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Practice of Malaria Prevention Strategies among Secondary School Students in Federal Capital Territory (FCT) Abuja, Nigeria

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Abstract

The purpose of this study was to assess practice of malaria prevention strategies among public senior secondary school students in Federal Capital Territory (FCT), Abuja, Nigeria. To achieve this, a descriptive survey research design was adopted for the study. A total of 400 public school students were used for the study from a total population of 85,495. The multi-stage sampling procedure which comprised of stratified, simple random, systematic, purposive and proportionate sampling techniques were used. The instrument used was a researchers-developed questionnaire. Descriptive statistics of frequencies and percentages were used to describe the demographic characteristics of the respondents, while mean and standard deviation were used to answer the research questions. Inferential statistics of one-sample t-test was used to test the hypothesis at 0.05 alpha level. Results of the study revealed that: practice of malaria prevention strategies among senior

secondary school students in FCT Abuja, Nigeria is significant (P = 0.000). It was recommended that the Federal Ministry of Education should further emphasize teaching as a strategy for disease prevention and control under disease prevention in health education curriculum for secondary school students, as this will help to further educate them and sustain the existing practice among the students.
Keywords: malaria, practice, prevention, strategies

Introduction

Malaria at present still represents a public health challenge in Nigeria and is a major cause of morbidity and mortality. Malaria is a serious and sometimes fatal disease which is caused by a parasite that commonly infects a certain type of mosquito (female anopheles) which feeds on humans (World Health Organization, 2020a). The mosquito infects an individual by injecting tiny plasmodium parasites from the saliva glands into the blood stream of an individual when feeding on it (Caraballo & King, 2020). These tiny parasites quickly migrate from the blood stream into the liver where they multiply and mature. After several days, the mature parasites enter the bloodstream and begin to infect red blood cells. Within 48 to 72 hours, the parasites inside the red blood cells multiply, causing the infected cells to burst open. The parasites continue to infect red blood cells, resulting in symptoms that occur in cycles that last two to three days at a time. Malaria is typically found in tropical and subtropical climates where the parasites can live (Centre for Disease Control and Prevention, 2019). People who get malaria are typically very sick with high fevers, shaking chills, and flu-like illness. P. falciparum is the type of malaria that is most likely to result in severe infections and if not promptly treated, may lead to death (Adigun et al., 2020). Although malaria can be a deadly disease, illness and death from malaria can usually be prevented.

Globally, the World Health Organization estimates that in 2017, 216 million clinical cases of malaria occurred, and 445,000 people died of malaria; most of them are children in Africa (World Health Organization [WHO], 2020b). Because malaria causes so much illness and death, the disease is a great drain on many national economies. Since many countries with malaria are already among the poorer nations, the disease maintains a vicious cycle of disease and poverty (European Alliance against Malaria, 2019). Malaria also contributes to malnutrition in children, which indirectly causes the death of half of all children under the age of five throughout the world (Abate et al., 2019).

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Malaria accounts for 30-50% of hospital admissions and a yearly loss of US $12 billion in the sub-Saharan African regions where the disease is most prevalent (Gosoniu et al., 2019; Eisele et al., 2018). Studies conducted in 2019 placed malaria as the fourth-leading cause of death in children in developing countries after perinatal conditions, lower respiratory infections, and diarrheal diseases (Black et al., 2010). Among adults, malaria is the second-leading cause of death from infectious diseases after HIV/AIDS (Black *et al.*, 2010).

The Nigerian National Malaria Control Programme, Malaria Indicator Survey of 2018 (NNMCP), shows that malaria remains a leading cause of maternal, child and infant morbidity and mortality in Nigeria (NNMP/MIS, 2018). The country accounts for up to 25% of malaria burden in sub-Saharan Africa, which is globally the highest burden region for malaria (Malaria Indicator Survey, 2020; Dawaki et al., 2017). In terms of morbidity, around 110 million of clinically diagnosed cases, 30 percent of health care facilities admission and 60 percent of outpatient visits are attributed to the disease each year (Mouzin, 2019). Malaria is also responsible for 300,000 childhood deaths annually (Kyu et al., 2013; WHO, 2019).

Practice refers to something that is usually or regularly done, often as a habit, tradition or custom (Cambridge Dictionary, 2019). Practice, according to this study, is the action taken in the use of malaria prevention strategies among senior secondary school students in FCT Abuja. Despite the growing concerns of malaria across the world, utilization of malaria prevention strategies remains a major challenge in Nigeria especially with respect to the three-pronged prevention measures recommended by Roll Back Malaria (RBM). The practice of malaria prevention has been globally accepted as a significant aspect of malaria control (Falade et al., 2018; Obrist et al., 2017). Udonwa et al. (2019) conducted a similar study to determine the malaria prevention practices of school adolescents in the coastal community of Calabar, Nigeria. The study reported that only few students practiced malaria prevention. The findings of the study revealed that clearing the vegetation in the peri-domestic environment (13.5%), opening up drainage (11%), using insecticide-treated nets (25.7%) and using antimalarial drugs (11.2%) were the practices done by the students. Mwanje and Comm (2019) reported that there still exist some myths regarding practice of malaria prevention such as difficulty in breathing associated with use of insecticide-treated nets (ITN).

Preventive strategy refers to measures taken to prevent diseases instead of curing or treating the symptoms (Faller, 2019). Kisling and Das (2019) are also of the view that prevention strategy consists of measures which are developed and aimed at at-risk population or individual to help them prevent against diseases. The purpose of prevention

is to prevent a disease from occurring. Thus, it is targeted at healthy individuals within a given population. It is commonly made up of activities that limit risk exposure among individuals who are at risk to prevent against a disease. Prevention strategies in the context of this study refer to the actions senior secondary school students take to help them avoid contacting malaria fever. Anene-Okeke et al. (2018) in their study reported that sleeping under insecticide treated nets (ITN), among others, is a malaria prevention practice. But the findings of the study revealed that good knowledge of malaria prevention does not result into healthy practices. Therefore, it is common to find out that certain individuals have good knowledge of malaria prevention but when their practices are assessed, it is found to be poor or inadequate (Dambhare et al., 2019; Singh et al., 2019; Udonwa et al., 2019; Eko et al., 2017).

Adigun et al. (2020) emphasized that control of malaria is dependent on key global prevention strategies, which include prompt and effective management of cases, intermittent preventive treatment (IPT) of malaria in pregnancy, and integrated vector management (IVM) which is comprised of insecticide-treated nets (ITN) use, indoor residual spraying (IRS), and environmental management (EM). The National Malaria Control Programme (NMCP) with the support of Roll Back Malaria (RBM) partners is keying into these strategies which formed the basis of the National Malaria Control Strategic plan (2017-2018) (MIS, 2018). Kyu et al. (2013) reported that in Nigeria the long-lasting insecticidal net (LLIN) possession was scaled up by mass distribution in 14 states of the country as of August 2018 through a campaign supported by other partner agencies. Prior to the campaign, more than 600,000 LLINs have been distributed in Cross River State between late 2017 and early 2018 by the United State Agency for International Development (USAID) and the Canadian Red Cross. These efforts contributed to about 42 percent of households having at least one ITN (MIS, 2018). Mouzin (2019) reported that between 2008 and 2010, 70 million rapid diagnostic tests (RDTs) were distributed to healthcare facilities across the country so as to allow for free diagnosis of suspected malaria cases. In 2008, 5% of these cases were screened with RDTs. At the end of the same year, IRS coverage was two percent in the entire country (Mouzin, 2019). The researchers observed that despite all these interventions, there is still an increase in the number of reported cases of malaria infected students in the secondary school's clinics and hospitals in FCT, Abuja (Jombo, 2017).

The fact that the control of malaria is dependent on the ability of individuals to prevent against it highlights the growing concern for the disease. It is on this note that the

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researchers were motivated to carry out this study to assess the practice of malaria prevention strategies among senior secondary school students in FCT, Abuja, Nigeria.

Purpose of the study

The purpose of this study was to assess practice of malaria prevention strategies among senior secondary school students in FCT Abuja, Nigeria. Therefore, the specific objective of the study was to assess the:

1. Practice of malaria prevention strategies among senior secondary school students in Federal Capital Territory (FCT) Abuja, Nigeria.

Research question

The study was proposed to answer the following specific research question:

1. Do senior secondary school student in Federal Capital Territory (FCT) Abuja practice malaria prevention strategies?

Hypothesis

On the basis of the research question, one hypothesis was formulated for the purpose of this study:

Ho1: The practice of malaria prevention strategies by senior secondary school student in Federal Capital Territory (FCT) Abuja is not significantly high.

Methodology

For the purpose of this study, a descriptive survey research design was adopted. The population of this study comprised of 85,495 male and female senior secondary school students in Federal Capital Territory (FCT), Abuja Nigeria, according to the FCT Secondary Education Board students' enrolment (2021/2022). The target population of this study consists of 10,348 (4,739 male and 5,609 female) senior secondary school students.

The sample size for this study was 400 male and female senior secondary school students in FCT Abuja, Nigeria. To obtain the sample size from the target population, the researchers employed the sample size procedure proposed by Dessel (2020). A multi-staged sampling procedure was employed for selection of the study sample which comprised of stratified, simple random, purposive, systematic and proportionate sampling techniques. Abuja was stratified into six (6) strata representing the already existing area councils. Simple random sampling technique was used by the researchers to randomly select four (4) area councils using the dip hand method. Purposive sampling technique was employed by the researchers to select only public senior secondary schools while

proportionate sampling technique was used to select eight (8) schools from the four selected area councils of the FCT.

The research instrument that was used for this study was an adapted closed-ended questionnaire developed by Musa (2020), titled Questionnaire on the Assessment of Knowledge, and Practice of Malaria Prevention Strategies. To score the responses of the respondents, a modified Likert scale rating was used. In order to establish a face and content validity of the research instrument, the questionnaire was vetted by three (3) experts from the Department of Human Kinetics and Health Education, Ahmadu Bello University, Zaria. Thus, the suggestions, comments and corrections made by these experts were effected on the final copy used in the field for data collection.

Descriptive statistics of frequency, percentage, mean score and standard deviation was used to describe the demographic characteristics of the respondents, and to answer the research question. Any mean score of any response was considered positive, if it is 2.50 and above, and any mean score less than 2.50 was regarded as negative. Inferential statistics of one sample t-test was used to test the formulated hypotheses at 0.05 level of significance.

Presentation of results

Table 2: Classifications of the respondents' demographic characteristics

Variable		**Frequency**	**Percent**
Gender	Male	153	38.2
	Female	247	61.8
	Total	400	100.0
Age	14-15yrs	145	36.3
	16-17yrs	230	57.5
	Above 17yrs	25	6.3
	Total	400	100.0

Table 2 revealed that 38.2% were males while 61.8% were females. The inclusion of this variable serves to ensure that gender representation is proportionate in the study to eliminate any such bias in the conclusion of findings relating to knowledge and practices of malaria prevention strategies. Table 2 showed the distribution of the students by their age ranges. Only 6.3% of the students were above 17 years as shown in the classification

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of the age ranges. Most (57.5%) of the students were between 16 and 17years. Those between 14 and 15years were 36.3% of the total number involved in the study. The mean average age was 15.14years with a standard deviation of 1.687years. The distribution showed that almost all the respondents fell within the age range of 14-17 years and could therefore be actual representation of senior secondary schools in the Federal Capital Territory.

Research question: Do senior secondary school students in Federal Capital Territory (FCT) Abuja practice malaria prevention strategies?

Table 3: Mean scores of responses on practices of malaria prevention strategies among senior secondary school students in FCT Abuja

s/n	Practices of malaria prevention strategies	Mean	Std. Dev.
1	I often use mosquito coil to prevent against mosquito bite	2.79	0.888
2	I usually use insect repellent to prevent against mosquito bite	3.02	0.793
3	I regularly clear drainages and stagnant water to prevent mosquitoes from breeding.	3.16	0.806
4	I often use window nets to prevent mosquitoes from getting into the house or dwelling place.	3.10	0.837
5	I use door nets to prevent mosquitoes from getting into the house or dwelling place.	2.93	0.909
6	I usually clear the bushes around the house to prevent mosquitoes from breeding.	3.12	0.848
7	I dispose garbage regularly to prevent breeding of mosquitoes.	3.33	0.691
8	I do sleep inside insecticide treated net to prevent against mosquito bite.	3.13	0.920
9	I usually wear protective clothes such as long sleeve shirts to prevent against mosquito bite.	2.92	0.923
10	I often use indoor residual spraying to prevent against mosquitoes.	3.20	0.876
	Aggregate mean	3.07	0.505

(Decision mean = 2.50)

The results in table 3 revealed the students' practice of malaria prevention strategies. The observation of the table shows that respondents do practice malaria prevention strategies (Agg. $\bar{x}$= 3.07; SD= 0.505). However, they used mosquito coil to prevent bite as shown regularly ($\bar{x}$= 2.79; SD = 0.888); wearing of protective clothes ($\bar{x}$= 2.92; SD = 0.923); using door nets to prevent mosquitoes ($\bar{x}$= 2.93; SD = 0.909); using insect repellent to

prevent against mosquito bite ($\bar{x}$= 3.02; SD = 0.793). The table also shows those who used window nets to prevent mosquitoes from getting into the house or dwelling place ($\bar{x}$= 3.10, SD; 0.837), clearing the bushes around the house to prevent mosquitoes from breeding ($\bar{x}$= 3.12, SD; 0.848), disposing garbage regularly to prevent breeding of mosquitoes ($\bar{x}$= 3.13, SD; 0.920), regular clearance of drainages and stagnant water to prevent mosquitoes from breeding ($\bar{x}$= 3.16, SD; 0.806), and use of indoor residual spraying to prevent against mosquitoes ($\bar{x}$= 3.20, SD; 0.876).

Ho1: The practice of malaria prevention strategies by senior secondary school students in Federal Capital Territory (FCT) Abuja, Nigeria is not significantly high.

Table 4: One sample t-test analysis on practice of malaria prevention strategies by senior secondary school students in FCT Abuja

Variables	N	Mean	Std. Dev.	Std. Error	t-value	df	p-value
Practices	400	3.07	0.505	0.025	22.548	399	0.000
Test mean	400	2.50	0.000	0.000			

(t-critical = 1.96, $p < 0.05$)

Table 4 revealed that the students' practice of malaria prevention strategies is significantly high. The observed mean score (3.07) for the practices is significantly higher than the fixed score (2.50) used for agreement as the benchmark in the test. This is indicated by an observed t-value of 22.548 obtained at 399 degree of freedom (df). The p-value obtained in the test was 0.000 ($p<0.05$). These observations provided enough evidence for rejecting the null hypothesis that senior secondary school students' practices of malaria prevention strategies in Federal Capital Territory (FCT) Abuja, Nigeria is not significantly high. The null hypothesis was therefore rejected, because the students practice malaria prevention strategies.

Discussion of findings

Practices of malaria prevention strategies among senior secondary school students in Federal Capital Territory, Abuja was investigated in this study. The study found that the students have good practice of malaria prevention strategies. The results from the study reveal that they used mosquito coil to prevent mosquito bite, they wear protective clothes, they use door/window nets to prevent mosquitoes from getting into their homes; some of the students also use insect repellent to prevent against mosquito bite, they also practice

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clearing the bushes around the house to prevent mosquitoes from breeding, they also dispose-off garbage regularly to prevent breeding of mosquitoes, practice regular clearing of drainages and stagnant water to prevent mosquitoes from breeding, and they use indoor residual spraying to prevent against mosquitoes. The finding of this study disagrees with the finding from a study carried out by Dambhare et al., (2019) in India which assessed knowledge, attitude and practice of malaria transmission and its prevention among the school going adolescents in Wardha District, Central India. The study found out that only about 47.4% of the adolescents practiced the prevention of breeding places of the mosquitoes by cleaning the surroundings; only 20.7% of the adolescents were using mosquito net and as a result, during the study, it was found out that 66 (6.02%) adolescents were suffering from malaria fever. The result of this study is not in consonance with a study conducted by Eko et al. (2017) in Nigeria. The study examined the practices of Malaria prevention among school adolescent within Calabar Metropolis, Southern Nigeria. The study found out that the students were aware of malaria but preventive practice such as use of ITN was average compared to the 100% awareness rate.

The finding of this study is in disagreement with the findings from the study conducted by Singh et al. (2019), who conducted a similar community based descriptive cross-sectional study on knowledge, attitude and practices of malaria prevention in Aliero Local Government Area in Kebbi Sate, Nigeria. The findings of the study revealed that only 16% of the respondents practice malaria prevention. The finding of this study is not in consonance with the findings from the study conducted by Udonwa et al. (2019). The study assessed the malaria prevention practices of school adolescents in the coastal community of Calabar, Nigeria. The result of the study revealed that fewer respondents would prevent malaria attacks by clearing the vegetation in the peri-domestic environment (13.5%), filling up potholes (16.9%), opening up drainage (11%), using insecticide-treated nets (25.7%) or using antimalarial drugs (11.2%). The findings of this study is also in disagreement with the study conducted by Anene-Okeke et al. (2018), who assessed knowledge and practice of malaria prevention and management among non-medical students of University of Nigeria, Nsukka. The result of the study revealed that only three hundred and thirty-eight (42.3%) of the students reported that they sleep under mosquito treated net which reflected a poor correlation between their knowledge of malaria prevention and its practice. The finding of this study is also in discord with the findings of a study conducted by Mwanje et al. (2019), who assessed knowledge, attitudes and practices on malaria prevention and control in Nsaabwa village, Mukono District, Uganda. The result of the study revealed that despite most households (79%) owning mosquito nets, participants of focus group discussions confirmed that some people do not use the nets

because they associate them with breathing difficulties. In total, 76% of the respondents had poor practices towards malaria prevention and control.

Conclusion

Senior Secondary School Students in Federal Capital Territory (FCT) Abuja practice malaria prevention strategies.

Recommendation

1. The Federal Ministry of Education should further emphasize teaching as a strategy for disease prevention and control under disease prevention in health education curriculum for secondary school students. This will help to further educate them and sustain the existing practice among the students.

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