

Factors in association with use or non use of ITNs In Rural Cameroon: case of Upper Muea

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Abstract

Background: Insecticide treated nets (ITNs) remains the instrument of choice for malaria prevention in Cameroon. However, the diversity of Africa and most especially the West African sub-region have attributed the use of ITNs to some socio-demographic and cultural contexts.

Purpose: The purpose of this study was to investigate and assess some demographics, social and cultural factors that affect the use of ITNs in rural Cameroon.

Methods: A multistage sampling technique was used to recruit participants into the study. A questionnaire was then administered to a single household individual with at least a biological child and/or is ≥ 18 yrs of age in these quarters as well as an interview guide used for opinion leaders. Information on demographic variables, socio-cultural factors associated to ITN utilization was recorded.

Results: Of the 92 respondents' who participated in this study, 66.24% of the respondents used ITNs while 33.76% did not. Looking into some demographic factor, individuals aged 26-40 years appeared to be the ultimate category that adhered to ITNs utilization (75.00%) with those at the bottom scale being individuals aged 18-25 yrs (32.26%). Net use and respondents' educational level was not progressive, those with no formal training and who had attended secondary school (O/L) accounted for the highest population of net users (76.9 % and 77.78% respectively) whereas the more educated accounted for only 26.32% and 33.33% (first degree and masters degree holders respectively). Among the 35.88% of ITNs non-users, the most recognized social factors that have limited the use of ITN included; night work, classic homes, feeling of facial and body swelling, coughing and discomfort among others. Some quotes were: "I work at night for a living", "our home is classic or decked so we can't destroy our walls in the name of mosquito nets", "the nets causes facial and body swellings", "it causes discomfort and coughing as well as hea". No cultural factor was realized in our study.

Conclusion: This study highlights potential social, cultural and demographic variables that are important to be targeted for effective ITN utilization.

Recommendations: Sensitizations against the negative feelings on ITNs is still very necessary.

Keywords: Malaria, Malaria Prevention, ITNs, Use, Non Use of ITNs, other implicating Factors

Introduction

Insecticide treated net (ITNs) remains the instrument of choice for malaria prevention in Cameroon. However, data suggests that its use by the population, especially vulnerable groups remains low (Tchinda *et al.*, 2012). Even though there is a scarcity of information about factors influencing its use, the growing body of literature reviewed, focuses on community behaviors and stresses the central importance of socio-cultural factors, knowledge, and beliefs concerning malaria control (Gillett, 1985). We therefore in this same light, found it necessary to identify the social and cultural factors associated with the use of treated mosquito bed nets in rural Cameroon- in the quarter 5 and 6 of upper Muea in the context of the community so that innovative programs can be modified for optimum net use.

Insecticide treated nets (ITNs) is one of the highly recommended strategies of “Roll Back Malaria (RBM)”. The utilization of ITNs as personal protective devices or tools to kill or repel mosquitoes (WHO, 2002a) cannot be over-emphasized. These nets were used in order to provide a barrier between mosquitoes and humans especially the vulnerable; pregnant women and children under five years.

There however exists some social variability because in any society, there are groups of people who have limited control over their ability to admit to illness, mobilize resources, access health

facilities and services, and make decisions. This lack of personal control places them in a position in which they can be considered socially vulnerable to disease infection, most commonly malaria (Jones and Williams, 2004).

The non-use of Mosquito nets among individuals has been variously attributed to practical barriers associated with the temporary unavailability of a normally available mosquito net or a range of social factors that render mosquito net use impractical in the short-term (Brieger *et al.*, 1996; Das *et al.*, 2007). According to Das *et al.*, (2007), the reported social reason for the non-use of ITNs by respondents is the aspect of sleeping elsewhere in their previous nights. Cohee *et al.*, (2009) added that, sleeping elsewhere, or not sleeping at all, are other social determinants associated with ITNs non-use. More so, Pulford *et al.*, (2011) cited that; Disruption of sleeping arrangements, away on business or visiting relatives, attending an all-night affair and night work are frequent results in mosquito net non-use.

Another issue on use or non use of ITNs has been linked to cultural variability. Different areas in the world possess different cultural beliefs. According to a study carried out on four (4) tribes in the north eastern part of India, two (2) of the tribes stated that, there are no cultural limitation to the use of treated mosquito bed nets and a majority of people from these two tribes (54.1% and 95.7%) responded affirmatively based on their perception to the benefit of treated bed nets in terms of providing protection from mosquito bites (Anil *et al.*, 2001). More so, the other tribes responded poorly to the use of treated mosquito bed nets based on human factors in the form of diversity of beliefs, lifestyle and occupational needs of various tribes (Anil *et al.*, 2001).

Demographic variables have also been found to have a toll on the use or non use of ITNs. Hence, several demographic factors have influenced net use of which are; sex, ethnicity and educational level of the people (Louis *et al.*, 1992). More so Thompson *et al.*, (1996) identified age, education, occupation/livelihood and gender as other demographic determinants to ITN utilization.

Problem Statement

Malaria cannot ably be prevented through the use of Insecticide Treated Bed Nets. These mosquito nets in the form of ITNs has been an old method of malaria prevention dating back to the 6th century (Lindsay & Gibson, 1994) and it has been upgraded as the Long Lasting Insecticide Treated bed nets in this contemporary era to be suitable for household and to combat malaria (NMCP, 2008). Despite this advancement, the nets are not appropriately used as observed because new nets are being used in fencing tomato/pepper farms with the idea of preventing animal invasion. They have also been observed in the picking beans and as an essential fishing tool. However, our observation is linked with what the Pan Afr Med J, (2012) published and stated thus; “one of the greatest challenges to bed net is its effective use by individuals”.

Demographic, social and cultural variability may be in association.

Research Questions

- Are there any association between the use of bed nets and some demographics?
- Are there any social reasons related with the use of treated mosquito bed nets?

- Are there cultural factors associated with the use of treated mosquito bed nets?

Objectives

1. Assess the effect of some demographics on the use of treated mosquito bed nets.
2. Assess the social factors associated with the use of mosquito bed nets
3. Investigate the cultural determinants associated with the use of ITNs.

Materials and methods

A cross-sectional community study was conducted within a period of 3 months using direct observations, structured questionnaires as well as a guided interview process for some opinion leaders. Quantitative and qualitative data was generated and analyzed. The quantitative component was an individual questionnaire that includes questions on some demographic characteristics, knowledge on malaria and mosquito bed nets as well as the socio-cultural associated factors to bed net use. The qualitative aspect was mostly of direct field observation on the different ways bed nets are used as well as from the opinion of some opinion leaders. The study population comprises of all individuals inhabiting quarter 5 and 6 of the Upper Muea Community, Cameroon.

The sampled population included male and females of this study population aged ≥ 18 years or who has a biological child in a household and also belong to any income group (Rich or Poor). A multistage sampling method was used in which all participants who met the selection criteria were included.

Sample Size Calculation

For a very large population, sample size (n_o) can be calculated based on the formula proposed by Cochran (1963:75) which is stated, thus;

$$n_o = \frac{z^2 p(1-p)}{e^2}$$

Where;

- n_o : This is the *minimum sample size* required for an infinite population.
- Z: Standard normal variant given as Z=1.96 for a given confidence level of 95%
- P: Assumed pre-study estimate for the proportion of participants that uses mosquito bed nets, given as P=0.5 and q=1-p. therefore q=0.5
- e: This is the error margin of the research the researcher is willing to tolerate (accuracy of statistics being calculated). It is given to be 10% (0.1)

Thus, the infinite population is calculated to be

$$n_o = \frac{1.96^2(0.5)(0.5)}{0.1^2}, n_o = \underline{97 \text{ participants}}$$

Therefore, this study needed a minimum of 97 participants.

Given that quarter 5 and 6 of upper Muea have a total population of 532 inhabitants, then the finite population correction is given by the formula

$$n = \frac{n_o}{\left(1 + \frac{n_o}{N}\right)}$$

Where; - n : Sample size for the finite population.

- N : Actual population size of quarter 5 and 6 in the Upper Muea Community.

Thus the finite population is calculated to be,

$$n = \frac{97}{\left(1 + \frac{97}{532}\right)}, \text{ Given } n = \underline{83 \text{ participants}}$$

Therefore, the study should recruit 83 participants.

Even though, a 10% error was allowed when determining the total number of participants to be recruited for this study, there was a probability that not all the questionnaires distributed were to be returned or fully answered. Therefore, an additional ten (10) household individuals (from pilot studies) were added to the total finite sample size to account for such contingency, given a total sample size of 93 Household Individuals. In this study, a multistage random sampling was used. Out of the different communities of the Muea health area, the Upper Muea Community was selected for this study because of the presence of the Medicalized health centre (CMA) and how nets were seen being misused in farmlands and some in HYSACAM dumping points when they could still have been washed and re-used. In this Upper Muea community, quarter 5 and 6 were selected by a convenient sampling method.

The data collection process considered the primary and secondary nature of the data. The primary source of data was obtained through interview from the recruited participants who met the inclusion criteria in the field and distribution of semi-structured questionnaires. Detail field observations and participation was undertaken within the quarters (neighbourhoods) selected in the Upper Muea Community. The questionnaire was divided into four (4) main

parts; the first part was for background information of the respondent (some demographics), the second part was information related to the knowledge on malaria/ITN, the third part addresses the social factors associated with ITNs, and the last part was based on questions related to the cultural factors associated with ITN utilization.

The interview targeted influential community leaders at various domains for the construction of primary data. The decision to use interview as the method of primary data collection was because;

- ✓ This was a better means for the opinion leaders to clearly bring out view points in their domain (religious, cultural/tribal, etc.) on the concept of net use, since this instrument of data collection pose no entry for the participants to choose.
- ✓ It was also assumed that, a better explanation pertaining to the use of mosquito bed nets can be given only by spiritual leaders and the elderly on the aspect of Religion and Culture respectively

The structured questionnaire was pre-tested with five staffs of the CMA and five randomly selected tribal heads. Hence, the research study made use of structured and semi-structured questionnaires as well as a guided interview process which seek precise measurements in order to analyze the targeted concepts. Data from the questionnaires were sorted out and coded accordingly, prior to processing by Microsoft Excel and spread sheet 2010. Quantitative data was used to generate simple descriptive information such as proportion and frequencies which were useful in evaluating and making comparisons between the different variables of the

study and qualitative data was used to bring out detail aspects of the social and cultural factors associated with ITN utilization.

Results

A total of 92 individuals participated because the questionnaires were distributed to just one individual in a household; 93 questionnaires were given to 93 individuals in 93 households.

ITN Utilization linked to some Demographics

Age Groups and the use of ITNs

Looking into the different age groups, those between the ages 26-40years appeared to be the ultimate category of individuals that adhere to the use of ITNs 75.00%, followed by individuals >50years 72.73% while those 18-25yrs were observed from findings to be on the bottom in scale of ITN users 32.26 % (Figure 1). Therefore, there is a pronounced discrepancy with the issue of ITN utilization among different age groups.

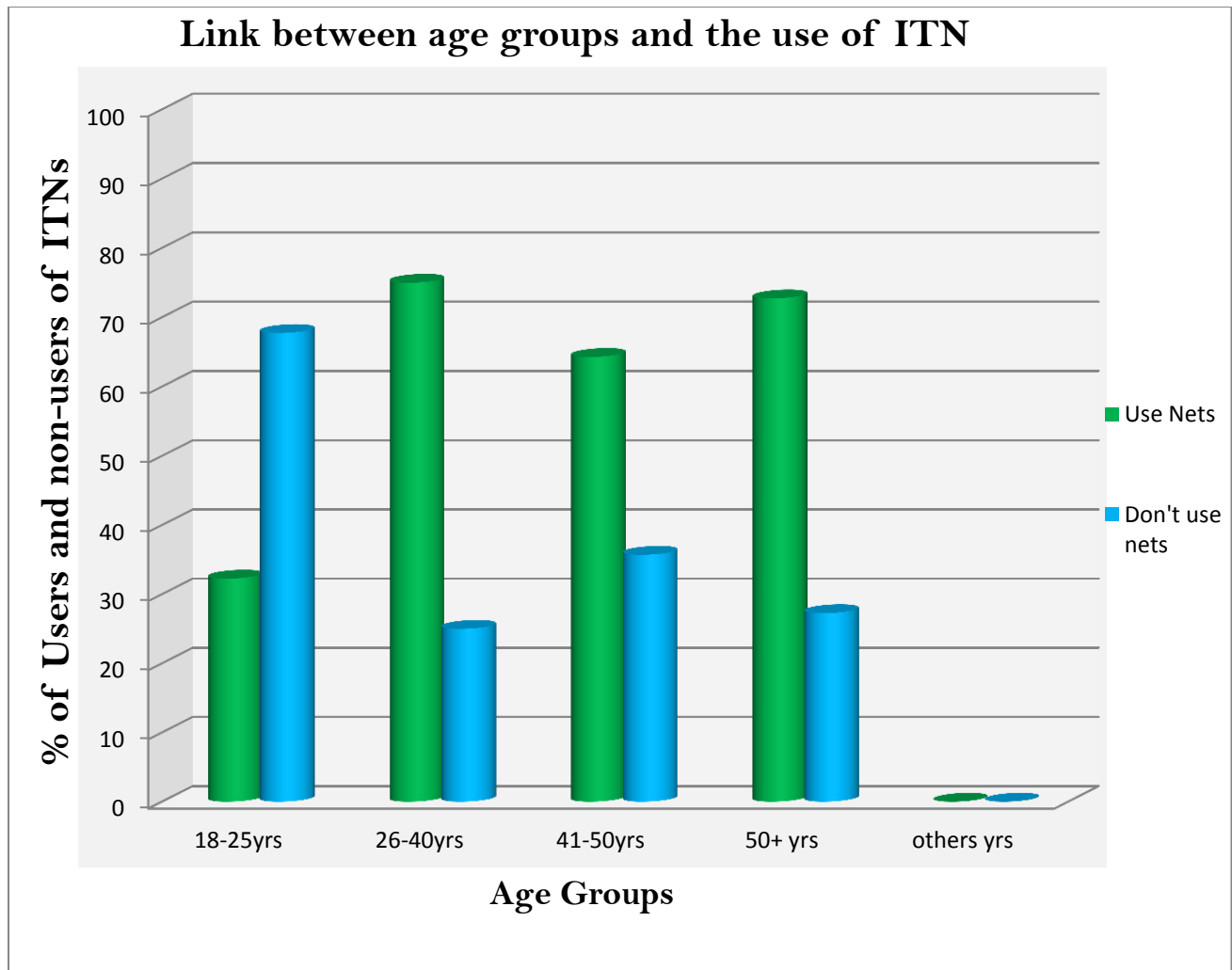


Fig1: Link between age and the use of ITNs.

Marital Status and ITN utilization

From the findings, those that are married appeared to be the main category of ITNs users 69.05%. More so, *the singles* were investigated to be the subsequent groups of individuals that used mosquito bed net 64.10% whereas, the widowers were the least among ITN users 33.33% (Figure 2)

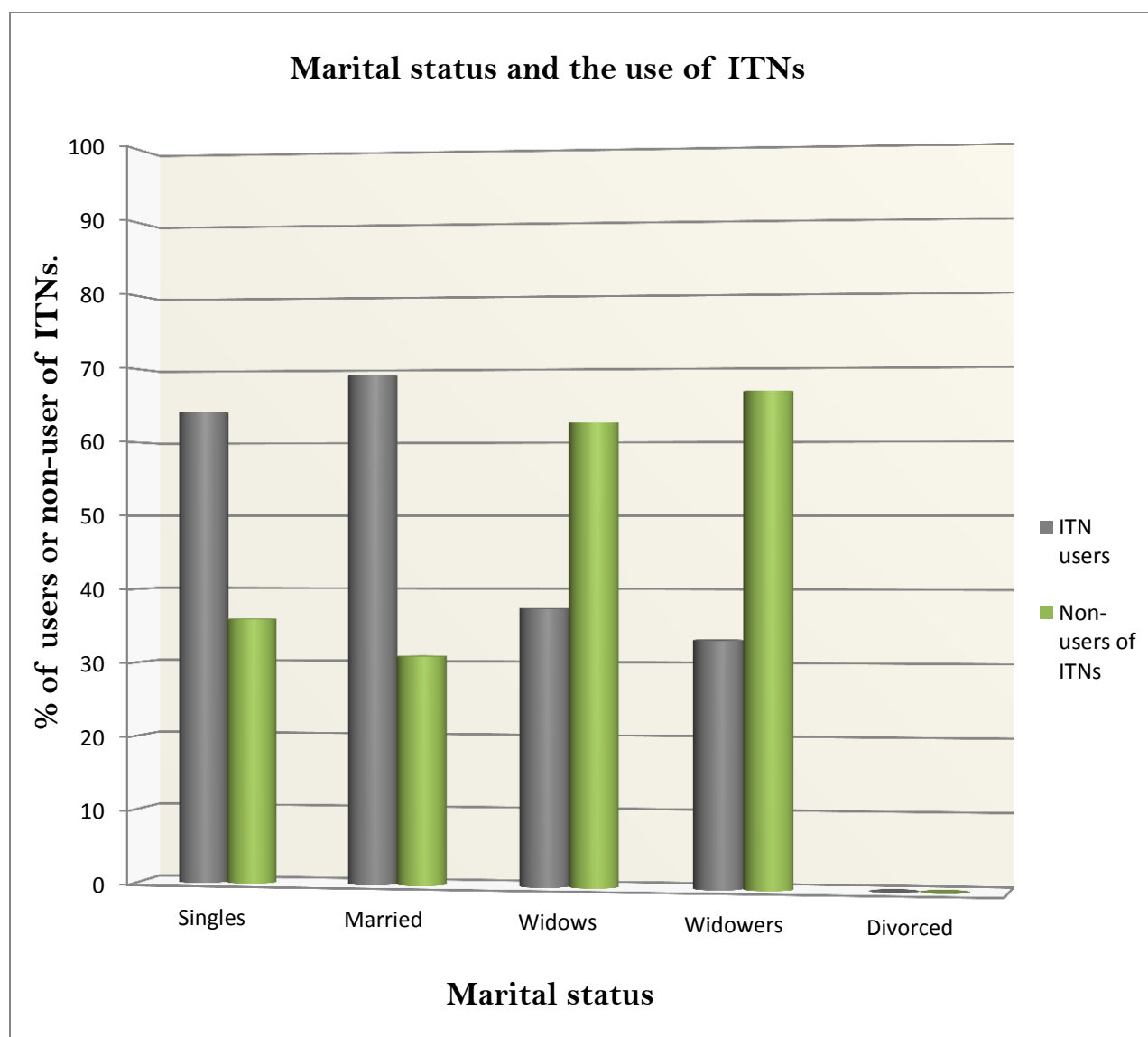


Figure 2: Marital Status and the use of ITNs.

Tribes and the use of ITNs

Concerning tribes, it was deduced that only 36.36% of the Hausa people uses ITNs. More alike, those from the west did not diligently use their nets. In other tribes (north-westerners and south-westerners), the adherence to ITNs utilization was high 76.19% and 70.00% respectively

(Figure 3).Northwest and south-westerners clearly took good measures for prevention against the malaria while the others need to put efforts especially the west and the Hausas.

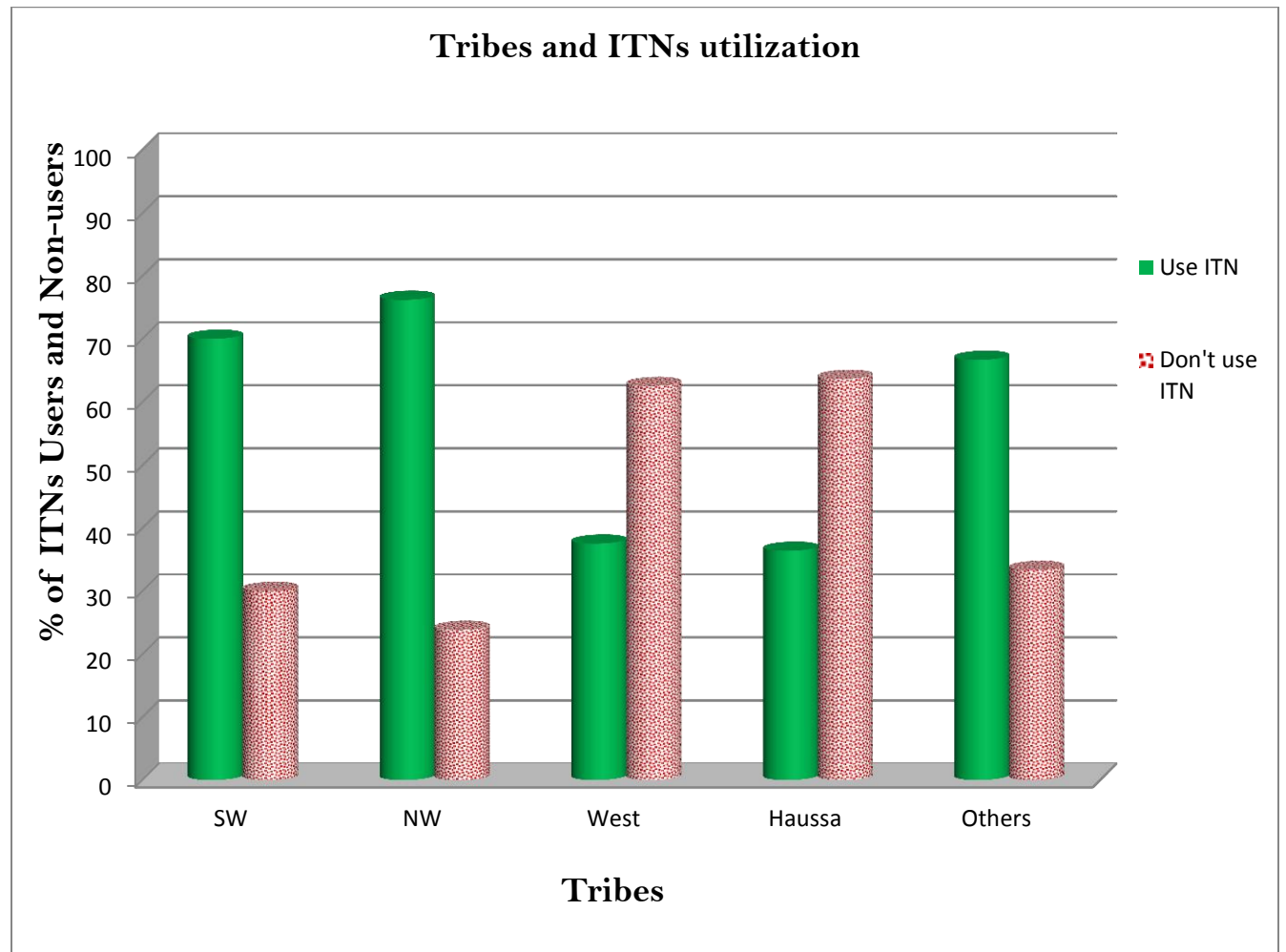


Figure 3: Tribes and ITNs utilization.

Linking educational levels and the use of nets

Following respondents' educational levels, ITN utilization was not progressive. Greater use of ITN was associated with those having *O/L* 77.78%, followed by *individuals with No formal education* 76.92% while a *substantial decrease was found amongst those having higher qualifications (degree: 26.32%, masters and others: 33.33%)*. Thus; looking critically into the

findings, individuals with higher educational qualifications were the least users of ITNs (Figure 4).

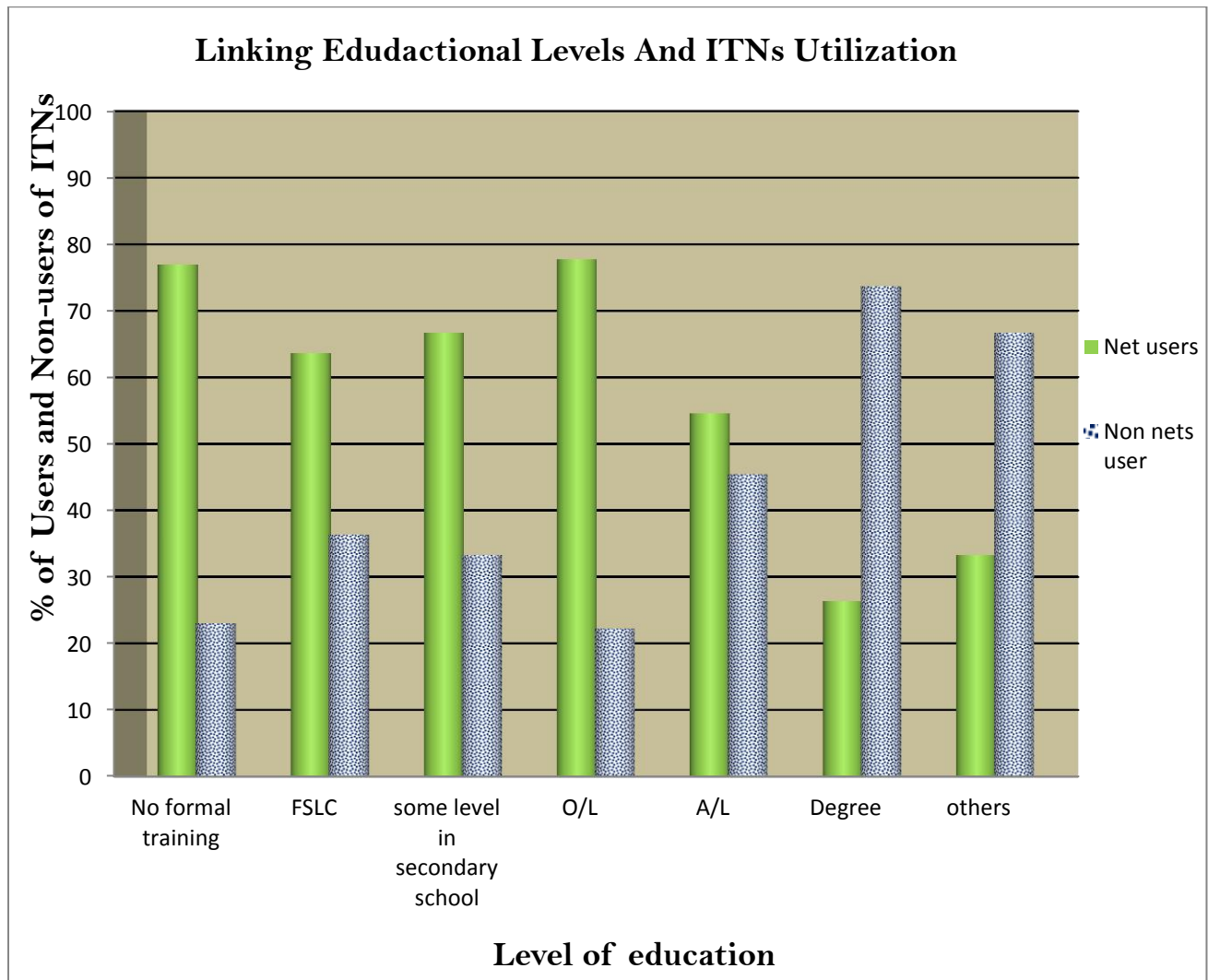


Figure 4: Linking educational levels and the use of ITNs.

Occupation and Mosquito net use

Concerning respondents' Occupation, ***It was also deduced that; net use varies between respondents' occupations.*** Findings showed that 76.92% of Nurses appeared to use nets the most, followed by farmers 68.42%. Other occupations like medical doctors remained the least users of ITNs 25.00% (Figure 5).

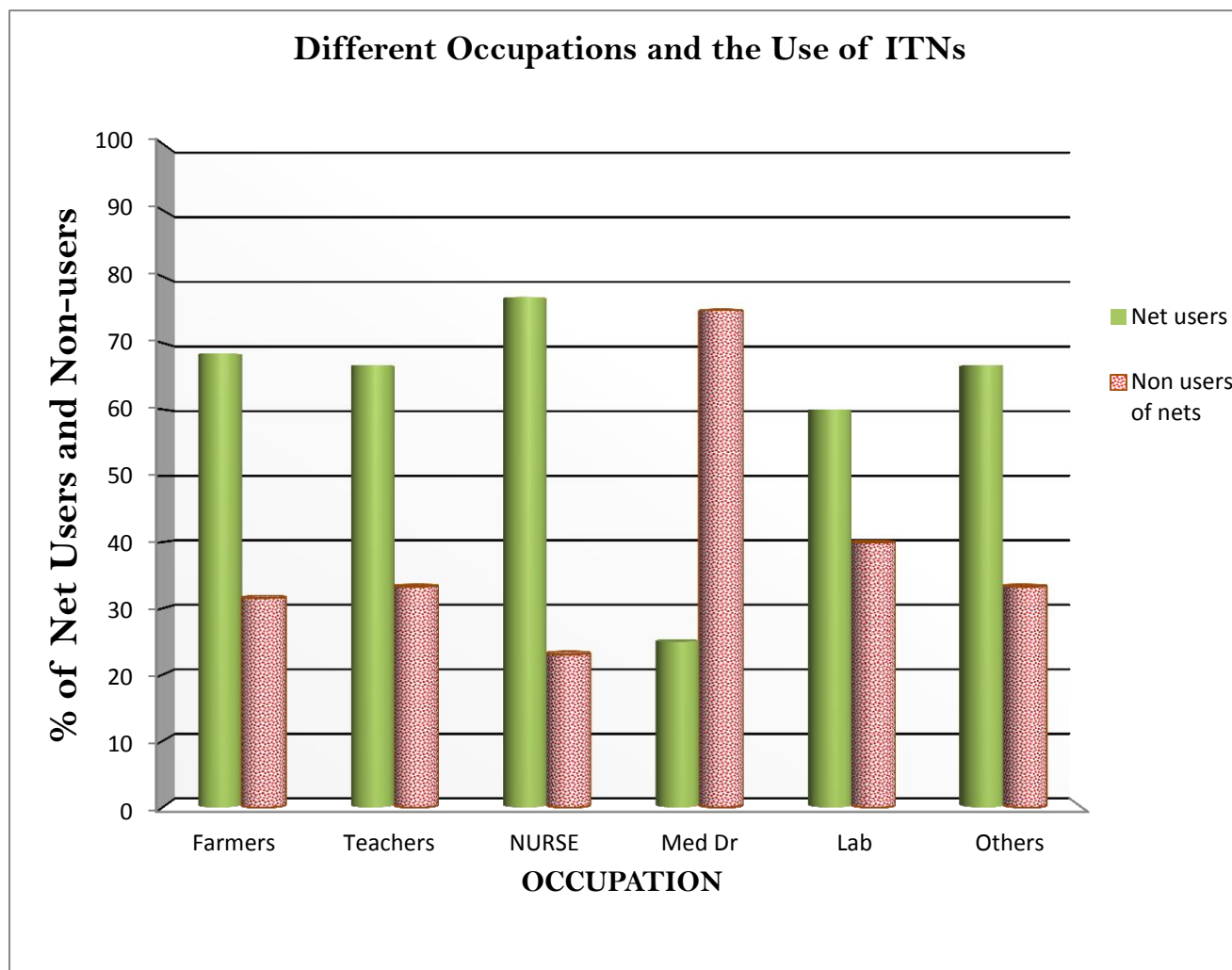


Figure 5: Different occupations and the use of ITNs

Religion and ITNs utilization

Table 8: Linking Religions to the use of ITNs

VARIABLES	FREQUENCY (%)	USES NETS (%)	DON'T USE NETS (%)
RELIGION			

Christian	67 (72.83)	46 (68.66)	21(31.34)
Islam	22 (23.91)	12 (54.54)	10 (45.46)
Others (Baha'i, JW)	3 (03.26)	3 (100.00)	0 (00.00)
TOTAL	92 (100.00%)	61 (66.30%)	31 (33.69)

Among the different religions, net use was high among the Christians population 68.66%, followed by those belonging to the Islamic faith 45.46%.

Among those belonging to denominations like the Baha'i and Jehovah's Witness, net use was recorded to be the highest for their small population assessed. More alike, Opinion leaders from Jehovah's Witness (JW), Islam and Christianity stated that, the use of mosquito nets is not prohibited in their ministry.

In a summary, 66.24% of the respondents are in use of mosquito bed nets while 33.76% do not adhere to ITN utilization in the entirety of quarter 5 and 6 of the Upper Muea community.

Respondents' Knowledge on Malaria and ITNs

The following criteria were used to classify respondent's knowledge on malaria and ITN

- **Good knowledge:** when a participant can state 4 of the following; *the cause, mode of transmission, methods of malaria prevention, whether he/she know what ITNs and its importance are.* This account for >70%
- **Moderate:** when a participant can state correctly 2 or 3 of the four criteria's above. This account for 40-70% on the scoring criteria

- **Low:** When a participant can state ≤ 1 of the above criteria. This account for 40%<

From our findings, majority of the individuals across all variables had; ***moderate knowledge about malaria and ITNs 45.83%***. Those with ***good knowledge accounted for 29.17%*** whereas those with ***low knowledge occupied 25.00%***.

Even though, a majority of the respondents were on an average more knowledgeable (75.00%) about malaria and ITNs, ***it was evident that ITN utilization decreases as the respondents' knowledge (level of education and quality of occupation) increases;***

- 90.91% who had good knowledge were A/L holders but accounted for 54.55% of net users
- Masters Holders and higher with 100% knowledgeable, accounted 33.33% of ITN users
- Degree holders with 95.65% knowledgeable accounted for only 26.32% of ITN users.
- Lastly Medical doctors with 100% knowledgeable accounted for 25.00% of ITN users.

Looking into those with moderate or poor knowledge whom net use seems to be mimicking among them, the followings were some of the wrong perceptions they had about malaria.

- 2.17% of the respondents said; malaria is caused by poor toilets,
- 2.17% said dirty dishes in the household and 11.96% stated that, it is caused by poor preparation of food.
- 14.13% of the respondents stated that malaria is transmitted by insects most especially ***flies*** and ***cockroaches***
- Concerning malaria prevention, 3.26% stated the use of ***blankets*** while 1.09% said; ***burning fire in the evening using palm kernel are methods of malaria prevention.*** Looking

into the poor responses given by some low knowledgeable respondents, malaria will only be eradicated according to MDG (goal 6) when such wrong perceptions are targeted.

Social Factors Associated With the Use of ITNs

The effect of income levels on ITN utilization

The millennium development goals (MDGs) were adopted by the UN by 189 members' states in 2000. These goals were to be attained by the year 2015 for quantifiable target. One of the goal was ***to eradicate extreme poverty and hunger***. This was to be attained based on one of the target; ***Half between 1990 and 2015, the proportion of people whose income is <\$1 a day (500FCFA).***

In this study, Rich was equated to use of >500FCFA, Average: use of at least 500FCFA some days and poor: use of <500FCFA a day.

*From our findings, income brackets did not greatly affected the use of ITNs as greater portion of people in all the income groups (Rich: 39.13%, Average: 32.61%, poor: 16.30% and No income: 11.96%) used the nets. thus, we cannot confidently link the **non-use of ITN** to income brackets (figure 6)*

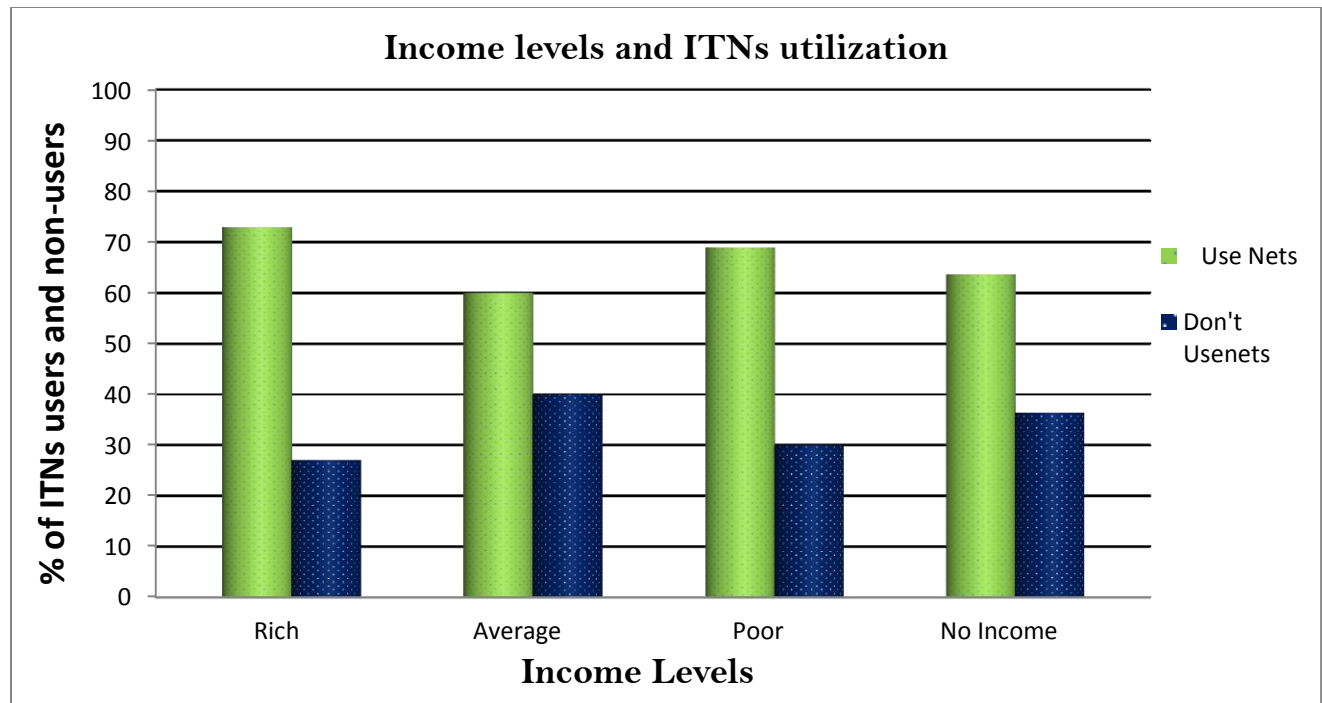


Figure 6: Income levels and the use of ITNs.

Social Factors Affecting the Use of ITNs

Aside from income levels, 31 of the respondents who reported not using ITNs cited the following as the social reasons for their non-use of ITNs (Figure 7 below)

- A. *The nets are local for me, we prefer to spray the mosquitoes***(8respondents)**
- B. *We feel they are ineffective* **(11respondents)**. So other preventive measures are used.
- C. A section of the respondents stated; *they are usually out for work or visits* **(7respondents)** or *work at night* **(7 respondents)** and as such, there is no need to use the nets.
- D. *The net occupies space and causes congestion.* **(9respondents)**
- E. *The design of our home does not give room for easy set-up of the nets and our home is classic and decked; thus rendering that bulk call nets; useless.* **(12 respondents)**

F. *Our family size is too large,so our many children can suffocate inside that cage(8respondents)*

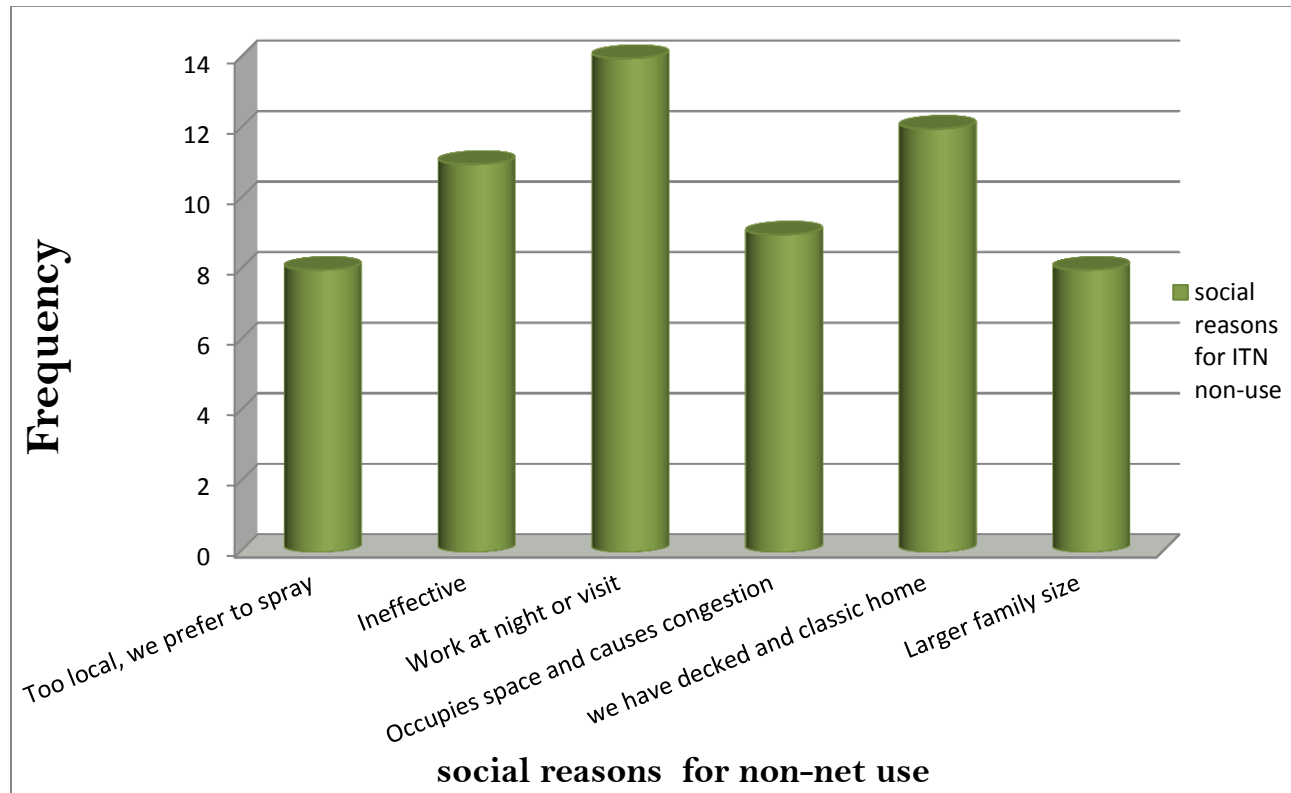


Figure7: Social reasons associated with the non-use of ITNs

From our findings, a majority of the respondents amongst others stated that, they usually go out for work at night or visits, thus no time to use the nets. While just a few stated that, their family sizes are too large to sleep under such small nets which can even suffocate them while inside.

More so, other reasons occurred among the respondents which were;

- *The net causes heat when we were sleeping under(17respondents)*
- *It causes allergic reactions (swellings and body itches most especially on the face when touched by the nets). (9 respondents)*

- It causes discomfort(**9respondents**), triggers coughing and causes difficulty in breathing (**5respondents**)
- Our crops are being destroyed daily by vultures and animals, so the nets are used in fencing our farmlands and even to make sieves (**12respondents**)
- We don't have and in need for nets (**8respondents**)(**Figure11**)

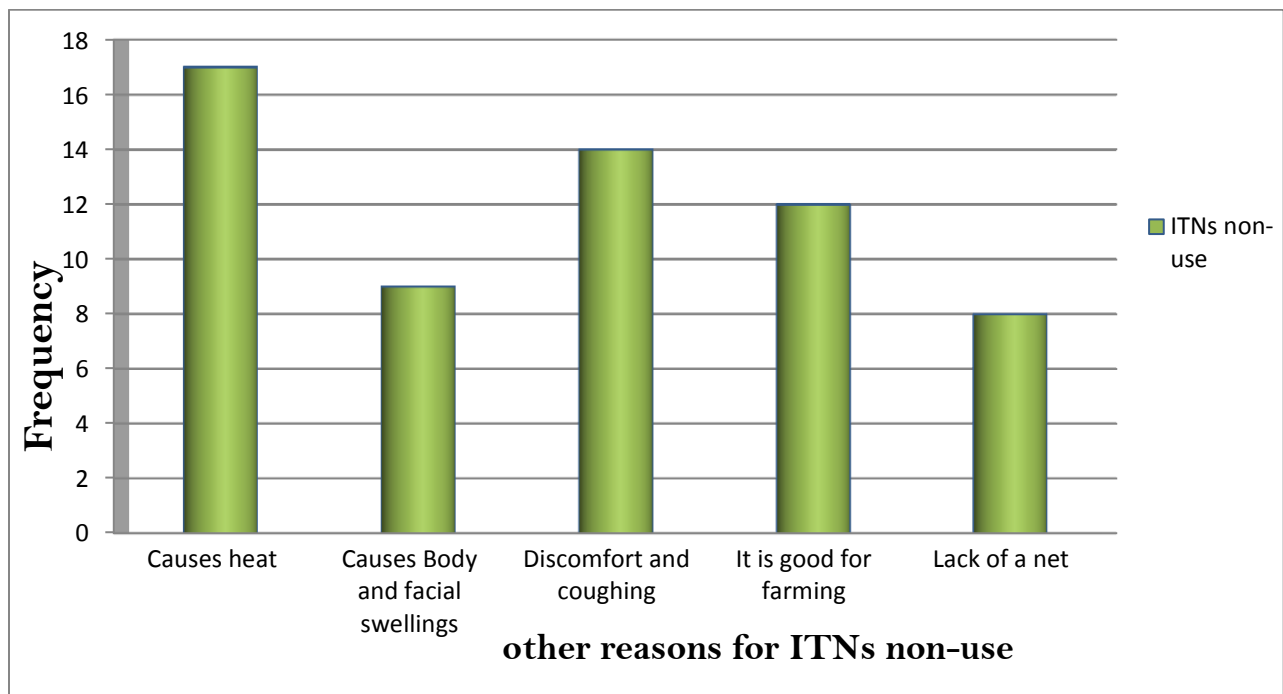


Figure 11: Other reasons associated with ITNs non-use

With these reasons in mind, better measures can be taken to boost up net acceptability and use.

Cultural Factors

With respect to cultural factors as to why ITNs are not being used at home, only 3 of the respondents from the southwest region (2 Bakwerians and 1 Bayangian) said their culture believed ITNs are to be used in health institutions and that was in the past, while all the other

respondents including the IMAM of the Mosque (Hausas), *stated there was no cultural beliefs associated with ITNs utilization*. Presently, no tribe was investigated to have any cultural limiting factor associated with ITNs utilization.

Discussion

From the results, 64.24% of the respondents used their ITNs while 33.76% have thrown the issue of ITN utilization to the wind. We can therefore deduce that, this coverage is slightly less than the coverage of 80.0% recorded in Obala, Cameroon in 2009 (CCAM, 2009). The wide gap of difference was not really expected because ITNs were distributed in these areas within the same period dating back to 2015. To our comprehension, we can justify for this differences in results as originating from our differences in study area.

Some Demographics and ITNs Utilization

Looking into the *different age groups*, those 26-40yrs gave the idea to be at the top in the scale of ITN utilization 75.00%, followed by those >50yrs of age 64.29%, with the least of ITN users 32.26%, being individuals 18-25yrs. This increase in net use among the older people in this community may have occurred because of their adaptation to the activities of a cosmopolitan town as compared to those in the interior. In the same light, Alaii *et al.*, (2013) indicated that; the use of ITNs by older people have been on an increase when younger children who are likely to have malaria appeared to be lower in the scale of utilization, and ITN non-adherence among these children was nearly 15% lower than the elderly. Contrasting our findings, Tchinda *et al.*, (2012) concluded in their study that, children <5yrs were the age group with high adherence to

net use after adjusting with other factors, followed by individuals 25-49yrs, while the older household members (>50yrs) remained the group with lower net use.

More so, individuals aged 26-40yrs appeared to be the second highest users of ITNs in our study while those 18-25yrs, the least. These findings are similar with what Tchinda *et al.*, (2012) stated; that individuals aged 5-25yrs are not protected since they remain at the bottom in the scale of ITNs utilization. In this light, we can comfortably say that; age will only affect the use of ITNs depending on the nature of the environment and activities the individuals find themselves but at this instance, individuals 18-25years are vulnerable to having malaria.

In the light of education, Individuals with no formal education and O/L(secondary level of education) accounted for 76.92% and 77.78% respectively used ITNs. While Degree and Masters Holders used ITNs the least 26.32% and 33.33% respectively. *Standing on these evidences, it can therefore be assumed that respondents' adherence to the use of ITNs decreases with increase educational status.* This is controversial to what Ngwibete and James, (2016) found in their study. They stated that; *"bed net usage increases with increased educational status and those with No formal education showed a very low rate of ITNs usage 8.3% against those that are more educated.* Again, Tchinda *et al.*, (2012) pointed that, the educated individuals are more prepared to integrate messages about the benefits of ITNs and adhere to it being used. To our understanding, we believe that our differences in result is based on the fact that, CMA Muea has always been there to strengthened their community through home visits on the use of ITNs which has created a body of knowledge to those with no formal education.

Concerning respondents' Occupation, it was also deduced that; net use varies between respondents' occupations. Findings showed that 76.92% of Nurses appeared to use nets the most, followed by farmers 68.42% even though they have low knowledge about the sickness while medical doctors 25.00% remained the least users on the scale of ITNs utilization. These findings are important but no literature to our search has been done to compare these. We can therefore state that; there are some classes of health workers that encourage people to use ITNs but are not interested in putting into practice their teachings. This is important to be looked upon so as to meet up the 80% target set in place during the Abuja summit in all works of life.

Looking into the different tribes assessed, we realized that only 36.36% of the Hausa people use ITNs. More alike, those from the West did not diligently use their nets unlike the north westerners and the south westerners that accounted for 76.19% and 70.00% respectively. From our understanding, the low-adherence to ITN utilization among the Hausas may have been associated with the issue that the women who barely serve as housewife are not allowed to go to school and so, they have developed resistance against new ideas. In linking these findings to other studies, we can confidently state that, no literature published or unpublished was seen upon our search.

Social factors affecting ITNs utilization

Working at night or paying visits was the most reported reason for the non-use of ITNs. The next widely reported reason in this study was the issue of *living in a classic room or decked homes.* Although these reasons are the most reported, they only accounted for 21.31% of all

social and other responses given by the respondents. Moreover, the issue of ineffectiveness was the next motive for the non-use of ITNs. Similarly to the findings of Pulford *et al.*, (2011), the reported social reasons for the non-use of ITNs by respondents was the aspect of visiting relatives, attending all-night affair and night work. Again, Das *et al.*, (2007) cited the issue of net non-use to be associated with sleeping elsewhere in their previous nights.

Other factors found in this study included the fact that; *Mosquito bed nets causes a lot of heat, followed by discomfort and coughing*. Although these reasons were amongst the very early reasons reported by participants in the study, the issue of *Allergy (it causes body and facial itches)* and *using the nets to prevent the entry of vultures and animals into their farmlands* later became the dominant and bold reasons for not using a mosquito net in this study. This is slightly similar to the findings of Pulford *et al.*, (2011) thus; *Discomfort, primarily due to heat, was the most widely identified reason why mosquito net owners chose not to use a mosquito net on one or more nights*. Still in their study, the reported use of MBNs for fishing (but in our case “farming”), still remains a problematic discrepancy between the intended and practical net function that need to be addressed.

Cultural factors associated with ITNs utilization

From our findings, there were no cultural factors associated with ITN utilization. This is similar to a study carried out in north eastern part of India where among the different tribes accessed, culture was not seen as a limiting factor to ITN utilization (Anil *et al.*, 2001). Contrarily, Jumbo *et al.*, (2010) further stated that the use of mosquito bed nets was found to have been affected by some cultural belief such as *fear of it causing death*. In Zanzibar, it was observed and believed

that, mosquito nets are meant only for health institutions and even if an individual is sick with malaria, it is only the grandparents that can treat him/her (Nsungwa et al., 2005). More alike, Chuma et al.,(2010) further contradicted our findings with the issue of ITN exposing Kenyan's children and pregnant women to infertility. Based on our understanding, we can simply say that these great differences in results was as a result of mostly their study participants; since they recruited mostly the elderly category for their study that had a better understanding about tradition unlike us which was mostly from individuals greater than or equal to 18years of age. More so, their study was also conducted in a rural area as opposed to a cosmopolitan town like ours which have diverse characters, with different knowledge and belief on ITN utilization.

Conclusion

The outcome from this study has strongly proven that, there are social factors that have negatively affected the use of mosquito nets in quarter 5 and 6 of upper Muea. These negative influences include; working at night, our home is decked and classic, and the nets are generally ineffective. Amongst others, peculiar reasons such as the nets causing heat and discomfort, body and facial swellings and the concept of misusing the nets for farming, needs to be properly addressed if our objectives are to meet up with the Abuja 2015 summit objectives.

Standing on these bases and others such ITNs non-use amongst the educated, we can conveniently state that, these bad practices will in the future wipe out the concept of ITNs as a prompt preventive method against malaria when an alternative preventive method has not been set in place. Therefore, these negative influences need to be subdued by fostering positive factors that will promote the use of ITNs.

Looking into the aspect of culture, we can conclude that there are no cultural factors associated with the use of ITNs even though some demographic factors such as age group 18-25yrs, occupation and level of education had proven otherwise. In a nut shell, greater importance needs to be stressed on information or education given to the people about the use of mosquito bed nets as a tool for malaria prevention.

Recommendations

Based on the research findings, the following recommendations are projected to improve on the effective use of ITNs

1. The issue of using ITNs for farm purposes needs to be addressed and proper education given to the people since many still belief a torn net, one that is dirty or has stayed for some months are meant for other purposes.
2. We call upon the government to carry out a revision on the insecticides and pesticides used in treating these nets, both the ITNs and the LLINs.
3. Since modernization is on a wheel, introducing and strengthening the concept of indoor spraying and the use of electric-like pesticide fumes will be essential since factors like heat, discomfort and classic homes cannot easily be eradicated.

Recommendations to the Community

1. More emphasis should be placed on educating the subjects on the benefits of using mosquito bed despite the very little disadvantages in some instances.

2. Community leaders should strengthen and ensure effective environmental sanitation from the entire community through to the door steps of individual's houses.

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