

**ORIGINAL ARTICLE**

**Peoples' Belief, Attitude, and Practice in the Use of Insecticide Treated Bed Net (ITN): The Case of Serbo, Nada, and Asendabo Towns, Jimma Zone, Southwest Ethiopia**

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**Abstract**

*The effort made to control malaria seems somewhat under the control of those people living in the malarious areas. Moreover, the tendency seems to shift from cure to prevention as malaria doesn't have effective vaccine or effective drug for mass chemoprophylaxis. Thus, this study was designed to assess the belief, attitude, and practice of ITN use to prevent malaria by peoples of Serbo, Assendabo, and Nada Towns. Samples of 274 people were taken from Serbo, Assendabo, and Omo Nada towns through multi-stage random sampling of lottery method. The response of 264 respondents collected through questionnaire was analyzed and interpreted using SPSS software version 16. The result shows people that have lower perceived susceptibility to malaria (78.8%), lower perceived severity of the disease malaria (73.1%), lower perceived self-efficacy in the use of ITN (56.4%), higher perceived barriers in the use of ITN (68.9%), and lower perceived benefit of ITN (56.4%). In addition, the majority of the subjects (74.6%) were found to have negative attitude towards ITN. Moreover, households mentioned some unintended uses of ITN at home indicating abuse in the use of ITN. These all indicate that the households have misconceptions and misunderstandings about malaria, negative attitude towards ITN, and they don't have firm belief in ITN to protect them from malaria. More or less, all subjects know that ITN is one of the malaria protection mechanisms. Thus, the majority of the subjects do not use ITN properly and consistently. The majority have low perceived susceptibility to malaria, severity of malaria, benefit of ITN, self-efficacy to use ITN and higher perceived barriers to use ITN properly and consistently. Moreover, the majority of the households have negative attitude for ITN. In addition, some households don't know how malaria is transmitted and the right preventive measures. Thus, a balance of knowledge, belief, and positive attitude toward ITN should be maintained for effective malaria prevention.*

**Keywords:** *ITN, Belief, Attitude, Serbo, Asandabo, Omonada*

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## BACKGROUND OF THE STUDY

The issue of malaria is very old. In Ethiopia, malaria is a leading public health problem (MOH, 1999). Three quarters of the land mass (altitude < 2000 m) is regarded as malaria affected (MOH, 2004), and about two-thirds (68%) of the population is at risk of malaria. It is estimated that the annual number of malaria cases is approximately 4-5 million, with 70,000 deaths (MOH, UNICEF, 2002). Of all deaths, the fatal disease malaria ranges from 17-35% annually (Negash et al., 2004). In the year 2004/05, malaria was the leading cause of outpatient visit (16.57%), admission (14.98%) and death (28.9%) (MOH, 2004/05). According to the Ethiopian Ministry of Health annual report, some of the socioeconomic burden that result from malaria are reducing productivity, preventing the movement and settlement of people in resource-rich low-lying river valleys, massive environmental and ecological degradation and loss of productivity of non-malaria highland areas, exposing a large population of the country to repeated droughts, famine and overall abject poverty, school absenteeism during malaria epidemics and, increased public health expenditures" (MoH, 2004). Though there is a reduction of the problem since the administration of ITNs, so far no thorough research has been conducted regarding the customers' belief and attitude towards it. Glanz, Lewis, and Rimer (2002) argued that people are ready to act if they believe they are susceptible to a condition (*perceived susceptibility*); believe the condition has serious consequences (*perceived severity*); believe taking action would reduce their susceptibility to the condition or its severity (*perceived benefits*); believe costs of taking action (*perceived barriers*) are outweighed by the benefits; are exposed to factors that prompt action (e.g., a television ad or a reminder)

(*cue to action*); and are confident in their ability to successfully perform an action (*self-efficacy*) (Glanz et al., 2002).

Jimma is one of the zones of Oromya Regional State, which is frequently affected by malaria. Of the 12 woredas found in the zone, ten are found to be malarious. Assendabo, Nada, and Serbo Towns were taken as the focus for this study as they register the highest prevalence rate of malaria (Jimma Zone Health Office, 2003-2006/07 cited in Tsige, 2008). Thus, the current study generally aimed at assessing the people's attitude, belief and use of ITN in Serbo, Nada, and Asendabo Towns of Jimma Zone.

## MATERIALS AND METHODS

**Site of the Study:** A cross-sectional research design study on ITN use, belief and attitude was conducted in Kersa and Omonada woredas of Serbo (at an altitude of 1,780m found at 7°45'N and 37°05'E), Asendabo (at an altitude of 1,754m found at 7° 46' 0.01" N and 37° 13' 59.99"E), and Nada Town (at an altitude of 1,887m found at 7° 36' 0.00" N and 37° 13' 0.01" E). Serbo, Assendabo, and Nada are located in Oromya regional state, Jimma zone, some 333 km, 306km, and 300km, respectively, southwest of Addis Ababa. These three sites were purposively selected as they are the most affected areas as can be observed from the data obtained from Jimma Zone Health Office (cited in Tsige, 2009). The data collection for the study was conducted from December 2009 to June 2009.

**Population and Sample:** The people of Serbo Town in Kersa woreda, Nada and Assendabo in Omonada woreda served as

the basis for the study. Three Kebeles were first selected randomly from the list of kebeles (from 2 kebeles in Serbo, kebele 02; from 3 kebeles in Assendabo, kebele 03; and from 2 kebeles in Nada, kebele 01), followed by a proportional selection of households from those kebeles. The study unit was a household, and the sampling frame was the list of households found in each Kebele. The total number of ITN distributed in the study sites was found to be 7132 (Jimma Zone Health Office, 1999 cited in Tsige, 2008). Thus, the total sample size 274 households (i.e., a total of 274 households from those who got the ITN in those towns) were taken according to Krejcie and Morgan (1970) sample size determination procedure. At each site, the sample size was proportional to the total number of ITN in that specific town. Hence, from the list of households who had received at least one freely distributed ITN, 94, 100, and 80 households from Nada, Serbo, and Assendabo towns, respectively, were selected randomly using the lottery method.

**Data Collection Instruments:** Two primary instruments, namely questionnaire and structured interview- were used. The questionnaire consisted of participants' demographic information pertinent to the objectives of the study, questions that assesses participants' attitude towards, belief about, and practice (behavior) of ITN and finally, some open-ended items were presented in the form of a structured interview.

Before the pilot study, the questionnaire developed in English was translated into Afan Oromifa by three individuals (one from Afan Oromo Department as language expert, the other from Psychology Department as expert on the constructs of the research, and the last from any of the

departments in Jimma University as layman). The Afan Oromifa version was translated back to English by another instructor from Afan Oromo Department.

**Data Collection Process and Ethical Issue:** Permission to collect data was obtained from the authorities of the selected towns. The questionnaire was distributed to subjects on a house-to-house basis. Prior to handing out the questionnaires to the subjects, oral their consent was taken, they were thanked verbally for participating; informed on the aim, nature, and purpose of the study; assured that the participation was voluntary; told that the questionnaire has four sections, were advised to answer all questions, requested to answer independently. Confidentiality and anonymity were ensured and maintained and the respondents were appealed to answer as spontaneously and honestly as possible. The questionnaires then filled out by the participating household heads or their representatives (if the household heads were not available). Data collectors, who were trained on ways of administering the questionnaire and conducting the interview through house-to-house visits, were recruited from the respective study areas. Completed questionnaires were then checked for consistency and completeness by the researcher.

**Data Analysis:** Data analysis took both description of and statistical inferences from the gathered information. After the data were coded and entered, the following statistical analyses were made using SPSS Soft are version 16. To summarize the raw data i.e., to see averages, variability, frequency, and to express proportions of certain characteristics of the variables, descriptive statistics such as *mean* and

standard deviations, were computed. *Chi Square test* ( $\chi^2$ ) was made to see whether there is significant difference in proportion of the responses of the subjects. Then correlation matrix was computed to understand the relationship among the variables under investigation. Finally, *independent samples t-test* was computed to find out whether there is difference in attitude, belief, and practice of ITN between males and females of all respondents.

## RESULT

While coding the data into SPSS sheet, it was discovered that 10 out of 274 copies

The questionnaire were found incomplete. Thus, they were removed, and the purely analyzed data was for 264 households.

### Characteristics of the Study Participants

The mean age of the respondents was found to be 37.86 with standard deviation of 11.06. The minimum and maximum ages recorded were 20 and 65 respectively. Regarding sex of the participants, almost equivalent number was found except in Nada Town where males were three times as many as female participants. Academically, almost half of the subjects were illiterate. Amongst the educated, the majority were in the grade 1-6 category. But the overall data indicated that only 25 (9.47%) were certificate holders or above in their educational status (Table 1).

**Table 1: Respondents' Distribution by Sex and Educational Status**

	Serbo	Assendabo	Nada	
<b>Sex</b>				
Female	54 (56.8%)	36 (48%)	23 (24.46%)	<b>113 (42.8%)</b>
Male	41 (43.2)	39 (52%)	71 (75.54%)	<b>151 (57.2%)</b>
<b>Total</b>	<b>95 (100%)</b>	<b>75 (100%)</b>	<b>94 (100%)</b>	<b>264 (100%)</b>
<b>Educational Status</b>				
Illiterate	48	40	39	127(48.1%)
Grade 1-6	26	21	31	78 (29.55%)
Grade 7-12	12	7	15	34 (12.88%)
≥Certificate	9	7	9	25(9.47%)
<b>Total</b>	<b>95(35.98%)</b>	<b>75(28.41%)</b>	<b>94(35.61%)</b>	<b>264(100%)</b>

### Practice and Knowledge about ITN

With regard to the subjects' practice and knowledge about ITN, 159(60.2%) have been taught about ITN. The rest, 105 (38.8%) have never been taught about ITN. In terms of availability, only 25% of the

subjects replied that there was no shortage of ITN. But the majority, 198(75%) admitted that there was not enough number of ITN in their home.

The majority of the subjects 114 (43.18%) have only a single ITN in their home, while

only an individual said that there were five or more ITNs at home (Table 2).

**Table 2: Number of ITNs Found in Each Household, N=264**

	1 ITN	2 ITNs	3 ITNs	4 ITNs	>=5 ITNs
How many ITNs are there in your home?	114 (43.18%)	98 (37.1%)	47 (17.8%)	6 (2.27%)	1 (0.38%)

In relation to the availability of ITN at home, subjects were asked whether they had slept under ITN the night before data collection day. About 135 (51.14%) household heads didn't sleep under ITN while the rest, 129(48.86%), slept under ITN. Data from the same subjects also shows that for various reasons they never used ITN, 72(27.27%), though they have at least one. About 89 (33.7%) household heads admitted that they used ITN always while a larger number of the respondents, 103 (39.01%), believed that they use ITN only sometimes. In terms of proper

utilization, only 87(32.95%) households believed that they *always* check whether the ITN was stretched properly while 92 (34.85%) checked only sometimes. The rest, 85 (32.2%), never checked the proper stretching of the ITN while they are sleeping under.

Of the participants, 113(42.8) indicated that supplying ITN is the government's responsibility. Only 7.96 % individuals bought ITN from shops by themselves (Table 3).

**Table 3. Measures Taken by Households in the Face of ITN Shortage (There is multiple response), N=264**

Response	Frequency	%
Asked for Government to provide	113	42.8%
Forced children to sleep tightly	98	37.12%
Kept silent/do nothing	78	29.55%
Bought from shop/market	25	9.47 %
Reported at the health center	15	5.68%

The averages of all the constructs taken to assess the beliefs as well as the attitudes of the subjects regarding their utilization of ITN were below the cut point of that variable considered, indicating the majority of the subjects of the study scored low in

each of the variables in focus. On the other hand, the standard deviation of the variables was low, indicating skewed distribution of the subjects' responses (Table 4).

**Table 4: Means and Variances of Perceived Susceptibility, Severity, Threat, Benefit, Self-efficacy, and Attitude, N=264**

Variable Considered	Mean	Variance
Respondent's Perceived Susceptibility	21.5985	28.796
Respondent's Perceived Severity	22.8258	38.951
Respondent's Perceived Threat	20.2955	29.312
Respondent's Perceived Benefit	24.8106	28.787
Respondent's Self-Efficacy	19.4280	28.787
Respondent's Attitude	12.1212	26.921

**Respondents'****Beliefs**

From the responses of the participants, it is possible to understand that the majority, 208 (78.8%), have low perceived susceptibility. More than three-fourth, 193 (73.1%), of the subjects have lower perceived severity of malaria while 182 (68.9) of the households scored higher

in their perceived barriers to ITN use. Only 69 (26.1%) participants believed that the cost of using ITN was lower than the benefit that they can obtain from it. People's perceived self-efficacy was also measured and found to be appealing in that 115 (43.6%) have attained higher score (Table 5).

**Table 5: Subjects Classified by Their Scores on Perceived Vulnerability, Severity, Threat, Benefit and Self-efficacy, N=264**

Variable Name	Low	Medium	High
Perceived Susceptibility to malaria	208 (78.8%)	13 (4.9%)	43(16.3%)
Perceived Severity of malaria	193(73.1%)	1(0.4%)	70(26.5%)
Perceived Barriers of ITN use	69(26.1%)	13(4.9%)	182(68.9%)
Perceived Benefit of ITN	149(56.4%)	12(4.5%)	103(39%)
Perceived Self-efficacy	149(56.4%)	-	115(43.6%)

**Respondents' Attitude**

The majority of the subjects had negative attitude, 197(74.6%). Only 67 (25.4%) of the them had good or positive attitude towards ITN. This in turn implies that the majority of the subjects are less likely to use the ITN to prevent malaria.

**Utilization of ITN at Home**

In an attempt to disclose the extent to which people use ITN for the intended purpose, a question was posed as "What are the uses of ITN at your home". From Table 8, the responses can be classified into three broad categories: some mentioned ITN's

use as related to mosquito and other insects biting such as to prevent malaria, to prevent mosquito bite, to prevent other insects' bite, and to protect oneself from disease; some others said ITN is important for dressings like as bed sheet, head cover, clothing; the rest mentioned that ITN is important for domestic use such as carpet, curtain, sieve,

collecting straw, water purifier. The second and third categories indicate that some people were not using ITN for the intended purpose. For various reasons, people were not using the freely distributed ITN, rather they were using it for sale and other domestic consumptions (Table 6).

**Table 6: Importance of ITN at the Households Under Study, N=264**

Response	Frequency	%
To prevent mosquito biting	236	89.39%
To sleep under	197	74.62%
To protect oneself from disease	180	68.18%
To prevent insects like "Binbi"&"Almaz Balechira"	179	67.80%
To protect dirt during sleep	167	63.26%
To prevent malaria	102	38.64%
To get heat during sleep	97	36.74%
As domestic container	91	34.47%
As curtain	79	29.92%
To collect straw	76	28.79%
As carpet	57	21.59%
As head cover	53	20.08%
As sieve	47	17.8%
For clothing	37	14.02%
For sale/ To generate income	30	11.36%
As bed sheet	19	7.2%
To sift/filter water	13	4.92%
To decorate house	5	1.89%

It is possible to have three clusters of reasons as to why people were not using ITN. The first was subjects' knowledge, misunderstanding (misconception); the second was problems related to ITN itself and its chemical and third subjects' behavior. Under the first category, we can observe reasons like not knowing the importance, lack of education, and lack of information as to how and when to use the

ITN. In the second category, undermining ITN's effectiveness to prevent malaria, leaving the issue of malaria to God, completely relying on medication, belief that malaria is inevitable despite ITN use, taking malaria as seasonal, lack of trust in ITN, belief in sufficient food rather than ITN use, and belief that malaria is from God and thus despite any effort there will be malaria. The third category, i.e.

problems related to ITN includes the irritating feeling subjects' have from the chemical ITN dipped in, the ITN they have may not fit their bed, feeling breathlessness and stressed while sleeping under ITN, the smell of the chemical in which the ITN is dipped in, and feeling uncomfortable while sleeping under ITN.

The last category included reasons like getting bored to stretch the ITN every day, carelessness, forgetting, hatred/disliking ITN, using the freely given ITN for sale, and unaffordable price of ITN. These were some of the basic reasons that the households believed why people were not using the freely distributed ITN to prevent malaria (Table 7).

**Table 7: Reasons for Not Using ITN to Prevent Malaria, N=264**

<b>Attribute</b>	<b>Frequency</b>	<b>%</b>
Getting Bored to do it every day	132	50%
The burning nature of the chemical of the ITN	126	47.73%
Unaffordable price of ITN	105	39.77%
Thinking malaria is seasonal so is prevention using ITN	101	38.26%
ITN can't fit their bed	98	37.12%
Feeling of Hotness from the ITN while sleeping under it	97	36.74%
Feeling breathless, stressed while sleeping under ITN	95	35.98%
Lack of sufficient education about ITN	89	33.71%
Hatred to the smell of the chemical in which the ITN is dipped	87	32.95%
Lack of sufficient number of ITN at home	84	31.82%
Leaving the issue of malaria on God	83	31.44%
Completely relying on medication	79	29.92%
Carelessness	77	29.17%
Thinking that malaria can be prevented by having sufficient food	77	29.17%
Disliking/hatred	73	27.65%
Not knowing the importance	71	26.89%
Forgetting	69	26.14%
Lack of trust on ITN	68	25.76%
Lack of understanding	67	25.38%
Lack of information as to how and when to use ITN	65	24.62%
Undermining ITN's importance	58	21.97%
ITN is not comfortable	58	21.97%
Bad thinking that despite ITN use there will be malaria	57	21.59%
Thinking malaria is from God thus can't be prevented	52	19.70%
Using the freely given ITN for sale	30	11.36%

**Peoples' Understanding of the Mechanism of Malaria Transmission and Prevention**

Above anything else, people's understanding of the mechanism of malaria transmission is the key for its prevention process. In this regard, a question was posed to assess people's understanding of malaria transmission. The largest number of individuals consider mosquito bite (the most responsible reason), not using ITN, and swampy areas, pond water, and stagnant water. Fewer people also believed that female mosquito and not spraying chemical at home are responsible reasons for malaria transmission (Table 8).

A significant number of individuals mentioned surrounding dirt, lack of personal hygiene, biting insects like "Bimbi", inhaling breathes of the victim, sleeping with the infected, not using insecticide, lack of sufficient food, hot climate, infected blood transfusion in health institutions, not feeding at the proper time, strong fatigue with sun heat, and broken, old and useless items at home as means of transmission for malaria. These indicates the subjects' misconception of the way malaria is transmitted.

**Table 8: Transmission Mechanisms of Malaria, N=264**

Response category	Frequency	%
Mosquito bite by Not using ITN	167	63.26%
Mosquito bite	139	52.65%
Swampy areas, pond water, and stagnant water	123	46.59%
Not using insecticides	99	37.5%
Not feeding at the proper time	98	37.1%
Not spraying chemical at home	87	32.95%
Insect biting like "Bimbi"	79	29.9%
Lack of sufficient food	79	29.9%
Strong fatigue with sun heat	73	27.65%
Female mosquito	64	24.24%
From surrounding dirt	49	18.56%
Hot climate	32	12.12%
Lack of personal hygiene	27	10.22%
Infected blood transfusion	23	8.7%
Broken & old items at home	17	6.43%
Inhaling breathes of the victim/ through breathing	12	4.55%
Sleeping with the infected	5	1.89%

Quite related to the mechanism of transmission, understanding of the way to prevent malaria transmission is important. Once again, we may classify the responses

given as the correct responses and misconceptions of subjects' under the study (Table 9). Drying out ponds/swampy areas, using ITN properly and spraying

home with chemicals were some of the correct mechanisms of preventing malaria which were mentioned by the majority households under the study. Despite these correct answers, some people believed that malaria can be prevented by closing doors and windows in time, disposing garbage in a pit, wearing more clothes at a time, burning litter, keeping utensils clean

sleeping fully dressed, closing doors early and smoking in the room/house, regular physical exercise, and keeping personal hygiene. Even if some of these responses were really important for people's basic health condition, these may not be directly involved to prevent malaria.

**Table 9: Preventive Measures of Malaria, N=264**

Response category	Frequency	%
Using ITN properly	178	67.42%
Spraying home with chemicals	103	39.01%
Drying out ponds/ swampy areas	101	38.26%
Closing doors and windows in time	86	32.58%
Closing doors early and smoking in the house	79	29.92%
Rushing to clinic immediately when sick	79	29.92%
Keeping personal hygiene	67	25.38%
Sleeping fully dressed	65	24.6%
Burning litter	46	17.42%
Putting on more clothes at a time	45	17.05%
Dispose garbage in a pit	25	9.47%
Keeping clean utensils	24	9.09%
Regular physical exercise	18	6.82%

## DISCUSSION

This study shows that a significant number of subjects, 105 (38.8%), have never been taught about ITN. This result is similar to the one obtained by Gashaw and Wagari (2008) in Wonago Woreda in which case 41.0% had never heard of educational messages on mosquito nets. Moreover, 27.27% don't use ITN at all while 39.01% use it only sometimes. This is much higher than the findings of Gashaw and Wagari (2008) in Wonago which identified 13.0% people who didn't use the net the time of

survey. Thus, lack of information i.e poor knowledge of advantages of ITN use is observed. In most cases, the reasons for not using the ITN are similar to that of Ayalew and Amsalu's (2009) study.

On the other hand, 236 (89.39%) of the households believed that ITN was useful to prevent mosquito biting and 102(38.64%) believed that it was important to prevent malaria. Similar but larger figure was also obtained by Gashaw and Wakgari (2008) in

Wonago Woreda of SNNPR that 97.5% of subjects believed sleeping under ITN has benefit. Despite such significantly right response, a number of households of the current study also mentioned some unintended uses of ITN which indicate that these households were not using it properly and consistently.

With regard to the participants' knowledge of the mechanisms of malaria transmission, the current figure was much higher than that reported by the Net Mark Survey (2004) in which only 37% of the respondents reported mosquito bite as the cause of malaria. However, it is much lower than the findings of Ayalew (2010) which depicted that 98.2% of the subjects correctly pointed out mosquito bite as the cause of malaria. Moreover, Gashaw and Wakgari (2008) found out that only 42.3% of their subjects mentioned mosquito as the main transmission mechanism.

On the other hand, the misconceptions pertinent to malaria transmission that the participants identified were similar to that of Ayalew's (2010) findings. The subjects' misconceptions were not only regarding the mechanisms that malaria was transmitted but also the prevention methods. Likewise, some households believed that closing doors and windows in time, disposing garbage in a pit, wearing on more clothes at night, burning litter, keeping utensils, clean keeping personal hygiene, closing doors early and smoking in the room/house, regular physical exercise, sleeping fully dressed, and rushing to clinic immediately when get sick are some of the mechanisms to prevent malaria transmission. These kinds of misunderstandings were also found by Yared, Ayalew, Tefera, and Kora (2008) in their assessment of ownership and use

of bed net in urban communities of Assosa Zone and by Gashaw and Wakgari (2008). This indicates the need for hard work to raise people's awareness and bring about behavioral change by using effective behavioral change communication to fight against malaria.

The majority (78.8%) of the subjects' perceived susceptibility was low. Only 43(16.3%) of the respondents perceived themselves as vulnerable to malaria. According to the Health Belief Model (Glanz, et al 2002), this indicates those individuals were less likely to use preventive mechanisms such as ITN. For instance, the subjects may use the ITN for other domestic services as can be observed from Table 8. Catania (1990) also emphasized that perceived susceptibility has a significant relationship to risk behaviors, independent of knowledge. A perception of personal vulnerability is generally regarded as a prerequisite to undertaking modifications in behavior to prevent a disease (Darrow, 1989).

In this study the majority, 193(73.1%), of the respondents' perceived severity of malaria was lower indicating that the majority were less likely to use ITN as a preventive measure. This might be due to the repeated and frequent occurrence of the disease within the community and its being treatable. In this regard, Darrow (1989) underlined that to be motivated to take preventive actions, a person must perceive a disease as having serious consequences.

More than half of the subjects, 182(68.9%), were also with higher level of perceived barriers of ITN use. Thus lower availability in the market and high price of ITN might be reasons for low perceived capability to buy and use by themselves as well as misconceptions and misunderstandings of ITN use. This study also indicates that more

than half of the subjects, 149(56.4%) have lower perceived self-efficacy. According to the Health Belief Model (Glanz, et al 2002), the majority of the subjects don't have that perceived capacity to use ITN properly by themselves. This can be seen in the form of being dependent on government for the supply of ITN, inability to buy ITN by oneself, failure to use the ITN always and properly, as well as their failure to handle the ITN properly. On the other hand, Becker (1990) stressed that self-efficacy affects people's choices of behavioral settings, the amount of effort they will expend on a task, and the length of time they will persist in the face of obstacles.

The result indicates that most of the households, 149(56.4%), have lower perceived benefit of ITN. The perceived costs and benefits of changing high risk behaviors, not using ITN properly and consistently, and self-efficacy to make the appropriate changes were expected to influence the commitment to change high risk activities (Catania, 1990). Accordingly, subjects were less likely to use ITN to prevent the transmission of malaria.

According to the Health Belief Model of health and illness, it is not only the subjects' belief that matters but also their attitude. Like wise, only around 25% of the households were found with positive attitude while the rest, 197 (74.6), have negative attitude towards ITN. The fact that most of the subjects have negative attitude for various reasons implies a deterring effect on the households' use of ITN to prevent them from malaria. Ajzen (1991), in his theory of planned behavior, also underscored that behavioral intentions, using ITN properly and consistently, are influenced and moderated by attitudes that the individual holds toward the behavior and by the subjective norms regarding the behavior.

## **CONCLUSION**

This study, conducted in three towns of Jimma Zone, showed that the majority of the people who were living in those malarious areas do not use ITN properly and consistently as intended. This was supported by the evidences that majority have low perceived susceptibility to malaria, low perceived severity of malaria, low perceived benefit of malaria, low perceived self-efficacy to use ITN and higher perceived barriers to use ITN properly and consistently. Moreover, the majority of the households have negative attitude towards ITN. Above anything else, the subjects mentioning of ITN's importance other than the intended one shows that these people are not using it effectively. Moreover, they don't know the right preventive measures to be taken to prevent malaria and they are not aware of the means of transmission.

## **RECOMMENDATION**

Therefore, some more concerted effort should be made to avoid misconceptions and misunderstandings. Moreover, awareness raising and sensitizing the peoples' responsibility to use ITN properly and consistently are vital in the fight against malaria. Of course, mere knowledge of malaria and its transmission as well as prevention mechanisms do not guarantee desirable behavioral change. And thus, a balance of knowledge, belief, and positive attitude toward ITN should be maintained for its effectiveness in the fight against malaria.

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