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Factors Associated with Utilization of Insecticide Treated Net among Pregnant and Nursing Mothers in Ago Iwoye, Ogun State

[1]Oyerinde, Oyewole Olusesan,[2]Ogunsanwo Oluwatosin,[3]Babalola Funmilola, [4]Adeoye Bolade, [5]Oyerinde Oluwayemisi I,[6]Kilanko AkinKunmi,[7]Olaoye Titilayo Abike
[1, 7]Department of Public Health, Babcock University, Ilishan-Remo; Department of Micro Biology Babcock University,
[3, 6] Loma Linda University, California, USA.
[4]Department of Nutrition and Dietetics, Babcock University, Ilishan-Remo, Ogun State, Nigeria,
[5]Federal Government College Odogbolu, Ogun State.

Abstract:- Insecticide Treated Nets (ITNs) is an effective tool to prevent mortality rate caused by Malaria in the world and especially in the Sub-Saharan region. Therefore, this study assessed associated factors affecting utilisation of insecticide treated nets among pregnant and nursing mothers in Ago-Iwoye, Ogun state.

The study was a descriptive survey. A simple convenient technique was used to select a total of 230 respondents. A semi-structured questionnaire was used to collect data on and results were presented in tables and bar charts.

The mean age was 31.33±8.15 and the highest 57(24.8%) aged group was 25-29yrs. Many 30.9% were in their second pregnancy while 31.7% came to the clinic with their second child. The factors affecting utilisation of Insecticide Treated Net (ITNs) were cultural 147(60%), because majority 88% believed that net is used to cover dead body during "line in state", socio economic factor 100(43.5%), environmental factors 70.5% and lack of information (71.3%) on the efficacy and effectiveness of ITNS and distribution of ITNs by the government was not adequate (81.1%).

In-conclusion utilisation of ITNs was low in the study area. Lack of information and environmental conditions were significant ($p<0.05$) factors affecting utilisation. Therefore, it was recommended that ITNs must be administered combined with health education in order to achieve a change in community behavioural practices.

Keywords:- *Long Lasting Insecticide Treated Nets (LLITNs), Insecticide Treated Nets (ITNs), utilisation of ITNs, Malaria and Net, Factors affecting utilisation of ITNS.*

I. INTRODUCTION

A simple mosquito net treated with an insecticide is a proven and cost effective way to repel or kill mosquitoes carrying the parasite that causes malaria (Becker-Dreps, Biddle, Pettrifor, Musuamban, Imbie, Mishrick, Belits, 2009). Dipping nets in a solution of a parathyroid insecticide transforms the net from a simple physical barrier into a physical and chemical barrier that can repel or kill the female anopheles mosquito, which is responsible for transmitting malaria parasite. Parathyroid insecticides are effective for up to 12 months, after which the nets must be retreated. While the evidence based on the effectiveness of ITNs in reducing malaria transmission has grown rapidly in recent years, utilisation rates for ITNs in most African countries have not, yet 90 percent of mortality is due to malaria (WHO, 2006: WHO, 2008).

Insecticide Treated Nets have been found to reduce the need for malaria treatment hospitalisation among pregnant women (Schulman, 1999; TerKuile, Dianne, Philips-Howard, Hawley, Friedmanet. et. al., 2003) and the pressure on Health Services (System). ITNs use is one of the major malaria control policy prevention methods in Nigeria. Consistent use of ITNs can reduce malaria transmission by up to 90 percent (Ansell & Hamilton, (2004)) and overt as much as 44 percent of all cases of mortality among children of under-five (Lengeler 2002; Anne Philips, Cattani, Lengeler, Binka, Rashed, (1998); Anosike, Nwoke, Chikere, Ukaga, Ogbasu, Asor,Meribe, Amajuogi, Ameli, Oku, &Udujih, (2004)). It has been widely spread that with the use of ITNs there is an overall reduction in child mortality of 17 percent could be demonstrated, with six lives saved per every 1,000 children protected (Brown, Maude &Binka, 2001). There is also evidence that if more than 80 percent of households in an area sleep under an ITN (Alaba, 2003), malaria transmission is significantly reduced, which can benefit people who do not use an ITN themselves (CDC 2008). Only two insecticides classes are approved for use on ITNs (pyrroles and pyrethroids). These insecticides have been shown to pose very low health risks to humans and other mammals, but are toxic to insects and kill them (Brown, Maude &Binka, 2001). Previously, nets had to be retreated every 6 to 12 month, or even more frequently if the nets were washed. Nets were retreated by simply dipping them in a mixture of water and insecticide and allowing them to dry in a shady place and still possess the ability to prevent malaria. Aerial insecticides' have been found to be harmful to the ecosystem because of the residues (Dare County, 2011).

Malaria places a staggering economic burden on already national economies (Goodman, Coleman, & Mills, 1997) and on struggling families in the world, it has been estimated that around 350-500 million clinical malaria disease episodes occur annually. In the year 2018, roughly

half of the World population was at a risk of malaria with 212 million cases and about 429,000 deaths (World Health Organization, 2018). These aforementioned had made Malaria a serious health problem in tropical and subtropical regions of the world with far reaching medical, socio-economic consequences for the countries in which it is found (Goodman, Coleman, & Mills 2005). Each year approximately 300 million malaria episodes and 2.5 million deaths are reported worldwide with 80% of them occurring in sub-Saharan Africa. In endemic areas, clinical episodes and mortality are more frequent and severe among pregnant women than non-pregnant (D'alessandro, 1996; Adeyemi, Adekunle, Akinota, 2007). Each year, reports have shown that 3.2 billion people remain at risk of malaria and nearly one million deaths occur. This has implications on national economies and on struggling families. The disease has been estimated to cost Sub-Saharan African nations more than 12 billion dollars every year in lost gross domestic (WHO 2005) and to short economic growth in Africa by up to 1.3% each year (Gallup and Sachs, 2000). In addition, malaria reduces human work capacity, productivity and affects social development indicators such as child health and school attendance.

Malaria is highly endemic in Nigeria and poses a major challenge, as it affects human development. It is a cause of under-development and remains one of the leading causes of mortality and morbidity in the country. (Country Strategic Plan Document (CSDP), 2011). It accounts for about 60% of all clinic attendance in the country (Malaria Situation Analysis Document, 2015). The most vulnerable groups are children below five years of age and pregnant women, particularly primigravidae (Adeyemi, Adekunle, Akinota, 2007). In Africa, malaria accounts for an estimated 25% of all childhood mortality below age five, excluding neonatal mortality (WHO 2003). The World Health Organization has estimated that around 350-500 million clinical malaria disease episodes occur annually and roughly half of the World population is at a risk of malaria with 212 million cases and about 429,000 deaths each year. In the Sub-Saharan region of Africa, malaria is one of the most important causes of mortality in children especially the under-five children and Insecticide Treated Nets (ITNs) (Netmark, 2001) have been acclaimed to be effective tools to prevent the other 3.2 billion people, who remain at risk of malaria and the one million deaths that are unnecessary and can be prevented.

Malaria is a leading cause of morbidity and mortality worldwide, especially in pregnant and young children, and particularly Tropical Africa where at least 90 percent of malaria deaths occur (UNICEF 2005). More than three quarters of global malaria deaths occur in under-five children living in malaria-prone countries in Sub-Saharan Africa (WHO 2003), where 25 percent of all childhood mortality below the age of five (about 800,000 young children is attributable to malaria) (WHO 2003). Between 2008 and 2010, a total of 294 million nets were distributed in sub-Saharan Africa. Funding for LLINs gradually increased from 2004 when 5.6 million nets were delivered, to 2010, when 145 million nets were delivered. However, funding for nets, and other malaria prevention and control interventions, is likely to plateau or even decline in the next few years due to the current economic situation. One way to maintain net coverage is to increase the lifespan of LLINs. A recent study estimated that up to $3.8 billion could be saved over 10 years by increasing the lifespan of nets from 3 years to 5 years, hence the use of long lasting insecticide treated nets (LLTNs) (Global Health, (2019); Division of Parasitic Diseases and Malaria, (2019))

Incidence of malaria varies by weather, which affects the ability of the main carrier of malaria parasites, anopheles mosquitoes, to survive or otherwise. Tropical areas including Nigeria have the best combination of adequate rainfall, temperature and humidity allowing for breeding and survival of anopheles mosquitoes. The burden of malaria varies across different regions of the world and even within a country. This is driven by the variation in parasite–vector–human transmission dynamics that favour or limit the transmission of malaria infection and the associated risk of disease and death.

Evidence on Nigeria given by the malaria report 2005 shows that malaria incidence throughout the country had been on the increase over the years ranging between 1.12 million at the beginning of 1990 and 2.25 million by the turn of the millennium 2000 and 2.61 million in 2003 (The Abuja Declaration and the plan of action, 2000; WHO, 2000). The disease carries with it two categories of costs; morbidity and mortality costs. Malaria morbidity affects households' welfare (through families' allocationto treatment and prevention of the disease), and decline in productivity, through losttime. In the case of mortality, losses to households include loss of future incomeand cumulative investment on the dead due to malaria.

Malaria during pregnancy can cause severe anaemia, miscarriage, still birth and maternal death. In endemic areas, it may account for up to 40% of preventable low birth weight among newborn (Brabin, 1991; UNICEF 1999; UNICEF, 2005). Studies indicate that women who were protected by ITNs every night in their first four pregnancies delivered approximately 25% fewer babies who were either small for gestational age or born prematurely than women who were not protected by ITNs. ITNs should be provided to pregnant women as early in pregnancy as possible, and their use should be encouraged among women throughout pregnancy and during the postpartum period.

In a study in Tanzania, it was observed that some families with high income were three times more likely to have a mosquito net than those with low incomes. The main reason for the low mosquito net usage is cost i.e. high expensive market price of insecticide treated nets. High cost of nets was the most frequently stated reason for not owning nets. Since the price was high this will affect the nursing mothers from purchasing ITNs. Nets were used mainly in the cold rainy season and stopped when the mosquito population was low. In three African countries net use was between 1.2-5 times higher in the rainy cooler months than in the dry and hotter months. Observation in a social

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marketing program shows that 29% of identified insecticide treated nets had been hung for use during the malaria transmission season.

Despite the evidence on the efficacy of Insecticide Treated Nets use, most programs have not yet been able to increase ownership and use of Insecticide Treated Nets to target levels (UNICEF, 2007). The factors that can affect the use of Insecticide Treated Nets can be socio- cultural factors, environmental factors, economic or financial factors (high expensive market price of ITNs), lack of information about the use of ITNs, individual belief about the use of ITNs and also inadequate distribution of ITNs by the local government (Onjekwe, 2000).

II. METHODS

The study is a longitudinal survey. The research setting for the study area was Ago Iwoye Community which is under Ijebu North Local Government in Ogun state, Nigeria. It is a semi-urban community with a latitude of 6.95 and a longitude of 3.92. It is a semi densely populated place located in Nigeria that is a part of Africa. Ago Iwoye is a multi-ethnicity area with predominantly Yoruba speaking residents, many people from other parts of the country such as tribes of Igbo, Hausa and others are residing in this community. The study was carried out in the Primary Health Centre in the community. The target population of the study comprised of Nursing Mothers and pregnant women attending the Primary Health Centres in Ago- Iwoye Community.

A simple sample technique was used to select the total number of participants in the study. Therefore 230 nursing mothers and pregnant women who attended the health centre/hospital were selected using an all-inclusive sampling method. The study was conducted within two weeks to capture the majority whose clinic attendance days varied.

Data collection instrument: The data was collected using a comprehensive semi structured questionnaire. The instrument was designed by the researcher and was pretested in a homogenous population to standardize and revalidate the questionnaire. The questionnaire included items designed to assess the factors determining the use of Insecticide Treated Nets as malaria preventive strategy among Nursing Mothers and Pregnant Women. The questionnaires were simple and straightforward and the data was collected through self-completion of questionnaires written in English language and was analyzed. The socio-demographic characteristics were subjected to descriptive statistics, and frequency distribution. Results were presented using tables, bar charts.

Ethical consideration: Approval of the Directorate of health in Ijebu North local Government Areawas sought. A letter was sent to the Hospitals/Health Centreexplaining the purpose of the study and the procedures thatwould be followed during the process and the same was read to the participants seeking their consent. Informed verbal consent was gained from the participants.

III. RESULTS

The age of group 15-19yrs were 13(5.7%) of the respondents and the age range 20-24yrs were 37(16.1%), age range from 25-29yrs were 57(24.8%), while age range 30-34yrs were 44(19.1%), some 37(16.1%) age range from 35-39yrs, 24(10.4%) age range from 40-44yrs, few 18(7.8%) age range from 45-49yrs. Many 138(60.0%) were married, 42(18.3%) were single while few 29(12.6%) was widows and one percent 21(9.1%) were divorced. Majority 229(99.6%) of the respondents have been pregnant before while just 1(4%) of the respondent have not been pregnant before this study. Some 57(24.8%) of the respondents were pregnant once, some 71(30.9%) were pregnant twice, few 55(23.9%) were pregnant thrice, few 25(10.9%) were pregnant the fourth time while a little percent 21(9.1%) were pregnant the fifth time. (See fig. 4.1). The position of the child some 55(23.9%) were the 1st child, many 73(31.7%) constitute the 2nd child, few 53(23.0%) were the 3rd child while little percent 27(11.7%) were the 4th child (see fig. 1). The table showed that Some 55(23.9%) of the respondents had Middle School education. Few 72(31%) of the respondent had secondary education with below average 74(32.2%) having tertiary education while little 21(9.1%) had only primary education and little percent 8(3.5%) had no education. Farming constituted seven percent 16(7%) of the respondents' occupation, 63(27.4%) of the respondent were petty trader, 56(24.3%) of the respondents were public workers, 42(18.3%) of the respondent were business women while 43(18.7%) were unemployed and others constituted 10(4.3%) of the respondents. Table 1, showed that few 13(5.7%) of the respondents had no child, majority 175(76.1%) had 1-3 children, some 39(17%) had 4-6 children, little 2(9%) nine percent had 7-9 children and a little percent 1(4%) had more than 9 children (See table 1).

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	N	%
Age Group		
15-19	13	5.7
20-24	37	16.1
25-29	57	24.8
30-34	44	19.1
35-39	37	16.1
40-44	24	10.4
45-49	18	7.8
Marital Status		
Married	138	60.0
Single	42	18.3
Widow	29	12.6
Divorced	21	9.1
Have you been pregnant before?		
Yes	229	99.6
No	1	.4
Number of pregnancy		
1 time	57	24.8
2 times	71	30.9
3 times	55	23.9
4 times	25	10.9
5 times	21	9.1
Others	1	.4
For nursing mothers, what is the position of your child?		
1st	55	23.9
2nd	73	31.7
3rd	53	23.0
4th	27	11.7
Others	22	9.6

Table 1: Demographic characteristics of Nursing mothers and pregnant women

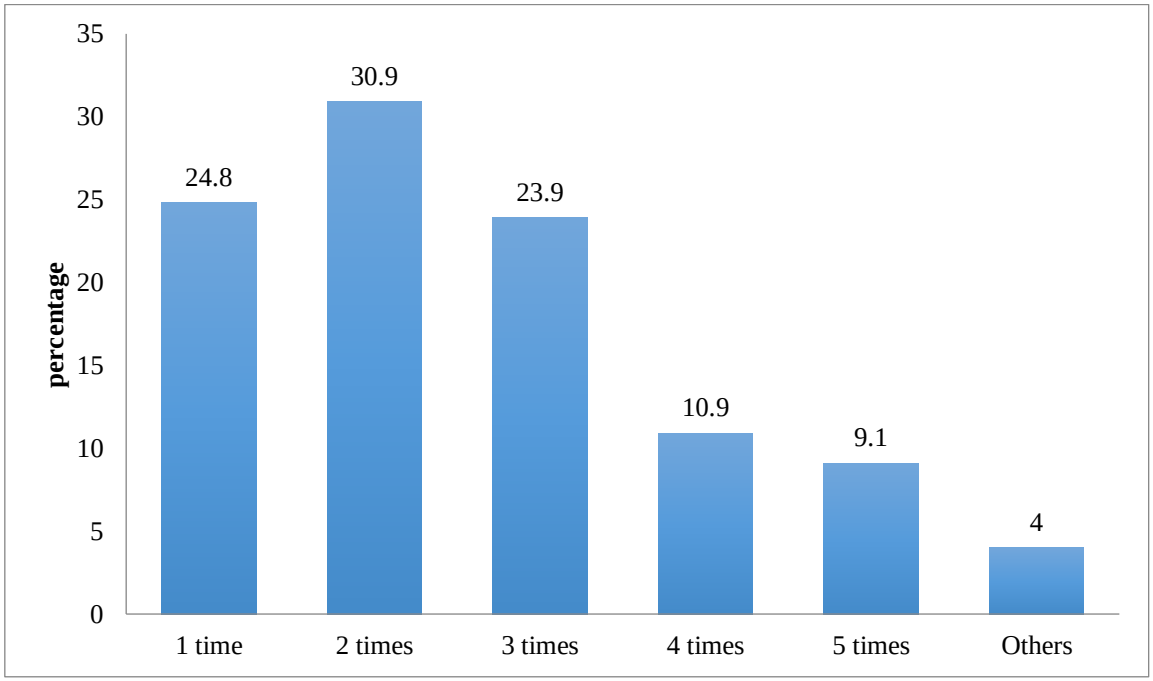

Fig. 1: Chart showing respondent's numbers of pregnancy as at the time of the study

ISSN No:-2456-2165

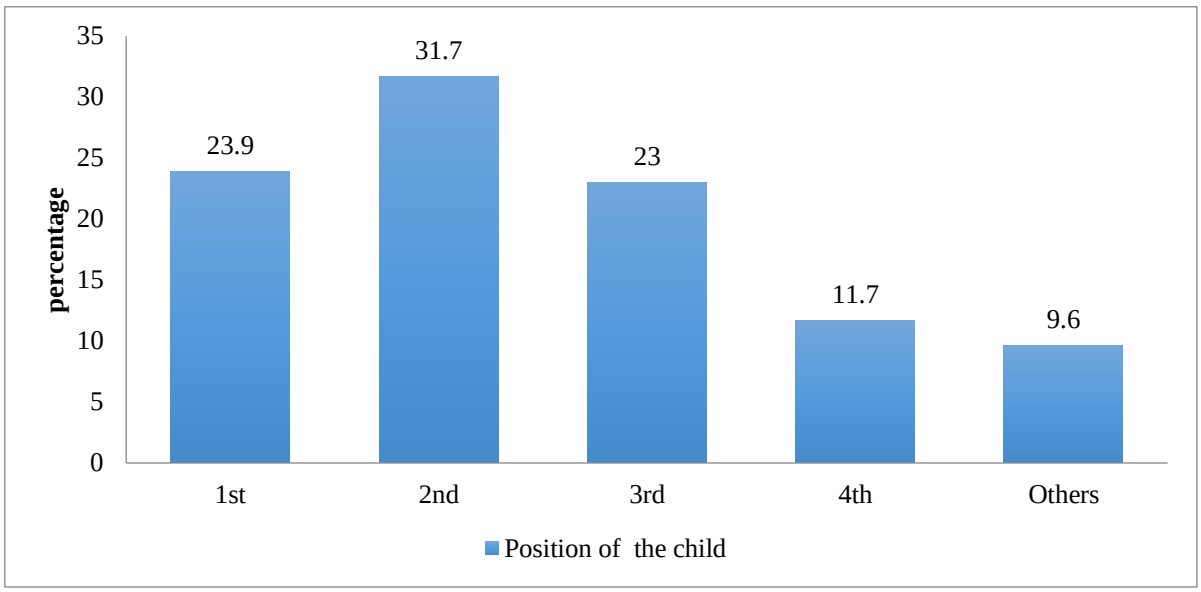

Fig. 2: chart showing the position of the child of the respondents

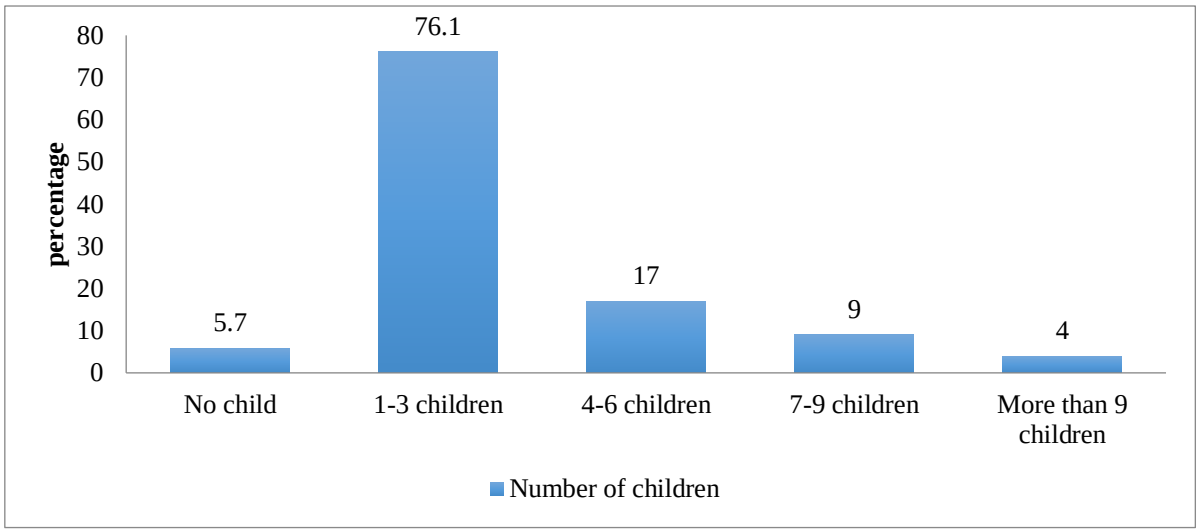

Fig. 3: chart showing the number of children of the respondents

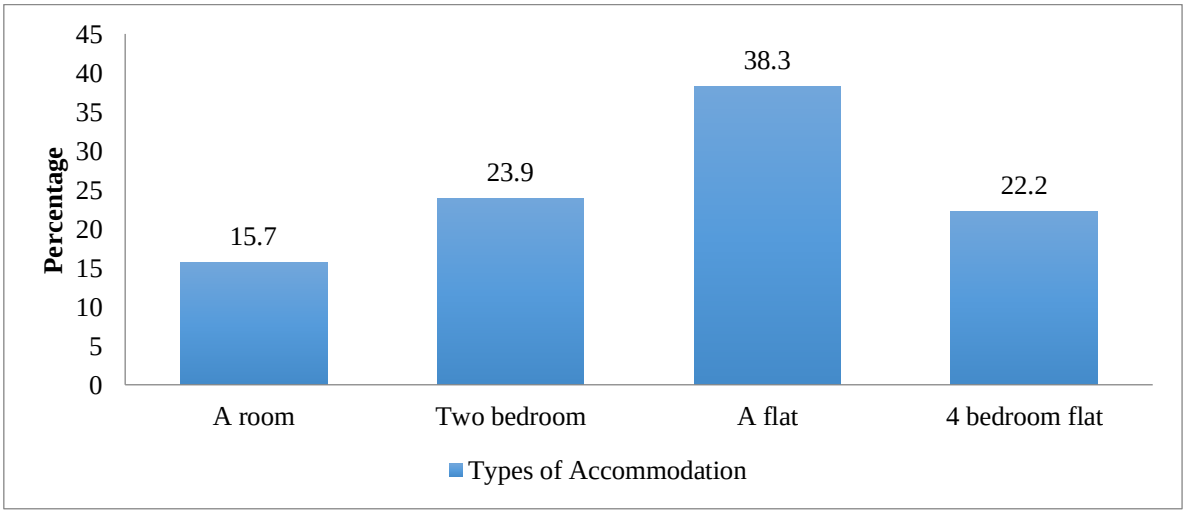

Fig. 4: chart showing the types of accommodation of the respondents

ISSN No:-2456-2165

A. Associated factors affecting ITNs utilization

Figures 1-4 showed the various respondent social demographic characteristics and factors that affect the use of treated nets. Some 80(34.8%) of the respondents had only 1 dependent, majority 85(37%) had 2 dependents, few 36(15.7%) had 3 dependents while little 18(7.8%) had 4 dependents and a little percent 11(4.8%) had 5 dependent's. Few 36(15.7%) of the respondents live in a room, some 55(23.9%) live in a two bedroom flat while many 88(38.3%) live in a flat and little 51(22.2%) live in a 4 bedroom flat (See fig. 4). Christianity constituted 123(53.5%) of the respondents religion while Islam constituted 87(37.8%) and traditionalist constituted 20(8.7%). Majority 137(59.6%) of the respondents were Yoruba, some 49(21.3%) were Hausa while few 41(17.8%) were Igbo.

Variable	SA N (%)	A N (%)	U N (%)	D N (%)	SD N (%)
A person's culture can affect the use of Insecticide Treated Nets	62(27%)	85(37%)	10(4.3%)	40(17.4%)	33(14.3%)
Herbal medicine is the best to cure malaria rather than the use of Insecticide Treated Nets	25(10.9%)	15(6.5%)	26(11.3%)	102(44.3%)	62(27%)
A health practitioner/ doctor are in the best position to choose the best ITN for my family.	64(27.8%)	70(30.4%)	30(13%)	45(19.6%)	21(9.1%)
Using Insecticide Treated Nets is inconvenient	16(7%)	43(18.7%)	26(11.3%)	88(38.3%)	57(24.8%)
The chance of my family getting malaria without the use of Insecticide Treated Nets is low	17(7.4%)	38(16.5%)	19(8.3%)	67(29.1%)	89(38.7%)
The use of Insecticide Treated Nets makes me feel hot	44(19.1%)	90(39.1%)	32(13.9%)	39(17.0%)	25(10.9%)
Net is used to cover dead body for line in state	64(28%)	70(30.4%)	22(9.6)	49(21.3%)	25(10.9%)

Table 2: Belief and Socio-Cultural Factors Affecting the Use of ITNS

Table 2 above showed the results of socio-cultural factors affecting the use of Insecticide Treated Nets above. The result showed that some 62(27%) of the respondents said that a person's culture can affect the use of Insecticide Treated Nets), many 85(37%) of the respondents agreed that a person's culture can affect the use of ITNs, few 10(4.3%) of the respondents were undecided that a person's culture can affect the use of Insecticide Treated Nets, while some 40(17.4%) of the respondents disagreed that a person's culture can affect the use of Insecticide Treated Nets and 33(14.3%) of the respondents strongly disagree with the statement that a person's culture cannot affect the use of Insecticide Treated Nets. Herbal medicine is the best to cure malaria rather than the use of Insecticide Treated Nets), few 25(10.9%) of the respondents strongly agreed that herbal medicine is the best to cure malaria rather the use of ITNs, a little 15(6.5%) of the respondents agreed that herbal medicine is the best to cure malaria rather than the use of ITNs, little 26(11.3%) of the respondents were undecided on the statement while majority 102(44.3%) of the respondents disagreed that herbal medicine is not the best to cure malaria but the use of ITNs is important and many 62(27%) of the respondents strongly disagreed that herbal medicine is not the best to cure malaria but the use of ITNs.

Some 64(27.8%) of the respondents strongly agreed that a health practitioner/doctor is in the best position to choose the best ITNs for their family, majority 70(30.4%) of the respondents agreed that a health practitioner/doctor is in the best position to choose the best ITNs for their family, little 30(13%) of the respondents were undecided about the statement, while few 45(19.6%) of the respondents disagreed that a health practitioner/doctor are not in the best position to choose the best ITNs for their family and a little percent 21(9.1%) of the respondents strongly disagreed that a health practitioner/doctor are not in the best position to choose the best ITNs for their family.Little, 16(7%) strongly agreed that ITNs is inconvenient, some 43(18.7%) agreed that ITNs is inconvenient, few 26(11.3%) were undecided about the statement while majority 88(38.5%) disagree that ITNs is convenient and many 57(24.8%) strongly disagreed that ITNs is convenient.A little, 17(7.4%) of the respondents strongly agreed that the chance of their family getting malaria without the use of Insecticide Treated Nets is low, few 38(16.5%) agreed that the chance of my family getting malaria without the use of Insecticide Treated Nets is low, little 19(8.3%) were undecided about the statement, while many 67(29.1%) of the respondents disagreed that the chance of their family getting malaria without the use of ITNs is high, and majority 89(38.7%) of the respondents strongly disagreed that the chance of their family getting malaria without the use of ITNs is high.

The results on table 2, further showed that some, 44(19.1%) strongly agreed that the use of ITNs makes them feel hot when it is used, majority 90(39.1%) agreed that the use of ITNs makes them feel hot, few 32(13.9%) of the respondents were undecided about the question, while few 39(17%) of the respondents disagreed that the use of ITNs makes them feel hot, and little 25(10.9%) of the respondents strongly disagreed that the use of ITNs makes them feel hot.Some 58.4% were of the belief that the net is commonly used for lining in state during burial ceremonies for dead people.

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Variables	SA N (%)	A N (%)	U N (%)	D N (%)	SD N (%)
The cost of Insecticide Treated Nets discourages me from buying it?	62(27%)	100(43.5%)	13(5.7%)	23(10%)	32(13.9%)
Lack of information about the use of Insecticide Treated Nets affects you from purchasing it?	65(28.3%)	99(43.0%)	22(9.6%)	26(11.3%)	18(7.8%)
Insecticide Treated Nets worth their cost?	13(5.7%)	32(13.9%)	28(12.2%)	108(47%)	49(21.3%)
Insecticide Treated Nets are inexpensive?	11(4.8%)	34(14.8%)	20(8.7%)	93(40.4%)	72(31.3%)
Low income earners tend to purchase Insecticide Treated Nets than High income earners?	6(2.6%)	35(15.2%)	54(23.5%)	76(33.0%)	59(25.7%)
We are many in our house so it is not possible to use Insecticide Treated Nets.	22(9.6%)	45(19.6%)	29(12.6%)	67(29.1%)	67(29.1%)
The distribution of Insecticide Treated Nets by the Local Government is not adequate.	101(43.9%)	86(37.4%)	16(7.0%)	15(6.5%)	12(5.2%)

Table 3: ECONOMIC FACTORS AFFECTING THE USE OF ITNs

IV. THE ECONOMIC FACTORS AFFECTING THE USE OF ITNS

Table 3 above showed that Some 62(27%) of the respondents strongly agreed that the cost of ITNs discourages them from buying it, majority 100(43.5%) of the respondents agreed that the cost of ITNs discourages them from buying it, 13(5.7%) of the respondents were undecided about the fact that the cost of ITNs discourages them from buying it, while 23(10%) of the respondents said that the cost of ITNs cannot discourage them from buying it, and 32(13.9%) of the respondents strongly disagreed that the cost of ITNs cannot discourage them from buying it.

A total of 65(28.3%) of the respondents strongly agreed that the lack of information affects them from purchasing it, many 99(43%) of the respondents agreed that lack of information affects them from purchasing it, little 22(9.6%) were undecided, while few 26(11.3%) said that lack of information affects them from purchasing it, and a little percent 18(7.8%) strongly disagreed that lack of information affects them from purchasing it.

Little, 13(5.7%) strongly agree that ITNs worth their cost, some 32(13.9%) of the respondents agreed that ITNs worth their cost while few 28(12.2%) were undecided, many 108(47%) disagreed that ITNs worth their cost, and 49(21.3%) strongly disagree that ITNs worth their cost.

Few 6(2.6%) of the respondents strongly agree that low income earners tend to purchase ITNs than high income earners, some 35(15.2%) agreed that low income earners tend to purchase ITNs than high income earners, 54(23.5%) were undecided, while many 76(33%) of the respondents disagreed that low income earners tend to purchase ITNs than high income earners, and some 59(25.7%) of the respondents strongly disagreed that low income earners tend to purchase ITNs than high income earners.

A little percent 22(9.6%) of the respondents strongly agreed that since they are many in their house it is not possible for them to use ITNs, some 45(19.6%) agreed that since they are many in their house it is not possible for them to use ITNs, 29(12.6%) were undecided, while some 67(29.1%) disagreed that since they are many in their house it is not possible for them to use ITNs, and same thing goes for some 67(29.1%) of the respondents who strongly disagreed.

Majority 101(43.9%) strongly agreed that the distribution of ITNs by the local government is not adequate, many 86(37.4%) of the respondents also agreed that the distribution of ITNs by the local government is not adequate, few 16(7%) were undecided, while little 15(6.5%) of the respondents disagreed that the distribution by the local government is not adequate, and a little percent 12(5.2%) strongly disagreed that the distribution of ITNs by the local government is not adequate..

ISSN No:-2456-2165

Variables	SA N (%)	A N (%)	U N (%)	D N (%)	SD N (%)
Insecticide Treated Nets should be used during the dry season and not during the raining season?	26(11.3%)	36(15.7%)	31(13.5%)	70(30.4%)	67(29.1%)
Insecticide Treated Nets are used mainly when there is mosquito bites?	46(20%)	88(38.3%)	20(8.7%)	51(22.2%)	25(10.9%)
Should Insecticide Treated Nets be used when there is stagnant water around the environment?	73(31.7%)	100(43.5%)	21(9.1%)	18(7.8%)	18(7.8%)
The use of Insecticide Treated Nets prevents mosquitoes from biting?	90(39.1%)	88(38.3%)	13(5.7%)	23(10%)	16(7.0%)
Once I clean my environment I don't need Insecticide Treated Nets.	17(7.4%)	34(14.8%)	33(14.3%)	69(30%)	77(33.5%)
Where I live do not need Insecticide Treated Nets.	13(5.7%)	31(13.5%)	29(12.6%)	96(41.7%)	61(26.5%)
Because mosquitoes breed in water my house is in dry place, I may not need to use Insecticide Treated Nets.	11(4.8%)	43(18.7%)	18(7.8%)	64(27.8%)	94(40.9%)

Table 4: ENVIRONMENTAL FACTORS AFFECTING THE USE OF ITNs

The environmental factors affecting the use of ITNs were measured and the result showed on table 4 that some 26(11.3%) of the respondents strongly agreed that ITNs should be used during the dry season and not during the raining season, few 36(15.7%) of the respondents also agreed that ITNs should be used during the dry season and not during the raining season, 31(13.5%) of the respondents were undecided, while majority 70(30.9%) of the respondents disagreed that ITNs should be used during the dry season and not during the raining season, and many 67(29.1%) strongly disagreed that ITNs should be used during the dry season and not during the raining season. Some 46(20%) strongly agreed that ITNs are used mainly when there is mosquito bites, many 88(38.3%) agreed that ITNs are used mainly when there is mosquito bites, some 20(8.7%) of the respondents were undecided, while few 51(22.2%) of the respondents disagreed that ITNs are used mainly when there is mosquito bites, and just a little 25(10.9%) of the respondents strongly disagreed that ITNs are used mainly when there is mosquito bites.

Many 73(31.7%) strongly agreed that ITNs should be used when there is stagnant water around the environment, majority 100(43.5%) agreed that ITNs are used when there is stagnant water around the environment, 21(9.1%) were undecided, while the same percent 18(7.8%) of the respondents disagreed and strongly agreed that ITNs are used when there is stagnant water around the environment.

Majority 90(39.1%) of the respondents strongly agreed that the use of ITNs prevents mosquitoes from biting, many 88(38.3%) agreed that the use of ITNs prevents mosquitoes from biting, 13(5.7%) were undecided, while 23(10.0%) disagreed that the use of ITNs prevents mosquitoes from biting, and 16(7%) strongly disagreed that the use of ITNs prevents mosquitoes from biting.

Little, 17(7.4%) of the respondents strongly agreed that once they clean their environment they do not need ITNs, some 34(14.8%) of the respondents agreed that once they clean their environment they do not need ITNs, 33(14.3%) of the respondents were undecided, while many 69(30%) of the respondents disagreed that once they clean their environment they do not need ITNs, and majority 77(33.5%) strongly disagreed that once they clean their environment they do not need ITNs. Little, 13(5.7%) strongly agreed that where they live do not need ITNs, few 31(13.5%) agreed that where they live do not need ITNs, 29(12.6%) of the respondents were undecided, while majority 96(41.7%) of the respondents disagreed that where they live do not need ITNs, and some 61(26.5%) strongly disagreed that where they live do not need ITNs.

A very little percent 11(4.8%) of the respondents strongly agreed that since mosquitoes breed in water and their house is in dry place, they do not need to use ITNs, few 43(18.7%) agreed that since mosquitoes breed in water and their house is in dry place, they do not need to use ITNs, 18(7.8%) of the respondents were undecided, while some 64(27.8%) disagreed that since mosquitoes breed in water and their house is in dry place, they do not need to use ITNs, and many 94(40.9%) strongly disagreed that since mosquitoes breed in water and their house is in dry place, they do not need to use ITNs.

V. DISCUSSION

Over 40% of the world's children live in malaria-endemic countries. Unfortunately, many children, especially in Africa, continue to die from malaria as they do not sleep under insecticide treated nets and are unable to access life-saving treatment within 24hours of onset of symptoms. Yet up to date, utilization is still unacceptably low: only 3% of Africa children are currently sleeping under an ITN and about 20% are sleeping under any kind of net (Oresanya 2008). However, recent efforts to scale up coverage have contributed to significant progress in several countries, but there were many factors influencing the utilization of ITNs in different countries. In a study to monitor community responses to malaria control measures in Nigeria, the proportion of people who perceived that mosquito net prevent malaria (22%) was less than those who believe in its prevention against mosquito bite (96%).

A. Belief and Socio-Cultural Factors Affecting the Use of ITNs

It was revealed that 37% of the respondents said that a person's culture can affect the use of Insecticide Treated Nets, while a little percentage (14.3%) disagreed. Few 6.5% said that Herbal medicine is the best to cure malaria rather than the use of ITNs, even though majority (44.3%) said that herbal medicine is not the best to prevent/cure malaria but the use of ITNs the confidence of the use of herbal medicine and it unscientific prove had caused a lot to disregard the use of insecticide nets. Majority (30.4%) of the respondent agreed that health practitioner/doctor are in the best position to choose the best ITN for their family, while few of the respondents (9.1%) disagreed that a health practitioner/doctor is not in the best position to choose the best ITNs for their family. Some (18.7%) of the respondents agreed that ITNs are inconvenient while (38.3%) disagreed that ITNs are not inconvenient but are convenient to use. Few (16.5%) agreed that the chance of their family getting malaria without the use of ITNs is low, (38.7%) disagreed that the chance of their family getting malaria without the use of ITNs is high. Majority (39.1%) of the respondents agreed that ITNs makes them feel hot while few (10.9%) of the respondents disagree that ITNs does not make them hot. (See Table 4.4)

B. Economic factors affecting the use of ITNs

It was found out that among the respondents many (43.5%) agreed that the cost of ITNs was high to discourage them from buying it, only a few (10.0%) disagreed that the cost of ITNs does not discourage them from buying it. Above average (43%) agreed that lack of information about the use of ITNs affects them from purchasing it, while only (11.3%) disagree that lack of information about the use of ITNs does not affect them from purchasing it. Few (19.6%) of the women agreed that ITNs are worth their cost while majority 157(68.3%) said that ITNs are not worth their cost due to the fact that the net is scarce even at distribution by health workers and that the nets are not available. 45(19.6%) of the women agreed that ITNs are inexpensive while the majority 157(68.3%) said that ITNs are expensive. The result on table 2 also showed that though the net is expensive yet some 17.8% of the respondents agree that low income earners can purchase ITNs than high income earners while (58.7%) disagreed that low income earners cannot purchase ITNs than high income earners. Majority (81.3%) agreed that the distribution of ITNs by the local Government is not adequate, while few (11.7%) disagreed that the distribution is adequate. (See Table 4.5)

C. Environmental factors affecting the use of ITNs

Table 3 showed that (17.7%) of the women agreed that ITNs should be used during the dry season and not the rainy season, while (30.4%) of the women disagreed that ITNs should be used during the raining season and not the dry season. High percent (58.3%) of the women agreed that ITNs should be used mainly when there is mosquito bite while (33.1%) disagreed that ITNs should be used all the time and not only when there is mosquito bite. Majority (43.5%) of the women agreed that ITNs are used when there is stagnant water around the environment while (7.8%) disagree that ITNs should not be used only when there is stagnant water around the environment. Majority (77.4%) of the women agreed that ITNs prevent mosquitoes from biting while (17.0%) disagree that ITNs do not prevent mosquitoes from biting. Few percent (14.8%) of the respondents agree that once they clean their environment they do not need ITNs while the majority (63.5%) disagree that ITNs should be used both when the environment is clean or not to prevent mosquito bite. Some (19.3%) of the respondents agreed that where they live do not need ITNs while (68.2%) disagree that it does not matter where one lives but the use of ITNs is important. Little of the respondents (4.8%) strongly agreed that they do not need ITNs because mosquitoes breed in water and they reside in dry place while few (18.7%) agreed, (7.8%) were undecided, some (27.8%) disagreed, while majority (40.9%) strongly disagreed that they do not need ITNs because mosquitoes breed in water and they reside in dry place. The continuous use is in line with WHO directives of 2019 that The 2015 goals of the World Health Organization's (WHO's) on Roll Back Malaria Partnership are to reduce global malaria cases by 75% and to reduce malaria deaths to near zero through universal coverage by effective prevention and treatment interventions (Guyatt, Noor, Ochola& Snow, 2004). Among other preventive interventions, WHO recommends the use of insecticide treated nets (ITNs), particularly Long-Lasting Insecticide Nets (Netmark, 2001; 2004), which have been shown to be cost-effective, (Guyatt, Noor, Ochola& Snow, 2004), to reduce malaria episodes among children under 5 years of age by approximately 50% and all-cause mortality by 17% (Johnson, Inyang, Etuknwa, Ekanem, Udo, and Ubom, (2015) . Universal coverage with ITNs is defined as use by > 80% of individuals in populations at risk

VI. CONCLUSION AND RECOMMENDATION

The use of ITNs/LLTNs remains a big challenge to pregnant women and nursing mothers compounded by availability, installed abilities and acceptability. Though, the Government policy on mosquito nets places much emphasis on children under five and pregnant women, ITNs remain inaccessible to majority of the children under five but there were barriers to the access by the majority such as limited acceptability, distance from ITN outlet where they are sold, unavailability in the commercial sector and the price. Infrastructure, information and communication played a central role in hindering access affordability.

This study therefore concludes that in this study community there are factors that affect utilization of ITNs within households with pregnant women and nursing mothers (Johnson, Inyang, Etuknwa, Ekanem, Udo &Ubom, 2015). These factors include: socio- cultural i.e. a person's culture and belief about the use of ITNs, using herbal medicine instead of using ITNs, economic i.e. the cost of ITNs, lack of information on ITNs use, inadequate distribution of ITNs by the local governments etc, environmental factors. Ultimately, ITN distribution strategy should provide a mix of public and private sectors working together to create a sustainable complementary system. The

low coverage of ITNs in this study community is distressing due to poverty. While many respondents were aware of the use of ITNs in malaria prevention among the under-five, they were constrained from taking any action due to a personal lack of resources. The findings further pointed to the fact that ITNs are too expensive for or are unavailable to the most vulnerable: pregnant women, children under 5 years of age, and the poorest families and communities.

Consequently it was recommended that ITNs must be administered concurrently with adequate resources for education for effective dissemination and broadcast of the information to a large community and groups will help to achieve a change in community behavioural practices of the use of ITNs. Certainly with regular ongoing effective messages and deployment of methods of media communication between program planners and a target population will help to maximize the use of the nets.

- **Declaration of conflict of interest**

All the authors hereby declared that there is no conflict of interest in the current work.

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