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Full length research paper

Effect of community based intervention on awareness and utilization of the long lastinig insecticidal nets in a rural area of Barkin ladi LGA Plateau state Nigeria

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Low awareness about malaria and the utilization of the preventive methods are serious challenges of malaria control programmes in Africa. A community based interventional study was carried out among pregnant women in Dorowa Babuje. Health education was given to the pregnant women on the use of Long lasting insecticidal nets (LLINs), after which the LLINs were distributed to the pregnant women. A reassessment on the level of awareness and utilization of the LLINs was done after four months. The women were within the mean age of 26+5.25 years, 69.6% of the women were farmers, 111 (63.8%) had primary school education.The level of awareness of ITNs increased from 59.2% at pre-intervention to 97.6% after health education intervention. McNemar's X2 = 61.02, df = 1, p< 0.001 The intervention also increased practice of sleeping under the nets significantly to 146(89%) McNermar's X2 =82.01, df = 1, p< 0.001. This study has demonstrated that with the ongoing National distribution of the Long Lasting Insecticidal Nets, a sustained community based education should be adopted as a strategy in order to achieve a universal coverage and utilization of the LLINs.

Keywords: Community based; Health education; Long lasting insecticidal nets; Awareness

INTRODUCTION

Long-lasting insecticidal nets (LLINs) have been strongly advocated for use to prevent malaria in sub-Saharan Africa and are considered to be a significant improvement in the strategy to fight malaria (Lengeler, 2004; WHOPES, 2007) many countries across sub-Saharan Africa are rapidly increasing ITN ownership coverage, that is the percentage of households which own at least one ITN, through several strategies including, social marketing (Grabowsky et al., 2007), free distribution to target groups (through antenatal care (ANC) or immunization campaigns) and recently, free universal population-based distribution campaigns targeting the entire population at risk (Beer et al., 2010). Awareness of the LLIN is vital to the mass coverage and utilization of the LLIN and the reduction in the malaria morbidity and mortality. However, ITN ownership and use remain low and inequitable among different socio-economic groups in sub-Saharan Africa (Blackburn et al., 2006).

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Low awareness about malaria and the utilization of the preventive methods are the serious challenges of the malaria control programme in Africa. Unless the awareness of and to determine the awareness and utilization level of LLINs among pregnant women.

MATERIALS AND METHODS

Study area

The study was carried out in Dorowa Babuje ward of Barkin Ladi LGA in Plateau State. Dorowa Babuje is one of the twenty wards in Barkin Ladi LGA with a population of about 7,362 and the estimated population of pregnant women is 368 according to the 2006 census. There is one PHC center in Dorowa Babuje, no industry is located in the community, the major occupation is farming with few civil servants and traders (WHO 2008; Plateau State Government of Nigeria, 2007).

Plateau State is the twelfth largest state of Nigeria with seventeen Local Governments and a population of about 3.5 million people. English is the official language in Plateau State. Most people are civil servants or farmers.

Others are petty traders, students and housewives. There are few industries and factories in the State (Plateau State Government of Nigeria, 2007)

Study design and population

This study was a community based interventional study with pregnant women as the study population**.**
All pregnant women in their first and second trimester were eligible while non pregnant women, those in their third trimester and those who did not consent for the study were excluded.

Sample Size Estimation and Sampling Method

A minimum sample size of 164 was determined using 95% confidence level, power of 80%, level of awareness of 60% and expected level of increase in the level of awareness and utilization of 15% at the end of the study. A total of 174 pregnant women were studied. The selection of the study population was by multistage sampling technique. The list of the seventeen LGAs in the state was used to select Barkin Ladi LGA by balloting.

All the wards in Barkin Ladi LGA were listed out to form a sampling frame and Dorowa Babuje was selected by balloting out of the 20 wards to serve as study group. The houses in the community were already numbered by the primary health care department in the LGA for ease of identification during the house to house immunization programme, using these same numbering for identification, a list of houses containing pregnant women was drawn and a total of 216 pregnant women who fulfilled the inclusion criteria from these houses formed the sampling frame. Subsequently, from this sampling frame, the pregnant women were selected through a simple random sampling technique by balloting. In this study, we had no case of two pregnant women fulfilling the inclusion criteria coming from the same house.

Pre-intervention:

A semi structured interviewer administered questionnaire was administered to the pregnant women to determine the level of awareness and utilization of insecticide treated bed nets.

Intervention:

The pregnant women were gathered in the community primary school located at a central place in the community where health education was given to them on what malaria is, ways of contacting malaria and ways of preventing malaria in the community. They were then allowed to ask questions and demonstrate what they understood from the health education. After the health education, the women were taught how to treat, retreat and mount the ITNs.

At the end of the Health education section, free insecticide treated nets (long lasting insecticidal nets) which were provided by the National Roll back malaria control office Abuja were distributed to the pregnant women. Three visits were made to the community monthly by the researchers to ascertain that the LLINs were properly hung on the beds before the final assessment.

Post Intervention:

At the end of four months, the same questionnaire that was administered at pre-intervention was again administered to the same group of pregnant women and then reassessed.

Data processing and analysis

All data generated at baseline and post- intervention were processed and analyzed using the EPI info version 3.4.3 2007 statistical software. McNemar's chi square was used to assess any significant difference within the group at the end of the intervention. A confidence level of 95% was calculated for relevant test statistic and a p-value of <0.05 was considered significant..

Ethical consideration

Ethical clearance was obtained from the Jos University Teaching Hospital (JUTH) Ethical Committee. An advocacy was paid to the Commissioner of Health, Local Government Chairman and the village heads to inform them about the study and solicit their support. A written permission was sought and obtained from the Commissioner of Health, Local Government Chairman and the village heads. A verbal consent was sought and obtained from the women before enrollment into the study.

RESULTS

Socio-demographic characteristics

The age range of the women was 17-40years with a mean age of 26 ± 5.25 years; median age of 25years and mode of 28 years. The study comprised of 174 pregnant women of which 171 (98.3%) were married and 3 (1.7%) were widowed. Close to two-third of the women had primary school certificate. 111 (63.8%) Only 4 (2.3%) of

Table 1: Sociodemographic characteristics of the pregnant women in the study population (N=174)

Socio-demographics	Frequency	%
Age group (yrs)		
>10 – 20	34	19.5
21 – 30	110	63.2
31 – 50	30	17.3
Marital status		
Currently Married	171	98.3
others	3	1.7
Educational level		
None	20	11.5
Primary	111	63.8
Secondary/tertiary	43	24.7
Occupation		
Skilled	14	8
Semi skilled	15	8.6
Unskilled	145	83.4
Religion		
Christian	162	93.1
Muslim	12	6.9

the pregnant women had tertiary education. One hundred and twenty one (69.6%) of the pregnant women were farmers, others included civil servants, students, hawkers and laborers. One hundred and sixty two (93.1%) of the pregnant women were Christians while 12 (6.9%) were Muslims (See table 1).

Awareness / knowledge of insecticide treated nets

The level of awareness of ITNs increased from 59.2% at pre-intervention to 97.6% after health education intervention. The change was statistical significant, McNemar's $X^2 = 61.02$, df = 1, $p < 0.001$

The knowledge of the importance of ITNs increased significantly in the study group after the interventions, McNemar's X2 =77.01, df =1, $p < 0.001$(See tables 2 and 3)

Utilization of insecticide Treated Nets

The practice of sleeping under the net everyday was poor. Most of the women who had the nets were not sleeping under it and the reason for not doing so was because the weather is hot and they are not comfortable sleeping under the net. At pre intervention, out of the one hundred and seventy four pregnant women in the study group, 8 (4.6%) slept under the net the night before the interview but when assessed after the health education intervention, the practice of sleeping under the nets improved significantly to 146(89%) McNemar's $X^2 = 82.01$, df = 1, $p < 0.001$ (See table 4)

DISCUSSION

Community oriented intervention to create awareness are vital to the achievement of the malaria control in the Community, not only to educate the public about the commodity but the need to use the interventions which include the use of Insecticide Treated Nets (MDG, 2008). The Roll Back Malaria (RBM) African Summit held in Abuja, Nigeria on April 25, 2000, set a target of having at least 60% of children under-five years of age and 60% of pregnant women use ITNs which was later increased to 80%. Thereafter, malaria-prone countries undertook a combination of demand creation, reduction of taxes and tariffs on ITNs, commercial ITN market development, and programme to reach the most vulnerable populations with subsidized ITNs (Baume and Marin, 2008).

About 7 years after the RBM summit in Abuja, while there seem to be a high level of awareness of ITNs in some part of the country, some other part still have a low awareness level about ITNs and the knowledge of the importance of ITNs in the prevention of malaria. The result of the study conducted in South Western Nigeria, among 246 health workers showed that 93.5% were aware of ITN, but only 20.9% had correct knowledge of the importance of ITNs in preventing malaria (Iyaniwura et al., 2008) while another study in Ile-Ife Nigeria got an awareness level of only 20.0% among mothers of under-five children (Senbanjo et al., 2008).

A study that was conducted in Osun State found the awareness of insecticide treated net (ITN) to be 60.8% and 47.5% in experimental and control groups respectively at pre-intervention (Adepoju et al., 2006) which is similar to the findings of this study that got a low level of awareness and knowledge of the importance of ITNs before the intervention. This finding might probably be due to inadequate emphases on health education at the community level.

The health education intervention that was given to the pregnant women during the study lead to a significant increase in the level of awareness of ITNs among the pregnant women at post-intervention which was also what was demonstrated in the study conducted in Osun State Nigeria where after the health education intervention, the experimental group became more aware and knowledgeable about ITNs (Adepoju et al., 2006). For promoting proper use of insecticidal nets, improvement in knowledge on malaria transmission and prevention is essential (Baume and Marin, 2006).

Studies have shown that owning LLINs does not always increase the prevalence of use, for instance, nets are occasionally misused for other purposes such as fishing in villages near Lake Victoria (Minakawa et al., 2008; Edelu et al., 2010).

Table 2: Comparison of the level of awareness of insecticide treated nets among study group at pre and post intervention

			Level of awareness of insecticide treated nets among study subjects after intervention		
			Awareness	Not aware	
Level of awareness of insecticide treated nets among study subjects before intervention	Awareness	Count	97	0	97
		% of Total	59.1%	.0%	59.1%
	Not aware	Count	63	4	67
		% of Total	38.4%	2.4%	40.9%
Total		Count	160	4	164
		% of Total	97.6%	2.4%	100.0%

McNemar's X2 = 61.02, df = 1, p< 0.001

Table 3: Comparison of the knowledge of the importance of insecticide treated nets among study group at pre and post intervention

			Knowledge of the importance of insecticide treated nets among study subjects after interventio		
			Adequate	No knowledge	Total
Knowledge of the importance of insecticide treated nets among study subjects before intervention	Adequate	Count	82	0	82
		% of Total	50.0%	.0%	50.0%
	No knowledge	Count	79	3	82
		% of Total	48.2%	1.8%	50.0%
Total		Count	161	3	164
		% of Total	98.2%	1.8%	100.0%

McNemar's X2 =77.01, df =1, p < 0.001

Table 4: Comparison of the pregnant women who slept under the net the night before the interview among study group at pre and post intervention

			Sleeping under the net the night before interview among study subjects after intervention		
			Yes	No	Total
Sleeping under the net the night before interview among study subjects before intervention	Yes	Count	5	0	5
		% of Total	5.0%	.0%	5.0%
	No	Count	84	11	95
		% of Total	84.0%	11.0%	95.0%
Total		Count	89	11	100
		% of Total	89.0%	11.0%	100.0%

McNemar's X2 =82.01, df = 1, p< 0.001

The result of the study that was carried out in Enugu State Nigeria found that despite the high level of awareness of ITN among the study participants, it did not translate to usage of ITNs (Elsheikh, 2007).

At pre-intervention, the usage of ITNs was very low but with health education, a statistical significant improvement in the utilization of the LLIN was recorded. The effectiveness of Health education in increasing the utilization of ITNs was seen in a control trial study in Piron, Mali with a 40% increase in the level of utilization of ITNs in the village at the end of the study.(Rhee et al., 2005).

It is clear that the provision of LLINs and education are both instrumental for attaining high bed net coverage and usage rates. With the ongoing national distribution of the Long Lasting Insecticidal Nets, emphasis should be placed on Health education to ensure the final utilization of the nets beyond the owners of the LLINs in order to achieve the set target for the reduction of malaria morbidity and mortality in the country.

The short coming of this study is the fact that there was no control to allow for effective comparison of the effect of the intervention, limited resources also hindered the implementation of this study beyond one village.

CONCLUSION

This study has demonstrated that with the ongoing National distribution of the Long Lasting Insecticidal Nets, a sustained community based education should be adopted as a strategy in order to achieve a universal coverage and utilization of the LLINs.

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