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Utilization of Insecticide Treated Net and Associated Factors Among Pregnant Women in Dera District, North-West Ethiopia.

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BAHIR DAR UNIVERSITY

COLLEGE OF MEDICINE HEALTH SCIENCES

**SCHOOL OF PUBLIC HEALTH, DEPARTMENT OF Health
Systems Management and Health Economics**

**Utilization of Insecticide Treated Net and Associated Factors
Among Pregnant Women in Dera District, North-West
Ethiopia.**

By: Wondale Alebachew (Bsc)

**A THESIS RESEARCH SUBMITTED TO COLLEGE OF MEDICINE AND HEALTH
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COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH, DEPARTMENT OF HEALTH
SYSTEMS MANAGEMENT AND HEALTH ECONOMICS

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Full title of the thesis Research

UTILIZATION OF INSECTICIDE TREATED
NET AND ASSOCIATED FACTORS AMONG
PREGNANT WOMEN IN DERA DISTRICT,
NORTH-WEST ETHIOPIA,2021

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Acronyms' and abbreviations

AOR	Adjusted Odd Ratio
CI	Confidence Interval
CBHI	Community Based Health Insurance
HAD	Health Development Army
ITN	Insecticide Treated Nets
IUGR	Intra uterine growth retardation
LLIN	Long-lasting Insecticide Nets
MIP	Malaria in Pregnancy
SNNPR	South Nation nationality people representative
SPSS	Statistical Package for Social Science
SSA	Sub-Saharan Africa
USA	United States of America
WHO	World Health Organization

ABSTRACT

Introduction One of the most effective ways to prevent malaria prevention is sleeping under an insecticide treated bed net. In Ethiopia insecticide treated bed net intervention as one of the most malaria prevention strategy is being practiced. Insecticide treated bed net intervention in Dera district started in 2006 and currently 95% were accessed but utilization was not well known.

Objective:- To determine the magnitude of utilization of Insecticide Treated Net and identify Associated Factors among Pregnant Women in Dera district, North-West Ethiopia,2021.

Methods. A community based-cross-sectional study was conducted in Dera district and the study subjects were selected by multi stage sampling techniques. To select the participants, health post pregnant registration book was used as sampling frame. A total of 591 pregnant women's were included in the study. Data was entered through EPidata 4.6 and exported to SPSS Version 23 for further analysis. Binary logistic regression were used to identify the potential determinants. P-value and 95% confidence interval was used to measure the level of significance on multi-variable analysis.

Results: Among 570 pregnant women surveyed, utilization of Insecticide Treated Net in pregnant women's were 38.2% (95%,CI : 34.2,42.1) .Responses rate of respondents were 96.6% and the mean age of respondents was 30.27 years with SD 14.6 years. Educational status (AOR=1.96; 95% CI : 1.04,3.67) , member of community based health insurance (AOR=0.45; 95% CI: 0.22, 0.90) and Antenatal care visit(AOR=3.18;95% CI : 1.03,9.8) were statically significance variables for Insecticide Treated Net utilization among pregnant women.

Conclusion& Recommendation: Utilization of insecticidal net was low as compared with previous evidence, and Antenatal care visit, educational status and member ship of community based health insurance were the factors associated with insecticidal net utilization. Formal educational status, respondents who were membership of community based health insurance were good utilization of Insecticide Treated Net , therefore, to increase Insecticide Treated Net utilization, conclude that strengthen female educational level, Antenatal care follow up with service counseling and member of community based health insurance .

1. INTROCUCTION

1.1. Back ground

Mosquito nets treated with insecticide – known as insecticide treated nets (ITNS) or bed nets were developed in the 1980s for malaria prevention. Utilization of long-lasting insecticide treated net (LLITN) is one of the main vector control activities in malaria prevention strategy. It has a killing, repellent and physical barrier effects against mosquito. World Health Organization (WHO) recommends that all risk persons, particularly pregnant women and infants, sleep under Long lasting insecticide treated nets (LLINs) during the night[1]. Seventy six percent of Africa's population is at high risk for malaria, children, and pregnant women are particularly vulnerable. Africa accounts for 89% of malaria cases, with 85% of deaths occurring in children under five years and almost 68% of Ethiopian population lives in malarias areas covering 75% of the land. The diverse eco-climatic conditions in the country make the malaria transmission pattern seasonal and unstable usually characterized by frequent focal and cyclic widespread epidemics.[2] .Other studies indicate that in estimation 25 million pregnancies are at risk of developing malaria in sub-Saharan Africa every year[3].Globally 23 million pregnant women were not utilize ITN [4].In Ethiopia, distribution of ITNs through the health care delivery system was first introduced in returnee and resettlement sites in the Western part of the Tigray Region, in 1997. In 1997-2006, ITNs were also distributed in Oromia, Amhara and Southern Nation Nationality Peoples Republic (SNNPR) regional states with the support of WHO and Italian Co-operation and in the district also introduced in 2006 up to know the coverage of ITNs were 95% [2].

Malaria still remain a major problem in Ethiopia especially among Pregnant women's[3]. ITNs are one of the effective tools in the prevention of malaria ,this great tool has been proven to be highly effective in all parts of the world as an effective method of reducing man–vector contact and child morbidity and mortality[5].The World Health Organization (WHO) recommends the use of insecticide-treated nets (ITNs) as mitigation strategies for malaria prevention. Similarly, one of the goals of the National Malaria Strategy in Ethiopia is to ensure that vulnerable individuals such as pregnant women protected from malaria by enhancing ITN utilization. even though, the Abuja declaration targets agreed upon by African heads of state in 2000 aims to provide at least 80% of pregnant women with ITNs by the year 2005, only 63% of pregnant women was utilize ITN in Ethiopia [6].

Before the development of insecticide treated nets (ITNs) as a new technology in the mid-1980s, people in many countries were already using different types of nets, mainly to protect themselves against insects' bites and for other cultural reasons. It was only recently appreciated that a net treated with insecticide offers much greater protection against malaria; not only the net act as a mechanical barrier to prevent mosquitoes come into contact and bite humans, but also the insecticide repels, inhibits, or kills any mosquitoes attracted to feed[7]. ITN utilization can provide protection of up to 90% and significantly reduces the incidence of malaria during pregnancy as well as its complications [8]. Study conducted in six sub Saharan Africa the number of pregnancies malaria outcome shows that 5520 for miscarriage (restricted to women enrolled before 28 weeks gestation and including loss to follow-up until last visit date), 6909 for stillbirths and 6583 for congenital malformations (restricted to live-births and stillbirths[9]. Timing of ITN use during pregnancy is important, because of the effects of malaria infection complication, risk of miscarriage would be increased [10].

According to the Ethiopian Ministry of Health , near to 20 million LLINs were delivered in the country between 2013 and 2015 with participation of health workers, community volunteers, and the local authorities[3]. In Ethiopian prevention of malaria goals using LLIN by 2015 to address 100% of LLIN coverage, and more than 80% of use of LLINs, have not been achieved yet[6].Therefore, the aim of this study was woman to determine the magnitude of Utilization of Insecticide Treated Net and Associated Factors among Pregnant Women in Dera district , North-Western Ethiopia.

1.2. Statement of the problem

Malaria poses a tremendous public health problem across the globe with an estimated 40% of the world's population living in areas of malaria risk and an estimated 300–500 million malaria episodes and at least one million malaria deaths occur annually and It also a leading cause of morbidity and mortality worldwide, especially in pregnant women and particularly Tropical Africa where at least 90 percent of malaria deaths occur [2].Malaria threatens the lives of 3.2 billion people globally and exacts a great toll on vulnerable pregnant women and children, killing an estimated 1 to 2 million yearly and causing illness in about 300 to 500 million among the two groups due to their high vulnerability [5]. In sub shah ran Africa, malaria infection during pregnancy contributes directly to 25% of all maternal deaths[11]. Africa is a malaria-endemic region where approximately 25 million women become pregnant annually and 15% of them is affected by malaria. Ethiopia is one of the hardest hit of the countries in malaria-

endemic countries of Sub-Saharan Africa, where the disease accounts for 11% of maternal mortality and its complicated effects are most common among pregnant women [5].

Use of ITNs among pregnant women is below national and international targets; the median use of an insecticide treated net (ITN) the previous night among pregnant women across 37 countries for 2009–2011 was 35.3% [10]. In Ethiopia, the prevalence of malaria during pregnancy varies from 6.1% to 10.4%, which is a public health problem. But, this terrible problem can be eliminated or reduced by appropriate utilization of insecticide treated nets for all pregnant women[3]. Currently as one of malaria prevention and control strategy, ITN utilization in Ethiopia is very far from the Global roll back malaria action plan for millennium development goal which is planned to achieve 80% coverage and utilization of ITN in pregnant in malaria's area by 2010 [2]. The severity of malaria is worsened by pregnancy as a result of distinct malarial parasites that bind to the placental [12]. Malaria infection during pregnancy poses substantial risk to the mother, her fetus, and neonate which doesn't use ITNs[5]. Malaria during pregnancy is one of the fatal diseases which mostly lead to the death of the mother and the fetus abortion.

The impact which doesn't use ITNs during pregnancy were: intrauterine growth restrictions, intrauterine fetal death, and stillbirth and as apart from the high maternal and infant mortality associated with the disease, it leads to delivery of premature infants and low birth weights due to intrauterine growth retardation (IUGR) resulting from placental Para citation and the effective use of ITN is shown to reduce malaria transmission by 90% and miscarriages and stillbirths by 33%[3]. The use of bed net over time starting from 2010 to 2016 decreased from 83.6 to 36.5% [12].

Utilization of long-lasting insecticidal net was low, and place of residence, exposure status to malaria during their current pregnancy, and family size were the factors associated with long-lasting insecticidal net utilization. Pregnant women are four times as likely to get sick from malaria and twice as likely to die from the disease if they are not using LLINs [1]. Less priority was given for malaria risk groups like children and pregnant women to sleep under ITNs [13] .

Malaria is among the leading of ten top diseases in Woreda among them pregnant women were highly venerable which account 5.6 % total malarias , which results two pregnant death due to malarias in 2013 annual reports. Even if different studies conducted in this area the limitation were institutional based which result may not be representative for the community so, the study solve the limitation by conducting community based study with optimum sample size and by

knowing the two new variables which is membership of community based health insurance and functional health development army (HDA) will have a determinant factor on pregnant ITNs utilization or not. Therefore, this study aims to determine the magnitude of Insecticide Treated Net utilization and Associated Factors among Pregnant Women in Dera district, North-Western Ethiopia

1.3 Significance of the study

Information concerning determinants of pregnant ITNs utilization was insufficient in Ethiopia. This paper examines determinants factor of pregnant women ITNs utilization in dera woreda .Therefore;

This study helps to identifying factors and show the health care administrators how Pregnant ITNs utilization was low and its burden on the community. The former studies were facility based and can't address the relevance variable, the study try to address such limitation .It also used to higher official to provide concerns in their program and to do farther analysis throughout Amhara region about determinants ITNs utilization. It also used to Amhara Regional State health bureau and stakeholders including nongovernmental organization (NGO) show the factors and incorporates additional ITNs utilization factors in pregnant women's and develops relevant interventional strategies. For the pregnant women to enhance the continuous utilization ITN and for community, to reduce malaria morbidity and mortality. Additionally, used as a reference for researchers who may conduct related studies in the future.

2. Literature Review

2.1. Utilization of ITN among pregnant women

In the world, an estimated 125 million pregnancies are at risk from malaria each year. LLINs are a powerful public health malaria preventing tool [10]. study showed that utilization of ITN among pregnant women was in Awabel district North West Ethiopia 33.6%, Amhara region (48.4%), at national level (35.3%), SNNPR (45.1%), Tigray region 33.3% , Kenya (82%) , Ghana 42.5%, Southern Nigeria 37.5%, and Uganda 35% [1,2,5,12] .

The main determinant factor of utilization were education status , knowledge of malaria, community involvement, parity and ANC follow up and service counseling[2,5,12,14] .The strategies adapted were packaged in the Abuja Declaration of African Summit on Roll Back Malaria in April 2000 in which African regional leaders expressed commitment to ensuring that 60% of pregnant women in malaria endemic areas accessed effective malaria preventive services by the year 2005 and utilization of ITN in pregnant women were 39% and 77% in Nigeria and Uganda respectively [15]. The level of awareness of pregnant women concerning the use of ITNs was high [16] .

Approximately 75% of Ethiopia's landmass is malaria endemic and the coverage and proper utilization of the most promising malaria preventive measure, insecticide treated bed nets (ITNs), in the country is also limited due to lack of sustainable distribution and issues related to replacement of nets, seasonality of malaria, and poor knowledge of the community with regard to the link between mosquitoes and malaria[17].ITN utilization did not meet universal LLIN coverage in malaria's areas, 44 percent of pregnant women slept under an LLIN the night before the survey[15]. Other study conducted in north Ethiopia 58.4% had slept under a net the night before 76% of urban and 56.7% of rural women and it was positively associated with educational status, household ownership of radio and living in urban area[18]. A study conducted in Ghana by Binka etal, showed that the time of the year during which the nets were delivered affects use. In their study, 99 percent of the net recipients were found to use the nets during rainy season, while only 20 percent used it during the dry season[2]. The delivery of free or subsidized LLINs (or vouchers) to pregnant women through ANC services is a key strategy for controlling malaria and increases utilization and use by pregnant women[10]. A study conducted in Arbaminch Zuria district Southern Ethiopia in 2009, showed, that the proportion of pregnant women and children less than five years who slept under ITNs the night preceding the study was 35% and 40.3% respectively. In these study

Utilization of bed net among pregnant women varies from 15.8% in Shashogo District, Southern Ethiopia to 90.5% in Enugu, South Eastern Nigeria. Studies in different areas of Nigeria showed that utilization of bed nets among pregnant women is 44.2% in Ibadan, 21.3% in Edo state, and 44% nationwide. Utilization of bed nets among pregnant women in Bungoma County Kenya is 82.5%, Kilif district, Kenya is 70.5%, in the Democratic Republic of the Congo is 78.4%, in the Buea Health District, Cameroon is 83.4%. In different parts of Ethiopia bed net utilization among pregnant women indicated that 72.5% in Damot Pulasa District, Amhara Region, 73.3% in Eastern Ethiopia, 52.3% in Itang, Gambella region and Trends of bed net utilization on average from 2010 to 2016 only 47.2% pregnant women utilized a bed net. [3,12,15,18]. study conducted by Dadi Jimma in 2010, showed that, from ITN-owning households, 53.2% of all persons had slept under an ITN the prior night, including (60.9%) of women 15 - 49 years of age, and (65.7%) of pregnant women [12]. The age of caregiver was strongly associated with the utilization of ITN among children less than five years. Caregivers aged 26-35 were 49% times less likely to use an ITN as compared to those aged between 17 and 25 and the difference was statistically significant[5].

Low utilization and compliance rates were observed. Participants' educational status, family size, employment and residential areas significantly influenced ITNs utilization. The women knew and learned about ITNs from ANC visits. Majority of the women did not own ITNs because of lack of access to free distribution. The coverage of ITNs was 58.7% but only 11.5% used ITNs regularly, Only 22.1% knew the proper usage of ITNs[7, 18]. A community based cross-sectional study were showed that the pregnant women who slept under the ITN the night before the study were (65.7%) Jimma, (35%), Arbaminch, , (14.7%) Adama district and (58.4%) northern Ethiopia districts respectively. [16,17,18] .A community based cross-sectional study was conducted on assessment of knowledge, attitude and practice about malaria and ITNs utilization among pregnant women in Shashogo District, Southern Ethiopia showed that a total of 398 pregnant women participated in the study and their overall knowledge and attitude towards malaria and ITNs was fairly good; 74.3 % of the mothers had good knowledge and 51.1 % of them possessed positive attitude. nevertheless, only 15.6 % of the mothers associated mosquitoes with malaria and majority of them (65.6 %) responded that it is transmitted due to poor personal hygiene and environmental sanitation. younger age, receiving information and information obtained from health extension workers and media were found to be important predictors of pregnant women's attitude (P < 0.05). the ITNs utilization was poor. Utilization of ITNs was promising, there are still significant number of

participants who demonstrate hanging and tucking improperly[19].Lack of access to nets was reported as a major problem by 91.4% in urban site and 65.5.% in rural areas. Lack of money was not mentioned as a barrier for not owning nets, but 4.8% did not know the reason why their households had no nets [7, 18]. Consistent and proper use of nets by pregnant women should be ensured through information campaigns [18].other study show in Amhara region 61.29 % reported that malaria is a preventable disease using bed nets and , 56.95% of pregnant women were slept under bed net every day [20].

2.2. Factors associated with LLIN utilization of the pregnant women

According to Andersen’s original behavioral model, there are three major categories of health service utilization determinants. these include; predisposing factors, enabling factors and need factors[21].

2.2.1 Predisposing factors

Factors associated with LLIN utilization of the pregnant women In the simple logistic regression analysis, place of residence, marital status, family size, to use LLIN are the factors which showed significant association with LLIN utilization and Pregnant mothers from the rural community were 71% less likely to use LLIN compared with pregnant women from the urban community. maternal age, income, gravidity, parity, abortion and accessibility to ITNs were significantly associated with current usage of ITNs[8].

Higher education was identified as the determining factor for ITNs utilization. Correct use of ITNs with special focus to uneducated and pregnant mothers[6]. A community based cross-sectional study was conducted in Harari National Regional State on Ownership and utilization of insecticide-treated nets (ITNs) for malaria control, the utilization of ITNs based on history of sleeping under net in the previous night was 73.3%. Regarding proper use of ITNs, 57.9% of respondents demonstrated proper hanging and tucking. Those households with secondary school education, knowledge about ITNs use and knowledge of malaria transmission by bite of mosquito have more likely hood to own ITNs. Cross-sectional study design was conducted on Trend of declining bed net utilization among pregnant women in Ethiopia2010–2016 ; showed that Out of 2657 mothers included in the study, more than half,(63.6%,) of the study participants were in the age group between 20 and 29 years. The trend of bed net utilization decreased from 83.6% in 2010 to 36.5% in 2016. The trends of bed net utilization decreased from 2010 to 2016 in Arba Minch. Utilization of bed net by pregnant women in the area need to be increased as it is malaria endemic. The government

should strengthen the existing bed net distribution strategy. Further research is needed to investigate the cause of decreasing bed net utilization[12].

2.2.2 Enabling factors

Lack of access to bed nets is an important barrier to use of nets by pregnant women[11].Community-based cross-sectional study of 815 pregnant women in eight malaria's kebeles in northern Ethiopia showed that knowledge about the cause, transmission and preventive measures of malaria was relatively good; 90.2% of women associated malaria with mosquito bites and 94.2% with living near water ponds. Ten per cent reported malaria illness within the 14 days before the survey, and sought treatment mainly from public health facilities (56.5%).attitude towards ITN utilization is influenced by socio-cultural expectations and negative attitude towards use of ITNs as a prevention measure has led to misuse of ITNs[22].Other study in Nigeria show that 80.0% of the respondents have heard of ITN either through the health facility, radio/television or through a friend and 92.4% had a favorable attitude toward ITN while 17 (7.6%) respondents had an unfavorable attitude[23]. Other finding conducted in Jimma only 41.9 % of the LLINs were hung over the sleeping areas while 54.6 % of the nets were kept folded. LLIN access and use by district and place of residence show that 51.9 % of the study population had access to LLIN within the households, with mean access 54.7 % and LLIN access was the highest in Kersa district and the lowest in Goma. Likewise, the rate of access to LLIN was higher in rural than urban settings [24].

Other study conducted in Asgede Tsimbla District, Northern Ethiopia, 2017 showed that among 550 pregnant women surveyed, 63.1% of the pregnant women slept under a long-lasting insecticidal net the night before the survey. Urban residence, family size of >5 and history of malaria during their current pregnancy were found to be the factors associated with pregnant women's long-lasting insecticidal net utilization. Other study conducted in Adis Zemen from May 1 to 30, 2018, showed that a total of 226 pregnant mothers attending antenatal clinics participated in making the response rate 100%. Seventy point eight percent of mothers had good utilization of insecticide bed net. Mothers who had an educational status of college and above were 2.8 times more likely to utilize insecticide-treated bed net than mothers who could not read and write. mothers whose age was >30 were 70% times less likely utilized insecticide-treated bed net than mothers whose age was 30 and less. Utilization of insecticide-treated bed net by pregnant women is low in the study area. The participants' age, educational status, and husband educational status were significantly associated with

utilization of insecticide-treated bed net[3].The knowledge of malaria and its preventive measures in pregnancy was 71.5%. There was a statistically significant association between knowledge of malaria and educational status. Insecticide-treated net utilization was 42.6%; however, its use declined from 28.5% before pregnancy to 24.6% during pregnancy. The knowledge and use of malaria preventive measures among pregnant women at antenatal care booking clinic are very important factors[25].The levels of knowledge and attitude of study participants regarding to prevention of malaria using ITN indicated that 64.8% and 47.1%. And other study in Myanmar show that ITN utilization in pregnant women were 46.6%. Of all nets, 31.3% had holes or had already undergone repairs. in terms of insecticide treatment status, 52.9% of bed nets were untreated and 35.9% of ITNs had not been treated with insecticide for more than a year[19].

2.2.3. Reinforcing [need] factors

Malaria experience during their current pregnancy, perceived malaria severity, perceived barriers to LLIN utilization, usage of ITNs during last pregnancy, previous history of malaria, usage of ITNs by other family members and perceived self-efficacy to use LLIN are the factors which showed significant association with LLIN utilization [8]. Other study was conducted in southwest Ethiopia only 63.8% reported to have used a LLIN the previous night. Age, marital status and education of household heads, as well as household size and cooking using firewood were associated with the access to enough LLINs within households. Decreased access to LLINs at households was the main determinant for not achieving $\geq 80\%$ household members sleeping under a LLIN the previous night. other associated factors were household size and education level of household head[26]. Other study conducted in Bench Maji zone show that 44.27% of households were using ITN at night before the date of data collection of which 90.4% were properly hanged it. Among ITN users under five children and pregnant mothers utilization rate of ITN was 40.33% and 36.7% respectively. Other finding in northern Ethiopia show that 60% of the pregnant women ITN utilization were in the third trimester of gestation, 37.7% in the second, and only 2.3% in the first, while multigravida was more common in rural (85.4%) than urban (74%) areas [18].

3. Conceptual frame work

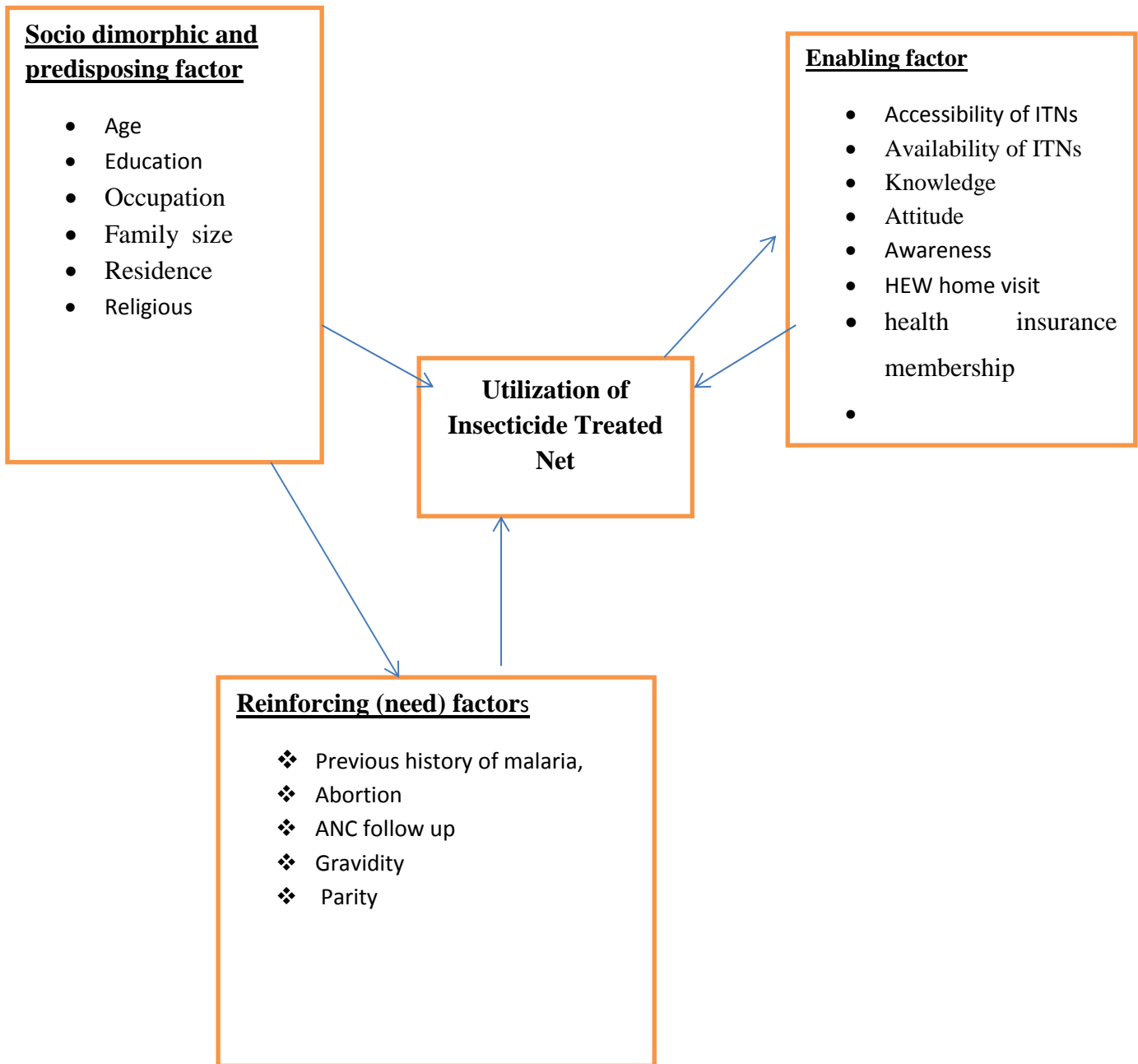


Figure 1 Conceptual framework of ITN utilization of pregnant women and associated factors in dera district 2021

4. OBJECTIVES

4.1. General objective:

- ❖ To assess the utilization of ITN and its associated factors among pregnant women in Dera district , North-West Ethiopia,.2021

4.2. Specific objective:

- To determine the utilization of insecticide treated net among pregnant women in Dera district, North-West Ethiopia, 2021
- To identify factors associated with utilization of insecticide treated net among pregnant women in Dera district , North-West Ethiopia,2021

5. Methods and Materials

5.1. Study area

Dera district were found 610 km away from Addis Ababa, the capital city of Ethiopia, 42 km from Bahir Dar and 80 Km away from Debretabor. It is found at South Gondar Zone of Amhara Region. The district was the biggest in South Gondar Zone. The district whether condition were 45 % kola and 55% Woyinadega , it has a total population of 303971, of whom 150184 are men and 150786 are women. The expected numbers of households were 70598 of this total expected pregnancy is 10243. Currently the district has 39 administrative kebeles and regarding to health infrastructures it has 11 health centers and 40 health posts. In the district ITN supplementation coverage was 95% . Even if ITN supplementation coverage is 95% there were high prevalence of malaria in the district. The total case of malaras ware 35594, among them pregnant women accounts 5.6% according to 2012 EC annual report [27]. According to woreda health office department report of 2012, malaria was reported as leading cause of health institution visit and the topographic feature is favorable for the incidence of malaria in the district.

5.2. Study design and period

Community based cross sectional study was conducted at Dera District from April 1 to April 30 ,2021.

5.3 Population

5.3.1. Source population

The source population were all pregnant women who had ITN in their home in Dera district .

5.3.2. Study population

All pregnant women who supplied ITN that live in selected kebeles during the data collection time.

5.4 Eligibility criteria

5.4.1. Inclusion criteria

- Pregnant women's who had /supplied ITN and who lives in selected kebele were included in the study.

5.4.2. Exclusion criteria

- Pregnant women's who are seriously ill were excluded from the study.

5.5. Sample size determination and Procedure

5.5.1. For the Objective One

1. Sample size was determined using single population proportion formula using 63.1% Long-Lasting Insecticidal Net Utilization from a study conducted in Asgede Tsimbla district, northwestern Ethiopia [28]. Using 95 % confidence interval and 5% margin of error =sample size was calculated as follows.

$$n = (Z_{\alpha/2})^2 * p (1-p)/d^2$$

2. $d = \text{Precision of the estimate} = 0.05$
3. $Z = \text{value at 5\% level of significance } (\alpha) = 1.96$
4. $n = (1.96)^2 * 0.63 * 0.37 / (.05)^2$
5. $n = 358$. Therefore, by adding 10% non -response rate, the sample size is 394. Final sample size is 591 since multistage sampling method is employed and a design effect of 1.5 is considered.

5.5.2. Sample size for the second objective

Second sample size was calculated by using power approach with Epi-info7 computer software using 95% CI and power of 80%. Taking factors associated with ITN utilization as reference , a similar study conducted rural population northern Ethiopia family size[18] , in Asgede Tsimbla District, Northern Ethiopia educational level[28] and other study conducted in Jimma zone south west Ethiopia house hold home visit by HEW [2] variables respectively.

Table 1: Sample size calculation using power approach for utilization of ITN and associated factors at Dera district North West Ethiopia 2021

Factors	Factors group	Assumption	Sample size
Family Size	>5	Percent of controls exposed 25.3%,Percent of cases with exposure=37.9% Case to control ratio=1:2, Power=80%, CI=95%, OR=1.8	170
Educational level of Women	Able to read and write	Percent of controls exposed 20%,Percent of cases with exposure=34.4% Case to control ratio=1:2, Power=85%, CI=95%, OR =2.1	119
Household by HEW	Yes	Percent of controls exposed=15%,Percentof cases with exposure=26.1% Case to control ratio=1:2, Power=80%, CI=95%, OR=2	339

Even if design effect is considered for the second objective, the sample size calculated for the first objective was higher than the sample size obtained for the second objective So, sample size obtained for the first objective was taken as final sample size. Therefore, by adding 10% non -response rate, the sample size was 394. Final sample size was 591 since multistage sampling method is employed design effect 1.5 is considered.

5.6 Sampling procedure

The district has thirty nine (39) kebeles. First, twelve (12) kebeles were selected by lottery methods[29]. Then, sample size was allocated to each selected kebeles by using proportional allocation from the total sample size. Finally, systematic sampling technique was employed to select the study participants from pregnant women registration book at kebele health post as sampling frame.

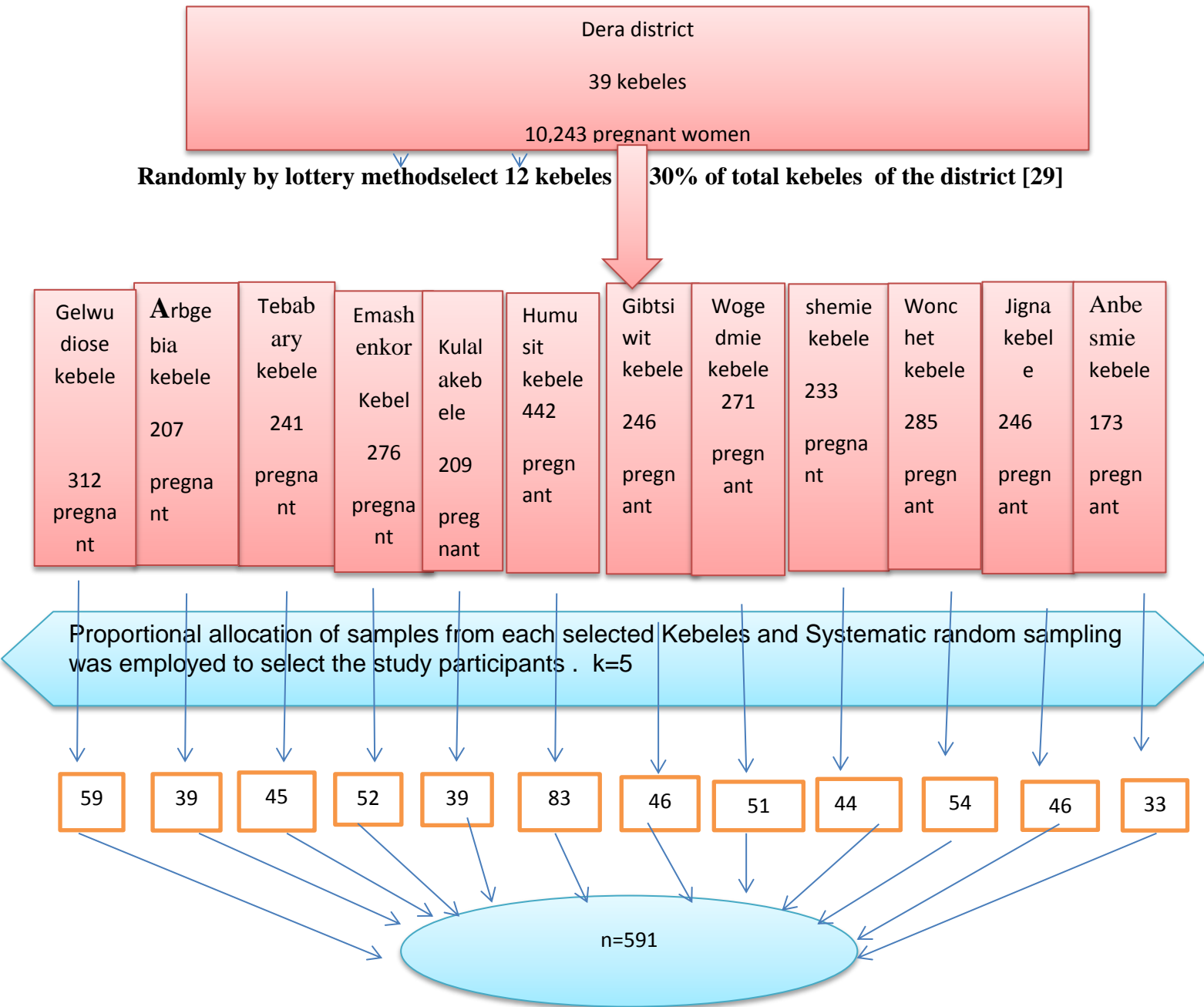


Figure 2 Schematic presentation of Sampling procedure 2021

5.7. Study variables

5.7.1. Dependent variable

Utilization of insecticide treated net

5.7.2. Independent variables

- Age
- Education
- Occupation
- Family size
- Residence
- Religious
- Accessibility of ITN
- Availability of ITN
- Knowledge
- health insurance membership
- previous history of malaria,
- abortion
- ANC follow up
- Gravidity
- Parity
- health development army leader

5.8. Operational definitions

Utilization of ITNs was measured based on six ITNs utilization related yes/no questions, like by asking pregnant women sleep under ITN in the previous night and hanged ITN observed during survey [2 ,3].

- I. **Good Utilization:** those pregnant women who scored 50% and more correct response for ITNs utilization related questions was considered as good utilization [3].
- II. **Poor Utilization:** those pregnant women who scored less than 50% correct response for ITNs utilization related questions was considered as poor utilization [3]

Knowledge of ITN utilization The knowledge of ITN utilization was assessed by seven yes/no question. The yes response of the respondents was the correct response labeled as 1 and No was the wrong response labeled as 0. After summarized the result scored 50% and above considered as **good knowledge** on ITN utilization, whereas below 50% considered as not having/**poor knowledge** about ITN utilization [3].

***Intact ITNs-Nets** that has no any visible holes or tears on its parts.

****Usable ITNs-Nets** which have < 5 holes or < 3 tears having not more than 1 and 2cm width respectively, and considered by the data collector as usable.

*****Un-usable (worn out) ITNs-Nets** which have >4 holes or >2 tears having more than 1and 2cm width respectively, or nets that are not hanged and considered by the data collector as no more usable [2].

5.9. Data collection tools and procedures

A structured pre-tested questioner was used prepared from reviewing different literatures [3,12 ,15, 18]. The questionnaire was first prepared in English and translated to local language (Amharic) and to check whether the translation was consistent with the English version and it was back retranslated. Amharic version of the questionnaire was used to collect the original data. The data collection was handled by 4 diploma nurses and 2 supervisor BSc nurse from April 1 to April 30, 2021. Both the data collectors and supervisor were given two days intensive training before the actual work about the aim of the study, procedures, and data collection techniques going through the questionnaires question by question, art of interviewing, ways of collecting the data and clarification were given.

5.10 Data quality Control

Pre-test was conducted on 5% of the samples in Fogera district at kuahr kebele outside the study area before the actual data collection. Data collectors and supervisor received a two days training regarding the questionnaire interviewing techniques, purpose of the study, confidentiality and importance of privacy. The supervisors checked the collected data for completeness and clarity through the data collocation period and the necessary corrections were made on the field. After data collection the supervisor also check the consistency and completeness of the question.

5.11. Data processing and analysis

The collected data were entered, cleaned and coded by Epi data version 4.6 statistical software and exported to SPSS version 23 for further analysis. Cross tabulations were used to summarize descriptive statistics such as frequencies and percentages of the data using tables and figures. Both bi-variable and multivariable logistic regression was employed and model of fitness was checked by Hosmer Lemeshow test. On bi-variable analysis a p-value less than 0.25 was used to select candidate variables for multi-variable analysis. P-value and 95% confidence interval were used to measure the level of significance on multi-variable analysis and those variables whose P-value less than 0.05 were considered as statistically significant.

5.12. Ethics approval and consent to participate

Ethical clearance was obtained from the Ethical review board of Bahir Dar University College of Medicine and Health Sciences. Supporting letters were received from Amhara public health institute and Dera district health office. Information on the purpose of the study

and the right not to participate were assured for the study participants during informed verbal consent. Any information taken from the participants would be kept confidential. In order to keep confidentiality during data collection, we were use code rather than name.

6. RESULTS

6.1. Socio-Demographic characteristics

A total of 570 pregnant women responded to the interview, making a response rate of 96.6%. The mean age of respondents was 30.27 years with SD 14.6 years and 57.9% pregnant women were in the age group of 26 to 35. Five hundred twenty nine (92.8%) pregnant women were married. Five hundred forty-five (95.6%) pregnant women were Orthodox followers and 47.5% pregnant women were farmer. Five hundred sixty nine (99.8%) women were Amharic ethnicity followed. One hundred sixty (28.1%) pregnant women un able to read and write education level while 73 (12.8%) pregnant women attended secondary education. Three hundred eleven (54.6%) pregnant women were from rural resident. Two hundred seventy seven (48.6%) pregnant women were with a family size <4. (Table 2)

Table 2: Socio-demographic characteristics of respondents in Dera worda, Amhara region, northwest Ethiopia; 2021.

Variables(n 570)	Category	Frequency	(%)
Age	15 - 25	146	25.6
	26 - 35	330	57.9
	>=36	94	16.5
Residence	Urban	259	45.4
	Rural	311	56.6
Marital status	Married	529	92.8
	single	21	3.7
	Other (widowed and divorced)	20	3.5
Religion	Orthodox	545	95.6
	Muslim	24	4.2
	protestant	1	0.2
Ethnic group	Amhara	569	99.8
	Oromo	1	0.2
Level of Education	Unable to read and write	160	28.1
	Able to read and write	197	34.6
	primary education	91	16.0
	Secondary education	73	12.8
	Technique and above	49	8.6

Occupation	House wife	111	19.5
	Farmer	271	47.5
	Merchant	113	19.8
	Government employee	57	10.
	Daily labor	18	3.2
Family size	<4 children	277	48.6
	>=4children	293	51.4

6.2. ITN utilization among pregnant women

The utilization of ITN in pregnant women were 38.2% (95%,CI : 34.2,42.1) and information heard about ITN were, 317(55.6%). Of this 127 (47.1%) of them heard from health extension workers, 78(29.1%) of the respondent mentioned that they heard from health center /health personnel's,37(13.8%) heard from television/radio and only 17(6.8%) heard from HAD. Almost all respondent agree that ITN can prevent malaria, 536(94%). Majority 269 (47.2%) respondents indicated that priority should be given for pregnant women and children to sleep under ITN in case of shortage in the household.

Majority 222 (54.4%) of pregnant responded that malaria is a common health problem of their community. About 322(56.5%) of the respondents indicated that malaria is transmitted by mosquito bite, 48(8.4 %) mentioned that dirty /stagnant water, 104(18.4%) by cold weather/rain. Almost all respondent indicated that malaria is preventable, 551(96.7%).

Pregnant ITN utilization Dera District North West Ethiopia, 2021

Pregnant ITN utilization participants at Dera district North West Ethiopia 2021 was 38.2% with 95% CI= 34.2, 42.1%.

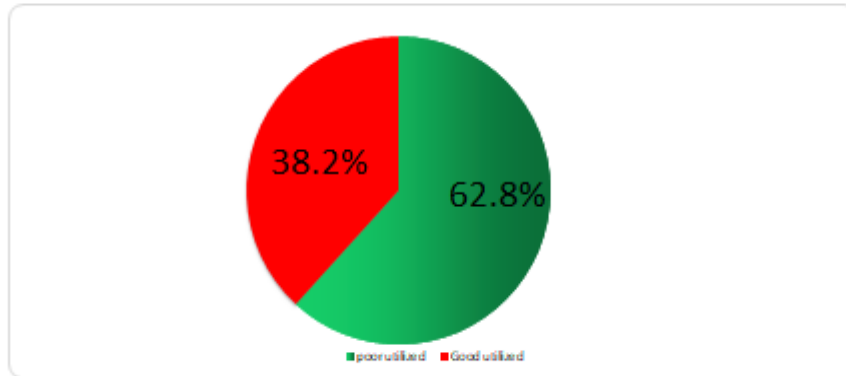


Figure 3 Pregnant women ITN utilization in Dera District North West Ethiopia, 2021

Table 3: pregnant ITN utilization characteristics and associated factor in dera woreda, Amhara Region, north west Ethiopia; 2021.

Variable	Category	Frequency	Frequency (%)
information about ITN utilization	yes	317	55.6
	no	253	44.4
Where do you get the information	Health center	78	29.1
	Health extension	127	47.1
	Community meeting	9	3.4
	HDA	17	6.3
	Radio	37	13.8
Do you know benefit of ITN	Yes	553	97
	no	17	3
Benefit of ITN	Prevention of malaria	423	76.4
	Prevention from other insect bite	131	23.6
Prevention of malaria	Yes	536	94.0
	no	34	6
Priority sleep under ITN	Head of the house hold	145	25.4
	Mother and father	156	27.4
	Pregnant women & children	269	47.2
Malaria is common health problem	yes	222	54.4
	no	186	45.6

How can malaria transmitted	Mosquito bite	322	56.5
	Cold weather	104	18.2
	Dirty water	48	8.4
	Sun shine	3	0.5
Is it possible to prevent malaria	yes	551	96.7
	No	19	2.3
prevent malaria to	Bed net use	351	61.6
	IRS/DDT house spring	102	17.9
	Early Dx and Rx	65	11.4
	Environmental sanitation	52	9.1
method prefer to prevent malaria	Bed net use	354	62.6
	IRS/DDT house spring	106	18.6
	Early Dx and Rx	53	9.3
	Environmental sanitation	57	10
Method practice to prevent malaria	Bed net use	357	62.7
	IRS/DDT house spring	74	13
	Early Dx and Rx	63	11.1
	Environmental sanitation	59	10.4
	I don't now	17	3
Risk group to malaria	Under five	126	22.1
	Pregnant women	203	35.6
	Adult	3	0.5
	All	238	41.8
Member of CBHI	Yes	317	55.6
	No	253	44.4
Membership of CBHI contribution to ITN utilization	Yes	341	83.0
	No	69	16.8
ANC follow up	Yes	501	87.9
	no	61	10.7
	don't know	8	1.4
No ANC visit	Yes	236	57.8
	No	172	42.2
Sleeping under ITN in the previous night	Yes	358	64.3
	No	212	37.2
Ever own ITN in the household	Yes	561	98.4
	No	9	1.5
Proper hanged ITN during observation	Yes	330	59.5
	No	240	40.5
Condition of ITN during observation	Intact	316	55.4
	Usable	198	34.7
	Unusable	56	9.8
Knowledge about ITN utilization	Yes	399	70
	No	171	30

6.3. Knowledge about ITN utilization

From all, 570 participants 399(70%) and 171 (30%) were having poor and good knowledge about ITN utilization respectively

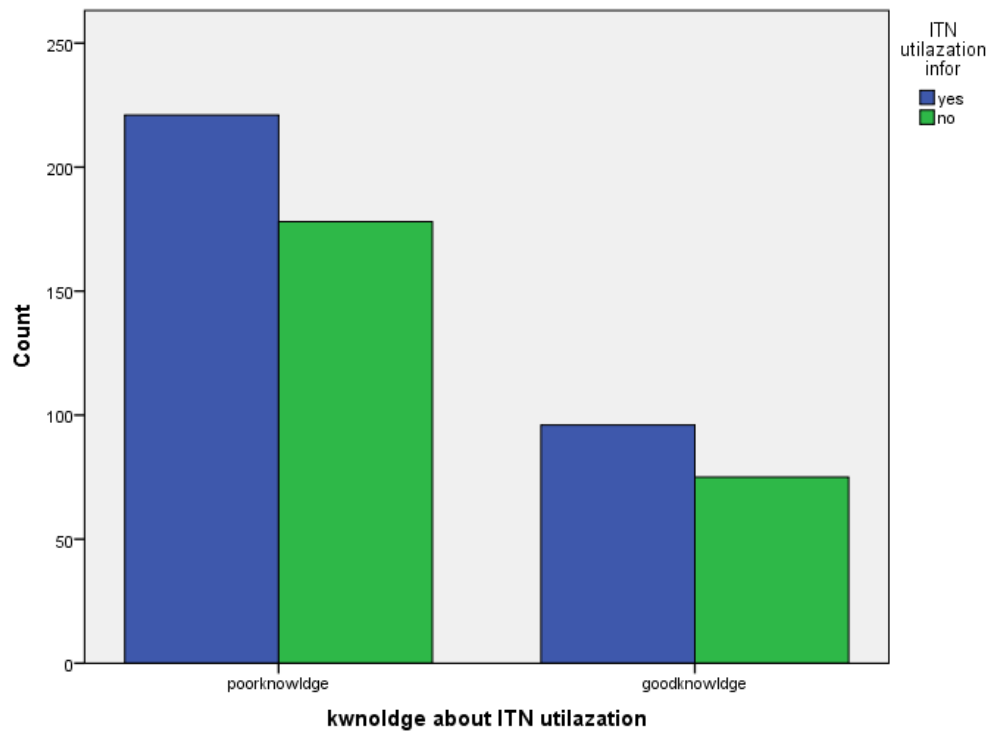


Figure 4 : Knowlage about ITN utilization in Dera district North West Ethiopia 2021

6.4. Factors Associated with utilization of ITN among pregnant mothers

Bivariable analysis showed that there was statistically significant association between ITN utilization and educational status, occupation, membership of CBHI, knowledge about benefit of ITN, source of information about ITN utilizations, ANC visit, information from HDA about ITN utilization, conditions of the ITN during observation, HEW household visit for ITN utilization, and knowledge about ITN utilization with p value ≤ 0.25 , were candidate variables for bivariable logistic regression analysis. In multivariable analysis: educational status, member of CBHI and ANC visit were statically significance variables. The ITN utilization level among Pregnant mothers with read and write were 1.96 times more likely to utilize ITN than pregnant women's with unable to Read and write (AOR =1.96 (95% CI:1.04,3.67)). Those pregnant women's without membership of CBHI were 55 % decrease to utilize ITN than those pregnant women with membership of CBHI (AOR = 0.45, 95% CI: :0.22, 0.90). Pregnant women who had ANC visit were 3.18 times more likely to utilize ITN than those who had not ANC follow up (AOR=3.18;95% CI : 1.03,9.8) .

Table 4 Bivariable and Multivariable Logistic Regression Analysis for utilization of ITN and its associated factors among pregnant women in Dera district , North-Western Ethiopia,.

Variable	Category	ITN utilization		COR(95%CI)	AOR(95% CI)
		Good	Poor		
Educational level of mother	Unable to read and write	126	180	1	1
	Read and write	90	174	1.39(0.98,1.95)	1.96(1.04,3.67)*
Occupation	farmer	72	39	0.847(.542, 1.322)	3.48(0.33,36.88)
	Civil servant	69	44	.997(.645, 1.541)	5.12(0.55,47.08)
	Merchant	211	135	1	1
Member of CBHI	Yes	134	183	1	1
	No	84	169	1.47(1.04,2.07)	0.45(0.22,0.90)*
knowledge on benefit of ITN	Yes	209	344	1	1
	No	9	8	0.54(0.21,1.42)	0.82(0.58,1.1)
Past History of Malaria	Yes	82	149	0.82(0.58,1.16)	1.03(0.5,2.11)
	No	136	203	1	1
Source of Information about ITN use	Health center	22	78	1	1
	Health extension	45	82	0.8(0.35,1.90)	1.93(0.68,5.47)
	Community meeting	5	4	0.14(0.52,2.40)	1.79(0.43,7.43)
	Had	7	10	2.60(0.59,11.48)	5.58(1.05,29.62)
	Radio	12	25	1.45(0.44,477)	1.5(.68,3.3)

ANC visit	Yes	182	324	0.43(0.25,0.73)	3.18(1.03,9.8)*
	No	36	28	1	1
Received information from HDA about ITN use	Yes	86	167	1	1
	No	138	185	0.72(0.51,0.1.01)	0.96(0.48,1.91)
HEW Household Visit	Yes	151	259	1	1
	No	67	93	0.80(0.55,1.17)	1.17(0.55,2.48)
Conditions of the ITN during observation	Intact	81	190	1	1
	Usable	45	66	0.71(0.29,1.69)	1.7(0.36,7.92)
	Unusable	9	15	1.13(0.45,2.82)	1.3(0.61,2.78)
knowledge about ITN utilization	Poor	164	325	1.51(1.0,2.20)	0.86(0.41,1.8)
	Good	54	117	1	1

Note * indicates significant at p-value of <0.05

7. DISCUSSION

Among 570 participants, utilization of Insecticide Treated Net in pregnant women's were 38.2% (95% CI : 34.2,42.1) .Responses rate of respondents were 96.6% and the mean age of respondents was 30.27 years with SD 14.6 years. Educational status (AOR=1.96; 95% CI : 1.04,3.67) , member of community based health insurance (AOR=0.45; 95% CI: 0.22, 0.90) and Antenatal care visit(AOR=3.18;95% CI : 1.03,9.8) were statically significance variables for Insecticide Treated Net utilization among pregnant women.

This study realized that the ITN utilization rate of pregnant women was 38.2% (95% CI : 34.2,42.1) which were lower than the study done at Uganda(77%), Ghana (42.5%), Nigeria (72.5%), arbaminchizuria (47.5%), Amhara regional stat (48.4%) and WHO recommendation of (80 %) ITN utilization [12 ,15 22] . Our finding was higher than the study in Tigray region(33.3%). But in this study showed that the finding were in line with the study conducted at Southern Nigeria (37.5%) , Uganda 35% [18] and Ethiopian national level (35.3%) [12 ,15, 16, 18]. The possible explanation may be endemic property of the area for malaria and the willingness of health professionals to provide health education and awareness at different times about the importance of ITN utilization.

Similarly other study conducted at Kenya (82%),Ibadan Nigeria(44.2%),afar regional state (79%) and Adiszemen (70.8%) were higher than our study finding. This might be difference in Variation in study duration and the government of Ethiopia has invested a lot to eradicate malaria as a result ,the magnitude of malaria infection in Ethiopia declined which make them provide less attention to malaria prevention and use of bed net[3,16, 17].

This study assessed predictor variables of ITN utilization by pregnant women In multivariate logistic regression model and identified significant association between pregnant womens' ITN utilization with ANC visit, educational status and member ship of community health insurance. similarly this is almost congruent with the study conducted in Nigeria [4], Uganda [22],and in Ethiopia awabel district[1] . This might be lead to increase the opportunity of getting information on how to use ITN during ANC visit. This study also revealed that the utilization of ITN was influenced by respondents' educational status. Pregnant women with read and write were more likely to utilize ITN when compared with those who were unable read and write, this study congruent in Similar studies done in , Nigeria [7], Uganda [22] and Sub-Saharan Africa [11] revealed that respondents who had able to Read and write were more likely utilized ITN than respondents who had unable to read and write and this finding

also in line with studies done in Ethiopia [12, 24, 28]. This association may be due to the fact that educated mothers can easily read and understand the information regarding malaria and ITN utilization. And in this finding pregnant mothers without membership of CBHI were decrease to utilize ITN than those who were membership of CBHI .This study also congruent with the study conducted at Uganda [22] and Nigeria [7] ,The association might be membership of CBHI had gate information about ITN utilization at health care since CBHI membership have good health seeking behaviors. A total of 322 (56.5%) of the respondents reported that malaria transmission is by mosquito bite. This finding was lower than the study done in Adama, Nigeria and Raya Azebo11 which were 80.5%, 96.7%, and 90.2%, respectively[6,11,12]. Overall, 357 (62.7%) of the respondents reported that malaria transmission can be prevented by effective utilization of insecticidal bed net, This was in line with the studies conducted in Amhara region (61.29%) and Adama districts which were 64.8%[1].

Pregnant women from the urban community were more likely to use ITN compared with the pregnant women from the rural community (AOR=1.9,95% CI:1.22,3.01). This was comparable with the studies done in Nigeria,a systematic review from SSA, and Adama district. This difference in utilization of ITN by residence may be explained by pregnant women from the urban community who were near to health professionals/health institution, mass media, and education and hence may be aware of malaria and LLIN importance.

This study realized that from 570 participants ITN utilization rate of the pregnant mother were reported that priority should be given for pregnant women, (47.9%) for under five children, 125(25.4%) for head of household 156(27.4%) for head and mother. The national guideline also recommends priority for pregnant women and under five children in prioritized economically and geographically vulnerable malarial areas [1] . This study revealed that for 410(71.9%) of the respondents their home was visited by health extension worker for proper utilization of ITN. The national guideline also recommend that health extension worker should use 50% of their working time on outreach activities specially house to house visit, health education and other environmental sanitation activities [2] .

8. Strength and Limitation of the study

The strength of the study was relatively large sample size and community based study. Whereas the limitation of study was Including all pregnant women in a household survey was difficult because all women did not know that they were pregnant and did not register all by health extension worker and the study was only qualitative design.

9. CONCLUSION

Pregnant utilization of insecticidal net were 38.2% ,which is low in the study area compared with previous evidence , and ANC visit, educational status and member ship of CBHI were the factors associated with insecticidal net utilization. Formal educational status, respondents who were member of CBHI were good utilization of ITN ., therefore, to enhance ITN utilization, it could be conclude that strengthen female educational status , regular ANC follow up with service counseling and mobilizing membership of CBHI.

10. Recommendation

Target specific intervention among pregnant women through local training and supervision about malaria prevention and sleeping under ITN, using IEC/BCC (information, education, and communication/behavioral communication change) material should be promoted in the district. formal educational level, respondents who were member of CBHI , were good utilization of ITN , therefore, to enhanced ITN utilization, I recommended that strengthen female educational status at woreda administration, close ANC follow up with service counseling at health care facility and strength mobilizing membership of CBHI at zonal district and kebele level.

. To health post

Community membership of community based health insurance should be strengthen
Continuing providing IEC/BCC intervention at each facility and community level to increase
Knowledge of community and ITN utilization and providing continuous information via
HAD, HEW

Continues home visit and observing for proper utilization of ITN and teach them on
Malaria prevention by using ITN

To health center

Providing continuous regular health education by using IEC/BCC materials

Strength mobilizing member ship of CBHI and regular ANC follow up

To researchers

Better if further study will be conducted by using other study designs like mixed qualitative and quantitative study designs and investigate the other determinant cause of decreasing ITN utilization.

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12. Annexes

I. Participant Consent information Sheet

Questionnaire ID _____
Name of District-----
Name of kebele_____

a. Participant information sheet

This sheet is to be read for the participants of the study

Good morning/afternoon, my name is ----- and I am one of the data collectors for the study being conducted by Bahir Dar University, College of Medicine and Health Sciences, School of Public Health to assess the utilization of ITN and its associated factors among pregnant women in Dera district, North-Western Ethiopia.

To be participant of this study if you give me consent after you have understood the following information sheet:

Title of the study: Utilization of Insecticide Treated Net and Associated Factors among Pregnant Women in Dera district, North-West Ethiopia

Background: Pregnant women are susceptible to symptomatic malaria due to invasion of the placenta by plasmodium. Malaria increases the risk of adverse pregnancy outcomes for mothers, the fetuses and newborns. The effective use of Insecticide Treated Nets (ITNs) would be of benefit to these vulnerable women

Objective: To assess the utilization of ITN and its associated factors among pregnant women in Dera district, North-Western Ethiopia

Benefit of the study:

- The study will serve as base line information for policy makers and planners on malaria prevention specifically on pregnant women.
- The finding will also be used by researchers and other who want to do similar work in other areas or similar setting
- To design for different malaria control and elimination strategies

Harm of the study: the study has no any harm without taking the participant's time during interview and discussion.

Rights of the participant at district:

- The participant can stop participating in the study at any time.
- During the review and interview, the participant can ask questions which are not clear

Confidentiality: - the secret of any information forwarded was maintained

Risks: There is no risk to you answering the questions or participated in this study.

Privacy: We will keep information about you private. We will not collect your name. We will not use any information that might identify you when we present or publish the study's results.

Payment: There is no cost to you being part of the study

Persons to contact:

This research project was reviewed and approved by the institutional review board of Bahir Dar University. If you have any question you may contact the following individuals.

Principal investigator: Mr. Wondale Alebachew, Bahir Dar University, College of Medicine and Health Sciences, School of Public Health, Health system and Project Management graduated

Email; wondalealebachew2011@gmail.com

Phone; =0918132798

Advisors: 1. Mr. Mohammed Hussien (PHD fellow): Bahir Dar University, College of Health Sciences, School of Public Health.

2. Mr. Desta. Debalkie (MPH): Bahir Dar University, College of Health Sciences, School of Public Health.

b.Informed consent form

Title of the study: Utilization of Insecticide Treated Net and Associated Factors among Pregnant Women in Dera district, North-West Ethiopia.

Good morning/afternoon, my name is ----- and I am one of the data collectors for the study being conducted Bahir Dar University, College of Health Sciences, School of Public Health on Utilization of Insecticide Treated Net and Associated Factors among Pregnant Women in Dera district, North-West Ethiopia

I have been informed that all the information I shall provide to the interviewer will be kept confidential. I understood that the research has no any risk. I also knew that I have the right to withhold information, skip questions to answer or to withdraw from the study any time I have acquainted nobody will impose me to explain the reason of withdrawal. I have assured that the right to ask information that is not clear about the research before and or during the research work and to contact

Investigator: Wondale alebachew ,Bahir Dar University

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Email:0918132798

Advisors: 1. Mr. Mohammed Hussien , Bahirdar University

Mobile: -----

Email:-----

2. Mr. Mr. Desta.Debalkie (MPH),Bahirdar University

Mobile: -----

Email:-----

I have read this form, or it has been read to me in the language I comprehend and understood the condition stated above, therefore, I am willing and confirm my participation by signing the consent.

Name of the participant _____

Agreed to participate in the study: Yes /No (mark one of them for verbal consent)

Signature _____ (if written consent)

Name of witness signature _____ (Data collector, supervisor, any third person)

Signature _____ Date _____

For Written Consent form

I, the undersigned, confirm that, as I give consent to participate in the study, it is with a clear understanding of the objectives and conditions of the study and with recognitions of the study and with recognition of my right to withdraw from the study.

ለሚጠናው ጥናት ማብራሪያ መስጫ ቅጽ

መግቢያ፤ ይህ የመረጃ ቅጽ የሚዘጋጀው ለሚጠናው ጥናት አስፈላጊ ማብራሪያ መስጠት ነው። የጥናቱ ዋና አላማ ምርምሩ በሚካሄድበት አካባቢ በደቡብ ጎንደር ዞን በደራ ወረዳ ሲሆን በነፍሰ ጡር እና ቶች ያለው ንጥል አጠቃቀም ሁኔታ እና ለመጠቀም የሚያስችሉ መንስኤዎች ናሉ ሆነ እና ለችግሩ መፍትሄ ለመጠቀም የሚያስችል ነባራዊ ሁኔታ ለማጥናት ነው። ቅጹ ን ለመሙላት የሚፈጀው ጊዜ 15 ደቂቃ ብቻ ነው።

የጥናት ዋና ተመራማሪ፡ ወንዳለ አለባቸው

የጥናቱ አማካሪዎች፡ አቶ ሙሃ መድ ሁሴን እና አቶ ደስታ ባልቁ (የባህር ዳርዲሽር ሲቴ የህብረተሰብ ጤና ትምህርት ቤት መምህራን)

ለጥናቱ የገንዘብ ድጋፍ የሚያደርገው አካል፡ አቶ ወንዳለ አለባቸው

የጥናቱ ዓላማ፡ የጥናቱ ዋና አላማ ምርምሩ በሚካሄድበት አካባቢ በደቡብ ጎንደር ዞን በነፍሰ ጡር እና ቶች ያለው ንጥል አጠቃቀም ሁኔታ እና ሲሆን በምንም ክንያት ሊከሰት እንደቻለ ለማወቅ እና ለችግሩ መፍትሄ ለመጠቀም የሚያስችል ነባራዊ ሁኔታ ለማጥናት ነው። ከጥናቱ የሚገኘው ውጤት በየደረጃው ለሚመለከታቸው አካላት በማድረስ ለችግሩ መፍትሄ የሚሆን ንጥል አቅድ ዝግጅት እንዲያደርጉ በመረጃ የተደገፈው ያደረጉት የጥናት መስጠት በውብ ሽታ የሚጎዱ ነፍሰ ጡር እና ቶች ን ለመታደግ እንዲያገዝድ ጋፍ ለማድረግ ነው።

በጥናቱ መሳተፍ ስለሚያስገኘው ጠቀሜታ

በጥናቱ እርስዎ በመሳተፍ ያደረጉት ህጋዊ ገዥ/የሚሰጥ ጥቅም እንደ ሌሎች ግልፅ ለሆኑት እውቀት ሁነገር ግን ይህ ጥናት ተጠናቶ ላለቀብኋለሁ ተገኘው ን መረጃ መስረት አድርጎ የሚመለከታቸው አካላት እንዲያውቁት በማድረግ አስፈላጊ የሆነች ግሩ ን ሚፈታ የአቅድ እና የአተገባበር አስተራቴ ጂዝ ግጅት እንዲደረግ ሙያዊ ድጋፍ ለማድረግ ዝግጁ መሆናችንን እንገልጻለን።

በጥናቱ መሰረት ፍሊፈጥረው የሚችለው ተፅዕኖ/ምቹት ስለመኖሩ

በጥናቱ እርስዎ በመሰረት ፈጠራ ምንም ዓይነት ችግር እንደሚኖረው መጠቀስ አለብዎት፤ ምን እንደሌለባት የማቀርብልዎትን ጥያቄዎች ለመመለስ የተወሰነ ሰዓት ልወስድብዎት እችላለሁ፤ በጥያቄዎቹ የሚሰጡኝን ማንኛውንም አይነት መረጃ ለማንም የማይደርስ መሆኑን እና ሚስጥራዊነቱ የተጠበቀ መሆኑን ልገልፅልዎት እወዳለሁ።

የተሳታፊው የፈቃደኝነት ቅጽ

ከዚህ ቀጥሎ የተሰጠኝን መረጃ በሚገባኝ ቋንቋ እንብቤ ወይም ተነባልኝ በትክክል

ተረድቻለሁ

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ይህ ጥናት በባህር ዳርዩ ኒቨሲቴ የህብረተሰብ ጤና ሳይንስ/ቤት ድጋፍና አስተባባሪነት ተማሪ ወንዳለአለባቸው ለምረቃ ሁፍ ጥናቱን እንደሚያካሂዱ

• የምንሰጣቸው መረጃዎች በሚስጥር እንደሚያዙ

• ጥናቱ ምንም አይነት ጉዳት እንደማያደርስብኝ

•

ጥያቄወካል ተስማማኝ ማቋረጥ ወይም ወደ ሌላ ጥያቄ መዘለል እንደምችልና ማንም ሰው ሊያስገድደኝ እንደማይችል

• በጥናቱ ምክንያት ምንም አይነት ጉዳት ሊያደርስብኝ እንደማይችል

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ጥናቱን በተመለከተ ያልገባኝን ገርቀጥ ሎ በተሰጠኝ አድራሻ ጠይቄ መረዳት እንደምችል ተገንዝቤ አለሁ፡

:

ከላይ የተሰጠኝን መረጃ በሚገባኝ ቋንቋ እንብቤ ወይም ተነባልኝ በትክክል ከተረዳሁ በኋላ በጥናቱ ለመሰረት ፍሊፈጥረው የሚችለው ተፅዕኖ/ምቹት ስለመኖሩ ፈቃደኛ ሆኛለሁ።

የተሳታፊው ስም ----- ፊርማ -----

የአጥኝው ስም ----- ፊርማ -----

Instruction: Circle the response provided by the interviewee or write the appropriate answer on the space provided.)

Woreda ----- Kebele----- Household No

Date of interview / /

.Annex English questions

Section 1: Socio-demographic background (predisposing factors)			
No.	Question	Answer	skip
1	Kebele	-----	
2	Age of respondent (in years)	-----	
3	Residence	urban -----1 rurals -----2	
4	Marital status of the respondent	Married ----- 1 Single ----- 2 Divorced ----- 3 Widowed ----- 4	
5	Educational status of the respondent	Unable to read and write -----1 Able to read and write only-----2 Primary schoo-----3 Secondary school -----4 Technique and above -----5	
6	Occupation of the respondent (multiple answers possible)	Farmer -----1 House wife-----2 Merchant -----3 Civil servant (Government. employee -----4 Daily laborer -----5 Other /specify/-----	
7	Ethnicity of the respondent	Amhara -----1 Oromo -----2	

		Tigre -----3 Other specify -----	
8	Religion	Orthodox -----1 Muslim -----2 Protestant -----3 Other /specify -----4	
9	Number of pregnant women in the household?	-----	
10	Family size in the household ?	-----	
Section 2: enabling factors of respondent (Knowledge, practice and attitude) about bed net/ITN utilization			
1	Have you heard about bed nets /ITN/ utilization?	yes-----1 no -----2	
2		Health centers /health personnel -----1 Health extension worker -----2 Community meeting/Church, market, Edir-----3 Health development army -----4 Rdio -----5 Other -----	
3	Do you know about the use/benefits/ of bed nets/ITN/?	yes-----1 no-----2	
4	If yes, what are the uses/benefits/ of bed nets /ITN/? (Multiple answers possible. Don't give options.)	Prevent from malaria/mosquito bites -----1 -It gives warmth -----2 Prevent from bite of other insects -----3 Other specify -----4	
5	ITN Can prevents malaria?	yes -----1 no-----2 don't know ---3	
6	Whom do you think has get	Head of household -----1	

	priority to sleep under ITN, in case of shortage in the household?	Head and mother -----2 Children under five ----2 Children under five*-----3 Pregnant mothers -----4 don't know -----	
7	Is malaria a common health problem in your community?	Yes-----1 No-----2 Don't now ----3	→
8	In your opinion, how can malaria be transmitted?	Mosquito bite-----1 Cold weather/rain----2 Dirty/stagnant water----3 Heat/sun shine-----4 Sleeping with sick person ----5 Other specify_____	
9	Is it possible to prevent malaria?	yes-----1 no-----2 don't now -----3	
10	If yes, how can we prevent malaria? Multiple answers possible. (Don't give choices).	Bed net /ITN/ use -----1 IRS/DDT/ house spray ---2 Early diagnosis and treatment –3 Environmental sanitation ----4 I don't know -----5 Other /specify_____	
11	Which method of prevention of malaria do you prefer?(multiple answers possible).	Bed net /ITN/ use -----1 IRS/DDT/ house spray ---2 Early diagnosis and treatment –3 Environmental sanitation ----4 I don't know -----5 Other /specify_____	

12	Which method do you practice to prevent malaria? Multiple answers possible!	Bed net use -----1 IRS/DDT sprays ---2 Early diagnosis and treatment --3 Environmental sanitation---4 Don't know -----5 Other (specify)-----	
13	are you member of CBHI?	yes-----1 no ----2 I don't know -----3	
14	if yes member of CBHI have contribution to ITN utilization ?	yes-----1 no-----2 I don't know --3	
Section 3. reinforcing (need) factor of respondent			
1	Do you have ANC follow up?	yes-----1 no-----2 I don't now ----3	
2	if yes, how many times do you visit ?	-----	
3	do you have information about ITNs utilization during ANC visit ?	yes-----1 no----- I don't ,know -----3	
4	do you have privacies history of malaria?	yes-----1 no-----2 I don't know -----,3	
5	What is your Gestational age ?-in wks	-----	
6	Gravidity?	Nulli parity -----1 Multi parity -----2	
7	parity ?	One ----1	

		two-----2 three----- More than three-----4	
8	do you have history of abortion ?	yes-----1 no -----2 I don't know-----3	
12	If yes what is the reason	Un known-----1 Due to malaria -----2 Different disease -----3 Other specify -----	

Section 4: Bed net /ITN/ utilization

1	Have your household ever own ITN/?	yes-----1 no-----2	
2	If yes, how many ITNs did you have?	-----	
3	Does your household have bed nets now?	yes-----1 no-----2	
4	If yes, how many bed nets does your household have now?	-----	
5	does the pregnant women has bed net now?	yes-----1 no-----2	
6	. if yes, where did you get it ?	Health institution -----1 Clinic ---2 shop-----3 other specify -----	
7	. when did you obtain it ?	with in year -----1 Two years ago -----2 Three years and above-----3	
8	How many bed nets do you need to have?	-----	

9	Are you willing to buy bed net if it is not distributed for free?	yes -----1 no -----2 I don't know -----3	
10	If yes, with in what price will you be able to buy the bed net? ___ birr	-----	
11	Are the ITN hanged now? (ask whether it is hanged or not)	yes-----1 no -----2 I don't know ----3	
12	If yes, is there any discrepancy between available and hanged ITN? (ask)	yes-----1 no----2 I don't know----3	
13	If any bed net is not hanged or there is discrepancy between available and hanged ITN, what is/are the reason for not hanging the ITN?	The ITN is being hanged at nigh----1 The sleeping place is not convenient to hang the ITN--2 I don't know how to hang the ITN -----3 The ITN is used for other purpose --4 Other specify ----	
14	How often you have used the ITN?	Daily ---1 Occasionally --2 During malaria seasons --3 Other specify -----	→
15	If not daily, what are the reasons for not using your ITNs daily?	There is no abundant mosquito --1 Dislike the suffocation of the ITN ----2 It is not malaria season -----3 Other /specify -----	
16	Is the Pregnan women sleeping under the ITN in the previous night?	yes-----1 no-----2 I don't know -----3	
17	If the Pregnant women didn't sleep under ITN, what was the reason?	Shortage of ITNs ---1 Discomfort to sleep under it --2	

		No place to hang the ITN ----3 The ITNs are damaged -----4 It is not malaria season -----5 Doesn't prevent malaria ----6 Other specify -----	
18	Have you visited by health extension worker for proper utilization of ITN in the last 12months?	yes-----1 no-----2 I don't know ----3	→
19	do you know your Health development army leader ?	yes-----1 no---2 I don't know ----3	
20	if yes do get information about ITN utilization from health development leader	yes-----1 no-----2 I don't know -----3	→
21	Have you ever sell ITN?	yes----1 no ----2	
22	If Yes in Qn. 4.21, what is the reason for selling the ITN?	Economical problem (to get money)-----1 Malaria is not a problem ---2 Unfavorable to use ITN ---3 Other specify -----	
23	Is there any bed in the house during Observation	yes -----1 no-----2	
24	Is there bed nets hanged during observation	yes -----1 no-----2	
25	The Conditions of the ITN during observation	Intact ----1 Usable ---2 Unusable -----3	→

*Intact ITNs-Nets that has no any visible holes or tears on its parts.

*Usable ITNs-Nets which have < 5 holes or < 3 tears having not more than 1 and 2cm width respectively, and considered by the respondent as usable.

*Un-usable (worn out) ITNs-Nets which have >4 holes or >2 tears having more than 1 and 2cm width respectively, or nets that are not hanged and considered by the respondent as no more usable.

Name of interviewer _____ sign _____ Date of
interview _____ Name of supervisor _____ signature _____

Declaration

I, the undersigned, MPH student declare that this thesis report is my original work in partial fulfillment of the requirement for the degree of Master of Public Health in Health Systems and Project Management.

Name: Wondale Alebachew

Signature: [Handwritten Signature]

Date: 09-02-2022

Place of submission: College of Medicine and Health Sciences, School of Public Health, Bahir Dar University.

Date of Submission: _____

This thesis work has been submitted for examination with my / our approval as University Advisor(s).

Approval of Advisors

<u>Name</u>	<u>Signature</u>	<u>Date</u>
1. Mr. Mohammed Hussien (MPH, PhD Fellow)	<u>[Handwritten Signature]</u>	<u>09 Feb 2022</u>
2. Mr. Desta Debalkie (MPH, Ass. Professor)	<u>[Handwritten Signature]</u>	<u>02/03/2022</u>
3. Asmamaw Keftman	<u>[Handwritten Signature]</u>	<u>12/05/2022</u>

