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Usage of Insecticide Treated Nets as a Preventive Strategy Against Malaria Spread among Community Dwellers in Owerri West Local Government Area, Imo State, Nigeria

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Abstract

The study investigated usage of Insecticide Treated Nets (ITNs) as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area (LGA), Imo State, Nigeria. Four research questions and two hypotheses guided the study. The cross-sectional research design was used for the study. The population for the study comprised all community dwellers in Owerri West LGA, Imo State. The sample size was 400, gotten through stratified and purposive sampling techniques. The instrument used for the study was a self-structured questionnaire called 'Usage of Insecticide Treated Nets (ITNs) as a Preventive Strategy against Malaria Spread Questionnaire' (UITNPMSQ). The reliability of UITNPMSQ was established using Pearson Product Moment Correlation Coefficient, which yielded an index of 0.85. Data collected were analyzed using mean, frequency, and percentage for the research questions and inferential statistics of chi-square was used to test the hypotheses at 0.05 level of significance. The results revealed that, community dwellers in Owerri West LGA, Imo State, Nigeria did not use ITNs as a mean score of 1.48 was recorded against the criterion mean of 2.25. The results also showed that, low proportion of the respondents (12%) used ITNs frequently, 24% sometimes used ITNs while 64% never used ITNs. There was no significant difference in the extent of usage of ITNs between male and female community dwellers in Owerri West LGA, Imo State, Nigeria (p= .986 > .05), while there was a significant difference in the usage of ITNs between educated and non-educated (p= .013, < .05.). This study proves that community dwellers in Owerri West LGA did not use ITNs. Based on the findings, the authors recommended that, campaign targeted at increasing awareness on the efficacy and usage of ITNs should be carried out by the government and non- governmental organizations as well as other health related organizations.

Keywords: Usage, Insecticide, Treated Nets, Preventive, Strategy, Malaria

Introduction

Malaria is undoubtedly one of the most serious public health concern especially among developing countries and its prevention and control are paramount interest of government and non-governmental organization within endemic localities. Malaria is a disease caused by parasites, which are spread by "The Female Anopheles Mosquito". In most cases it causes high fever, chills, anemia and flu-like symptoms which is of great danger to pregnant women and infants.

Malaria occurs nearly in one hundred [100] country worldwide, exacting a heavy economic, social and physical burden in developing countries particularly in Sub-Saharan Africa and South Asia (WHO ,2012). In the submission of Abebe et al. [2003], malaria accounts for 30% and 11% of child and mother's death respectively. It was estimated by world malaria report (2016) that worldwide 2.12 million new cases of malaria and 429,000 deaths occurred in 2015 with 90% and 92% respectively occurring in the region of Africa.

Reports have also been made by world malaria report (2016) that under five (U5) years children are more susceptible in regions with high malaria infestation and that, more than 70% of all malaria deaths occur in this age group.

Since the year 2000, a concerted efforts against malaria [roll back malaria] has led to unprecedented level of effective treatment across Sub-Saharan Africa [B halt, Weiss, Cameroon (2016). Currently the World Health Organizations (2015) has set new goals for global malaria reduction by 2030, which include the reduction of global malaria incidence and mortality rates by at least 90%, as well as elimination of the disease in at least 35 endemic countries.

Economically, the impact of malaria in Nigeria is of great proportion compared to most countries with about 132 billion naira lost annually (National Malaria Program, 2006). It was discovered that insecticide treated nets (ITNs) have shown to be the most cost effective strategy in prevention of malaria (World Health Organization [WHO], 2019). It has shown to be effective in the reduction of malaria by 17% in children below age 5 (Lengeler, 2004). Insecticide treated nets are vector control measures that create barrier between a person sleeping under the net and the mosquito. Its aim is to reduce human-vector contact and the vector capacity of the anopheles mosquito population to prevent malaria infection from occurring (WHO, 2014). Centre for disease control (2012), Global Malaria Programme (2007), and National Malaria Control Programme (2006) noted that insecticide that are used for treating bed nets kills mosquitoes as well as other insects. The insecticides also repels mosquitoes, reducing the number that infiltrate the house to feed on the people within the house. This is a way that serves as a protection for everybody within the household.

The WHO (2013) statistics reveled that between year 2000 AND 2012, estimated malaria mortality rates decreased by 42% in the African region, they are estimated to have decreased by 48% in children under five years of age and by 54% in the African region. If the annual rate of decrease that has occurred over the twelve (12) years (2000 – 2012) is maintained, the malaria mortality rate are projected to decrease by 52% globally and by 62%bin African region by 2015. In children under 5 years of age they are projected to decrease by 60% globally and by 68% in African region by 2015. WHO (2019) recommended that, in areas targeted for malaria vector control all persons at risk should be protected by insecticide treated nets (ITNs).

In a study carried out by Asa [2012], it was discovered that ITNs coverage in Nigeria was low and its utilizations among women and children was from the Roll Back Malaria partnership ([RBM) target to protect 80% of children and pregnant women at risk for malaria with ITNs by 2015. Asa (2012) found out that ITNs ownership and use was very low in the rural areas, South West region and households with the lowest wealth quintile. The study also showed that about 50% of children less than 5 years of age did not sleep under ITNs the night preceding the survey, but children under the age of one (1) year were more likely to sleep under ITNs.

In Nigeria, the three tiers of government are aware of the need to eradicate malaria with absolute commitment; hence the massive distribution of Insecticide Treated Nets (ITNs) by the government and Non-Governmental Organizations in recent years with the aim of preventing mosquito bites. Despite all these efforts and the declarations by African government in the 1990s and the complementary efforts promised in the main content of Roll Back Malaria (RBM) declaration in Abuja in 2000, today malaria remains a major health challenge. Malaria happens to be one of the most prevalent, commonest, threatening and frequent occurring diseases in Imo State in particular and Nigeria in general.

In Imo State, it is hardly seen that a member of household is not affected by malaria in a month among congested population, such as Owerri North Local Government Area of Imo

State, Nigeria despite the provision and distribution of ITNs which is said to be one of the most effective ways of preventing malaria by the Primary Health System. In view of the above, this study is aimed at determining the usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri North Local Government Area of Imo State, Nigeria.

Research Questions

The following research questions guided the study.

1. What is the extent of usage of insecticide treated nets as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria?
2. What is the frequency of usage of insecticide treated nets as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria?
3. What is the extent of usage of insecticide treated nets as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria based on gender?
4. What is the extent of usage of insecticide treated nets as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria based on level of education?

Methodology

A cross-sectional survey research design was adopted for this study to determine the usage of Insecticide Treated Nets (ITNs) as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria. The population for this study comprised all community dwellers in Owerri West LGA. The sample for the study was 400 community dwellers within the LGA. The stratified and purposive sampling techniques were used to select the sample for the study. A self-structured and validated questionnaire called ``Usage of Insecticide Treated Nets as a Preventive Strategy against Malaria Spread Questionnaire`` (UITNPSMSQ) was used for the study. The questionnaire was in two sections. Section A and B, section A was on the demographic characteristics of the respondents while section B contained items designed to elicit information on the topic in question. The reliability of the instrument was established through the use of test re-test method and the data generated was analyzed with Pearson Product Moment Correlation Coefficient. The correlation coefficient was found to be 0.85.

The researcher with three research assistants collected and collated the data for the study. Since net use is subject to seasonal variation (Baume and Marin, 2010), the data was collected at the peak of rainy season in the month of July to August when the condition for breeding of mosquitoes are most favorable and in-door mosquito bites are likely to be at its peak. The data collected was analyzed using frequency, mean, percentage and inferential statistics of chi-square to test the hypotheses at 0.05 level of significance. It should be noted that, a grand mean equal to or greater than the criterion mean of 2.5 was considered high extent while less than 2.5 was considered low extent.

Results

Table 1: **Frequency table showing the extent of usage of Insecticide Treated Nets as a preventive strategy against malaria among community dwellers in Owerri West Local Government Area of Imo State, Nigeria**

S/N	Items	Always	Sometimes	Never
1.	Do you sleep under ITNs	46(11.5%)	98(24.5$)	256(64%)
2.	I sleep well under ITNs	49(12.3%)	108(27%)	243(60.8%)
3.	I feel safe sleeping under ITNs	40(10%)	96(24%)	264(66%)
4.	My household members sleep under ITNs	48(12%)	99(24.8%)	253(63.3%)
5.	It is comfortable for me to sleep under ITNs	53(13.3%)	88(22%)	259(64.8%)
6.	I do not have sleepless night sleeping under ITNs	51(12.8%)	91(22.3%)	258(64.5%)
Mean		47.8	96.7	225.5
Grand mean			1.36	
Criterion mean			2.25	
Decision			Low	

Table 1 above shows the extent of usage of ITNs among community dwellers in Owerri West Local Government Area of Imo State, Nigeria. The mean analysis showed that, a mean of 47.8 (always), 96.7 (sometimes) and 225.5 (never) was recorded. A grand mean (1.36) which is lower than the criterion mean (225.5) was obtained. Therefore, this showed that the extent of usage of ITNs as a preventive strategy against malaria among community dwellers in Owerri West Local Government Area of Imo State is low.

Table 2: **Frequency table showing the frequency of usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria**

ITNs Usage	Frequency	Total Weight	Grand Mean	Criterion Mean	Decision
Always	48(12%)	144			
Sometimes	97(24%)	194	1.48	2.25	Low
Never	255(64%)	255			

Table 2 above shows the frequency of usage of ITNs as a strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria. From the analysis it was discovered that 48(12%) of the respondents always use ITNs, 97(24%) of the respondents sometimes use ITNs while 255(64%) of the respondents never used ITNs. Also, a grand mean of 1.48 was recorded as against the criterion of 2.25. This indicated low frequency of usage of ITNs. Therefore, it can be concluded that community dwellers in Owerri West Local Government Area of Imo State are not users of ITNs as a preventive strategy of malaria spread.

Table 3: **Chi-Square Test showing the difference in the extent of usage of ITNs as a preventive strategy against malaria spread between male and female community dwellers in Owerri West Local Government Area of Imo**

	N	%	$\chi^2 cal.$	Df	p-value	Decision
Male	188	(47%)				
Female	212	(53%)	1.25	2	.986	Not rejected
Total	400	(100%)				

Table 3 above shows the chi-square value of no difference in the extent of usage of ITNs as a preventive strategy of malaria spread among between male and female community dwellers in Owerri West Local Government Area of Imo State, Nigeria. The result shows that the null hypothesis was not rejected, thus not significant, since the p-value was above 0.05 level of significance. This implies that, the extent of usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria, was not determined by gender.

Table 4: **Chi-Square Test showing the difference in the extent of usage of ITNs as a preventive strategy against malaria spread between educated and non-educated community dwellers in Owerri West Local Government Area of Imo State, Nigeria.**

	N	%	$\chi^2 cal.$	Df	p-value	Decision
Educated	161	(40.25%)				
Non-educated	239	(59.75%)	96.15	2	.013	Rejected
Total	400	(100%)				

Table 4 above shows the chi-square value of no difference in the extent of usage of ITNs as a preventive strategy of malaria spread among between male and female community dwellers in Owerri West Local Government Area of Imo State, Nigeria. The result shows that the null hypothesis was rejected, thus significant, since the p-value was below 0.05 level of significance. This implies that, the extent of usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West Local Government Area of Imo State, Nigeria, was determined by level of education.

Discussion

The purpose of this study was to determine the extent of usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West LGA of Imo State, Nigeria.

The results revealed that, the extent of usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West LGA of Imo State, Nigeria, was low. This low usage could be due to the fact that the community dwellers had low level of awareness of the efficacy of ITNs in malaria prevention among the community dwellers. The result of this study is in contrast with the findings of Okpako and Odibo (2016) who found out that, the

extent of utilization of ITNs among residents of Uwvie LGA of Delta State was high. They attributed this high level to the belief and understanding of the residents that mosquitoes which are the causative agent of malaria in the study area is highly predominant and the only preventive means is the use of ITNs coupled with the free distribution of nets by successive governments. The result of the study is also in line with findings of Sunday et al (2014) in a study they carried out in South Western Nigeria in which they discovered that, 58.8%of the household utilized ITNs.

The result showed no significant difference in the usage of ITNs by male and female community dwellers as a preventive strategy against malaria spread in Owerri West LGA of Imo State, Nigeria. This showed that both male and female community dwellers in Owerri West LGA of Imo State, Nigeria did not use ITNs as a preventive measure against malaria spread. The implication of this is that, being male or female had no influence on ITNs usage among the community dwellers. The result is in line with the findings of Okpako and Odibo (2014) whose results revealed no significant difference in the utilization of ITNs among the studied group. However, the result is in contrast with the findings of Eisele et al (2005) and Asa (2002) who found out those women, particularly lactating mothers use ITNs more than non-lactating women and men.

The result also revealed significant difference in the usage of ITNs as a preventive strategy against malaria spread between educated and non-educated community dwellers in Owerri West LGA of Imo State, Nigeria. The educated showed more usage of ITNs than the non-educated community dwellers. This result is in line with the findings of Okpako and Odibo (2016) who found out that, there was a significant difference in the extent of utilization of ITNs as a preventive measure of malaria between educated and non-educated resident in Uvwie LGA of Delta State. They argued that, this is as a result of education which has been proven to influence people's decision about health matters as well enhance positive change in attitude and behavior.

Conclusion

Malaria remains one of the most public health problems in Sub-Saharan African and Asian countries. In Nigeria, malaria top the list of prevalence diseases. However, ignorance and low income have been implicated in the low usage of ITNs. This study showed that, there was low usage of ITNs as a preventive strategy against malaria spread among community dwellers in Owerri West LGA of Imo State, Nigeria. The reason for this low usage is due to ignorance, unavailability and negative attitude towards INTs. Although there was no significant difference in the usage of ITNs between male and female, it was however discove red that there was a significant difference in the usage of ITNs between the educated and the non- educated as the educated community dwellers showed more usage of ITNs.

Recommendations

The following recommendations were made based on the findings of this study.

1. Vigorous campaign targeted at increasing the awareness of the efficacy and usage of ITNs among community dwellers should be embarked upon by the government, non-governmental organizations as well as health and health related organizations.
2. Insecticide treated nets should be distributed to community dwellers free of charge to enhance availability and usage. This can be achieved through health agencies by the government and well-meaning individuals.
3. Health education of the public should be carried out by stakeholders through the mass media like radio, television, newspapers and internet. This will enhance insecticide treated nets usage.

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