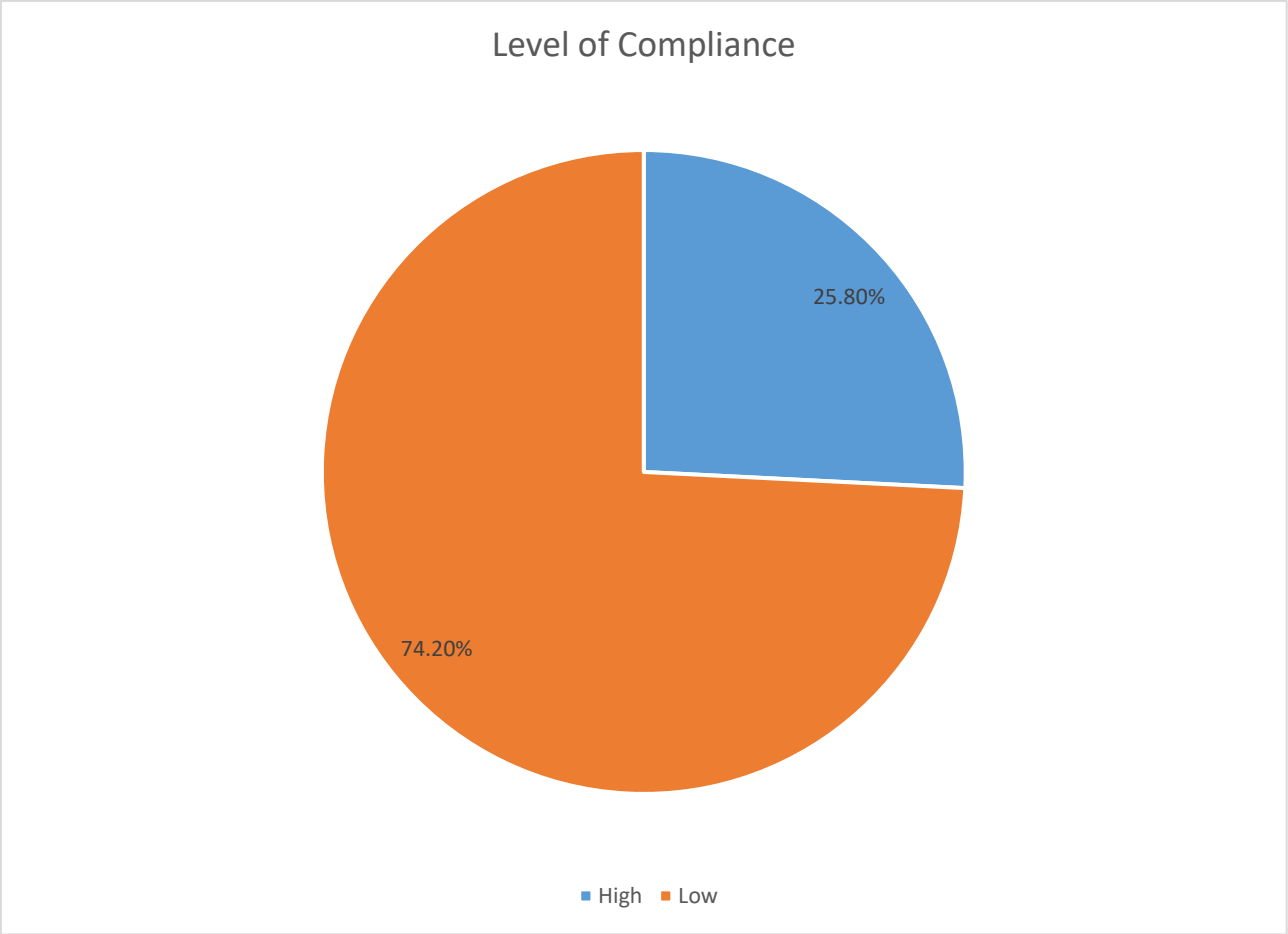

Fig 1: Pie Chart showing Level of compliance to intermittent preventive treatment of malaria among the respondents

The result in Fig 1 above showed that about one quarter 57 (25.8%) of the respondents had high level of compliance while 164 (74.2%) had low level of compliance with intermittent preventive treatment of malaria.

Table 2: Factors Influencing Compliance to IPT

SN	Items	SD F(%)	D F(%)	A F(%)	SA F(%)	Remark
1	Distance to the health care facilities	42(19.0)	71(32.1)	81(36.7)	27(12.2)	Agree
2	My culture forbids it	0(0.00)	0(0.00)	96(43.4)	125(56.6)	Agree
3	Unfriendly nature of health staff at the ANC	44(19.9)	96(43.4)	81(36.7)	0(0.00)	Disagree
4	I prefer traditional care to formal care	27(12.2)	54(24.4)	98(44.3)	42(19.0)	Agree
5	Fear of reaction	0(0.00)	0(0.00)	152(68.8)	69(31.2)	Agree
6	I did not know the right time for first visit to ANC	0(0.00)	0(0.00)	96(43.4)	125(56.6)	Strongly agree
7	Taking medication during pregnancy causes problem	0(0.00)	54(24.4)	140(63.3)	27(12.2)	Agree

Hint: SA = strongly agree, A = agree, D = disagree and SD = strongly disagree

Table 2 revealed that, the factors influencing compliance with IPT were: fear of reaction 152 (68.80%), not knowing the right time for first visit to ANC was a factor influencing compliance to IPT and cultural values 125 (56.60%) each, and taking medication during pregnancy causes problem 140 (63.30%).

Table 3: Chi-square test showing association between between gestational age and compliance with intermittent preventive treatment of malaria among respondents

Variable	Compliance		Total	df	$\chi 2$	p-value	Decision
Gestational age	**High Freq.**	**Low Freq.**					
1st trimester	22	30	52	2	10.16	0.01*	H_o rejected
2nd trimester	21	71	92				
3rd trimester	14	63	77				

*Significant; p<0.05.

Table 3 showed that there was a statistically significant association between gestational age and compliance ($\chi 2$ = 10.16, df = 1, p<0.05).

Table 4: Chi-square test showing association between maternal age and compliance with intermittent preventive treatment of malaria among respondents

Variable	Compliance		Total	df	$\chi 2$	p-value	Decision
Maternal age	**High Freq**	**Low Freq**					
<19yrs	4	23	27	3	24.29	0.00*	H_o rejected
19-25yrs	19	98	117				
26-40yrs	24	31	55				
41-49yrs	10	12	22				

*Significant; p<0.05.

Table 4 showed that there was a statistically significant association between maternal age and compliance ($\chi 2$ = 24.29, df = 3, p<0.05).

Table 5: Chi-square test showing association between parity and compliance with intermittent preventive treatment of malaria among respondents

Variable	Compliance		Total	df	$\chi 2$	p-value	Decision
Parity	**High Freq**	**Low Freq**					
1	45	134	179	4	6.49	0.09*	H_o not rejected
2	10	28	38				
3	0	2	2				
4	2	0	2				

*Not Significant; p>0.05.

Table 5 showed that there was no statistically significant association between parity and compliance ($\chi 2$ = 6.49, df = 4, p>0.05).

Table 6: Chi-square test showing association between parity and level of knowledge of intermittent preventive treatment of malaria among respondents

Variable	Level of Knowledge			Total	df	$\chi 2$	p-value	Decision
	Poor	**Good**	**Average**					
Parity	**Freq**	**Freq**	**Freq.**					
1	55	38	86	179	6	8.49	0.20*	H_o not rejected
2	8	12	18	38				
3	2	0	0	2				
4		1	1	2				

*Not Significant; p>0.05.

Table 6 showed that there was no statistically significant association between parity and knowledge ($\chi 2$ = 6.49, df = 4, p>0.05).

Discussion of Findings

The findings of the study are discussed below:

Only 25.8% of the pregnant women in the research actually took the full dosage of intravenous pyrogallotherapy (IPT), indicating a low level of compliance. The results of this study are consistent with those of other investigations. Case in point: Edouard and Muawiyyah (2020) found a dismal compliance rate of just 24.5% in Burwdi; in contrast, Peters and Naido (2022) found that nearly all participants (99.5%) in their study did not take IPTp-SP according to the national guidelines in selected primary health care facilities of Bwari area council, Abuja, Nigeria. Only 33% of pregnant women in other trials actually followed the malaria prevention plan, according to those studies (Uchechukwu et al., 2021; Farotimi et al., 2019). There has been little improvement in compliance and utilization of the IPTp method utilizing SP, despite evidence that it effectively reduces the incidence and deleterious effects of malaria during pregnancy. Because of this, health care providers should step up their initiatives to raise awareness and sensitize the public about the significance of following preventative tactics, such as increasing the use of IPTp SP, in order to enhance health outcomes. One possible explanation for the high degree of concordance between the current study and its predecessors is that the sample size was very small.

Findings of the study show that several factors influence compliance with IPT among pregnant women. Result showed that not knowing the right time for first visit to ANC was a major factor influencing compliance to IPT which was followed by fear of reaction and side effects from the medication. These findings are in agreement with the findings of Peter and Naido (2022) from a study on primary health care facilities of Bwari area council, Abuja, Nigeria and Edouard and Muawiyyah, (2020) in Muramvya Health District in Burwdi which reported poor knowledge of IPTp in malaria prevention and as well as gestational age at first ANC visit respectively. several studies in Nigeria have shown a greater measure of efficacy of IPT using Sulfacloxine - Pyrimethanine (IPTp-SP) in preventing malaria in pregnancy among Nigeria women, implementation of these interventions is very poor which attributed to various factors.

According to the results, there is no correlation between respondents' knowledge and their adherence to IPT. A substantial correlation ($p<0.05$) was found between the respondents' degree of knowledge and their compliance with IPT, according to the results of the analysis for the association between the two. This is in line with previous research that found that few women understood the significance of IPT in preventing malaria, which affects the use of IPTp-SP. For example, Uchechukwu et al. (2021) found that only 33% of women who heard about IPTp followed the malaria preventive strategy. Peters and Naido (2022) also found that this lack of understanding influences the use of IPTp-SP.

Among pregnant women in Nembe Local Government Area, Bayelsa State who visited health care facilities, there was a significant association ($p<0.05$) between respondents' gestational age and compliance with intrapartum prophylaxis (IPT), but no statistically significant association between the two. In a similar vein, Edouard and Muawiyyah (2022) found that gestational age was one of the independent drivers of taking the optional dose (three plus) of IPTp-SP among their respondents (aOR=3.3, 95% CI (1.4-7.7), P =.005).

The finding of the study also revealed that there was a statistical significant association between maternal age and compliance to IPT among the respondents. This result is similar to the observation of the study by Edouard and Muawiyyah, (2022) which revealed that age (aOR=3.3, 95% CI (1.4-7.7), P = .005) was among the independent determinants of taking optional dose (three +) of IPTp-SP among their respondents.

Conclusion

Researchers in Bayelsa State's Nembe Local Government Area found that few pregnant women who visited healthcare facilities actually took their iron pills as prescribed. Therefore, in order to enhance health outcomes, there needs to be a strong campaign to raise awareness and sensitize people to the IPT-SP.

Recommendations

The following are recommendations based on the findings of the study.

i) Medical professionals at all levels of the system should do their part to raise awareness and sensitivity about the significance of IPTp-SP through a comprehensive and intense campaign.

ii) Health education on the risks of malaria during pregnancy can also greatly improve compliance with IPTp_SP.

iii) In order to increase the frequency of intrapartum therapy (IPT), pregnant women should be encouraged to use neighboring health care facilities and to start antenatal checkups as soon as possible. This is because delaying ANC will reduce the frequency of IPT.

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