

PERCEPTION AND UTILIZATION OF LONG LASTING INSECTICIDAL NETS (LLINS)
AMONG ADULTS IN A RURAL NIGERIAN COMMUNITY

BY

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Abstract

Long lasting insecticide treated nets (LLINs) are key preventive intervention that reduces the burden of malaria if well utilized; therefore, this study was designed to determine perception and utilization of LLINs among adults in a rural Nigerian community. A descriptive cross-sectional survey was used for the study and purposive sampling technique was used to select the 301 adults who are permanent residents of the community and were willing to participate in the study. Data were collected using validated structured questionnaires. Data were analyzed using the statistical product and service solution (SPSS) version 24. The results were presented using both descriptive and inferential statistics with level of significance set at 0.05. The study revealed that that 150 (49.8%) of the respondents were between 20-30 years of age, 181 (60.1%) were female, and 153 (50.8%) had tertiary level of education. Only 169 (56.1%) of the respondents possess LLINs despite 220 (73.1%) had positive perception regarding LLINs. Utilization of LLINs was also low among participants 181 (60.1%). Conclusively, there is need to motivate adults in the community toward the utilization of LLINs in the prevention and control of malaria. Furthermore, government, ministry of health and NGOs should ensure that every adult own a net either through large community coverage or at a cost that every individual should be able to afford.

Keywords: Adults, Community, Long Lasting Insecticidal Net (LLINs), Perception, Utilization

Introduction

Malaria poses a significant public health threat globally (Doda, Solomon, Loha, Gari & Lindtjorn, 2018). According to World Health Organization (2019), malaria is a life-threatening disease caused by parasites that are transmitted through the bites of infected female Anopheles mosquitoes. It is preventable and curable that is responsible for an estimated 219 million cases in 87 countries and 435,000 deaths globally. The WHO African region carries a disproportionately high share of the global malaria burden. In 2017, the region was home to 92% of malaria cases 93% of malaria deaths (WHO, 2019). The World Health Organization (WHO) defines an Insecticide treated net (ITN) as a mosquito net that repels, disables and kills mosquitoes, which come into contact with insecticide on the netting material. An ITN can either be a conventionally treated net, which should be re-treated after three washes or at least once a year by use of pyrethroid insecticides or a long lasting insecticidal net (LLIN), which can stay without retreatment for at least 20 washes or three years (Krezanoski, 2016).

Insecticidal nets are of great importance in the intervention and control of malaria in most African countries. The long lasting insecticide treated net has been identified as major preventive tool which if well utilized could reduce the burden of malaria (WHO 2018). However, most previous studies did not examine perception which enhance the use of long-lasting insecticide treated nets and factors which limit compliance to its regular use. Insecticide nets reduce malaria related mortality and morbidity significantly

(Ayeni et al, 2017). In Nigeria, long-lasting insecticide treated nets is one of the components of roll back malaria programme, RBM. A summit on Roll Back Malaria (RBM) including some African countries was held in Abuja, Nigeria, the Heads of State and Governments of 53 African Countries resolved that by 2010 at least 90% of pregnant women especially those in their first pregnancies will have access to intermittent Preventive Treatment (IPT) and at least 80% of those at risk for malaria particularly children under age five and pregnant women sleep under LLIN (Okoronkwo & Okoye, 2016). Efforts were made towards achieving these targets in Nigeria have led to the distribution of LLINs in public health facilities by the federal and state governments through the Malaria Control Programme. In spite these efforts, a number of studies have shown low utilization of LLINs among people in Nigeria (Okoronkwo & Okoye, 2016).

Statement of Problem

Nigeria suffers the greatest malaria burden with approximately 51 million cases and 207, 000 deaths reported annually which is approximately 30% of the total malaria burden in Africa, while 97% of the total population (approximately 173 million) is at risk of infection (Salwa, et al., 2016). Malaria is a heavy burden on individual, families, health care system, communities, and nation at large (Onasoga et al., 2016). The financial loss due to malaria in the form of treatment costs, prevention, loss of productivity and earning due to days lost from illness etc is estimated to be about 132 billion Naira which is equivalent to \$906 million annually (Onasoga et al., 2016; National Population Commission (NPC), 2010). Studies have shown that consistent and correct utilization of LLIN reduce the incidence of malaria as well as decreases malaria-related morbidity and mortality (WHO, 2019; Samarajiva, 2018; Wilson, et al., 2014). In spite of health education and awareness of advantages of long-lasting nets in prevention of malaria, it has been observed malaria is still a major cause of hospital admission in Nigeria.

Utilization of long-lasting insecticide nets (LLINs) is known as major key to malaria prevention and control strategy. However, studies have reported a large gap in terms of its utilization particularly in the sub-Saharan Africa which Nigeria is a part (Admasu, et al, 2017). Admasu et al (2017) further argued that with continual efforts to improve the use of LLIN and to ensure malaria elimination is of high importance. Therefore, the study aimed to examine perception and utilization of LLINs among adults in a rural Nigerian community.

Purpose of the Study

1. Determine the association between level of education of respondents and utilization of Long-lasting insecticidal nets among respondents
2. Examine the association between perception and utilization of Long-lasting insecticidal nets among respondents.

Research Hypotheses

Null hypothesis 1 (H₀): There is no significant association between level of education of respondents and utilization of Long-lasting insecticidal nets among respondents.

Null hypothesis 2 (H₀): There is no significant association between perception and utilization of Long-lasting insecticidal nets among respondents.

Methodology

A descriptive cross-sectional research design was used to determine perception and utilization of LLINs among adults in a rural Nigerian community. The study was conducted in Oke-ose community, Iponrin district in Ilorin East Local Government Area of Kwara State, Nigeria. The sample size for this study was 301 which was calculated using Fisher's formula: $Sample\ size\ (S) = \frac{(z^2)pq}{d^2}$. Using test statistic (z) of 1.96 at 95% confidence interval, estimated proportion of an attribute in a population (p) is 0.50, q is 1-p, and the desired level of precision (d)=0.05. Purposive sampling technique was used to select the 301 adults who are permanent residents of the community and were willing to participate in the study. The

instrument for data collection was a self-structured questionnaire. It consists of section A-C, section A was designed to elicit the socio-demographic data of respondents, section B was designed to determine perception of long lasting insecticidal nets, section C was designed to determine the utilization of long lasting insecticidal nets and section.

Face and content validity of the instrument was done by experts who are nursing researchers, while the internal consistency of the instrument was measured using Cronbach Alpha, which showed a score of 0.85. This indicates that the questionnaire is reliable. The data collected were collated and analyzed using Statistical Product and Service Solution (SPSS) version 24 and results were presented using both descriptive and inferential statistics. Written permission to use the community for the research was obtained from the appropriate authorities. Information about the research was discussed in detail with participants and consent forms were duly signed by the participants. Confidentiality and anonymity were ensured as names were not required on questionnaires and cannot be traced to the participants. Respondents were granted the freedom to withdraw at any point they want.

Results

Table 1: Socio- Demographic Characteristics of Respondents (n=301)

Variable	Responses	Frequency	Percentage
Age in years	20-30	150	49.8
	31-40	30	10.0
	41-50	60	19.9
	51-60	37	12.3
	61 and above	24	8.0
Sex	Male	120	39.9
	Female	181	60.1
Occupation	Student	58	19.3
	Farmer	11	3.7
	Trader	101	33.6
	Does not work	12	4.0
	Others	60	19.9
	Civil servant	59	19.6
Level of education	No education	36	12.0
	Primary education	36	12.0
	Secondary education	76	25.2
	Tertiary education	153	50.8
Religion	Christianity	72	23.9
	Islam	229	76.1

Table 1 shows that 150 (49.8%) of the respondents were aged between 20-30 years, 181 (60.1%) of the respondents were female. 101 (33.6%) of the respondents were traders, 153 (50.8%) of the respondents had attained tertiary level, and 229 (76.1%) practiced Islam.

Test of Formulated Hypotheses

Table 4: Statistical illustration of association between level of education of respondents and utilization of long lasting insecticidal nets (n=301)

Variable	Response	Utilization of long lasting insecticidal nets		Total	Chi-Square X^2	df	P-Value
		High (n= 120)	Low (n=181)				
Level of	No education	12	24	36	3.274 ^a	3	0.721

education				
Primary education	9	27	36	Not Significant
Secondary education	20	56	76	H ₀ accepted
Tertiary education	79	74	153	
Total	120	181	301	

Table 4 shows that there is no association between level of education of respondents and utilization of long lasting insecticidal nets with $p\text{-value}=0.721>0.05$. Since the p value is greater than the significance value (0.05), the null hypothesis was accepted. This connotes that the level of utilization has nothing to do with educational status of people in the study population

Table 5: Statistical illustration of association between perception and utilization of long lasting insecticidal nets among respondents (n=301)

Variable	Response	Utilization of long lasting insecticidal nets		Total	Chi-Square X^2	df	P-Value	Remark
		High (n= 120)	Low (n=181)					
Perception of Long lasting Insecticidal Nets among Respondents	High	112	108	220	21.124 ^a	1	0.015	Significant
	Low	8	73	81				
	Total	120	181	301				H ₀ rejected

Table 5 shows that the chi-square analysis is significant at $p < 0.05$ alpha level because, the $p\text{-value}=<0.05$. Since the p value (0.015) is less than the significance value (0.05), the null hypothesis was rejected and the alternative hypothesis which states that there is no significant association between perception and utilization of long lasting insecticidal nets among respondents is accepted.

Discussion of Findings

This study revealed that more than half of the respondents believed that the use of long lasting nets gives maximum protection against malaria. This implies that respondents have knowledge on the beneficial effect of LLIN. This is in contrast to a study conducted by Nalley et al (2018) where respondents lack knowledge on the importance of LLIN use in prevention and control of malaria even with high ownership. Majority of the respondents maintained that sleeping under LLINs causes a lot of discomfort such as heat, feeling of suffocation and sleep disturbance. This has been demonstrated by authors in previous studies where respondents' complaint of poor airflow, feeling of suffocation, skin reactions, and increased temperatures when using the LLIN (Habimana et al., 2020; Atenchong & Ozims, 2016; Axame et al., 2016). Majority of the respondents disagreed that there are traditional malaria medicines that are more effective therefore the use of LLINs are not necessary. Overall, it is indicative that respondents have positive perception regarding LLINs. This resonates with the findings by Dye, et al (2010) where LLINs were perceived positively by the participants and with regards to utilization of long lasting insecticidal net, the study revealed that most of the respondents and their family members do not sleep under LLIN regularly despite the fact that more than half of the respondents possess the LLIN. This implies that LLINs ownership does not translate into utilization. This is similar to the findings reported by in previous studies where utilization of LLIN does not keep up with its possession (Nalley et al 2018; Israel et al, 2018; Aderibigbe et al, 2014).

Conclusion

Long lasting insecticide treated net (LLIN) is an effective prevention intervention that reduces the burden of malaria if well utilized and this study has shown that only (56.1%) of the respondents possess LLINs despite positive perception regarding LLINs among participants. utilization of LLINs was also low among participants. Therefore, there is need to motivate adults in the community toward the utilization of LLINs in the prevention and control of malaria. Furthermore, government, ministry of health and NGOs should

ensure that every adult own a net either through large community coverage or at a cost that every individual should be able to afford.

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