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KNOWLEDGE TOWARDS INSECTICIDE-TREATED NETS UTILIZATION IN MALARIA PREVENTION AMONG RESIDENTS OF MUTUNGO ZONE IV, KAMPALA DISTRICT. A CROSS-SECTIONAL STUDY.

Jonathan Edward Lwanga*, Claire Mukomuzibu, Jane Frances Namuddu
Lubaga Hospital Training Schools

Abstract

Background

Malaria remains a significant public health concern globally, with Sub-Saharan Africa bearing the largest burden. Insecticide-Treated Nets (ITNs) are a cornerstone in malaria prevention, as a cost-effective and efficient strategy. Despite the widespread distribution and promotion of ITNs, their utilization remains suboptimal in many endemic regions. This study aimed to assess the knowledge of ITN utilization in malaria prevention among residents of Mutungo Zone IV, Kampala district.

Methodology

The study was a cross-sectional study design that involved a quantitative data collection method. 30 participants were selected using a simple random sampling method. Data was collected using semi-structured questionnaires consisting of open and closed-ended questions, data was analyzed and presented in tables, graphs, and pie-charts where frequencies and percentages were used.

Results

Majority 21(70%) were female, and the minority 9(30%) were male. Most 12(40%) were between 31-40years and the minority 4(13.3%) were between 10-30 years. The majority of the respondents (57%) reported the use of ITNs as the best way of preventing malaria and (6.7%) reported draining of water-logged areas. 28(93.3%) wanted to know more information concerning with ITNs. 22(73.3%) said that ITNs are used to protect against malaria. 17(57%) said that the use of ITNs is the most effective malaria preventive measure.

Conclusion

The study found relatively good knowledge about ITN use because respondents knew the purpose of insecticide-treated bed nets and also knew that the use of ITNs is the most effective. Malaria preventive measure.

Recommendation

The Government/ Ministry of Health should conduct door-to-door education talks on the utilization of ITNs in the prevention of malaria.

Keywords: *Knowledge of Insecticide Treated Nets, Malaria Prevention, Kampala District.*
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Corresponding Author: *Jonathan Edward Lwanga*
Email: ***jonathanedwardlwanga@gmail.com***
Lubaga Hospital Training Schools

Background of the study

Malaria is a febrile disease caused by microorganisms of the Plasmodium genus and these include; plasmodium falciparum, plasmodium vivax, plasmodium malaria, Plasmodium ovalle, plasmodium Knowlesi (Plewes et. al., 2019). Malaria is still a significant health problem whereby 247 million cases of malaria with 619,000 deaths were reported in 2021 as compared to 245 million cases with 625,000 deaths in 2020 (World Health Organisation, 2021).

In Greece, Evlampidou, et al., (2018) found out that the majority 86(66%) of the respondents had low knowledge regarding information about ITNs and were not willing to learn more about them. They revealed that ITNs were used for fishing and thought that they had acquired enough information from neighbors and friends who had used ITNs. This was not safe because some members of the community depended on misconceptions about ITN use. A study by Dahesh, Bassiouny, and El-Masry (2019) about the factors affecting the utilization of ITNs among pregnant mothers attending antenatal care in Fayoum Governorate, Egypt revealed that ITN use increased with the decrease in the level of educational attainment of mothers. This showed that the mothers' level of education affected their level of knowledge regarding the utilization of ITNs.

A study carried out by Luyiga (2019) among community members in Nsaabwe village, Mukono District indicated that 97.1% of the respondents had good knowledge about ITNs being a form of protective gear that repels and prevents mosquito bites and they reported that ITNs were very effective in Malaria prevention. This good knowledge may be a result of the effective sensitization of citizens by stakeholders (Larson, et al., 2020). Therefore, the objective of this study was to assess the

knowledge of ITN utilization in malaria prevention among residents of Mutungo Zone IV, Kampala district.

Methodology

Study design and rationale

The researcher intended to a descriptive cross-section design because it enabled the researcher to describe the knowledge, attitude, and practices of respondents and examine the relationship of these variables. A quantitative method of data collection was employed. Quantitative data collection involves the use of numerical values to assess information. The entire design was chosen because it enabled the researcher to obtain data at one point in time.

Study setting and rationale

The study was community-based and it was conducted in Mutungo Zone IV village located in Mutungo parish, Nakawa division Sub County in Kampala district. The area is situated 20 km away from the center of Kampala and it has a population of over 5000 people.

This area was chosen because it is marked among the zones with higher number of Malaria cases in Nakawa division sub-county. Furthermore, it was chosen because respondents are readily available to be involved in the study.

Study population

The study population included community members of Mutungo Zone IV who were above 10 years of age.

Sample size determination

The sample size was determined according to UNMEB guidelines 2009 which stated that the appropriate sample size should be not less than 30 respondents. Therefore, the study targeted
30 respondents.

Sampling procedure

A random sampling technique was employed. This technique was chosen for this study because it ensures that the sample is representative of the study population as well as reducing bias in the sample. This makes it possible for the researcher to obtain inferential statistics.

The process involved the researcher cutting 40 pieces of paper of similar size and 30 were written on yes and the rest no. Eligible residents picked a single paper at random. Those who picked papers with the word yes took part in the study.

Inclusion criteria

The study included residents who were 10 years and above.

The study included residents who were not medical personnel.

The study included residents who had stayed in the area for at least 5 months.

The study included residents who were willing to participate.

The study included residents who were present at the time of the study.

Definition of variables

Independent variables

Knowledge, attitude, and practices of Mutungo Zone IV residents.

Dependent variable

Utilization of insecticide-treated bed nets.

Research instrument

The researcher used self-administered questionnaires with open and close-ended questions to assess the knowledge, attitude, and practices of residents toward the utilization of ITNs in
Mutungo Zone IV.

Data collection procedure

Upon approval of the proposal by the supervisor and the principal tutor of Lubaga Hospital Training Schools, an introductory letter was obtained from Lubaga Hospital Training Schools to carry out the study in Mutungo Zone IV, the researcher presented the letter to the zone chairperson who then drafted a letter of acceptance to enter the zone. Together with the chairperson, the researcher informed the respondents about the study; and information that was expected from them, and assured of confidentiality and anonymity, the researcher and research assistant pre-tested the questionnaire, and minor corrections were made to the questionnaire.

Their researcher intended to collect data within 14 days.

Data Management

Questionnaires were first checked immediately for completion; any mistake was corrected and editing was done on each day of data collection. Answered questionnaires were put in an envelope and kept in safe custody under lock and key only accessible by the researcher

Data Analysis

Data collected was manually analyzed and tallied. The results were processed using Microsoft Word and Excel programs for Windows. These processed and presented the information as frequency tables, figures, pie charts, and graphs.

Ethical consideration

Approval was obtained from the research supervisor; permission was acquired from the Principal of Lubaga Hospital Training Schools by obtaining an introductory letter. This was taken to the Mutungo Zone IV Chairperson who granted the researcher permission.

The study started with the researcher introducing and explaining the topic objectives to residents. He also informed them that participation was voluntary with a consent form being signed. The confidentiality, enjoyment, and privacy of respondents over their information given was assured and they used numbers instead of respondents' names.

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Informed consent

Participants were provided with clear and easily comprehensible details about the study's purpose, objectives, procedures, potential benefits, and risks. They were informed of their voluntary participation, the freedom to withdraw at any point, and the assurance of confidentiality regarding their responses.

Results

Socio-demographic characteristics of respondents

Table 1: Distribution of respondents by social-demographic characteristics. n=30

Category	Variables	Frequency	Percentage (%)
Gender	Male Female	9 21	30 70
Age(years)	10-30 31-40 41-59 >60	15 9 4 2	50 30 13.3 6.7
Marital status	Single Separated Married Divorced Widow/Widower	7 0 21 0 2	23.3 0 70 0 6.7
Occupation	Housewife Peasant farmer Student Civil servant	0 25 2 3	0 83.3 6.7 10
Education	Primary Secondary Tertiary No formal education	9 4 3 14	46.7 40 10 3.3
TOTAL		30	100

From Table 1, out of 30 respondents that participated in the study, the majority 21(70%) were female, and the minority 9(30%) were male. majority 12(40%) were between 31-40years and the minority 4(13.3%) were between 10-30 years, most 21(70%) were married and the least 2(6.7%) were widow/widower. The majority of the respondents 25(83.3%) were self-employed and the minority 2 (6.7%) were students, majority of the respondents 14(46.7%) had a primary level of education and the minority 1(3.3%) did not have formal education.

Knowledge of respondents towards utilization of ITNs

What do you understand by ITNs?

Table 2: Distribution of respondents by definition of ITNs, n=30

Variable	Category	Frequency(f)	Percentage(%)
Definition of ITNs	ITNs is a form of protective gear that repels and prevents mosquito bites	24	80
	A material used to screen the beds to provide privacy	1	3.3
	A material used to decorate beds	3	10
	A material used to maintain bed warmth	2	6.7
TOTAL		30	100

From Table 2, the majority 24(80%) said that ITN is a form of personal protective gear that repels and prevents mosquito bites and minority 1(3.3%) defined ITN as a material used to screen the beds to provide privacy.

Would you like to know more about ITNs?

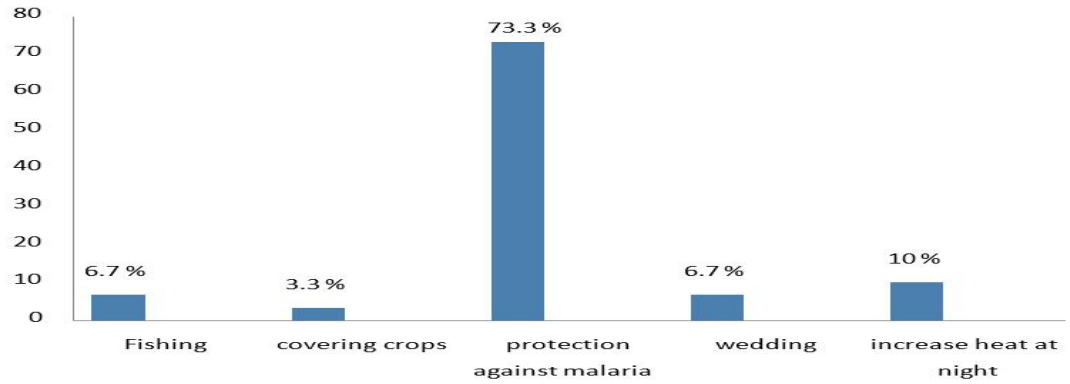
Table 3: Respondents' responses on whether they would have liked to know more about ITNs, n=30

Variable	Category	Frequency	Percentage(%)
Would you like to know more about ITNs	Yes	28	93.3
	No	2	6.7
TOTAL		30	100

From Table 3, 28(93.3%) wanted to know more information concerning ITNs and minority 2(6.7%) did not want to know more about ITNs.

What is the purpose of ITNs?

Figure 1: Distribution of respondents by purpose of ITNs, n=30



From Figure 1, the majority 22(73.3%) said that ITNs are used to protect against malaria and the minority 1(3.3%) said covering crops is the purpose of ITNs.

What is the most effective malaria preventive measure?

Table 4: Respondents' response on the most effective malaria preventive measure, n=30

Variable	Category	Frequency	Percentage (%)
The most effective malaria preventive measure	Use of antimalarial	8	27
	Use of ITNs	17	57
	Keeping doors and windows closed during bedtime	3	10
	Draining of water-logged areas	2	6
TOTAL		30	100

From Table 4, the majority of the respondents 17(57%) said that the use of ITNs is the most effective malaria preventive measure and the minority 2(6%) mentioned draining of water-logged areas as the best malaria preventive measure.

Where should ideal drugs for retreating ITNs be acquired from?

Table 5: Distribution of respondents by where ideal drugs for retreating ITNs should be acquired from, n=30

Variable	**Category**	**Frequency(f)**	**Percentage(%)**
Where ideal drugs for retreating ITNs be acquired from	Health centers, Pharmacies, Drug shops	24	80
	Market, Vendors, Hardware, Pesticide drug shops	6	20
TOTAL		30	100

From table 5, the majority 24(80%) said Health centers, Pharmacies, and Drug shops as the sources of ITNs retreating drugs and a minority 6(20%) said Market, vendors, Hardware, and Pesticide drug shops.

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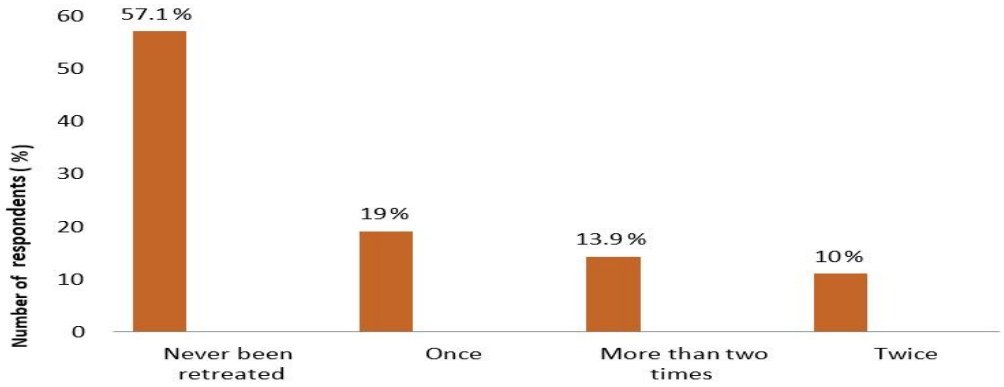
How many times should an ITN be retreated in a year?

Figure 2: Respondents' response by the number of times an ITN was retreated in a year, n=30



From Figure 2, the majority 16(57.3%) of the respondents said that ITNs should never be retreated in a year and the minority 3(10%) said twice a year.

Discussion

The majority of the respondents (80%) had a right understanding of the definition of ITNs as a form of protective gear that repels and prevents mosquito bites. This was in line with the study carried out by Luyiga (2019) among community members in Nsaabwe village, Mukono District where 97.1% of the respondents had the right understanding of ITNs. Most of the respondents (93.3%) reported that they need to know more about the use of insecticide-treated bed nets. This indicated that the majority of the respondents had a knowledge gap regarding the use of ITNs. The finding of this study is contrary to the study carried out by Evlampidou, et al., (2018) in Greece which found that the majority of the respondents (66%) did not need any more information about malaria and the use of ITNs as they acquired enough from neighbors and friends who had used ITNs.

Regarding the purpose of insecticide-treated bed nets, the study results revealed that the majority of the respondents (73.3%) knew the purpose of ITNs and indicated that they help in the prevention of malaria. This implied that the majority of the respondents knew the purpose of insecticide-treated bed nets. The results of the study are consistent with those of

Taremwa, et al., (2020), revealed that the majority of the respondents 75(57%) said that ITNs were used to prevent malaria and they attributed it to attaining such knowledge from hospitals, a few 21(33%) on radio and Television while the least 12(10%) said from neighbors.

Concerning the most effective malaria preventive measure, the majority of the respondents (57%) were aware that the use of ITNs is the most effective preventive measure. This implies that the majority of the respondents were knowledgeable about the most effective malaria preventive measure. The results of the study are in line with those of Musoke, 2021, which revealed that (62%), (and 90%) of the respondents respectively were aware that the use of ITNs is the most effective malaria preventive measure.

According to the study, more than half (80%) were aware that Insecticide-treated bed nets retreating drugs are acquired from Health centers, Pharmacies, and Drug shops. This implies that the majority of the respondents knew the correct source of ITN retreating drugs. This may be due to the information they get from health workers during health service delivery, in health education talks, and also when mothers have attended antenatal care. This is contrary to San, Soe, and Shwe (2019) whose results revealed that (83%) of the respondents did not know where they could buy ITNs retreating drugs.

Furthermore, the study findings revealed that the majority of the respondents (57.1%) did not know the number of times an ITN should be retreated in a year. This implied that respondents had a knowledge gap about the frequency of retreating insecticide-treated bed nets. Similarly, the study by San, Soe, and Shwe (2019) found that the majority (54.3%) of respondents did not know the correct period of use before retreating an ITN. They were not aware that ITNs were supposed to be retreated between 6-9 months or after 10-20 washes.

Conclusion

The study found relatively good knowledge about ITN use because respondents knew the purpose of insecticide-treated bed nets and also knew that the use of ITNs is the most effective malaria preventive measure. However, respondents lacked knowledge about the number of times awareness about the number times an ITN should be retreated in a year creating a doubt about their awareness of efficacy and effectiveness of ITNs.

This study was limited by the following.

Resistance from the respondents as many had fear or felt less concerned, the target respondents in most cases were in a hurry to go back home and do some housework as well and financial difficulties and time limitation was the greatest challenge.

Recommendation

The Government/ Ministry of Health should conduct door-to-door education talks on the utilization of ITNs in the prevention of malaria.

Ministry of Health emphasizes education talks on the benefits of sleeping under ITNs over fears such as suffocation, and skin itching.

Community members get the right information on the use and efficacy of ITNs to rule out rumors such as ITNs can make one suffocate.

Acknowledgment

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List of Abbreviations

ITNs:	Insecticide Treated Bed nets
WHO:	World Health Organization
NMCP:	National Malaria Control Program
GMIS:	Government Management Information Sciences
HMIS:	Health Management Information System

Source of funding

This study was not funded.

Conflict of interest

No conflict of interest declared

Author contributions

JEL designed the study, conducted the data collection, cleaned and analyzed data, and drafted the manuscript, CM supervised all the study from conceptualization of the topic to manuscript writing and submission, JFN supported study conceptualization and general supervision as well as mentorship.

Data availability

Data is available upon request.

Author Biography

Jonathan Edward Lwanga is a student of the Diploma in Nursing at Lubaga Hospital Training Schools.

Claire Mukomuzibu is a tutor at Lubaga Hospital Training Schools.

Jane Frances Namuddu is the principal tutor at Lubaga Hospital Training SchoolsLubaga Hospital Training Schools.

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Contact: +257 6266 2725

Email: burundipublishing@gmail.com

Website: https://burundipublishing.com

Address: Avenue de l'université,Quartier Rohero I, Bujumbura, Burundi