Knowledge and utilization of long lasting insecticide treated nets among pregnant women

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Abstract

Background: Long Lasting Insecticide Treated Nets (LLITNs) are a form of personal protection that have been shown to reduce malaria illness in endemic regions**.** They form a protective barrier around people sleeping under them particularly the vulnerable group such as pregnant women and under - fives.
Methods: A cross sectional study carried out among 310 pregnant women attending ANC in a tertiary health institution to assess the knowledge and utilization of Long Lasting Insecticide Treated Nets LLITNs.
Results: The mean age of the pregnant women in the study was 27 ± 4 years with 264 (85.2%) of them residing in urban areas. Most (73.9%) of the respondents had good knowledge of LLITNs and consistent utilization of LLITNs was found to be 78.3%.Age of the respondents was found to have statistically significant relationship with consistency of use of LLINs.
Conclusion: This study has revealed good knowledge and utilization of LLITNs among pregnant women.

Keywords: Knowledge, Utilization, Insecticide Treated Nets, Pregnant Women

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Introduction

Malaria is a protozoal disease caused by the plasmodium species that is transmitted from human-to-human by the female *Anopheles* mosquito. Malaria is a preventable and treatable disease that affects humans of all ages, race and sex.[1]Long Lasting Insecticide Treated Nets (LLITNs) are a form of personal protection that have been shown to reduce malaria in endemic regions. These LLITNs form a protective barrier around people sleeping under them particularly the vulnerable group such as pregnant women and under - fives.[2]The World Health Organization(WHO) now recommends that LLITNs be distributed to and used by all people ("universal coverage") in malaria endemic areas, not just by the most vulnerable groups; pregnant women and children under 5 years.[2]However, mobilizing resources to procure these nets remains a major challenge in low income countries.[2] Pregnant women are more susceptible to malaria than the general population as they are more likely to become infected, suffer a recurrence, develop severe complications and to die from the disease. Malaria contributes significantly to maternal and foetal loss with at least 10,000 maternal deaths per annum attributable in Sub-Saharan Africa.[3] This study was to assess the knowledge and utilization of LLITNs among pregnant women attending the Antenatal Clinic (ANC) of Jos University Teaching Hospital (JUTH).

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Materials and Methods

Study Area

This study was carried out in the antenatal clinic of JUTH. It is one of the tertiary health institutions in Plateau State with a capacity of about 600 bed spaces.[5]It was established in the year 1981 and is presently located in Lamingo, Jos North local government area. The Obstetrics and Gynaecology department runs the Antenatal Clinic from Mondays to Thursdays. The clinic caters for an average of 70 pregnant women per clinic day.

Study Population

The study population comprised of pregnant women attending ANC in JUTH with gestational age of 20 weeks and above. This ensured that booking would have already been done and the women would have had at least one Antenatal visit.

Study Design

This was a descriptive cross sectional study using quantitative method of data collection**.** All pregnant women with gestational age of 20 weeks and above who had attended at least one ANC visit after booking at the time of the study were included while all pregnant women with gestational age less than 20 weeks who had not attended any ANC visit were excluded from the study.

Sample Size Determination

The sample size was calculated using standard acceptable formula.[6] An LLITNs utilization rate of 74%[7] among pregnant women attending ANC from a previous similar study was used and 295 was obtained then 5% of this was added to account for incomplete and poor responses giving a minimum sample size of 310.

Sampling Technique

The subjects for this study were selected using a multistage sampling technique where JUTH was selected from the list of the tertiary health institutions in Plateau State using simple random sampling technique by balloting. From the ANC booking register, a list of all the pregnant women booked for ANC who have met the inclusion criteria was obtained for all the ANC days for a period of two weeks. All the pregnant women who consented to participate in the study.

Data Collection

The tools of data collection were pretested in a Primary Health Centre (PHC) during the Antenatal clinic in Jos South LGA. This helped in making appropriate corrections where necessary. Verbal informed consent was sought and obtained from each of the participants with explanation of the aims of the research. Anonymity and confidentiality of the information obtained was assured and maintained.

Subjects were administered a semi – structured questionnaire divided into three sections was used to obtain information from the participants. Section A obtained information on socio-demographic characteristics of the respondents, section B obtained information on knowledge of LLITNs and section C obtained information on utilization of LLITNs.

Three trained research assistants participated in the data collection after a detailed explanation as to the purpose of the study was given to all the eligible respondents. Verbal informed consent was obtained from each participant before the administration of the questionnaire. Ethical clearance was obtained from Ethical Review Committee of JUTH, Jos.

Scoring and Grading of Responses

Knowledge of LLITNs

A total of five stem questions with 13 possible responses out of which 7 correct responses were attainable were used to assess the knowledge of LLITNs. One mark was awarded for every correct response and no mark was awarded for wrong response and a total of 7 maximum attainable scores were used for knowledge of LLITNs. A score of 0–3 marks out of 7 marks was graded as poor knowledge and a score of 4–7 marks out of 7 marks was graded as good knowledge.

Utilization of LLINs

Sleeping under the LLITNs everyday of the week for the last one week (night before the day of assessment included) was graded as consistent use of LLITNs while sleeping under the LLITNs for days less than 7 days a week or never sleep under LLITNs was graded as inconsistent use of LLITNs.

Data Analysis

Data analysis was done using EpiInfo™ statistical software package version 3.5.4 developed by CDC 1600 Clifton Rd. Atlanta, GA 30333 USA. Chi square statistical test was used to establish relationship between the socio-demographic characteristics of the participants and utilization of LLITNs, Fisher's exact test was used for correction of continuity where chi square test was not valid. A 95% confidence level was used for the study and a $P<0.05$ was considered statistically significant.

Results

A total of 310 pregnant women participated in this study. The ages of the respondents ranged from 18 to 47 years with a mean age of 27 ± 4 years. One hundred and eighty respondents (58.1%) had tertiary level of education, while 11(3.5%) had no formal education.

Table 1: Socio-demographic characteristics of pregnant women who used long lasting insecticide treated nets (LLITNs) at the Jos University Teaching Hospital

Characteristics	Frequency	Percentage
Age group (years)		
≤ 19	10	3.2
20 – 29	167	53.9
30 – 39	128	41.3
≥ 40	5	1.6
Educational status		
None	11	3.5
Primary	35	11.5
Secondary	84	27.1
Tertiary	180	58.1
Married	291	93.9
Religion		
Christianity	208	67.1
Islam	102	39.9
Place of residence		
Urban	264	85.2
Rural	46	14.8
Family type		
Monogamous	248	80.3
Polygamous	62	19.7
Occupation		
Unemployed	92	29.7
Civil servant	68	21.9
Trading/business	58	18.7
Privately Employed	64	20.6
Artisan	28	9.0

Table 2: Knowledge and Utilization of long lasting insecticide treated nets (LLITNs) among pregnant women at the Jos University Teaching Hospital

Parameters	Frequency	Percentage
Aware of LLITNs	305	98.4
Source of information on LLITNs*		
Mass media	105	33.9
Health care workers	171	55.2
Churches/mosque	23	7.4
Schools	40	12.9
Family and friends	24	7.7
Good Knowledge of usefulness of LLITNs	296	95.5
Uses of LLITNs*		
Prevention of malaria	127	54.0
Prevention of mosquito bite	168	71.5
Prevention of insect bite	6	1.9
Good knowledge of LLITNs	229	73.9
Ownership of LLITNs	235	75.8
Consistent use of LLITNs	184	78.3
Reasons for inconsistent utilization of LLINs*		
Difficulty in getting up at night	34	11.0
It makes the room hot	83	26.8
Time consuming	6	1.9
It reduces ventilation	55	17.7
It restricts movement while sleeping	9	2.9
The chemical is harmful	44	14.2
Mosquitoes still bite through the net	5	1.6

* = Multiple responses obtained

Majority 291(93.9%) of the respondents were married with most of them 208 (67.1%) practicing Christianity as their religion. Majority of the respondents 264 (85.2%) were urban dwellers while 248(80.3%) belong to a monogamous family setting (Table 1).

Almost all the respondents (98.4%) had heard of LLITNs with the main sources of the information on LLITNs being mass media 105 (33.9%) and healthcare workers 171 (55.2%). The majority of the women knew the usefulness of LLITNs as means of prevention of malaria by 127 (54.0%) and prevention of mosquito bite by 168 (71.5%). The level of knowledge of LLITNs among the respondents was high as 229 (73.9%) had good knowledge of LLITNs with a mean knowledge score of 4.9 ± 1.8 out of 7 points.

Two hundred and thirty five (75.8%) of the respondent owned at least one LLITNs out of which 184 (78.3%) consistently utilized it. Reasons commonly adduced for non consistent utilization of LLITNs among pregnant women were the associated difficulty in getting up from bed at night 34 (11.0%), the perception of LLITNs making the room hot 83 (26.8%), reduction of ventilation of the room 55 (17.7%) and perception of the harmfulness of the chemical used for treating the net by 44 (14.2%) [Table 2]. Only age was associated with the consistent use of LLITNs ($P = 0.034$) (Table 3).

Table 3: Relationship between socio-demographic characteristics and utilization of long lasting insecticide treated nets (LLITNs) among pregnant women at the Jos University Teaching Hospital

	Utilization of LLINs n = 235			
Characteristics	Consistent use Freq (%)	Inconsistent use Freq (%)	Total	P - value
Age group (years)				
≤ 19	1 (50.0)	1 (50.0)	2 (100.0)	
20 – 29	87 (74.4)	30 (25.6)	117 (100.0)	0.034*
30 – 39	95 (84.1)	18 (15.9)	113 (100.0)	
≥ 40	1 (33.3)	2 (66.7)	3 (100.0)	
Educational status				
None	8 (100.0)	0 (0.0)	8 (100.0)	
Primary	19 (70.4)	8 (29.6)	27 (100.0)	
Secondary	56 (73.4)	10 (26.3)	76 (100.0)	0.135
Tertiary	101 (75.4)	33 (24.6)	134 (100.0)	
Place of residence				
Urban	160 (78.4)	44 (21.6)	204 (100.0)	0.899
Rural	24 (77.4)	7 (22.6)	31 (100.0)	

* = Fisher's exact

Discussion

The findings of this study on socio-demographic characteristics of the respondents particularly age and religion had similarity with that of the study conducted in Sudan.[8] In this study, the results obtained revealed that majority of the respondents knew about LLITNs which was in tandem with findings of another Nigerian study in which 80% of the respondents knew about LLITNs.[9] Other studies done in Ethiopia and Nigeria also had findings in support of this study in which 77.9% and 70.5% of the respondents had heard of LLITNs.[10,11] Contrary to the findings of this study, other Nigerian studies revealed that only 36% and 48% respectively were aware of LLITNs.[12, 13,]

Slightly above half (52.2%) of the respondents had the health care workers as their sources of information of LLITNs while mass media was 33.9%. This is in agreement with findings of another Nigerian study conducted in Ogun State where 54.7% of women indicated health care workers as the sources of information about LLITNs.[13] Majority (95.5%) of the respondents in this study knew that LLITNs was useful for either prevention of malaria or mosquito bite which is similar to what was obtained in an earlier Nigerian study where 94.7% knew about the usefulness LLITNs.[13] Other studies also revealed that the knowledge of use of LLITNs as a means of preventing malaria and or prevention of mosquito bites was high among the respondents.[14,15,16,,17,18] Contrary to the findings of this of this study, another Nigerian study found low levels of knowledge of use of LLITNs with only 25% of them

stating that LLITNs could be used for malaria prevention.[19]

This study found that majority 235(75.8%) of the respondents owned at least one LLITNs. This is in synergy with the findings of a Kenyan study where ownership of LLITNs was 75.4%.[20] whereas, a study conducted in Edo State, Nigeria reported ownership of LLITNs among only 9.3% the respondents.[21]

The consistency of utilization of LLITNs was found to be good as majority of the respondents used LLITNs on a daily basis in this study. This finding is similar to what was obtained in a Kenyan study where 70.5% of the respondents used LLITNs consistently.[20] However, findings from Nigerian studies conducted in Edo and Kwara States reported seemingly lower consistent utilization rates of LLITNs of 8% and 19% respectively.[21,22] Majority (78.3%) of the respondents who owned at least one LLITNs in this study used it consistently, however, a Kenyan study expressed disparity in the level of consistent use of LLITNs where 49.5% and 61.6% of the respondents consistently used LLITNs during dry and rainy seasons respectively.[23]

In this study, reasons given by respondents for non consistently use of LLITNs were heat and ventilation problems, difficulty in get up at night, restriction of movement during sleep and the time it takes to tuck in the LLITNs into the beddings. In other studies, reasons given by the respondents were hot and humid conditions, spousal rejections, difficulty in mounting the net, unavailability of its accessories.[10,17,24,25]

Age of the respondents was found to have statistical significant influence on consistent use of LLITNs in this study whereas in another study done in Ethiopia sex and knowledge of malaria were the factors that affected the utilization of LLITNs.[26]

The study had some limitations. It could not directly assess the consistency of utilization of LLITNs through home visits for direct observation of its use, however information on utilization of LLITNs was obtained using well explained and simplified questions. The results of this study also could not be generalised to all pregnant women as this was a single centre study.

In conclusion, this study has revealed high level of knowledge of LLITNs and its consistent utilization however, more effort is required to achieve universal coverage and utilization of LLITNs.

Conflict of Interest

None declared in this work.

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