Acceptance And Use of Insecticide Treated Nets for Malaria Prevention among Students of College of Education Gidan-Waya, Kaduna State, Nigeria

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Abstract

Although insecticide treated nets (ITNs) been the most effective tool for the malaria control and prevention, there is still poor acceptance and ineffective utilization of ITNs in Nigeria especially among students. The study was to ascertained the level of awareness, acceptance and utilization, and the factors affecting the utilization of insecticide treated nets among students in College of Education Gidan-Waya on the benefit of ITNs as an effective tool in prevention of malaria. A descriptive survey design was adopted. A self-constructed close ended questionnaire was used for data collection. The target population for the study was 6,225 200L student teachers from which 400 respondents were obtained through a simple random sampling technique. Data was analyzed using tables, percentage and figures. The findings revealed that majority of respondents 320 (80%) are aware and have accepted the use of ITNs as a means for prevention of malaria but due to certain constraints such as side effects, cost, unavailability of ITNs and poor implementation. Based on these facts, the researchers recommended a tactical approach with proper organization of seminars and enlightenment campaign on the need for acceptance and utilization of ITNs.

Keywords: Acceptance, Use, ITNs, Malaria, Prevention, Students, Kaduna

Introduction

Malaria has remained endemic in the Sub-Saharan Africa with a high mortality. Despite recent reduction in the overall malaria case incidence, malaria remains a leading cause of morbidity and mortality in the developing world (Badmos, 2021). Malaria is an infectious protozoan disease that can be transmitted by the female anopheles mosquito via a skin bite. It is a major public health problem and indeed a cause and consequences of underdevelopment (Federal Ministry of Health, 2010). According to Ajaji (2009), about 300 million cases are reported at the health facilities worldwide, nine out of ten cases occur in Africa. Research has further shown that a single person in Africa died of malaria in every 10

seconds, pregnant women and children below the age of 5 are the most vulnerable group at risk.

Malaria poses a public health challenge in endemic African countries (World Health Organization [WHO], 2014). Global estimates of malaria indicate at least, 3.3 billion people are at risk of being infected with malaria and developing disease and 1.2 billion are at high risk (WHO, 2017). The World Health Organization (2014) postulates that malaria affects people about five times as AIDs, hepatitis, measles, tuberculosis and leprosy. The symptoms include fever, chills, headache, muscle ached, vomiting, and malaise. Complications such as cerebral malaria, anaemia, algid malaria, dysenteric malaria, black-water fever and kidney failure are associated with *Plasmodium falciparum* infection (Gerhard, 1989; Oyerinde, 1999; WHO, 1996). The severe forms of the disease can result in death or life-long neurologic impairment especially in subjects with little protective immunity (Center for Disease Control and Prevention [CDC], 2006).

Mosquito nets need to be treated with insecticide so as to increase their effectiveness. These insecticide treated nets (ITNs) have been shown to protect against the transmission of malaria if used effectively. The treated nets are designed to kill the mosquito that pass through the net to bite or infect the person beneath, it is expected that at every six months, the already treated net should be re-impregnated with insecticide chemical (for example perithrethrium) to boost its effectiveness.

Research has further shown that long-lasting insecticide nets (LLINs) are prefered form of insecticide treated mosquito nets (ITNs) for public health programmes. The acceptance and utilization of insecticide treated mosquito nets seems to be related to adequate distribution and its availability in schools (Mu'azu, 2018).

Two forms of vector control, insecticide treated mosquito nets and indoor residual spraying are effective in a wide range of circumtances. In parallel, effective behaviour change communication strategies are required to ensure the acceptance and utilization of all students at risk of malaria sleep under ITNs every night and that the net is properly maintained. The most cost-effective way to achieve this is by providing ITNs free of charge to ensure equal access for all (WHO, 2017) The risk of the disease can be reduced by preventing mosquito bites through the use of mosquito net and insect repellents, or with mosquito control measures such as spraying insecticides and draining of standing waters (Caraballo, 2014). Despite the obviousness of ITNs as a tool for malaria control and prevention, there is still wrong perception in utilizing the ITNs and refusal to accept it as a preventive measure of malaria among students in College of Education Gidan-waya, which may be greatly attributed to ignorance and lack of adherence to its utilization. The purpose of the study was to assess the level of students acceptance of insecticide treated nets in preventing malaria, to ascertain the level of utilization of insecticide treated nets among students of college of education Gidan-Waya, to determine the student's mode of utilization of insecticide treated nets and to find out the factors affecting the utilization of insecticide treated nets.

Research Questions

The following research questions guided the study.

1. What is the level of acceptance of insecticide treated nets among students of college of education Gidan-Waya?

2. What is the level of utilization of insecticide treated nets in preventing malaria among students of college of education Gidan-Waya?
3. What are the factors affecting the utilization of insecticide treated nets among students of college of education Gidan-Waya?
4. What is the mode of utilization of insecticide treated nets among students of college of education Gidan-Waya?

Methods

Research Design

The research design adopted for this study was descriptive survey method. This was considered the most suitable because it was the method that seeks to capture people's awareness and feelings in their naturalistic environment.

Population

The target population of the study was the NCE students of College of Education Gidan-Waya 200 level students which constitute a total number of 6,225 students. This is because the 200 level students are the most accessible students than the 100 level students that have just stepped into the college and are yet to become adapted to the college environment, the 300 level students are at the point of exit and therefore are not usually accessible due to project research work, final exams and other social needs.

Sample Size and Sampling Technique

The sample size determination was carried out according to Krejcie and Morgan (1970) sample size determination table as recommended by (Bukhari, 2020 & 2020b; Daniel, 1999). The WHO recommended that a population from 10,000 to 100,000 can use the table of sample size determination. Hence, for this research work, the sample size according to Krejcie and Morgan table of sample size was observed based on the fact that the population of the students in the College was 11,000. Thus the calculated sample size from the table was 361 but was rounded up to 400 in order to have an even number and also to improve the quality, validity and reliability of the research work because the higher the number of sample size, the more reliable the results. Therefore, 400 respondents from 200 level students were selected through a simple random sampling technique method.

Instrument Used for Data Collection

The instrument used for this work was self-constructed close ended questionnaire developed by the researcher. The questionnaire is made up of two sections. Section A sought information on the demographic data of the respondents while section B, collected information necessary for answering research questions and all questions were drafted in close ended format. The instrument was validated through expert's appraisal. The face validity was determined by experts through checking the size of print, alignment of items with the research questions and the item calibration. The input of the experts was used to improve the quality of the instrument. The reliability of the instrument was determined through the process of pilot study. The instrument was pilot tested on a small portion of the population that was not part of the sample. Cronbach Alpha method of estimating reliability was used to compute the reliability index. The instrument produced 0.80 as index of rational reliability.

Method of Data Collection

The questionnaires were administered by the researcher to the 400 respondents (200 level students) who duly filled and returned the questionnaires to the researcher.

Method of Data Analysis

The returned questionnaires were analyzed and presented using simple tabulation, frequencies and percentages. The percentages were marked out in response to the number of respondents used.

Ethical Consideration

Ethical approval was obtained from the ethical committee of the college. Full explanation on the concept of the research work was made known to the respondents before the questionnaires were distributed. Culture and religious values of the respondents were fully respected, respondents' autonomy and confidentiality was also ensured, and participation of the respondents was voluntary.

Results

Table 1: Age Distribution of the Study Group (200L) Students

S/N	Variable (Age)		Frequency	Percentage
1.	Age	20 – 25	276	69%
2.	Age	26 – 30	80	20%
3.	Age	31 – 35	32	8%
4.	Age	36 & above	12	3%
	Total		400	100%

Table 1 indicates that 276 (69%) of the respondents were between the ages of 20 – 25, 80 (20%) were between the ages of 26 – 30, 32 (8%) were between the ages of 31 - 35 while 12 (3%) were at the ages of 36 years and above.

Table 2: Descriptive Statistics for Gender Respondents

S/N	Variable (Gender)	Frequency	Percentage
1.	Male	200	50%
2.	Female	200	50%
3.	Total	400	100%

Table 2 shows the gender statistical analysis to be 200 (50%) males while females were equally 200 (50%) giving a total of 400 (100%) of respondents altogether.

Table 3: Descriptive Statistics for Marital Status of Respondents in the Study

S/N	Marital Status	Frequency	Percentage
1.	Single	320	80%
2.	Married	64	16%
3.	Divorce	8	2%
4.	Widows/Widowers	8	2%
	Total	400	100%

Table 3 shows the marital status of the respondents, which indicates that 320 (80%) of the respondents single, 64 (16%) were married, while 8 (2%) were divorced and 8 (2%) were widows and widowers

Table 4: Descriptive Statistics for Level of Acceptance of ITNs

Key

Strongly Agreed – SA
Strongly Disagreed – SD
Agreed - A
Disagreed - D

S/N	ITEM	SA	A	D	SD	Total
	Level of Acceptance of ITNs					
1.	Should ITNs be accepted as a preventive measure for Malaria?	320 (80%)	64 (16%)	12 (3%)	4 (1%)	400 (100%}
2.	Should ITNs be accepted by few groups of individuals?	4 (1%)	12 (3%)	50 (12.5%)	334 (83.5%)	400 (100%}
3.	Fear of site effect is associated with ITNs acceptability by students	40 (10%)	60 (15%)	100 (25%)	200 (50%)	400 (100%}
4.	Lack of awareness has effect on acceptance of ITNs	10 (2.5%)	30 (7.5%)	60 (15%)	300 (75%)	400 (100%}
5.	Availability is a strong factor for ITNs acceptance	320 (80%)	100 (25%)	70 (17.5%)	10 (2.5%)	400 (100%}

Table 4 shows a strong acceptance of ITNs to be used as a preventive measure for malaria by 320 (80%) respondents which is the highest while the least is 4 (1%) only. The other categories Level of acceptance are clearly shown in the table 4 accordingly.

Table 5: Descriptive Statistics for Level of Utilization of ITNs

S/N	ITEM	SA	A	D	SD	Total
	Level of Utilization of ITNs					
1.	The use of ITNs creates inconvenience/discomfort which affects its adequate utilization.	50 (12.5%)	80 (20%)	120 (30%)	150 (37.5%)	400 (100%}
2.	Having a well-informed knowledge on the importance and use of ITNs will go along way in enhancing its utilization	300 (75%)	100 (25%)	0 (0%)	0 (0%)	400 (100%}
3.	The cost of ITNs can affect its utilization by students.	320 (80%)	50 (12.5%)	20 (5%)	10 (2.5%)	400 (100%}
4.	Would you agree to use the ITNs if given to you?	300 (75%)	80 (20%)	15 (3.75%)	5 (1.25%)	400 (100%}
5.	Communication and education has influence on utilization of ITNs	310 (77.5%)	70 (17.5%)	20 (5%)	0 (0%)	400 (100%}

Table 5 shows the highest and the least percentage of acceptance categories by the respondents.

Table 6: Descriptive Statistics for the factors that Affects Utilization of ITNs

S/N	ITEM	SA	A	D	SD	Total
	Factor that affects the Use of ITNs					
1.	Site effects such as itching, rashes and burning sensation affects the adequate utilization of ITNs	80 (20%)	20 (5%)	100 (25%)	200 (50%)	400 (100%}
2.	Lack of awareness of the importance of ITNs by students affects the use of ITNs	20 (5%)	30 (7.5%)	50 (12.5%)	300 (75%)	400 (100%}
3.	Lack of availability is a factor affecting the use of ITNs by students	300 (75%)	50 (12.5%)	30 (7.5%)	20 (5%)	400 (100%}

4.	The cost of ITNs affects the utilization by students	320 (80%)	50 (12.5%)	20 (5%)	10 (2.5%)	400 (100%}
5.	Time use in putting down the Net is a factor affecting its utilization	100 (25%)	120 (30%)	150 (37.5%)	30 (7.5%)	400 (100%}

Table 6 shows the highest and the least percentage of acceptance categories by the respondents accordingly.

Table 7: Descriptive Statistics for the Mode of Utilization of ITNs

S/N	ITEM	SA	A	D	SD	Total
	Mode of Utilization of ITNs					
1.	Some students have the ITNs but do not know how to use it	5 (1.5%)	25 (6.25%)	50 (12.5%)	320 (80%)	400 (100%}
2.	Some students feels it is a waste of time putting down the ITNs	100 (25%)	120 (30%)	150 (37.5%)	30 (7.5%)	400 (100%}
3.	Some student don't know how to fix the ITNs properly	20 (5%)	20 (5%)	200 (50%)	120 (30%)	400 (100%}
4.	Using the ITNs directly to cover one's body is another option if there is no other means of hanging it	10 (2.5%)	40 (10%)	50 (12.5%)	300 (75%)	400 (100%}
5.	Treating the Net is no longer necessary once it has been treated.	300 (75%)	50 (12.5%)	30 (7.5%)	10 (5%)	400 (100%}

Table 7 shows the highest and the least percentage of acceptance categories by the respondents respectively.

Discussion

Analysis on the level of students acceptance of insecticide treated nets (ITNs) in preventing malaria infection revealed that 320 (80%) of the subjects have accepted the use of insecticide treated nets (ITNs) for the prevention of malaria infection as observed in table 1. This findings correlates with the research findings of Mu'azu, (2018) who obtained 78 (78%) acceptance in his studies of "The acceptance and Utilization of Insecticide Treated Nets in preventing Malaria Among Student Nurses in College of Nursing Kafanchan". This also agreed with WHO (2010) statement which states that: Insecticide treated net is one of the most effective method of reducing malaria in sub-Saharan Africa. Analysis on the level of utilization of insecticide treated nets (ITNs) in preventing malaria infection revealed that

utilization of ITNs has some factors associated with it or that affects it, such as inconvenience/discomfort, well-informed knowledge on the importance and use of ITNs and the cost of ITNs, this can be observed in table 2 in which the variables mentioned above has 80 (20%), 100 (25%), 50 (12.5%) and 80 (20%) agreement respectfully. This can be related to the statement of WHO (2017) which states that; the promotion and utilization of ITNs has become the leading strategy in malaria prevention and control.

The analysis on the factors affecting the utilization of insecticide treated nets (ITNs) in preventing malaria infection revealed that 200 (50%) of the respondents strongly disagreed that Site effects such as itching, rashes and burning sensation affects the adequate utilization of ITNs while 20 (5%) agreed that Site effects such as itching, rashes and burning sensation affects the adequate utilization of ITNs, 300 (75%) respondents strongly disagreed that Lack of awareness of the importance of ITNs by students affects the use of ITNs while 20 (5%) of them strongly agreed that lack of awareness of the importance of ITNs by students affects the use of ITNs, 300 (75%) respondents strongly agreed that lack of availability is a factor affecting the use of ITNs by students while 20 (5%) strongly disagreed that lack of availability is a factor affecting the use of ITNs by students, also it was observed from the study that 320 (80%) of the respondents strongly agreed that the cost of ITNs affects the utilization by students while 1 0 (2.5%) strongly disagreed that the cost of ITNs affects the utilization by students, it was also observed that 150 (37.5%) disagreed that time use in putting down the Net is a factor affecting its utilization while 120 (30%) agreed, 100 (25%) stongly agreed and 30 (7.5%) strongly disagreed. All the observations of the results above indicates that these factors are strongly associated with the utilization of ITNs by students of College of Education Gidan-Waya and this agreed with the findings of Mu'azu, (2018) who had greater proportion of the respondents 64 (64%) who opined that itching, rashes and burning sensations are factors that affect the adequate utilization of ITNs. The analysis on the determination of the student's mode of utilization of insecticide treated nets (ITNs) in preventing malaria infection revealed that 320 (75%) of the respondents strongly disagreed that some students have the ITNs but do not know how to use it while 5 (1.5%) strongly agreed that that some students have the ITNs but do not know how to use it, 150 (37.5%) of respondents disagreed that Some students feels it is a waste of time putting down the ITNs while 30 (7.5%) strongly disagreed, 200 (50%) disagreed that Some student don't know how to fix the ITNs properly while 20 (5%) and 20 (5%) strongly agreed and agreed respctively, it was observed that 300 (75%) respondents strongly disagreed that using the ITNs directly to cover one's body is another option if there is no other means of hanging it while 10 (2.5%) strongly agreed that using the ITNs directly to cover one's body is another option if there is no other means of hanging it, the study again observed that 300 (75%) respondents strongly agreed that Treating the Net is no longer necessary once it has been treated while 10 (2.5%) strongly disagreed. These findings is in agreement with the findings of Mu'azu, (2018) who showed that 80 (80%) of the subjects think that modalities like mobilization. use of media communication and education will increase the level of awareness of ITNs, and this can also be related to WHO (2017) which outlined that re-educating communities can increase the level of their awareness.

Tables 1, 2, and 3 revealed a significant statistical precentage differences in the demographic factors associated with the acceptance and utilization of ITNs in terms of age, gender and marital status showed that 276(69%), 200 (50%) and 320 (80%) respectively one can think the demographic characteristic play a role in hindering students' efficient utilization of ITNs. This correlated with Namibian malaria survey (2009) studies. while in Nigeria, study using data from demographic health survey (DHS) in 2008, targeting 34,070 household to determine the demographic factors associated with ITNs utilization revealed that 44% of

people slept under treated bed nets. Also Oresanya et al. (2011) identified some factors like awareness, adequate knowledge alongside some demographic characteristics such as age, gender and ethnicity which impair possession and utilization.

The result of this study showed that majority of the student population in College of Education have higher level of awareness of ITNs on prevention of malaria and share the opinion that having a well-informed knowledge emphasizing on the importance of using ITNs will go a long way in enhancing its proper utilization Greater percentage of the population 320 (80%) agreed that ITNs are necessary for preventing malaria but shortage of them in schools and collection centres hindered its widespread utilization by the students. Despite its shortage in schools and collection centres, certain factors were identified to be affecting its proper utilization, like itching, rashes and burning sensations.

Implication of Findings to Student Teachers

This research work has drawn attention to the fact that student teachers and health workers in areas of their practice are in good position to health educate and advice patients/clients /pupils on the use of ITNS to prevent mosquito bites that causes malaria infection. The health education should entail educating patients/clients/pupils about the cause of malaria and preventive measures. Personal and environmental hygiene should be emphasized to eradicate the breeding places of mosquitoes with proper nutrition to boost immune system. Also, during the health education, all misconceptions on ITNs should be demystified.

Recommendations

Following findings of this research the researchers recommended that

1. School management should determine ways of ensuring effective utilization of ITNs in prevention of malaria among students of college of Education, the following recommendations were made:
2. The students should be re-educated on how to use ITNs in prevention of malarial disease and this can be achieved through their religious association or student's union as well as behaviour modifications.
3. There is the need to eradicate wrong perception on ITNs through seminars and enlightenment campaigns adequate distribution to ensure adequate and proper malaria prevention.
4. Roll back malaria programmes should be enhanced in conjunction with other development partners to assist in prevention of malaria in College of Education Gidan-Waya.

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