
ADHERENCE AND PREVALENCE OF INTERMITTENT PREVENTIVE TREATMENT AGAINST MALARIA DURING PREGNANCY IN SIX STATES OF NIGERIA

Mustapha Usman Baba¹, Kabiru S. Labaran, Ibrahim Isah¹, Muhammad Yusuf EL-Tahir¹,
Abba Bello Muhammad² and Usman Inuwa Balarabe³

1. Department of Statistics School of Technology, Kano State Polytechnic
 2. Sabon Garin Wudil, Wudil Local Government Kano.
 3. No. 52 Madabo Quarters Dala Local Government Kano.
- Corresponding Email: mubstatistics@kanopoly.edu.ng

Abstract

Optimal Intermittent preventive treatment (IPTp) dose of sulphadoxine-pyrimethamine (SP) uptake during pregnancy protects pregnant women from malaria related cases. This study determines whether malaria during antenatal period depends on IPTp-SP uptake in six states of Nigeria namely Adamawa, Benue, Nassarawa, Ogun, Ondo and Taraba State. The data was obtained from a survey conducted by Federal Ministry of Health in collaboration with National Bureau of Statistics and World Bank. The study assessed six states of Nigeria in the year 2013. A total of 1676 pregnant women were selected for the current analysis. Data analysis involved the use of Brandt and snedecor's test for associations without employing multivariate analysis to take care of confounding. Over all, malaria during pregnancy period and IPTP uptake were linearly related with (p -value < 0.001), and the odds of women who received IPTP dose were 74.2% less likely than those who did not receive the dose at all (OR=0.2579, 95% CI=0.2081 – 0.3197). Therefore, ignoring intermittent preventive treatment against malaria during the antenatal visit is a missed opportunity. Hence lack of understanding the importance of the dose contributes to its low uptake.

Key words: Pregnancy, Malaria, IPTp-SP, Nigeria

Background

Malaria during pregnancy is one of the major health concerns in Nigeria that lead to both maternal and neonatal mortality. Intermittent preventive treatment against malaria during pregnancy IPTp is one of the strategies for pregnant women considering whether they are malaria positive or negative [1,2]. IPTp-SP was adopted by Nigerian government in the year 2005 as a national strategy as recommended by W.H.O [1]. The strategy of adopting IPT for controlling malaria during the pregnancy period, shows significant reduction of incidence of maternal anaemia, placental parasitaemia, peri-natal death and low birth weight rate deliveries particularly in developing countries including Nigeria [3-7]. Administration of two curative IPTp-SP doses given during the second and third Trimesters of pregnancy was the Nigerian national policy [8]. Inferiority of Single-Dose Sulfadoxine-Pyrimethamine Intermittent Preventive Remedy for Malaria during the pregnancy of women with HIV-Positive Zambia was examined. Maternal and neonatal birth outcomes were compared; they served as a function of doses the mothers received (1 to 4 doses). IPTp-SP Dose was a familiar result of trying to apply the standard optimal dose treatment and was lower to all other dosing regimens. It implied that monthly SP - IPTp may eventually be more effective than the standard procedure by reducing the risk unintentionally under-dosing mothers [9]. IPTp SP uptake during pregnancy is poor in Ibadan, Nigeria [10] but multigravidae were more than twice less likely to take IPTp SP compared to primigravidae.

[11] studied the Effects of Malaria and Intermittent Preventive (IPTp) Treatment During Pregnancy on Fetal Anemia in Malawi with Unconditional linear and logistic regressions were achieved on a cross-sectional study of 3,848 mothers and babies delivered at Queen Elizabeth Central Hospital in Blantyre, Malawi between 1997 and 2006, with multiple charge for missing covariates to measure the relations between malaria, IPTp with SP, and fetal anemia. It was observed that women pregnant at the first time who did not receive IPTp had children at highest risk for fetal anemia. There was no significant association between SP use and cord Hb or fetal anemia. It was recommended that intermittent preventive treatment during pregnancy with SP may continue to be safe and effective in preventing malaria in pregnancy and fetal anemia regardless of development of SP resistance. [12] measured the level and predictors of optimal IPTp-SP doses in six districts of Tanzania using Chi-Square to test the independent association between IPTp uptake and risk factors of malaria during antenatal period, and multinomial logistic regression for multivariate analysis. [13] determine the pattern of IPTp utilization by pregnant women in a rural town in Western Nigeria.

Methods

Data and Area

The information employed in this research was a secondary data obtained from National Bureau of Statistics Nigeria, it was survey conducted by Federal ministry of Health in collaboration with National Bureau of Statistics and World Bank in the year 2013. It was Health Results Based Financing Nigeria using an exit interview for antenatal care visit in six states of Nigeria namely Adamawa, Benue, Nassarawa, Ogun, Ondo and Taraba State. The data was analyzed using the standard methods of applied statistics in health sciences. A total of 1676 ANC women were selected from the database for this analysis whom responded for malaria related questions. The analysis involved the use of Brandt and snedecor's test for associations without employing multivariate analysis to take care of confounding. Each variable with (p-value < 0.05) was considered significant.

Statistical Analysis

The variable used for this research was malaria status among the pregnant women. It was derived from the question whether the pregnant woman was prescribed or given any antimalarial pill used for curing malaria like Arthimeter, fansider or chloroquine. The response was categorized into Yes (indicates malaria positive) and No (indicates absence of malaria). While the other variable was IPTp-SP uptake, which was categorized into None (0-dose), partial dose (1-dose) and optimal dose (2-doses). The data was presented in 2 x 3 cross table below:

Table 1:

		Use of IPTp			Total
		0-DOSE	1-DOSE	2-DOSES	
Malaria in pregnancy	YES	418	288	123	829
		50.4%	34.7%	14.8%	100.0%
	NO	176	454	217	847
		20.8%	53.6%	25.6%	100.0%
Total		594	742	340	1676
		35.4%	44.3%	20.3%	100.0%

Table 1 indicates that 50.4% of the pregnant women do not take IPTp-SP, and they were found to have malaria in pregnancy. Also 34.7% and 14.8% take partial and optimal IPTp-SP respectively, and they were found with malaria during the pregnancy period. For those without malaria, 20.8%, 53.6% and 25.6% took none, partial and optimal IPTp dose respectively. The data was presented in a Bar chart below.

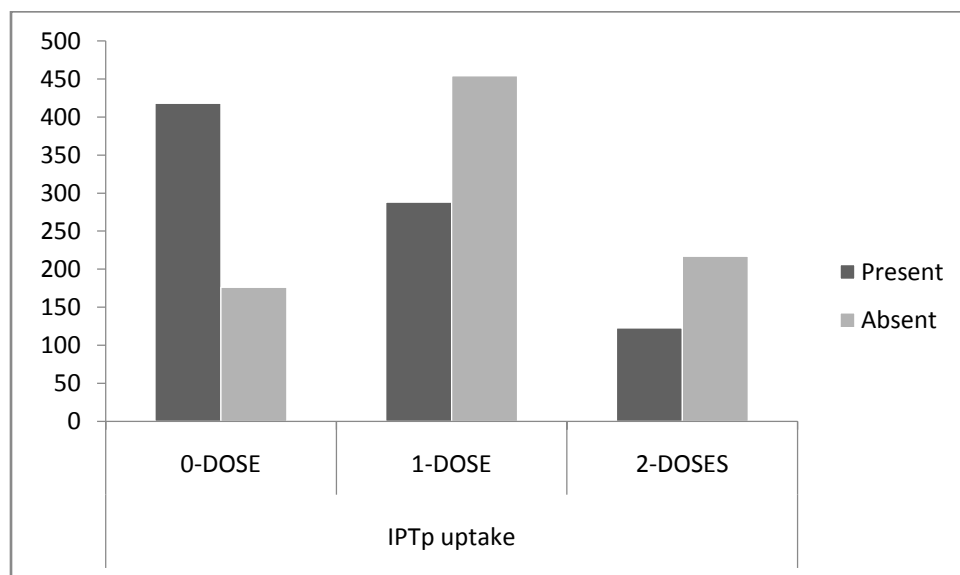


Figure 1:

The result below was significant with p-value less than 0.05; this shows that malaria during pregnancy depends on IPTp-SP uptake. Brandt and snedecor's test arrived at $\chi^2 = 149.56$ which is greater than the chi-square tabulated value $\chi^2_{0.05, 2} = 5.99$. Hence the result was significant.

Table 2: Chi-Square Tests

	Value	Df	p-value
Pearson Chi-Square	161.544 ^a	2	.000
Likelihood Ratio	165.109	2	.000
Linear-by-Linear Association	128.063	1	.000
N of Valid Cases	1676		

Table 1 was later transformed to two by two simple contingency table, in which antenatal women that uptake partial and optimal IPTp SP were categorized as exposed group, while those with 0-Dose were unexposed group. The odds ratio is the probability that an event will happen divided by the probability that an event will not happen [14]. This research intended to determine the odds that malaria in pregnancy will occur among women who were exposed to IPTp and the magnitude of the effect.

Table 3:

		Use of IPTp		Total
		Exposed	Unexposed	
Malaria in pregnancy	YES	411	418	829
	NO	671	176	847
Total		1082	594	1676

$$\begin{aligned}
 \text{Odds ratio} &= \frac{\text{odds of exposed}}{\text{odds of unexposed}} \\
 &= \frac{411 \times 176}{418 \times 671} \\
 &= 0.2579
 \end{aligned}$$

Hence, the odds ratio less than one shows that the odds of exposure among cases is less likely than the odds of exposure among controls and exposure may be protective against the disease [15]. Therefore, the odds ratio above shows that the odds of women who receive IPTp SP were 74.2% less likely than those who did not receive the dose at all.

The log of the estimated OR is

$$\ln(OR) = -1.355$$

while the estimated standard error of the log of estimated odd ratio is

$$S.E(\ln(OR)) = 0.1095.$$

And 95% CI of the odds Ratio is given by:

$$\begin{aligned}
 &= [e^{\ln(OR) - 1.96 S.E(\ln(OR))}, e^{\ln(OR) + 1.96 S.E(\ln(OR))}] \\
 &= [0.208, 0.3197]
 \end{aligned}$$

This indicates a significant effect; therefore IPTp-SP shows a preventive effect against malaria during pregnancy period.

Discussion

This study showed that 64.6% of the antenatal women used IPTp-Dose, were 44.4% and 20.3% took partial and optimal doses respectively. This is much higher than of Malawi (38%) [4] and the reported 5% antenatal women from Kenya. Malaria attack prevalence in Nigeria in 2012 was 47.8%. Only (40.4%) pregnant women practice IPTp for malaria Prevention, with only 14.6% of them uptaking the recommended optimal IPTp dose during pregnancy. This study shows a great improvement [13] as compared with prevalence in 2009 which was 18.4% and that of 2012.

Conclusion

This study concludes that some of pregnant women who attend ANC in Nigeria do not receive IPTp-Dose, but most of them stop the treatment after receiving partial-dose. An identified challenge was utilization of the dose was not as expected, in spite of free provision of the doses and organization under direct supervision of health facility as stated by the Nigerian Government policy statement. Therefore ignoring intermittent preventive treatment against malaria during the antenatal visit is a missed opportunity. Hence lack of understanding the importance of the dose contributes to its low uptake.

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