

ORIGINAL ARTICLE**Awareness, attitude and perception of preventive measures towards malaria among students in Government Girls' College, Kano**

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ABSTRACT

Background: Malaria is one of the world's most deadly diseases which are highly preventable. In Africa, malaria contributes 5% to 8% of all-cause absenteeism, equivalent to 50% of all preventable absenteeism, and around 4 to 10 million school days lost per year. As much as 60% of school children's learning may be impaired due to malarial infection. **Methodology:** A cross-sectional design was adopted, with 119 respondents selected using stratified sampling technique, self-administered questionnaire was used to collect the data, which composed of socio-demographic characteristics, awareness, attitude and perception of the respondents towards preventive measures of malaria. Data was analyzed using SPSS Version 23. **Results:** The findings showed that majority (89.6%) of the respondents are aware of preventive measures of malaria, majority of the respondents have positive attitude towards preventive measures of malaria with the overall mean of (2.31) as well as positive perception towards preventive measures of malaria with an overall mean of (3.78). **Conclusion:** The study therefore concluded that, majority of the respondents are aware of preventive measures towards malaria but indicated a negative attitude with the correct use of mosquito nets. It is recommended that interventions should not be limited to nets distribution alone but more emphasis should be geared towards educating the students on correct use of the nets by their teachers and non-governmental organizations. The nets could also be design to be bigger in terms of width and length to prevent scenario of mosquitoes having access while users are asleep.

Keywords: Malaria, Awareness, Attitude, Perception

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Introduction

Malaria is a protozoan infection of the red blood cells caused by *Plasmodium* sp. and spread through the bites of infected female *Anopheles* mosquitoes (1). The prevalence of malaria in Africa causes a significant problem despite all efforts in place in order to eradicate the parasite. Although, efforts geared towards preventing the occurrence of malaria has led to a decline in the cases and or severity of the condition at a slow pace (2,3). In most African countries experiencing malaria, major factors such as; changes in tropical climate, poor living conditions, poverty and inappropriate housing patterns contributes greatly to the prevalence of malaria (4).

A cross-sectional study conducted in Abeshige Woreda, south west Ethiopia, reported the presence of malaria everywhere in Ethiopia, except in the central highlands, and 56 million people were at risk. The author opined that malaria is one of the country's leading health problems in terms of morbidity, mortality and impediment to socioeconomic development (5).

Malaria is an endemic infection in Nigeria with an estimated case of 68 million in 2021 accounting for 27% of the global burden, and 28% of the burden in the WHO African region (6). Kano State has an estimated population of 15 million in 2021 and the estimated malaria cases in 2021 is 6 million (6). The bite of an infected mosquito is the major medium of malaria spread from one person to another. The breeding of these mosquitoes in Nigeria are mainly influenced by; large plantations, agricultural activities including irrigation, poor drainage systems, rainfall, altitude, temperature of the geographical area and other environmental factors such as unauthorized dump sites (1).

There are more than 500 million school children who are at risk of getting malaria around the world and 200 million live in Sub Saharan Africa (7). In Africa it was indicated that malaria contributes between 5% to 8% of all-cause

absenteeism, equivalent to 50% of all preventable absenteeism, and around 4 to 10 million school days lost per year (8). Malaria is therefore a problem among students especially in boarding schools where student live within the school hostels for a period of three months. The illness usually leads to their inability to attend classes which in turn leads to poor academic performance, and failure in examination.

Hence, the spread of malaria can be prevented through curtailing the breeding of these mosquitoes or by avoiding the bite of the mosquitoes. A study conducted among vulnerable groups in Buea health district, Cameroon, revealed 99% of the respondents heard about insecticide treated nets, 99% perceived ITNs to be a good means of preventing malaria and 57% used ITNs mainly as protection against mosquito bites (9). A similar study from a mixed method approach utilizing indebt interview and focus group discussion among pregnant women in Arusha region, Tanzania, reported that majority of the women have a good understanding of malaria preventive measures with a significant number among the women who still lack a proper understanding of this preventive measures (10). In Nigeria, several intervention programs were rolled out to either kill the mosquitoes by providing in-door residual spraying (IRS) or preventing the bite of the mosquitoes by proving insecticides treated nets (ITNs) (11, 12). However, several studies conducted in Nigeria on practice of preventive measures reported that 46.9% of Federal university students in Owerri do not practice any control measure against malaria (13), Mosquito control was mainly carried out by the use of insecticide spray (215; 47.7%), followed by anti-mosquito coils (95; 21%) in Badagry, Lagos among pregnant women (14), preventive measures amongst medical students in a university in Osun state revealed 12.25% used indoor residual spray while 35.97% used ITNs (15). A separate study on perception of malaria in Mokola community, Ibadan, Oyo State showed that the respondents have a positive

perception on causes of malaria. It was also revealed in the study that positive perception was significantly related to their level of education (16). In recent times, there is an improvement in the use of ITNs by residents within the country. For instance, the report by (6) indicted an increase in persons with access to ITN by 63.3% in Kano State. Furthermore, it was also reported that an estimated 44.5% of children had malaria and were treated for malaria within the same period of the study. This shows a significant incidence of the cases of malaria in the region of Kano State despite an increase in access to ITN which is expected to serve as a prevention. It is against this backdrop that the study identifies the need to assess the awareness, attitude and perception of these preventive measures.

Materials and Methods

Study setting

Government Girls College, Kano, formally known as Womens Teachers College (WTC) Kano was established in 1947 at the emir's palace as the first women training collage in northern protectorate. It was later moved to Bukavu barracks and presently located at kofar famfo along FCE road, located on latitude 11°05'30' and longitude 8°02'30', by north it nearly opposite FCE new site, by south it's bonded by Unguwar Gadon kaya, by east it is bounded by Badala, kofar famfo, and by west it is near to FCE old site. Kano.

With the phase out of teachers training collages in 1996, the school was named Government Girls College, Kano. The school has two sections; junior secondary school which is day and senior secondary school which is boarding, the junior secondary school has a population of about 1355 student and senior secondary school about 1000 students. The school has 55 teaching staff and 46 non-teaching staff.

Design

A cross-sectional descriptive survey was used as the study design

Sampling

A prevalence of malaria in African region of 92% (World Health Organization, 2017) was used as "P" value in Cochran (1977) sample size formula determination. With an attrition rate of 5%, the sample size for the study was determined at 119 students.

Stratified sampling technique was used to group the students into three strata: SSSI, SSSII and SSSIII. A paper basket simple random sampling technique was then applied to select 39 students in SSSI, 40 in SSS II and 40 in SSS III.

Instrument

A self- administered questionnaire, adapted from Farida (2013) similar research work, titled knowledge, attitude and practices on malaria prevention and control in Uganda was used. The instrument consist of 4 sections A, B, C & D.

SECTION A; consist of 4 items on socio-demographic characteristics of the respondents.

SECTION B; consist of basic questions about awareness on preventive measures towards malaria.

SECTION C; consist of Attitudes of the respondents on preventive measures towards malaria. A Likert scale of 3 was used to assess the attitude.

SECTION D; consist of the perceptions of the respondents on preventive measures towards malaria. A Likert scale of 5 was used to assess the perception

Validity and Reliability

The research instrument was given to three experienced researchers in order to ensure face and contents validity, observations and corrections made were incorporated in the instrument.

To ensure reliability, the instrument was subjected to a test -retest method using 10% (15)

of the study sample size in a selected school which was not included in the main study. Some questions were seen to be difficult to understand, these were restructured and the retest was done and analyzed. Cronbach's Alpha was used to obtain a reliability coefficient of 0.81

Method of Data Collection

The researcher went to the school with an introductory letter and ethical clearance to conduct the study. The health master and three teachers were assigned to serve as assistant in data collection. The assistants help in introducing the researchers to the students as well as guide in the location of the classes. The respondents were selected using ballot paper sampling in each of the stratum, 39 students were selected in SSS I, 40 in SSS II and 40 in SSS III to give a total of 119 questionnaires administered. The questionnaires were administered by the researchers personally in the respective classes and each of the questionnaires was filled by the respondents at an average of 45mins after administration, and the copies of the questionnaires were retrieved immediately after completion.

Data analysis

The data was analyzed using SPSS version 23 and presented in descriptive statistics of frequency, percentage, and mean.

Ethical considerations

An introductory letter was taken to Kano State Secondary Schools Management Board before the commencement of the study. Ethical clearance was sought and obtained from the Kano State secondary schools management board and permission was obtained from the authority of the school to conduct the study. Informed verbal consent was obtained from each respondent. Respondent's privacy and confidentiality was guaranteed by anonymity of responses. All information collected was treated with utmost confidentiality. Consideration was given to the timing and conduct of the study so that normal teaching period was not unduly

affected and there was no adverse effect on learning.

Results

The study showed that about half of the respondents (47.8%) are 18 years above, while (43.5%) are in SSI, majority (96.5%) of the respondents' religion is Islam and about two-fifth (40%) of the parents' occupation of the respondents are civil servants (Table 1). Findings also indicate that, majority (89.6%) of the respondents have heard about preventive measures of malaria, and more than two-thirds (38.2%) of the respondents indicated school as their main source of information about preventive measures towards malaria. Furthermore, few of the respondent (4.3%) mention fly as the vector that spreads malaria while more than half of the respondents (55.7%) mention long lasting treated bed net as preventive measure of malaria (Table 2). The study revealed that, the respondents have mean of mosquito net usage of (2.67), also they have the mean of stagnant water clearance of (2.53), while the mean of indoor spray use is (1.83) (Table 3). From the findings, the respondents have a mean of (4.30) in perceiving that spraying with insecticide reduce mosquitoes, they also have the mean of (4.01) in perceiving Mosquito treated net prevent mosquito bite and a mean of (2.88) in feeling uncomfortable when they sleep inside mosquito treated net (Table n).

Discussion

Finding of the study showed that the average year of the respondents is 15 years, and about half of them are in SSI. This is because of the high number of new admissions in to SSI and majority of the respondents' religion is Islam.

Majority of the respondents are aware of the preventive measures towards malaria. This is not surprising because Nigeria is an endemic country for malaria, as such; much effort has been put in place by government in collaboration with Nongovernment organizations towards enlightenment of its citizens. The study further

revealed that more than half of the respondents identified long lasting treated bed net as the preventive measure of malaria which may be attributed to the fact that in recent times long lasting treated nets distribution to houses has been the wide spread intervention executed. This is in line with the report of (17) in Ethiopia where (84.6%) of the respondents mentioned mosquito nets as a protective measure against mosquito bites.

The respondents have positive attitude towards mosquito net usage, this is contrary with the report of (18) in Tanzania, where only (44.7%) of the respondents use bed nets. The disparity in the present study finding and that of the latter in Tanzania may be attributed to the accessibility of mosquito bed net in Nigeria due to various malaria interventions which therefore makes the use of mosquito bed net a cheaper method of preventing mosquito bite. Furthermore, the study revealed that respondents' have negative attitude towards the use of indoor spray insecticides, this agrees with the report by (17) where only (4.5%) of the respondents use spraying method. Insecticides sprays are usually expensive for the students to afford and if not used properly, the offensive odour may trigger an allergic reaction to some of the students. These reasons might have contributed to the limited usage by the students.

The study reported a positive perception that indoor residual spraying and mosquito treated nets reduce mosquitoes bites. A similar report was also shared by (19) in Kenya where (82%) of the respondents associated Indoor residual spraying with reduction in mosquito bite inside houses and (20) in Myanmar revealed that 86.75% of the respondents correctly perceived that sleeping inside Insecticide treated net reduces mosquito bite. However, the respondents in the present study and the study in Kenya by (19) both have a negative perception towards the use of indoor residual spraying because of the offensive smell as well as feel uncomfortable sleeping under the nets. This calls for concern

because despite the effectiveness of indoor insecticide sprays, the usage is limited. The wide acceptance of the insecticide nets and free distribution is commendable. However, this strategy alone may not be effective in preventing mosquito bite because anecdotal report has shown that a lot of people are not convinced that they slept under the nets throughout their sleep duration. Therefore, this may still result to mosquito bite

Limitation of the study

The study did not utilize junior secondary school students and thus cannot be generalize to such students.

Conclusion and Recommendation

The study therefore concluded that, majority of the respondents are aware of preventive measures towards malaria as well as positive attitude & perception towards preventive measures of malaria with the exception of insecticide indoor spray smell and sleeping under mosquito net.

It is therefore, recommended that interventions should not be limited to nets distribution alone but more emphasis should be geared towards educating the students on correct use of the nets by their teachers and non-governmental organizations. The nets could also be design to be bigger in terms of width and length to prevent scenario of mosquitoes having access while users are asleep.

It is also recommended that more odourless insecticide sprays should be produced for better usage and the amount should be subsidized by malaria intervention organizations. This will enhance its usage in combination with the nets for more effectiveness because positive behavior in terms of curtailing the vector is currently a challenge in the country.

Conflict of Interest

There was no conflict of interest among authors while conducting the study

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Table 1: Distribution of socio-demographic data of the respondents

VARIABLES	FREQUENCY	PERCENTAGE (%)
AGE (Years)		
12-14	51	44.3
15-17	55	47.8
18-above	9	7.8
Mean=15years		
CLASS		
SSI	50	43.5
SSII	37	32.2
SSII	28	24.3
RELIGION		
Islam	111	96.5
Christianity	4	3.5

PARENT OCCUPATION		
Civil servant	46	40
Self employed	36	31.3
Others	33	28.7

Table 2: Distribution of the respondents according to awareness of preventive measures towards malaria

n= 115

VARIABLES	FREQUENCY	PERCENTAGE (%)
Awareness about preventive measures of malaria?		
YES	103	89.6
NO	12	10.4
Main source(s) of malaria prevention information.		
School	44	38.2
Hospital	24	21.7
Family and friends and hospital	12	10.5
School and family and friends	20	17.4
Media and hospital	14	12.2
Vector that spread malaria.		
Fly	5	4.3
Mosquitoes	110	95.7
The preventive measures of malaria.		
long lasting treated bed net	64	55.7
long lasting treated bed net, indoor spraying, clearing bushes and clearing stagnant water	32	27.8
indoor spraying		
long lasting treated bed net & indoor spraying	4	3.5
clearing stagnant water	4	3.5
indoor spraying clearing, clearing bushes & clearing stagnant water	6	5.2
	5	4.3

Table 3: Distribution of the respondents according to their attitude towards preventive measures of malaria

n=115, Assumed mean=2

ATTITUDE	ALWAYS (3)	SOMETIMES (2)	NEVER (1)	MEAN
	N	N	n	
Mosquito net use	85	23	7	2.67
stagnant water clearance	74	29	12	2.53
bushes clearance	40	63	12	2.24
insecticide spray use in hostels	17	62	36	1.83
OVERALL MEAN				2.31

Table n: Distribution of the respondents according to their perception towards preventive measures of malaria

n=115, assumed mean=3

STATEMENT	SA(5)	A(4)	N(3)	D(2)	SD(1)	MEAN
	N	n	n	n	n	
Indoor spraying with insecticide reduces mosquitoes	60	41	4	9	1	4.30
Mosquito treated net prevent mosquito bite	45	46	8	13	3	4.01
Cleaning environment reduce the risk of malaria	43	49	14	7	2	4.07
Clearing stagnant water reduce mosquitoes	51	36	12	12	2	4.00
I feel uncomfortable when I sleep inside mosquito treated net.	27	25	7	20	36	2.88
Indoor spraying with insecticide brings bad smell	34	32	15	17	17	3.42
OVERALL MEAN						3.78

Authors Contribution Details

S/N	Contributors	Contributions
1	Suberu A.	Guarantor
2	Suberu A., Bello U.L.	Literature search, data acquisition, data analysis, manuscript editing
3	Muhammad A., Samuel G.A.	Definition of intellectual content, design, data analysis, manuscript editing
4	Mba C.J., Ado A.A.	Design, definition of intellectual content, literature search
5	Suberu A., Bello U.L., Muhammad A.	Data analysis, manuscript editing