Predictor of Insecticide Treated Nets Utilization among Pregnant Women in Ikenne Local Government Area Ogun State Nigeria

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Abstract

Objective: This study sort to investigate the predictors of insecticide treated nets utilization among pregnant women in Ikenne LGA Ogun State, Nigeria.

Methodology: This study employed descriptive cross-sectional design guided by Information Behavioral Skill model. Simple random sampling technique was used to select 250 respondents. A validated semi-structured questionnaire with Cronbach's alpha of 0.78 to 0.79 was used to collect data. Frequency table, mean, standard deviation correlation, multiple and binary logistic regression analysis were conducted to give statistical responses to the research question and hypotheses using SPSS version 23.

Results: The respondent's level of information on ITN use was 7.85 \pm 1.75. Majority (91.6%) had high level of information on ITN. Motivation to ITN use was moderately high with a mean of 18.96 \pm 4.62. Less than half (46.8%) strongly agree that they were motivated using ITN. The behavioral skill was moderately high with a mean of 12.4 \pm 4.57. Most (76%) of them reported that they were very confident to use ITN. Respondents' utilization of ITN was high with a mean of 3.86 \pm 1.51. Majority (86.6%) reported that they slept under ITN last night. There was a significant relationship between' level of information (r=0.260; p=0.000), motivation (r=0.246; p=0.000), behavioral skills (r=0.643; p=0.000) and utilization of ITN.

Conclusion: the respondents had high level of information on ITN with moderately high motivation to ITN use, moderately high behavioral skills. The respondents' use of ITN was high. This study recommended that ITN use should be guided by the IMB model.

Keywords: ITN Utilization, Information, Motivation, Behavioral-Skill, Pregnant Women.

Introduction

Malaria remains one of the most important causes of maternal and child morbidity and mortality in sub-Saharan African, despite the availability of effective interventions. In Nigeria, 11% of maternal deaths are attributed to malaria ^[1]. The use of all the three types of nets were slightly higher in urban areas than in rural areas. Despite the urban slight increase in utilization of ITNs, it falls short of the roll back malaria (RBM) set targets of malaria control under the RBM initiative such as at least 60% of the people at risk of malaria (especially young children and pregnant women) should benefit from ITN and minimum of 60% of pregnant women would have access to effective preventable treatment^[2].

The 2013 national demographic health survey reported that 18 percent of pregnant women slept under a mosquito net, 10 percent of women slept under an ITN, and 16% slept under a longlasting insecticide nets (LLIN).

A study conducted by ^[3] revealed that in Nigeria, only 5% of women utilize ITNS despite government policy of free insecticide-treated nets for vulnerable group.

Notwithstanding the evidence that the use of ITN is the best strategy for malaria prevention and control in Nigeria, only 36% of households have access to it and only 18% of pregnant women slept under ITN the night before the survey ^[4].

The burden is largely borne by Africa where 91% of deaths occurred, with pregnant women, their unborn babies and children under five years

of age most at risk of infection and adverse outcomes ^[5].

Malaria in pregnancy is still a major health issue in Nigeria, accounting for about 33% of cause of maternal death. Despite massive efforts to make insecticide-treated net (ITN) available to all pregnant women in Nigeria, the use is still low ^[6]. Nigeria alone accounts for a quarter of all malarial cases in the 45 endemic countries in Africa, and approximately 150 million people live in areas of high malarial transmission.^[7]. Malaria accounts for approximately 1 million deaths yearly and about 300,000 deaths in Nigeria alone. Pregnant women and their unborn babies are particularly vulnerable to the adverse consequences of malaria ^[8].

Malaria in pregnancy is one of the major causes of mortality and morbidity in tropical regions like Nigeria, causing maternal anemia, intrauterine growth retardation, preterm birth, and low birth weight (LBW)^[9]. Use of mosquito nets by pregnant women is an important strategy to prevent malaria morbidity and to reduce the negative effects of malaria on pregnancy and pregnancy outcomes. Compliance with the use of ITNs has been very distinct in sub-Saharan Africa. Malaria causes a variety of adverse consequences in pregnant women due to the invasion of the placenta by Plasmodium. It increases the risk of adverse pregnancy outcome for the mother, the fetous and the newborn, such as maternal anaemia, Intrauterine Growth Retardation (IUGR) and the delivery of low birth weight infants.

The Roll Back Malaria (RBM) has identified under-five children and pregnant women as one of the highest risk groups for malaria, and one of the strategies set to fight malaria in this group is to increase utilization of mosquito nets^[10].

What then is responsible for the low utilization? What are the predictors associated with utilization of ITNs among pregnant women despite increased health education and awareness campaign, and more importantly nationwide free ITNs distribution by government agencies. This study intends to investigate the predictors of ITN utilization among pregnant women.

Therefore, this study proposes the following hypothesis

1. There is a significant relationship between information and ITN utilization among pregnant women.

- 2. There is a significant relationship between motivation and ITN utilization among pregnant women.
- 3. There is a significant relationship between behavioral skills and ITN utilization for among pregnant women.

Materials and Methods

Study design, population and location

This study employed descriptive crosssectional design was used to select 250 respondents from the selected health facility. A validated semi-structured questionnaire with Cronbach's alpha of 0.78 to 0.79 was used to collect data. The respondent's level of information was measured on 10- point rating scale, motivation to use ITN was measured on 30-point rating scale, behavioral skills was measured on 20-point rating scale and ITN use was measured on 6-point rating scale.

The study was conducted in Ikenne LGA and the study population are pregnant women in selected hospitals in Ikenne Loocal Government Area, Ogun State, Nigeria. South-Western region of Nigeria. Its headquarters is in town of Ikenne at 60 52 'N' 30 43 'E'. It has an area of 144km2 and a population of 118,735 at the 2006 census.

Measures of variables

The questionnaire items contained questions regarding demographics, awareness, motivation, self-efficacy and ITN utilization among pregnant women. The Socio-demographic characteristics of participants were determined using 7-items with options to be chosen. The first item had 3 options, the second item had 4 options, the third item had 4 options, the fourth item had 4 options, the fifth item is optional, the sixth item had 4 options and the seventh item had 4 options.

Section B, assess the Level of information among pregnant mothers and it consist of 10 questions measured on 10-point rating scare having (yes or no) options. The answer "yes" was coded as one (1) while the answer "no" was coded as zero (0).

Section C, assess motivation about malaria prevention among pregnant mothers with 10 items with a 40-point rating scale ranging was measured on a Likert scale with responses ranging from strongly agree, agree, strongly disagree to disagree coded from 0,1,2, and 3 respectively depending on the nature of the question.

Section D, ascertain self-efficacy on utilization of ITNs among pregnant mothers with 10 items at 20-point rating scale from always, not at all, to occasionally, coded as 0, 1, and 2 respectively.

Section E, assess ITN utilization among pregnant women with 6 items at 12-point rating scale of yes or No, coded as 0 and 1.

Inclusion criteria

The pregnant mothers attending antenatal clinic in the selected hospitals in Ikenne LGA that are willing to partake in this study.

Exclusion criteria

Non-pregnant mothers that will come for family planning and other health needs in the selected hospitals during the study will be excluded in this study, and those who will not give their consent.

Instrument for the study

The instrument that was used for data collection in this study was a structured questionnaire, so as to achieve the set objectives. Each section represents a variable to be studied and it will be strategically constructed for easy and accurate information. The questionnaire was divided into five sections: section A addressed Socio-demographics of respondents such as age, gender, religion, marital status, number of children, and educational attainment, section B assessed information on ITN utilization among pregnant women, section C assessed the motivation on ITN utilization among pregnant women, section D assessed self-efficacy on ITN utilization among pregnant women and section E assessed ITN utilization among pregnant women. The Information Motivation and Behavioral skill model was considered as a theoretical framework during development of the questionnaire for this study.

Ethical considerations

This study will adhere strictly to the principle of voluntary participation. Ethical clearance has been obtained from Babcock University Health Research and Ethics Committee (BUHREC). Also, an Informed Consent form was issued to the participants, which would explain the purpose of the study and assure the participants of confidentiality.

Data analysis

Data obtained from completed questionnaires will be coded and analyzed using statistical package for social science (SPSS) version 23.0. The variables were computed and scores were also allocated according to the rating scale for each variable. Descriptive statistics, frequency table, mean, standard deviation correlation, multiple and binary logistic regression analysis were conducted to give statistical responses to the research question and hypotheses.

Results

Socio-demographic characteristics of respondents

More than half (59.6%) of the respondent were of the ages 20 to 30 years. The ethnic distribution of the respondents showed that more than half (61.2%) were from Yoruba tribe. For educational attainment, more than half (58.5%) of the respondents had tertiary education. Majority (92.8%) of the respondents were married. Less than half (34%) of the respondents had one child. Almost half (49.2%) of the respondents were the self-employed majority (81.6%) of the respondents were Christians (Table 1).

Respondent's Level of Information on ITN Use

Most (79.6%) of the respondents reported that they heard information about ITN utilization from the ANC clinic. Majority (89.2%) of the respondents reported that they were reminded on ITN use during their clinic days. Majority (86.4%) of the respondents reported that ITN use Information was not new to them. More than half (51.6%) of the respondents reported that they get information for ITN from community meeting. Majority (91.2%) of the respondents reported that they were aware that ITN can protect them from having malaria. More than half (69.2%) of the respondents reported that their friend usually tells me of sleeping under ITN

Majority (86%) of the respondents reported that they were aware that malaria kills babies if they do not use ITN. Most (72.8%) of the respondents reported that they get information during ITN distribution campaign. Most (75.2%) of the respondents reported that they get information about ITN from the media. Majority (83.2%) of the respondents reported that they were informed that ITN can be use even with a mat (table 2).

The respondent's level of information on ITN use measured a 10-point rating showed a mean score of 7.85 \pm 1.75. This translates to 78.5% (See Table 6). The proportion of the respondents with high level of information was 91.6%. One can infer that the respondents had high level of information on ITN. (See, Table 2).

Respondents Motivation of ITN Use

Less than half (40.8%) of the respondents strongly agree that there was adequate publicity on media on ITN utilization. Few (28.8%) of the respondents strongly disagree that they were not motivated in using ITN because they cannot maintain it. Less than half (46.8%) of the respondents strongly agree that they were motivated using ITN because government makes it available for all pregnant women. The respondents' motivation to ITN use measured on a 30-point rating scale showed that the respondents scored a mean of 18.96±4.62 translated to motivation prevalence of 63.2% (See table 6). The proportion of the respondents with moderately high motivation to ITN use was 60%. One can infer that most of the respondents had moderate motivation to ITN use. (Table 3).

Respondents Behavioral Skill of ITN Use

As shown in table 4.4 below, more than half (58.4%) of the respondents reported that they were very confident to use ITN at night without stress. More than half (52%) of the respondents reported that they were very confidents sleeping with ITN makes them comfortable at night. Most (76%) of the respondents reported that they were very confident to use ITN to protection from mosquito. Most (73.2%) of the respondents reported that they were very confident to spread the ITN under a shade for 24 hours before use. Half (50%) of the respondents reported that they were not confident to use ITNs as cotton on my doors and windows. Half (50.0%) of the respondents reported that they do not forget using ITN at nights.

The respondents' behavioral skills of ITN use measured on a 20-point rating scale showed that the respondents scored a mean of 12.4 ± 4.57 translated to behavioral skills prevalence of 62% (See table 6). The proportion of the respondents with moderately high behavioral skills to ITN use was 60%. One can infer that most of the respondents had high behavioral skills to ITN use. (table 4).

Respondents Utilization of ITN

As show in table 4.5 below, Majority (82.8%) of the respondents reported that they had ever use ITN. Of those who ever use ITN, majority (71.9%) still used ITN every night? Those respondents that reported to still use ITN every night, majority (86.6%) reported that they slept under ITN last night. Majority (84.4%) of the respondents reported that sleeping under ITN is necessary to prevent them and their babies from having malaria More than half (54.4%) of the respondents reported that they knew how to sow your ITN when it tears. More than half (53.6%) of the respondents reported that they forget using ITN some nights when I sleep.

The respondents' utilization of ITN measured on a 6-point rating scale showed that the respondents scored a mean of 3.86 ± 1.51 translated to utilization prevalence of 64.3% (See table 6). The proportion of the respondents with high utilization of ITN was 60.8%. One can infer that most of the respondents had high utilization of ITN (Table 5).

Discussion

Those who had high level of information on ITN as compared with those with low level of information on ITN had an odd of 1.79 times more likely to utilize ITN. Respondents with high motivation as compared with those with low motivation had an odd of 1.93 times more likely to utilize ITN. Respondents with high behavioural skills as compared with those with low behavioral skills had an odd of 5.88 times more likely to utilize ITN. This is similar to the findings of ^[11] where they reported that Women who believe that it is normal to use ITNs were 1.9 times more likely to use ITN than those who did not. Women who were confident in their abilities to use ITNs were 1.9 times more likely than those who do not to use ITNs. Women who had a good attitude towards ITNs were more likely to use ITNs compared to those who do not.

Having more information on malaria, its complications, the safety and effectiveness of insecticidal nets, as well as strong motivation for sleeping under an insecticidal net are likely to be the main determinants of insecticidal net use among this group. This is in line with findings from a previous study on curb side recycling behaviour, where information and motivation showed a similar relationship with behaviour ^{[12].} ^[13] and ^[14]. reported that knowledge of malaria and insecticidal net were important determinants of insecticidal net use.

Information and motivation constructs however, played a significant role in predicting behavioural skills among the respondents. A behavioural skill is more relevant in predicting the utilization of ITN than information and motivation. This shows that interventions aimed at promoting LLIN use should lay much emphasis on increasing behavioural skills. This corroborates the findings of ^[15]. However, ^[16]. reported that information and motivation predict behavioural utilization than skills. whv behavioural skills did not play a significant role among their study population; inability to properly hang or care for an LLIN may not be sufficient to prevent one from sleeping under it, as these procedures could be done by someone else, especially in northern Nigeria where

Figures and Tables

pregnant women are generally considered delicate and usually have some female relative(s) or friend(s) to care for them during their pregnancies. For such women, sleeping under an LLIN would basically be dependent on their access to one, and their choice to sleep under it. This point is further buttressed by the fact that social support from significant others played a very significant role in determining those who slept under an insecticidal net.

Conclusion

The pregnant women had high level of information on ITN and moderately high motivation to ITN use. Also, the pregnant women had high behavioral skills and high use of ITN. Findings showed that pregnant women utilization of ITN was dependent on their level of information, motivation to use and their behavioral skills. These findings highlight the potential usefulness of the IMB model in guiding interventions for promoting LLIN use among pregnant women. More emphasis should also be laid on boosting the behavioral skills of the pregnant women.

Socio-demographic	Respondents in this Study N=250					
Variables	Frequency (N)	Percentage (%)				
Age (in years)						
20-30	149	59.6				
31-40	96	38.4				
>40	2	0.8				
Mean = 15.66, SD = 2.25						
Ethnic Origin						
Igbo	56	22.4				
Yoruba	153	61.2				
Hausa	8	3.2				
Others	33	13.2				
Educational Attainment		-				
Non-formal	4	1.6				
Primary	11	4.4				
Secondary	88	35.2				
Tertiary	146	58.4				
Number of Children						
1	85	34.0				
2	70	28.0				
3	25	10.0				
4	6	2.4				
5	1	0.4				
Occupation						

Table 1. Socio-demographic characteristics of respondents in this study

Civil servant	64	25.6		
Self-employment	123	49.2		
House wife	28	11.2		
Others	33	13.2		
Religion				
Christianity	204	81.6		
Islam	41	16.4		
Traditional	2	0.8		
Others	3	1.2		

Table 2. Respondents Level of Information on ITN

Respondents in this Study N=292					
Items	Yes (%)	No (%)			
I get information about ITN utilization from the ANC clinic	199 (79.6%)	51 (20.4%)			
In my clinic days am reminded	223 (89.2%)	27 (10.8%)			
Information about ITN is not new to me	216 (86.4%)	34 (13.6%)			
I get information for ITN from community meeting	129 (51.6%)	121 (48.4%)			
I am aware that ITN can protect me from having malaria	228 (91.2%)	22 (8.8%)			
My friend usually tells me of sleeping under ITN	173 (69.2%)	77 (30.8%)			
I am aware that malaria kills babies if I don't use ITN	215(86.0%)	35(14.0%)			
I get information during ITN distribution campaign	182 (72.8%)	68 (27.2%)			
I get information about ITN from the media	188 (75.2%)	62 (24.8%)			
I am informed that ITN can be use even with a mat	208(83.2%)	42(16.8%)			

Table 3. Respondent's Motivation of ITN Use N=250

Statements	Strongly agree F (%)	Agree F (%)	Disagree F (%)	Strongly Disagree
There is adequate publicity on media on ITN utilization	*102(40.8)	127(50.8)	16(6.4)	F (%) 5(2.0)
I am not motivated in using ITN because I cannot maintain it	21(8.4)	42(16.8)	115(46.0)	*72(28.8)
ITN is too expensive (i.e. not affordable)	29(11.6)	23(9.2)	84(33.6)	*114(45.6)
Health care providers encourage me to use ITN every night during antenatal clinic	*140(56)	77(30.8)	20(8.0)	13(5.2)
I don't like using ITN because it gives me heat at night	56(22.4)	83(33.2)	75(30.0)	*36(14.4)
ITN is difficult for me to hang so I don't use it	28(11.2)	65(26.0)	94(37.6)	*63(25.2)
There is no enough air to breath when sleeping with ITN	56(22.4)	67(26.8)	79(31.6)	*48(19.2)
I don't use ITN because of the too much chemical in it	41(16.4)	68(27.2)	102(40.8)	*39(15.6)
My husband always reminds me of using ITN	*73(29.2)	88(35.2)	58(23.2)	31(12.4)
Am motivated using ITN because government makes it available for all pregnant women	*117(46.8)	85(34.0)	34(13.6)	14(5.6)

*Expected responses

Statements	Not	A bit	Very
	Confident	Confident	Confident
	F (%)	F (%)	F (%)
I use ITN at night without stress	43(17.2)	61(24.4)	*146(58.4
Sleeping with ITN makes me comfortable at night	51(20.4)	69(27.6)	*130(52.0)
I use ITN for protection from mosquito	20(8.0)	40(16.0)	*190(76.0)
I spread the ITN under a shade for 24 hours before use	37(14.8)	30(12.0)	*183(73.2)
I use ITNs as cotton on my doors and windows	125(50.0)	47(18.8)	*78(31.2)
I can hang the ITN on my bed confidently	40(16.0)	66(26.4)	*144(57.6)
I spread ITN in the sun after use for more effectiveness	*90(36.0)	56(22.4)	104(41.6)
I use ITN only when am pregnant	*75(30.0)	61(24.4)	114(45.6)
I use ITN every night	72(28.8)	55(22.0)	*123(49.2)
I don't forget using my ITN at nights	72(28.8)	53(21.2)	*125(50.0)

Table 4. Respondents Behavioural Skill on ITN UseN=250

*Expected responses

Table 5.	Respondents	Utilization	of ITN
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Respondents in this Study N=292					
Items	Yes (%)	No (%)			
Do you ever use ITN?	207 (82.8%)	43 (17.2%)			
*Do you till use ITN every night?	149 (71.9%)	58 (28.1%)			
**Do you use ITN last night?	129 (86.6%)	20 (13.4%)			
Sleeping under ITN is necessary to prevent me and my baby	211 (84.4%)	39 (15.6%)			
from having malaria					
Do you know how to sew your ITN when it tears	136 (45.6%)	114 (54.4%)			
I forget using my ITN some nights when I sleep	116 (46.4%)	134 (53.6%)			

*N=207; N=**129

Table 6. Summary of Descriptive Statistics of Variables Mean, Standard Deviation, and Standard error of mean of in the Study

Variables	Maximum Point on a	Respondents in this study		Prevalence
	Scale of Measure	N=241		(%)
		\bar{x} (S.E) ±SD		
Level of information	10	7.85(0.11)	1.75	78.5
Motivation	30	18.96(0.29)	4.62	63.2
Behavioural Skills	20	12.4(0.28)	4.57	62.0
ITN Use	6	3.86(0.98)	1.51	64.3

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