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Research Article

KNOWLEDGE AND ADHERENCE TO ANTIMALARIAL DRUGS REGIMEN AMONG INDIVIDUALS IN JALINGO LGA, TARABA STATE

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ABSTRACT

Poor adherence to standard malaria drug regimens has resulted in the spread of antimalarial drug resistance. Non-adherence to antimalarial is the potential for treatment failure or incomplete recovery from malaria. This study aims to assess the Knowledge and Adherence to Antimalarial drug regimens among individuals in Jalingo LGA, Taraba State of Nigeria. A descriptive cross-sectional study design was adopted using a questionnaire to collect the data. A total of 380 respondents were enrolled in the study. A probability simple random sampling was used to determine the sample size. SPSS was used for data analysis and Chi-square statistics was used to test the hypotheses. The result shows that majority of the respondents are male (54.7%), 18-29 years (37.9%) and SSCE holders (29.5%). Individuals with Non-formal education have the lowest knowledge (54.2%) on Antimalarial drug regimens, male has the lowest adherence (25%) on adherence to antimalarial compared to females (29.7%). It was also revealed that the age group of 18-29 years (38.9%) exhibited the lowest adherence. The test of hypothesis showed that there is a significant difference in knowledge of antimalarial based on educational qualification and adherence based on age while there is no significant difference in adherence based on gender. Health care workers, Government, NGOs should educate individuals about the importance of adhering to antimalarial drug regimens, including the risks of non-adherence.

Key Words: Adherence, Antimalarial, Drugs, Knowledge, Regimen

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INTRODUCTION

Malaria is a life-threatening disease that can be transmitted to people through some types of mosquitoes. It is still a huge social and economic health problem in the world. It is mostly found in tropical countries. It is preventable and curable. The infection is due to a parasite and does not necessarily spread from man to man. Symptoms can be mild or life-threatening. Mild symptoms are fever, chills and headache. Severe symptoms include fatigue, confusion, seizures, and difficulty breathing (WHO, 2023).

According to the World Malaria Report (2022), there have been 247 million cases of malaria in 2021 compared to 245 million in

2020. The estimated number of malaria deaths stood at 619,000 in 2021 compared to 625,000 in 2020. The WHO African Region maintains a disproportionately high percentage of the worldwide malaria burden. In 2021 the Region was home to about 95% of all malaria cases and 96% of deaths. Four African countries accounted for just over half of all malaria deaths worldwide: Nigeria (31.3%), the Democratic Republic of Congo (12.6%), United Republic of Tanzania (4.1%) and Niger (3.9%) (WHO, 2023). Apart from a huge consequence on health, malaria imposes a heavy financial burden on individuals, families and the whole economy. Malaria is totally preventable and treatable, however, if the remedy is behind schedule or ineffective, the parasite burden might also additionally increase rapidly, which has a case fatality rate of 10–20% even among those receiving treatment (Flatie *et al*., 2021).

To lessen the malaria burden, the World Health Organization (WHO) recommends the use of artemisinin combination therapy (ACT), for uncomplicated malaria that is diagnosed or tested with both microscopy or rapid diagnostic test (RDT), in a bid to reduce the misuse of ACT (Awoleye *et al*., 2016). WHO guidelines on the usage of ACTs for the treatment of uncomplicated malaria in 2005 was adopted by the Nigerian government. Unavailability and inaccessibility of healthcare facilities especially in rural areas in Nigeria is a limitation to provision of appropriate and effective malaria treatment services (Orimadegun *et al*., 2015). Malaria treatment is sought via diverse healthcare providers consisting of government-authorized health facilities and drug shops like pharmacies and patent medicine dealers (PMDs). (Uzochukwu *et al*., 2018). Most patients often prefer the informal sector due to its availability, accessibility and lower cost of treatment although treatment may be inappropriate and practice may be inconsistent with national treatment guidelines (Uzochukwu *et al*., 2018).

Despite advancements in orthodox medicine, herbal remedies have found wide patronage in the treatment of malaria (Babylon *et al*., 2022). One of the major reasons is the dissatisfaction with orthodox medicine as a result of the development of resistance to most antimalarial drugs including the popular Artemisinin-based Combination. Antimalarial drug resistance is the capacity of a parasite strain to live or survive and multiply regardless of the absorption of medication given in doses same as or higher than those usually recommended (Shibeshi *et al*., 2020). Among the factors that facilitate the emergence of resistance to current antimalarial drugs: are the parasite mutation rate, the general parasite load, the strength of the drug selected, the treatment adherence, poor adherence to malaria treatment guidelines, improper dosing, poor pharmacokinetic properties, fake drugs lead to inadequate drug exposure on parasites, and poor-quality antimalarial may aid and abet resistance (Shibeshi *et al*., 2020). Widespread and indiscriminate use of antimalarial drugs contributes to malaria parasites to adapt mechanisms of resistance (Lee *et al*., 2018). The increased rate of resistance towards antimalarial drugs is one of the serious challenges encountered in malaria control and elimination, as such antimalarial drug resistance in a setting where access to health care is limited has severe consequences (Alexandra *et al*., 2021).

MATERIALS AND METHODS

This Study adopted a Descriptive Cross-Sectional study that assessed the knowledge and adherence to antimalarial drug regimens among residents of Jalingo LGA, Taraba state. The data collected were quantitative data. The Population of the Study involves all individuals from the ages of 18 years and above who are residents of Jalingo at the time of data collection. The sample size was determined by William Cochran's formula (1977) for a finite population with a margin of error (e) at ±0.05 at a 95% confidence level, a sample size of 380 was determined. The sampling technique that was used in this study was the Probability, Simple Random Sampling Method. Primary data was collected via a structured questionnaire administered to the respondents. The questionnaire was designed in such a way that it is divided into two sections. The first section contained the demographic data of the respondents while the second section contained questions on knowledge and adherence to antimalarial drugs regimen. The results collected were analyzed using Statistical Package for Social Sciences (SPSS) and were presented in form of tables, frequencies and percentages. Chi-square was used to test the hypotheses.

RESULTS

It can be seen from the study that 54.7% (208) were male while 45.3% (172) were female. This shows that there were more females than males. Based on Age, 37.9% (144) of the respondents were 18-29 years, 41.1% (156) 30-39 years, 15.0% (57) 40-49 years and 6.0% (23) were 50 and above. From the above, majority of the respondents are aged 30-39 years old. In terms of educational level, 6.3% (24) of the respondents did not have formal education, 7.1% (27) had Primary certificate, 29.5% (112) had SSCE, 25.0% (95) had ND, 28.7% (109) had HND/BSc and 3.4% (13) were PG holders. This shows that SSCE holders were the majority (Table 1).

The study revealed that respondents with non-formal education exhibited varying levels of knowledge on antimalarial drugs regimen, 54.2% (13) had low knowledge, 41.7% (10) had moderate knowledge, and 4.1% (1) had high knowledge. Among those with a primary certificate, 44.4% (12) showed low knowledge, 51.9% (14) had moderate knowledge, and 3.7% (1) demonstrated high knowledge. Similarly, individuals with SSCE 40.2% (45) displayed low knowledge, 55.4% (62) had moderate knowledge, and 4.4% (5) had high knowledge. Those with ND showed 40.0% (38) low knowledge, 55.8% (53) moderate knowledge, and 4.2% (4) high knowledge. HND/BSc holders had 39.4% (43) low knowledge, 56.0% (61) moderate knowledge, and 4.6% (4) high knowledge. Finally, PG holders had 38.5% (5) low knowledge, 7.7% (1) moderate knowledge, and 53.8% (7) high knowledge regarding antimalarial drug regimen (see Table 2).

Table 1: Demographic Characteristics of Respondents (n=380)

Variable		Frequency	Percentage
Gender	Male	208	54.7%
	Female	172	45.3%
Age	18-29	144	37.9%
	30-39	156	41.1%
	40-49	57	15.0%
	50 and above	23	6.0%
Educational level	No formal education	24	6.3%
	Primary	27	7.1%
	SSCE	112	29.5%
	ND	95	25.0%
	HND/BSc	109	28.7%
	PG	13	3.4%

Source: Field 2024

Table 2: Knowledge of Antimalarial drug regimen among individuals in Jalingo LGA in relation to Educational Qualification

Level of Education	Low (%)	Moderate (%)	High (%)	Total (%)
NFE	13 (54.2)	10 (41.7)	1 (4.1)	24 (100)
Primary	12 (44.4)	14 (51.9)	1 (3.7)	27 (100)
SSCE	45 (40.2)	62 (55.4)	5 (4.4)	112 (100)
ND	38 (40.0)	53 (55.8)	4 (4.2)	95 (100)
HND/BSc	43 (39.4)	61 (56.0)	5 (4.6)	109 (100)
PG	5 (38.5)	1 (7.7)	7 (53.8)	13 (100)
TOTAL	**156(41.1)**	**201(52.9)**	**23(6.0)**	**380(100)**

Summary of statistical Analysis: χ^2=35.870, df=10, p-value=0.0006.

The adherence to antimalarial drug regimens in Jalingo LGA shows that a higher proportion of males (67.8%) than females (64.5%) exhibit moderate adherence, with lower proportions of both genders showing high adherence (males 7.2%, females 5.8%). The overall adherence rates are similar between genders, as indicated by the chi-square statistic ($X^2 = 1.181$, p-value = 0.554), which suggests no statistically significant

difference in adherence levels between males and females. The data reflects a generally moderate level of adherence across both genders, with slight variations in the distribution of low and high adherence rates.

Gender	Low (%)	Moderate (%)	High (%)	Total
Male	52 (25.0)	141 (67.8)	15 (7.2)	208 (100)
Female	51 (29.7)	111 (64.5)	10 (5.8)	172 (100)
Total	103 (27.1)	252 (66.3)	25 (6.6)	380 (100)

Table 3: Adherence to Antimalarial drugs regimen among individuals in Jalingo LGA in relation to Gender
Summary of statistical Analysis: χ^2=1.181, df=2, p-value=0.554.

The analysis of adherence to antimalarial drug regimens reveals that both males and females show similar patterns, with males having 25% low adherence, 67.8% moderate adherence, and 7.2% high adherence, while females have 29.7% low adherence, 64.5% moderate adherence, and 5.8% high adherence. Despite these similarities, females exhibit slightly lower adherence levels compared to males. The adherence rates vary by age, with younger individuals (18-29 years) showing the highest proportion of low adherence (38.9%) and the lowest proportion of high adherence (6.9%). In contrast, older age groups demonstrate better adherence, with 30.4% of those aged 50 and above showing high adherence. This suggests that younger individuals may need targeted interventions to improve adherence, while older individuals generally exhibit better adherence behaviors, potentially due to Tincreased health literacy and experience.

DISCUSSION

The study's findings indicate a clear correlation between educational qualifications and knowledge of antimalarial drug regimens among individuals in Jalingo LGA. Respondents with higher educational qualifications demonstrated significantly better knowledge of antimalarial drugs compared to those with lower educational levels. Specifically, those with non-formal education (NFE) and primary education levels had the highest percentage of low knowledge, whereas those with postgraduate education had the highest percentage of high

knowledge. This aligns with previous studies which suggest that higher levels of formal education contribute to improved health literacy and better understanding of healthcare information (Ntamabyaliro *et al.*, 2021).

Age	Low (%)	Moderate (%)	High (%)	Total
18-29	56 (38.9)	78 (54.2)	10 (6.9)	144 (100)
30-39	33 (21.2)	119 (76.3)	4 (2.6)	156 (100)
40-49	12 (21.1)	41 (71.9)	4 (7.0)	57 (100)
50 above	2 (8.7)	14 (60.9)	7 (30.4)	23 (100)
Total	**103 (27.1)**	**252 (66.3)**	**25 (6.6)**	**380 (100)**

Table 4: Adherence to Antimalarial drugs regimen among individuals in Jalingo LGA in relation to Age
Summary of Statistical Analysis: χ^2=19.707, df=6, p-value=0.003.

The lower knowledge levels among individuals with lower educational qualifications have significant public health implications. It can lead to suboptimal adherence to antimalarial treatment regimens, contributing to the development of drug resistance and increased malaria morbidity and mortality rates in communities. Therefore, targeted health education programs and initiatives aimed at improving access to healthcare information for individuals with lower educational qualifications are essential. Enhancing health literacy through community-based interventions and leveraging local resources to disseminate information about antimalarial drug regimens can improve adherence and contribute to malaria prevention and control efforts.

The study shows a comparable pattern of adherence to antimalarial drug regimens between males and females in Jalingo LGA, with a considerable portion of both genders exhibiting low adherence. Although the differences in adherence levels between males and females were not statistically significant, females showed a slightly lower adherence compared to males. This finding is inconsistent with some studies that found females to have better adherence rates (Hossain *et al.,* 2023). The observed low adherence among both genders, particularly among females, necessitates gender-sensitive interventions. Cultural norms and societal expectations may affect women's ability to adhere to medication regimens, such as caregiving responsibilities or limited decision-making power in healthcare. Public health strategies should therefore include gender-specific components, such as

engaging community leaders to address cultural barriers and promoting women's empowerment in health-related decision-making. Special attention should be given to pregnant women due to their heightened risk of malaria-related complications.

Adherence to antimalarial drug regimens varied significantly across different age groups. Younger individuals (18-29 years) exhibited the highest levels of low adherence, while older age groups showed better adherence. This trend aligns with findings from other studies which indicate that younger adults often have lower medication adherence rates due to lifestyle factors and a lack of awareness about the importance of adherence (Ge *et al.,* 2023). The lower adherence rates among younger individuals highlight the need for age-specific public health interventions. Younger adults may benefit from educational campaigns that emphasize the importance of adherence to antimalarial treatments. Utilizing digital platforms and social media could be effective in reaching this demographic. For older individuals, maintaining high adherence levels can be supported through continuous education and regular health check-ups. Understanding the specific barriers to adherence in each age group can help tailor interventions more effectively, improving overall treatment outcomes.

CONCLUSION

In conclusion, the findings of this study provide valuable insights into the factors influencing knowledge and adherence to antimalarial drug regimens in LGA. These results can inform targeted interventions aimed at improving malaria prevention and treatment strategies in the region.

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