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Assessment of intermittent preventive treatment for malaria among pregnant women in a tertiary hospital in Northern part of Nigeria

MODUPE IRETIOLA BUILDERS [1,*], DANLAMI WETCOS DAYOM [2], STEPHEN AJEN ANZAKU [3], AKANDE TUNJI [4] and PETER UDUAK ISE [1]

[1] *Department of Pharmacology and Toxicology, Faculty of Pharmacy, Bingham University, Karu, Nasarawa, Nigeria.*
[2] *Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Bingham University, Karu, Nasarawa.*
[2] *Department of Obstetrics and Gynaecology, College of Medicine and Health Sciences, Bingham University, Jos Campus, Jos, Nigeria.*
[3] *Department of Medical Laboratory Science, Faculty of Allied Sciences, Bingham University, Karu, Nasarawa. Nigeria.*

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Abstract

The objective of this study is to assess the IPTp use among the pregnant women attending the antenatal clinic in Bingham University Teaching Hospital and improve the knowledge and attitudes of the patients toward the treatment. Method: A cross-sectional study was carried out between August and December 2017 among 107 pregnant women selected by systematic random sampling from antenatal care attendees at Bingham University Teaching Hospital in Jos North local Government of Plateau State of Nigeria. Information on the knowledge, attitudes and practices with respect to intermittent preventive treatment (IPTp) with sulphadoxine –pyrimethamine (SP) were obtained with the aid of a pre-tested interviewer-administered questionnaire. Descriptive statistics and Bivariate analysis were used to analyze the data. Results: Most of the interviewees were aged 26-30 years 40(37.4%) of the respondent, there was a high significant association between the age, educational level and occupation of the patients. Many of the respondents 57 (61%) were graduates, the association between the knowledge of malaria and level of education was highly significant. About 32 (29.9%) of the respondents had poor knowledge of treatment of malaria, there was a high significant association between the knowledge of treatment of malaria and level of education. 26 (24.3%) of the patients rarely used insecticide treated nets (ITNs) as method of malaria prevention, the association between the knowledge of malaria prevention and educational level was significant. Conclusion: Effort is needed to increase the sensitization of pregnant women about the benefits of IPTp in order to improve IPTp compliance.

Keywords: Malaria; Pregnant Women; Intermittent Preventive Treatment; Sulphadoxine-Pyrimethamine

1. Introduction

Malaria reduces immunity in pregnant women thereby making them to be one of the most vulnerable groups [1]. Intermittent Preventive Treatment in Pregnancy with Sulphadoxine-Pyrimethamine (IPTp-SP) and use of Insecticide Treated Nets are recommended by World Health Organization (WHO) in stable malaria areas to reduce adverse effects of malaria in pregnancy [1, 2]. In these areas, the harmful impact of malaria is most evident in primigravidae and secundigravidae [3]. Malaria during pregnancy causes maternal anaemia, placental parasitaemia and low birth weight [4].

* Corresponding author: BUILDERS MODUPE ; Email: modupebuilders@yahoo.com
Department of Pharmacology and Toxicology, Faculty of Pharmacy, Bingham University, Karu,Nasarawa, Nigeria.

The single dose therapy of IPTp-SP makes it attractive because of its simple administration, low cost, good safety profile and good compliance [3, 5]. SP is recommended to be administered in the second and third trimesters of pregnancy during antenatal care (ANC) visits [5, 6]. Several studies have shown increase resistance to SP in Africa countries therefore the effectiveness of IPTp-SP has not been certain. For example, SP treatment failures have been reported in Ghana, Uganda, Malawi and Tanzania [6, 7].

In addition, dihydrofolate reductase triple mutation among *Plasmodium falciparum* isolates, which confers resistance to SP has been documented in 73% of pregnant women in some Africa countries [8-10].

The important entry point to target the pregnant women for chemoprophylaxis is antenatal clinic, studies have shown that many women attend this clinic at least once during pregnancy in Nigeria [3]. ANC packages promote timely and appropriate care during pregnancy and timely attendance at ANC clinic for effective delivery of IPTp services to curtail maternal morbidity and mortality as well as better birth outcomes [8].

Information on assessment of association between IPTp-SP usage and malaria knowledge, level of education, malaria treatment and malaria prevention are limited. Therefore, this study set to assess the knowledge and attitudes of pregnant women attending antenatal clinic in Bingham University Teaching Hospital in relation to IPTp-SP usage and malaria prevention. It is expected that findings from this study may be used as a guide for planning of programmes to improve IPTp-SP usage.

2. Material and methods

2.1. Study area and population

The study was conducted in Bingham University Teaching Hospital, Jos, Nigeria from August to December, 2017. The area characteristics have been described elsewhere [4], in brief, the study was carried out in Jos North local Government Area in Plateau state. It has an area of 291km^2 and a population of 1, 900, 897, the major occupation of the inhabitants is trading. The study population comprised all consenting pregnant women attending antenatal care unit of Bingham University Teaching Hospital.

2.2. Study design and sampling

The research was a cross sectional study. The sample size was calculated by a systematic sampling technique based on the total number of pregnant women attending the clinic annually. One hundred and seven pregnant women were recruited into the study.

2.3. Selection criteria

All the pregnant women who gave consent to participate in the study that reported in the antenatal clinic for the first time and who had received at least one dose of IPTp-SP during the first two trimesters of the pregnancy were recruited into the study. Also, respondents aged 18yrs and above were included in the study.

2.4. Ethical clearance

Ethical approval for this study was obtained from Bingham hospital's research ethics committee. Written informed consent was sought from each participant before the interview.

2.5. Data collection

Information was collected using a structured questionnaire administered by trained research assistants. The questionnaire comprised questions on socio-demographic characteristics, knowledge and attitude of pregnant women to IPTp-SP use, malaria treatment and prevention.

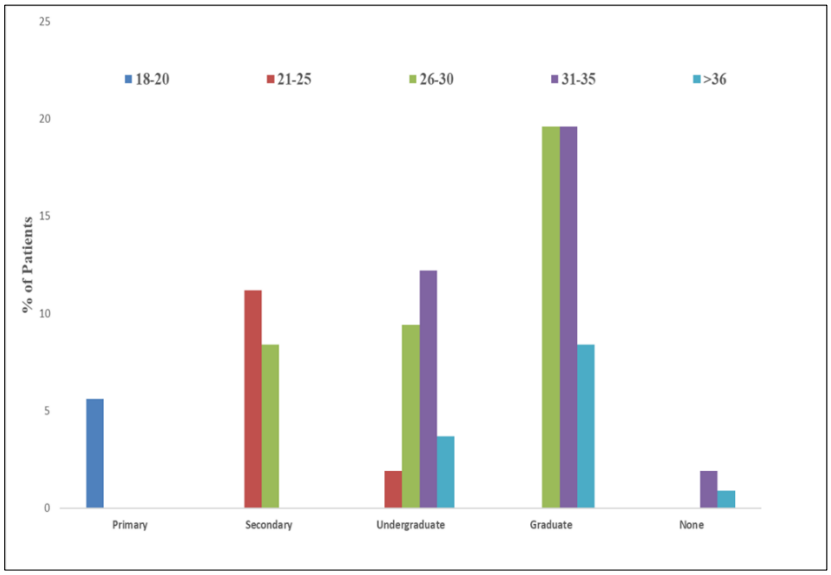
2.6. Data analysis

Statistical Package for Social Sciences (SPSS) version 22.0 SPSS Inc, Chicago, II, USA was used to enter all data. Data were analyzed using frequency, tables, graphs and percentages. Bivariate analysis was done using Kendall test to compare proportions for categorical variables. Results were considered to be significant when the 2-sided value was < 0.05.

3. Results

3.1. The relation between age distribution and educational level

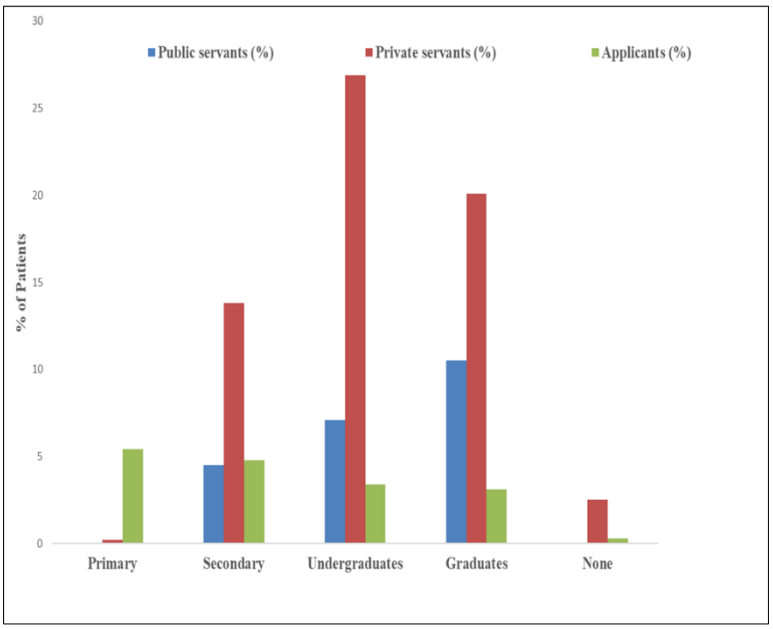
Figure 1 indicates that 33.7% of the participants were in age group 31-35yrs. Majority were graduates (19.6%), followed by undergraduates (12.2%) and illiterates (1.9%). There was a high significant association between the age and educational level.



**. Correlation is significant at the 0.01 level (2-tailed).

Figure 1 The relation between age distribution and educational level

Majority of the participants are private servants (63.5%) followed by public servants (32.1%). There was a high significant association between the occupational level and educational level as shown in figure 2.

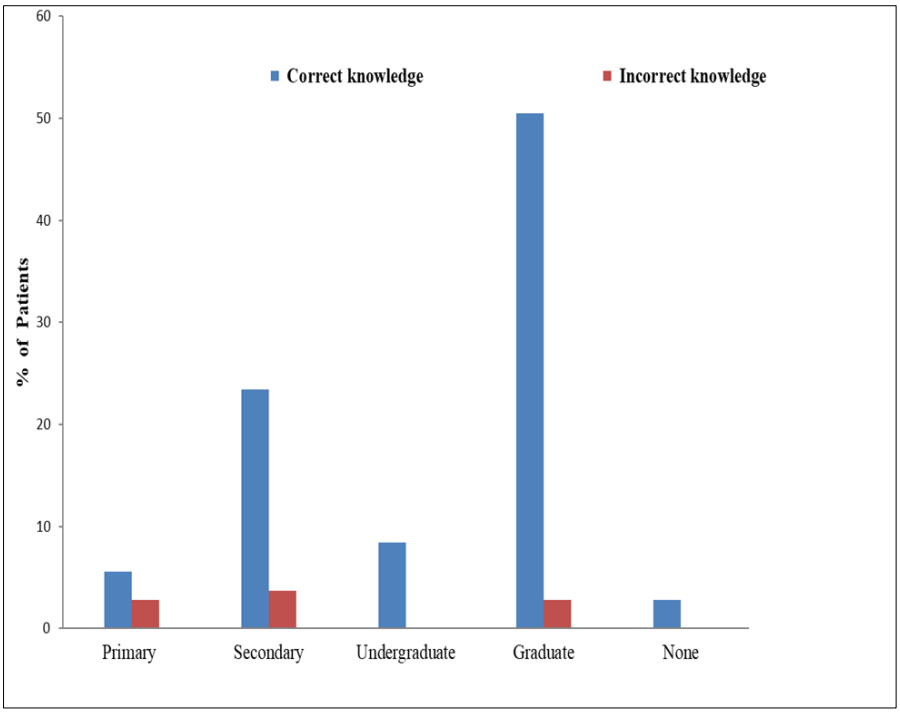


**. Correlation is significant at the 0.01 level (2-tailed).

Figure 2 The relation between age distribution and occupational level

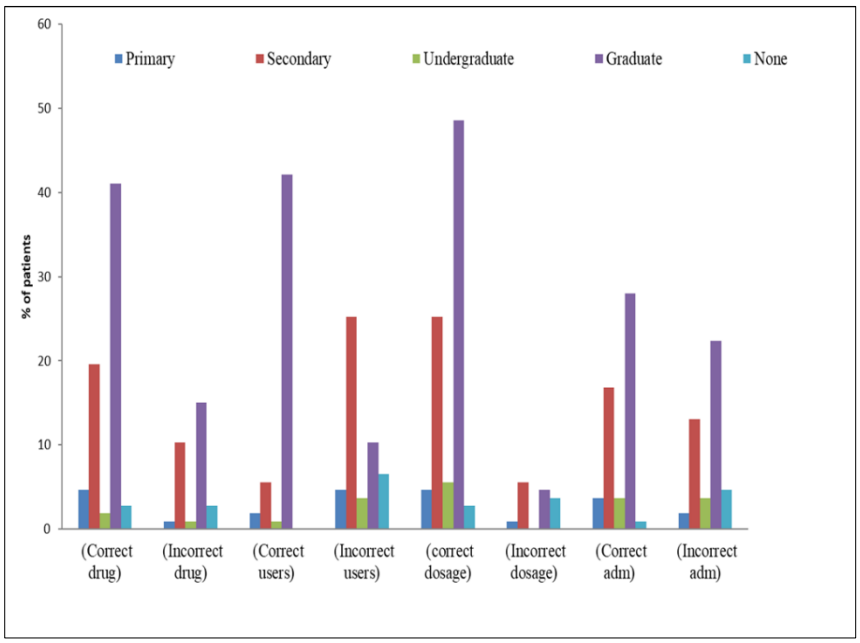
3.2. The relation between malaria knowledge and educational level

Malaria knowledge did not correspond with the level of education of participants, however graduates (50.5%) had the highest correct knowledge of malaria followed by secondary leavers (23.4%) as shown in figure 3. The association between the knowledge of malaria and level of education was highly significant.



**. Correlation is significant at the 0.01 level (2-tailed). The relation between malaria treatment and educational level

Figure 3 The relation between knowledge and educational level



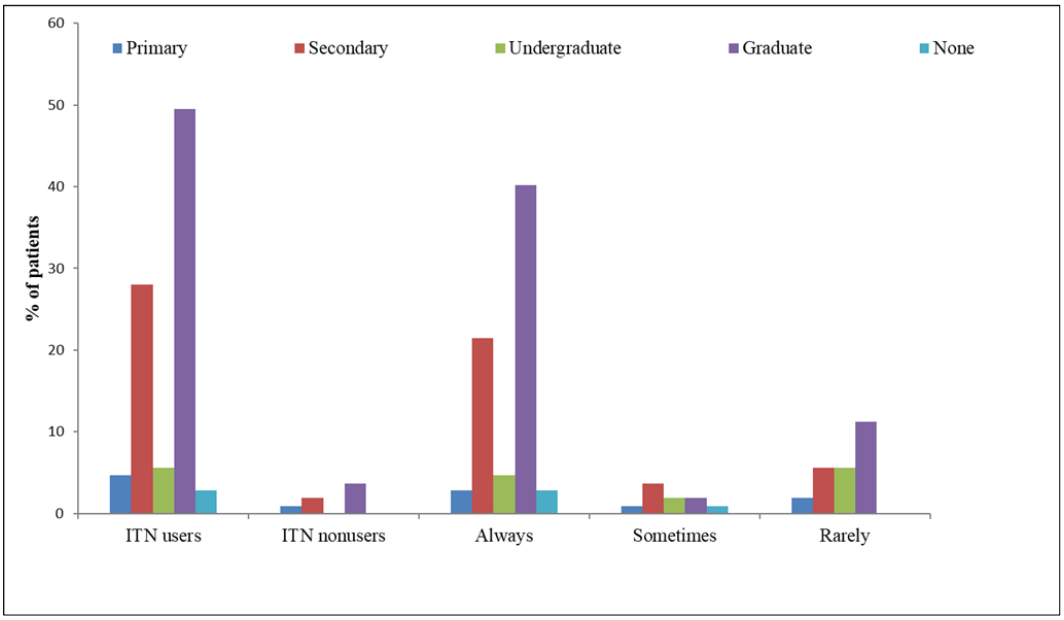
**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4 The relation between knowledge of treatment and educational level

Figure 4 illustrates the relation between malaria treatment and educational level. The mode of malaria treatment was not proportional to the educational level of respondents. Graduates had the highest knowledge of malaria treatment in terms of IPTp-SP (41.1%) IPTp-SP usage (42.1%), dosage (48.6%) and administration (28.0%), followed by secondary leavers, IPTp-SP (19.6%) IPTp-SP usage (5.6%), dosage (25.2%) and administration (16.8%). There was a high significant association between the knowledge of treatment of malaria and level of education.

3.3. The relation between malaria prevention and educational level

Malaria knowledge of prevention was not in accordance with the level of education of participants. Graduates had the highest knowledge of prevention with (49.5%) ITN users and 40.2% regular users followed by secondary leavers (28.0%) ITN users and (21.5%) regular users. The association between the knowledge of malaria prevention and educational level was significant as indicated in figure 5.



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

Figure 5 The relation between knowledge of malaria prevention and educational level

4. Discussion

Malaria is the leading cause of illness and death in Africa and adversely affects different demographic and socio-economic groups [11]. Socio-cultural and demographic variables are used to differentiate different groups according to age/age group, number of pregnancies and socio-economics status [11]. This gives the classical variables that serve as a basis for designating social categories that can be compared and possibly individually targeted [12].

Research has shown that IPTp-SP usage is dependent on age, therefore this explains the high significant association between age group and IPTp-SP users [1,3,5]. Studies have shown the importance of education in health care and there is a need to intensify health education schemes for pregnant women in rural areas. The high significant association between the age group and educational level is in line with several research [1,5] in which IPTp-SP users were significantly more educated.

Better health seeking behavior has been exhibited with people with stable income because social status of patients correlates with health care [1, 13, 14]. The association between the educational level and occupational level is significantly high because IPTp-SP users were significantly better employed.

The use of SP in pregnancy in health promotion activities like provision of health education, nutrition and promotion of ITN use has increased the knowledge of pregnant women in malaria prevention because many women benefit from this intervention [14, 15]. This research strongly supports the high significant association between the malaria knowledge and educational level.

Assessing the possible correlation between educational level and malaria treatment may provide information on the effectiveness of IPTp-SP in preventing malaria among pregnant women [5]. Since education and socioeconomic status are strongly associated with IPTp-SP use, therefore early and regular antenatal clinic visit by educated and employed women increase the IPTp-SP usage [16, 17]. This showed strong correlation between IPTp-SP dosage and malaria in pregnancy, to buttress this, several studies have shown strong correlation between education and malaria [5, 18], the result of our findings is in agreement with the high significant association between malaria treatment and educational level.

The most specific method of malaria prevention by many mothers is the use of insecticide treated net (ITN), which is highly dependent on the frequency of malaria prevention [16, 19]. Research has shown that education has a strong link with malaria, this means that education is dependent on health seeking behavior, therefore more educated women will take measures to prevent malaria than less educated women [5, 16, 19]. The significant association between malaria prevention and educational level is explained by these findings, however some studies do not corroborate our findings [5,19] but the use of ITN reduces malaria morbidity and mortality according to several studies [18,19].

Limitation

The main limitation of this study is lack of information on sensitive indicators of malaria in pregnancy such as low birth weight (LBW) and placental parasitemia. However, several studies have been published to show the efficacy of IPTp-SP usage in reducing placental parasitaemia and preventing LBW (IP9). Other limitations are inability to assess number, timing of ANC visits and availability of IPTp-SP.

5. Conclusion

IPTp-SP usage is a strategy to reduce maternal malaria, maternal anaemia and improve birth outcomes weight, therefore there is need to intensify health education programs for pregnant women with low educational status. This will go a long way to improve their knowledge of malaria and attitude toward the use of IPTp-SP.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

No conflict of Interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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