



ASSESSMENT OF MALARIA PREVENTION PRACTICES AND ASSOCIATED FACTORS AMONG HOUSEHOLDS IN PIGNIWUDO TOWN, GAMBELLA REGION, SOUTH WEST ETHIOPIA: COMMUNITY-BASED CROSS-SECTIONAL STUDY, 2021

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A RESEARCH THESIS TO BE SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF HEALTH, FACULTY OF PUBLIC HEALTH, DEPARTMENT OF EPIDEMIOLOGY IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF DEGREE OF MASTERS IN EPIDEMIOLOGY

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Abstract

Background: Malaria is easily preventable but remains a major public health problem in Ethiopia. Around 3.3 billion individuals worldwide are at risk of contracting malaria and 409,000 deaths. Factors that contribute to poor malaria preventive knowledge, attitudes, and actions have not thoroughly researched.

Objective: is to assess malaria preventive practices and associated factors among households in Pigniwudo town, Gambella region, south-west Ethiopia.

Methods: The community-based cross-sectional study conducted among 413 systematic randomly selected households in Pigniwudo town, south-west Ethiopia, 2021. Data was collected using interviewer-administered questionnaire. After checking for completeness, the data were entered into Epi-data 3.1 and analyzed using SPSS version 25. A descriptive summary computed and presented. Binary logistic regression analysis did to look for the association between dependent and explanatory variables. Then factors that were statistically significant at (P-value < 0.25) in Bi-variable analysis were included in multi-variable regression analysis and variables P-values <0.05 and CI not touch 1 were considered as significantly associated with malaria prevention practice. Hosmer-Lemeshow goodness of fit test was checked and conclusion was made for P-value >0.05.

RESULT: Data collected from 413 households, with a 100% response rate. The mean age of participant was 31 ± 8.8 SD. The overall malaria prevention practice of the society was 62.7%. Ages 25-34 with (AOR= 4.5, CI= (2.546, 8.032), ages 35-44 with (AOR= 4.9, CI= (2.435, 9.805) and ages above 45years 5.812(2.029, 16.65). Female (AOR= 2.922, CI= (1.891, 4.515), married (AOR= 1.740, CI= (1.035, 2.925), knowledge of breeding site of mosquito (AOR= 3.700 CI= 1.482, 9.235) and knowledge about malaria as preventable disease (AOR= 4.014, CI= (1.502, 10.731) and the occupation of farmer and private employees were found to have statistically significant association with malaria prevention practice.

Conclusion and recommendation: The overall malaria prevention practice of the study participants has found to be at acceptable and comparable level to other national findings and standards. Further strengthening of the program is important.

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List of abbreviations and acronyms

ACTs	Artemisin-based combination therapy
CDVs	Community drug vendors
FGDs	Focus group discussions
FMOH	Federal Ministry of health
HHs	Households
ICIPE	International Centre of Insect Physiology and Ecology
IRS	Indoor residual spray
ITN	Insecticide-treated nets
KAP	Knowledge, attitude, and practice
KIs	Key informants
LLITNs	Long-acting insecticide-treated nets
NGOs	Non-governmental organization
NSP	National strategic plan
PMI	President's malaria initiative
RHB	Regional health bureau
US	United States
WHO	world health organization

CHAPTER 1: INTRODUCTION

1.1. Background

Malaria is a protozoal disease of red blood cell. There are four parasite families, namely: *P. Vivax*, *P. malariae*, *P. falciparum* and *P. ovale*. The infected female anopheles mosquito can transmit malaria from person to person(1). Malaria can attack anyone; but pregnant women, infants, patients with human immune virus/acquired immune deficiency syndrome (HIV/AIDS) and ages less than five year children are the most vulnerable to dying of the disease(2,3). Malaria is easily preventable and curable disease if all prevention strategies applied well(4).The World Health Organization proposes a package of prevention techniques to reduce morbidity and mortality associated with the disease in malaria-endemic areas(5). malaria control has mostly focused on reducing the malaria burden through the use of insecticide-treated mosquito nets (ITNs) specifically long-lasting insecticidal nets (LLINs) and indoor residual spraying (IRS)(6). Malaria preventive education is one of the malaria preventive strategies that reduces the risk of getting the malaria and its associated morbidities by using effective behavior change communication to shift people's attitudes about malaria prevention strategies(7). Malaria prevention strategies in Ethiopia are vector control(epidemiological surveillance, ITN, IRS), diagnosis and drug-based prevention and treatment, and crucial support systems(8).

1.2. Statement of problem

Around 3.3 billion individuals worldwide are at risk of contracting malaria and developing the disease, with 1.2 billion of them at high risk, according to WHO report in 2019, around 229 and in 2018 there were 228 million new cases of malaria, 94% of these cases were in Africa region. And there were around 409,000 deaths related to malaria and again 94% in Africa region(9). HMIS reported 1,530,739 confirmed malaria infections and 365 deaths in Ethiopia between June 2016 and July 2017(10). The Gambella region is one of the most malaria-endemic locations in the world, with a 22 percent malaria-related fatality rate(11). Gambella has high migrants and large agricultural areas and in sense, a high malaria, and here malaria transmission lasts 6 months than other regions in Ethiopia(10).The prospective study in Gambella showed most of mothers didn't take preventive and therapeutic measurement against malaria(11). According to a

Gambella health office report from 2019, the region's malaria prevalence was 18.4 percent, with 102,053 malaria cases and 13 malaria deaths(12).

Malaria is not only the most critical health problem that African countries are currently experiencing, but it is also a huge impediment to their socio-economic progress. It has an impact on the health and wealth of nations; therefore, it has been seen as both an illness and a source of poverty. Malaria's direct costs include both personal and state expenditures connected to the disease's prevention and treatment. The indirect costs, on the other hand, include lost production or income as a result of disease or death(26,31). As malaria remains the most common communicable disease seen in Ethiopian health institutions, to improve the disease control program in malaria-endemic areas of the country, an integrated power that includes communities with their knowledge and practice is required. By 2018, the WHO advises that 72% of African households have at least one ITN, with roughly 57 percent of the population having access to one, and 40% of the population living in households with enough ITNs for all inhabitants(3). President's malaria initiative (PMI) expected to continue to assist safe and successful IRS implementation in 44 high-burden districts in the Benishangul-Gumuz, Gambella, and Oromia Regions, as well as give limited IRS support to 60 graduated districts, with fiscal year 2019 financing(14).

Many problems face Ethiopia's ongoing malaria control measures, including under-utilization of intervention, lack of sufficient and high quality data, gaps in service delivery and health system inadequacies, and low community awareness toward malaria and insecticide-treated nets (ITN)(10,15). Literature lists socio-demographic variables, individuals' resident, educational status, and household affluences' as factors that influence an individual's malaria prevention and control measures. Because of their high mass media access, Urban communities have more information access about malaria transmission and prevention methods than rural communities, and individuals from high wealth index households have better information on access because they can buy a radio and other information sources(16,17). Culture has a significant impact on malaria beliefs and habits, which can affect the effectiveness of control methods(18). Individuals' preferences and decisions about the adoption of preventive and control measures vary from community to community and among individual households' understanding of possible causes,

modes of transmission, and individual preferences and decisions about the adoption of preventive and control measures(19,20). The inadequacy of programs to consider community malaria prevention practices has contributed to their inability to achieve long-term control(21). People's actions may raise the risk of malaria, yet changing human behavior is difficult. Indeed, there are a variety of reasons why certain behaviors exist, and they are frequently linked to significant benefits in areas other than health(22).

By 2020, Ethiopia's PMI hopes that all households living in malaria-endemic areas would have the knowledge, attitudes, and practice to adopt optimal malaria-prevention and control behavior(8). The knowledge and attitude gap can interfere with the effectiveness of a control measure, such as vector control or chemotherapy. These issues are particularly important in tropical areas where malaria control options are limited because of the parasite and vector resistance to antimalarial drugs and insecticides, respectively. In such an area, an understanding of the communities' knowledge and attitude may be important to the success of specific malaria control measures. Therefore, this study investigates the community understanding of malaria transmission, their recognition of signs and symptoms, their treatment-seeking behavior, community preventive measures and practices such as bed net use and clearing of bushes around households, as well as the cultural context within which all of this occurs. The study intended to provide baseline information that would inform the design of malaria prevention and control interventions in the community.

Although numerous studies to assess the level of malaria KAP been done in different regions of the world, but no studies have been reported in practices of malaria prevention measures and factors behind it in the community levels in the Gambella region, especially in Pigniwudo town, even malaria is numerous. Despite the presence of numerous NGOs, hospitals, and private clinics, malaria cases remain high. According to a Pigniwudo primary hospital report from 2021, there were 2908 suspected and 798 confirmed malaria cases in the previous three months, and the region's malaria prevalence is 62 percent in 2019(23), indicating that the region is malaria endemic. The Gambella University study in 2019 aimed solely at determining the prevalence of malaria, despite the fact that 44 percent of participants never slept inside ITNs. Therefore, this

household survey intended to assess the level of malaria prevention practices and other factors hindering the prevention and control of malaria among the people living in Pigniwudo town.

1.3. Significance of study

This study is aim to provide information about malaria prevention practices and the factors that hinder the community from practicing malaria prevention measures. After this study, almost all community will be aware of malaria signs, symptoms, and preventive measures and actively perform preventive measures. It will also create vital data for strengthening and enhancing community treatment seeking when infected with malaria, as well as indirectly and directly reducing malaria treatment costs. In addition to these, the finding of this study aimed as crucial inputs for a planner, program designers, policy-makers, donors (especially in this community a lots of NGOs), and administrators for developing strategies and effective intervention to strengthening implementation, informed decision making and resource allocation and provide information for researchers and students to explore more about malaria prevention strategies.

CHAPTER 2: LITERATURE REVIEW

2.1. Malaria prevention practices

Community-based malaria prevention techniques make a significant contribution to the long-term control of endemic illnesses like malaria. Primary malaria prevention focuses on vector control, particularly through the regular use of insecticide-treated nets and the readiness to use indoor residual spray(24).

Peoples in different areas practice different mechanisms to heal from malaria-related complications, due to the prevalence of inadequate medical facilities and due to the distantly situated medical service centers. Some people's use of basil leaves as an antimalarial remedy explained by the herb's therapeutic capabilities as well as religious beliefs. During their sickness, those who had encountered malaria had a higher level of understanding and familiarity with malaria terminology and processes such as blood slide examination, parasite diagnosis, and antimalarial medicine purchase(25). Prevention and control activities of malaria in Ethiopia are implemented a guided by the National Strategic Plan (NSP) with four major intervention

strategies. These are early diagnosis and prompt treatment with the highly efficacious artemisin-based combination therapies (ACTs), selective vector control that involves the use of insecticide-treated mosquito nets (ITNs), indoor residual spraying (IRS) and environmental management to ultimately reduce the burden of malaria to a level where it is no longer a public health problem(5,10,15). Study in north-west Ethiopia shows 68% of participants sometimes use ITN as preventive mechanisms and 58% drain stagnant water(26). The 82% and 30% of Participants in Wakiso district Uganda slept inside untreated mosquito net and treated mosquito net respectively(27). The other study in Ethiopia states that only 3.8% of study participants screen windows(28) but the study in Shewa Robit shows 58% of community close windows early at night and 94 % slept inside ITN(29). Study in the Amhara region shows that the 61.29% of the respondents believed that malaria prevented by using bed nets, and only 69% of them had positive attitude towards modern health care utilization for malaria treatment. Still misconceptions related about causes and transmissions of malaria are very common, where exposure to cold weather, hunger, and drinking dirty water was mentioned as causes of malaria(30).

2.2. Factors associated with malaria prevention practices

2.2.1. Knowledge related to malaria prevention methods

Participants previously heard about malaria are more likely practice malaria prevention methods than others and similarly those who were believe malaria as preventable(31).A study in Kenya states that Ninety-one percent (91.3%) of the respondents reported having previously received, seen, or heard malaria-related messages from ICIPE (87.5%) and Radio (62.5%). According to a survey conducted in Belesa, 93.2 percent of study participants had heard about malaria and aware that mosquitoes are the main cause of malaria. Nearly half of them received information from medical practitioners(16). research conducted in the Amhara region, most respondents learned about malaria via a variety of sources, including health organizations, religious institutions, radio, friends, schools, and television. Health extension workers were the primary sources of knowledge on malaria in the community at health institutions(30). Another study in the Kefa zone of Tepi town found that 38.6% of participants got their information from the health institution, whereas 19% got it through school(32). Study in Guinea found that,58.3% of

participants knew that malaria mostly transmitted by mosquito bite and 73% believe that malaria is preventable(33).

The study revealed that there are many misconceptions about the causes and transmissions of malaria, yet the majority of respondents were aware that malaria is produced by tiny organisms (plasmodium species)(34). The 85% of the Nigerian society knew that malaria is transmitted by mosquito bite(35). The community's main concern, according to the survey, was for the three most prevalent indications of malaria: feeling cold and rigidity, fever, and headache. Also, on a rural community, respondents had little knowledge of signs and symptoms of severe malaria, such as loss of consciousness, seizure/convulsion, vomiting, inability to eat or drink, high-grade fever, dark red urine, and little knowledge of restlessness and severe anemia, with 30.2 percent and 18.9 percent of rural and urban communities, respectively(30). According to a study conducted in Mizan Tepi, Ethiopia, 94 percent of participants are aware of the signs of malaria. Fever was the most commonly stated symptom (88.8%), followed by chills and rigor (33%) and headache (18%), respectively, and 87 percent of the participants were aware that malaria is a communicable disease. All of them identified mosquito bites as a mode of transmission, as well as the use of a bed net and the drainage of stagnant water as preventative measures(32). The three most commonly cited symptoms of malaria, according to another study conducted on hospitalized symptomatic patients, were increased temperature, headache, and vomiting(36). The participants' knowledge of malaria prevention and control measures has examined in this study. Almost all of the participants agreed that sleeping ITNs are effective in preventing malaria. Other preventive strategies, on the other hand, were poorly understood; just 38.6 percent identified long-sleeved clothing as being protective against malaria, 52.7 percent identified pesticide spraying, and 41.9 percent identified bush pruning as being protective against malaria(17). The study conducted in Botswana shows that the 97% of participants knew that ITN is one of the method to prevent malaria(37). Study in west Belesa shows only 28% close windows at night to prevent entrance of mosquito(28). From community to community and among individual homes, perceptions of likely causes, mechanisms of transmission, and decisions regarding preventative and control actions differ(25). Because people clean it for their work, and because it is then too windy and open for mosquitoes, the community that had a clean environment believed that their workplaces had a low chance of developing malaria.

2.2.2. Attitude of participants related to malaria prevention methods

Malaria not believed to be as common or as severe for the majority of the responders, even those who have previously encountered it. However, only a few people are aware that malaria can be fatal if not treated promptly(38). Study shows when household head asked about treatment-seeking for fever and self-medication as treatment mode for malaria, 68% of the respondents reported that they preferred to visit hospital treatment while others preferred self-medication(39).

The presence of stagnant water and overgrown vegetation near residences well known as an environmental risk factor linked to increase mosquito breeding. Despite the employment of non-chemical and chemical techniques of control in the context of integrated vector management, these aspects have received little attention in the prevention of malaria(40). The very low-cost techniques of removing standing water and cutting overgrown vegetation have been demonstrated to lower mosquito numbers and malaria incidence dramatically(41). According to a study conducted by the Hawassa city administration, 41% of the community drain stagnant waters near their homes(2).

The difficulty of spreading interventions through insufficient health-care infrastructures is commonly a barrier to reducing illness burden in low-income nations. The Millennium Development Goals (MDGs) place a special emphasis on reducing infectious disease burdens (50). Especially when it is COVID-19 and they both have similar symptoms like fever, headache, pains, and weakness, distinguishing which one is which can be tough. As a result, the World Health Organization advises that malaria prevention procedures be followed while using COVID-19 preventative protocols(42). Malaria prevention measures were more likely to be practiced in families who participated in malaria prevention campaigns than in households that did not participate in campaigns(34,39).

2.2.3. Sociodemographic factors affecting malaria prevention practices

Different characteristics, such as job position, marital status, religion, level of education, gender, age, occupation, the structure of respondents' residences, and LLINs received by the household, were found to influence malaria prevention practices in studies(16,34,39,43). A study done in Ghana showed that age, sex, and educational level affect knowledge of the community to malaria

prevention. females had good knowledge than males(25). Ages 18-35 years in Thailand had good malaria prevention practices than ages above 35(44). Many households choose malaria treatment in pharmacies and private setting health facilities, this may be due to better accessibility and shorter waiting time(45). A study done in North West Ethiopia showed that those persons who were 9th grade or above were 4.9 times more likely to report a high score of malaria knowledge to prevention practices compared to those who had no formal education. A study was done in Gambella town shows employed caregivers has quickly seeking malaria treatment compared to housewife caregiver(46).

Respondents from urban settings frequently reported high knowledge scores. Inaccessibility of mass media (such as radio, television, or both) was significantly associated with a low score of malaria preventive practices and the respondent's educational level was significantly associated with the treatment-seeking habit(47). According to the study, all interviewed respondents with a high school diploma or higher proven to have prior malaria prevention/control knowledge. Gender, marital status, and occupation, on the other hand, were unrelated socio-demographic characteristics(48).

2.3. Conceptual Framework

Conceptual framework showing factors affecting malaria prevention practices among HHs in Pigniwudo town adapted from different literatures (fig1)

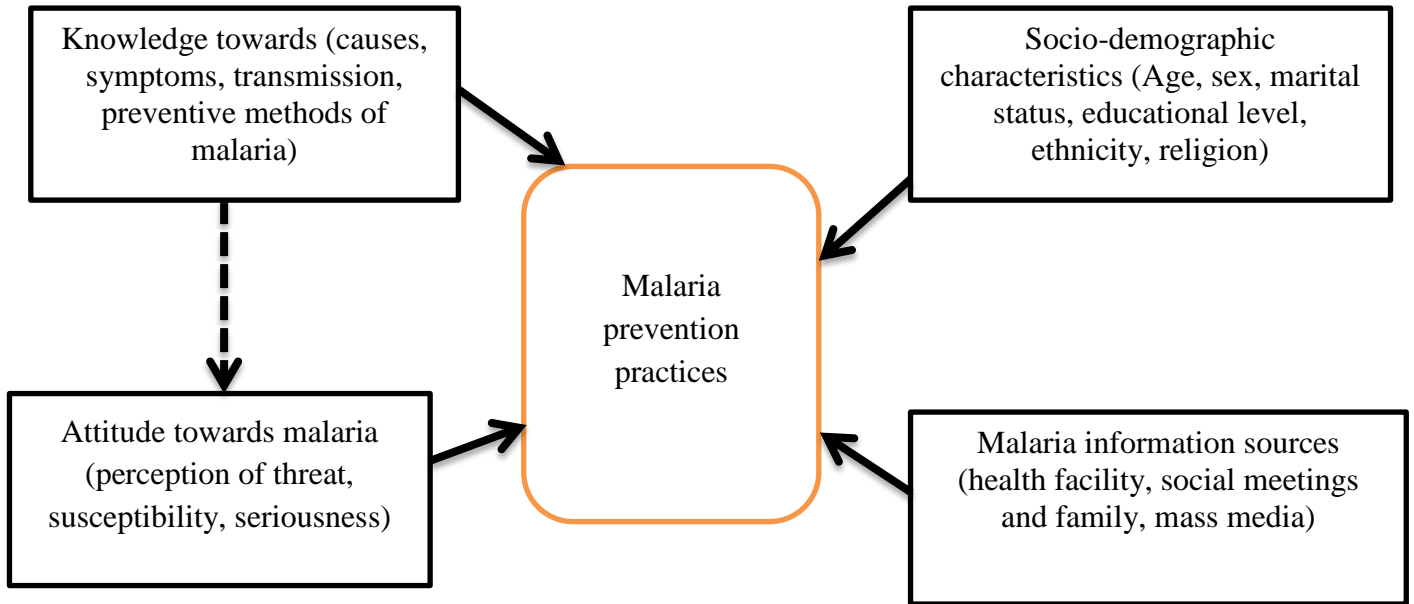


Figure 1: Conceptual framework indicating factors affecting Malaria prevention practices among households in Pigniwudo town,2021(38,45,49,50).

2.4. OBJECTIVES

2.4.1. General objective

To assess malaria prevention practices and associated factors among households in Pigniwudo town, Gambella region, south-west Ethiopia, 2021

2.4.2. Specific objectives

- To assess the level of malaria prevention practices among households in Pigniwudo town from June 23 to November 2021 G.C.
- To identify factors associated with malaria prevention practices among households in Pigniwudo town from June 23 to November 2021 G.C.

3. Methods

3.1. Study Area and period

A community-based cross-sectional study was conducted from June 23 to November 2021, in Pigniwudo town that is located 830 kilometers to the south West of Addis Ababa, the capital of Ethiopia, and 110 kilometers from Gambella city. The total population of the town is about 13417 in 2017. The town had four villages with an estimated number of 3477 households. Each village had an average family size of four persons per household. The town has one primary hospital, one private clinic, three drug vendors, and above 20 NGOs related to health that serving the community. The town is a lowland area with an average altitude of 300–500 meters above sea level and has latitude and longitude of 8°15'00" N and 34°34'59" E, respectively. The main rainy season of the region is between May and October, and from November through April, it is mostly dry. The mean annual temperature of the region ranges from 17.3 to 28.3°C and the annual monthly temperature vary between 27 and 33°C throughout the year(51), the minimum temperature for mosquito development is 8-10°C, optimum and maximum temperature is 21-27°C and 40°C respectively according to communicable diseases report(52). The absolute maximum and minimum temperatures are 45.0 and 10.3°C occurring in mid-March and December respectively. The average rainfall yearly is 1200mm(46).

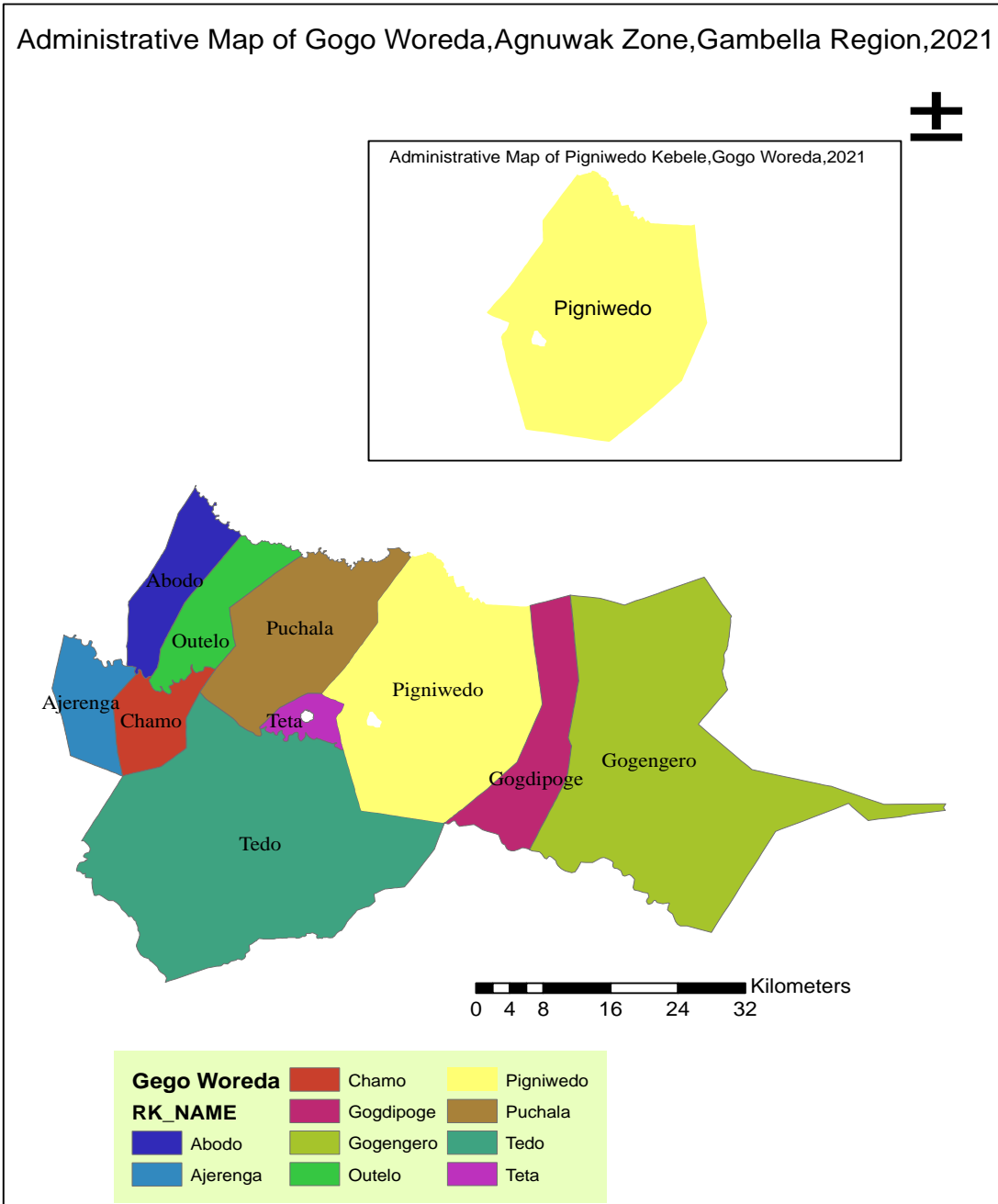


Figure 2: Administrative map of Gog woreda, Angwa zone, Gambella region, 2021

3.2. Study Design

A community-based cross-sectional study employed

3.3. Population

3.3.1. Source population

All households found in Pigniwudo town were source population.

3.3.2. Study population

All those selected households that were eligible for the study

3.3.3. Study units

Head/ representative of selected households

3.4. Inclusion criteria

- Any family member aged 18 years or above and who have stayed in the study area as a permanent resident for at least 6 months

3.5. Exclusion criteria

- Respondent in the household cannot communicate due to impairment or severe sickness.

3.6. Sample size determination

The total number of household required for this study obtained by calculating the sample size for the objectives and then the largest sample size was taken. The sample size for the first objective was calculated based on the practice level(based on report on the Woreta, Northwest Ethiopia(26).The sample size was calculated by using the usual single population proportion formula.

✚ 57.6% (proportion (p) of the population who drain stagnant water to prevent malaria)

✚ 95% confidence level (CL)

✚ The maximum tolerable error of 5% (d)

✚ 10% of non-response rate

$$\text{Then, } n = (Z^2 P(1-P))/d^2 = (3.84 * 0.576(0.425))/0.0025 = 375 + 38 = 413$$

To decide on the largest sample size, the sample size for the second objective was determined by using double population proportion in Epi-info version 7.

Variable	%exposure among controls	%exposure among cases	CI=95%, P=80%, NR=10%	AOR	Total sample size	Reference
Educational background	40.3%	59.7%	23	2.15	251	(39)
Attitude to malaria	62%	38%	15	2.66	167	(2)
Received ITN from HC	80%	59%	17	0.66	185	(16)

Table 1: sample size calculated for factors affecting malaria prevention practices

Therefore, the sample size for this study was 413 households from objective one.

3.7. Sampling Techniques

Participants were chosen using a systematic random sampling technique from the four kebeles of Pigniwudo town: Oleign, Agagn, Okedi, and Puljay. A sample size of 413 was assigned to each kebele based on the proportion of the four kebeles' households. Each kebele's sample size was determined by dividing the product of the total sample size required and the total number of households in each kebele by the total number of households in the town. As a result, each kebele receives a proportional distribution based on its population size was, Oleign kebele $(859 * 413)/3477 = 102$, Agagn kebele $= (859 * 413)/3477 = 102$, Okedi $=(873 * 413)/3477 = 104$, Puljay $=(886 * 413)/3477 = 105$ HHS. The sampling interval (k) computed by dividing the total households (3477) by the sample size (413) for each kebele, resulting in a sampling interval of about 8.4 for each kebele. The first home has then chosen at

random from one to eight. That is to say, the first HH was RS (random start), the second HH was RS+SI (sampling interval), and the interval was followed by the sequence RS+ (d-1) SI, where d=next HH, 1, 2, 3...

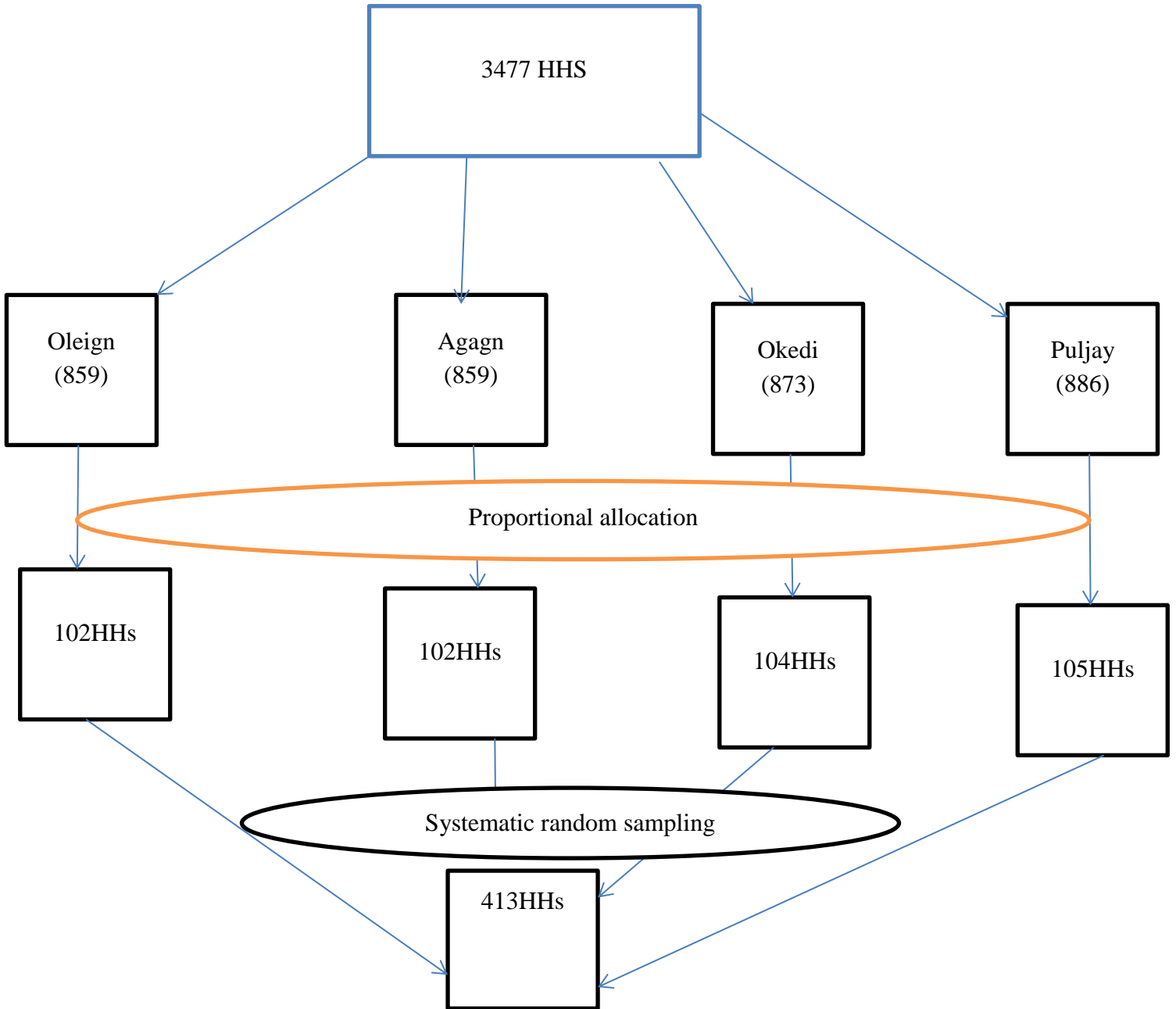


Figure 3: Schematic presentation of sampling procedures for malaria prevention practices and associated among HHs in Pigiwudo town, 2021.

3.8. Study variables

The Outcome variable was practice related to prevention of malaria and the explanatory variables were: Socio-demographic characteristics (Age, Education level, marital status, Residence, occupation, family size, Gender), Knowledge about malaria, Information sources for malaria and attitude towards malaria

3.9. Operational definition

Attitude towards malaria (negative and positive attitude): Attitude had measured using a combination of 13 positive and negative statements. An individual's overall attitude score was determined by adding up the scores across all the thirteen questions. The attitude said to be positive when the score was above or equals to score (23) and negative when it was less than or equals to 22.

Malaria prevention practices (Good or poor practice): Are practices individuals use to protect themselves against malaria. The overall practice said to be good if the score was (7.64) or more after summing up the seven practices related questions.

Knowledgeable (good knowledge): is the understanding of respondents about basic information, signs and symptoms, transmission as well as the prevention of malaria. An overall Knowledge score had calculated by adding up the scores for each respondent across all questions with '1' for correct and '0' for incorrect answers and a score above 26 considered as knowledgeable.

3.10. Data Collection Procedures

Data collected using a structured and semi-structured questionnaires adapted from standardized questionnaires used by international organizations; such as the 2004 WHO/UNICEF core population coverage survey guidelines with some modifications. And national studies such as the Demographic and Health Survey, and peer-reviewed journal articles(10,16,34,38,39,53). Data collected using a structured and pretested questionnaire presented by an interviewer. Health professionals interviewed Adult's age 18 years and above who lived within the city for at least 6 months. When a home had more than one eligible respondent, the mother was preferred. Four

nurses (one for each village) had trained by the investigator before collecting data. Interviewer administered technique was used to collect data with and pretested questionnaire.

3.11. Data Analysis procedures

The collected data entered into Epi-data version 3.1 and exported to Statistical Package for Social Sciences (SPSS) version 25 for cleaning, recoding, categorizing and analyzing. The distribution of the variables described using as frequencies, means and standard deviations depending on their nature and presented in frequency tables. Some variables dichotomized for further analysis. Bivariate analysis conducted between outcome variable and each dependent variable. Variables with a p-value <0.25 were considered as candidate for multiple logistic regression that was performed to test associations between categorical variables. The use of multivariate logistic regression yielded adjusted odds ratios to test associations between the independent variables and the use of different types of malaria prevention methods in the community, and controlled for potential confounding factors. In addition, 95% CI and p-value of less than 0.05 used to test statistical significance of the association between dependent and independent variables. Backward elimination method used to create the final logistic regression models. Model fitness was checked by Hosmer and Lemeshow goodness of fit test (Chi-square =11.258, DF=7, P-value = 0.128). Multi-collinearity was checked and become VIF= (1.101 to 1.236) and tolerance 0.567 to 0.908, shows moderate correlation and it is not severe enough to warrant corrective measures. Model summary table also showed, about 62.7% to 73.4% of variance in the dependent variable explained by the predictor variables indicating goodness of fit of the model. Finally, the model classification accuracy was 66.25%, which was less than the value 73.4% in block1 classification table.

3.12. Data quality management

Prior to data collection, the questionnaire was prepared in English and translated into Amharic, then translated back into English (because mixed and diversified communities' and Amharic as language for the communication there), and the contents of the questionnaires were reviewed to ensure that both versions had the same information. Four data collectors with a background in health and the ability to speak read, and write the local language and Amharic, as well as one supervisor with a first degree in the health, were hired. The investigator also provided two days

of training to all data collectors and supervisors on the purpose of the study, the contents of the questionnaire, issues of maintaining confidentiality, informed verbal consent, and interview techniques. The questioner was pretested among 5% of households(20) in a similar setting but outside the sampled households (block1 or Angwa site) and found to be valid through appropriate test of Cronbach's alpha test (0.729), then after the results were discussed and some modification and correction have been made accordingly to the questionnaire. Strict supervision had undertaken by the investigator and supervisor throughout the data collection period. After data collection, each questionnaire had checked for completeness, consistency, accuracy, and clarity daily by the supervisor.

3.13. Ethical consideration

The ethical approval for this study has obtained from the research ethics committee of the faculty of public health, Jima University; a permission letter has also written for concerned bodies of town. Then verbal informed consent was obtained from the participants, after the necessary explanation about the purpose, procedures, benefits, risks of the study and also their right on the decision of participating in the study. Confidentiality kept at each step of data collection and processing. The participants had assured that they have full right to participate or withdraw from the study.

3.14. Dissemination of results

The final report of this study will submitted to Jima University's department of public health. It will also send to woreda health offices, Angwa zonal health department, and Gambella regional health bureau (RHB). The dissemination also goes to different non-governmental organizations (NGOs) found in Gambella town that are working on malaria prevention activities. Efforts will make to disseminate results through publication and presentation in conferences

3. RESULT

3.1. Socio-demographic characteristics

Data collected from 413 households, with a 100% response rate. The mean (\pm SD) age of participant was 31 (\pm 8.8) and the majority, 231 (51.9%) of participants were male. From 413 participants, 194 (47%) were between the ages of 25 and 34, and 307 (74.3%) were married, followed by 85 (20.6%) who were single. The community's educational level was diploma or higher for 168 people (40.7 percent). The 167 (40.4%) of study participants were private employees, whereas 103 (24.9%) were government employees. Angwa composed 153 (37%) of the study participants (Table2).

Table 2: Socio-demographic characteristics of the study participants in Pigniwudo town, 2021(n= 413)

Variable	Frequency	Percent (%)
Sex		
Male	231	55.9
Female	182	44.1
Age in years		
18-24	97	23.5
25-34	194	47
35-44	93	22.5
\geq 45	29	7
Ethnicity		
Angwa	153	37
Amara	59	14.3
Oromo	75	18.2
Tigre	39	9.4
Gurage	39	9.4
Others	48	11.6

Religion		
Orthodox	112	27.1
Protestant	235	56.9
Catholic	30	7.3
Muslim	34	8.2

3.2. Practice of malaria prevention methods

From 410 households that heard about malaria, 200(48.8%) always slept under insecticide treated mosquito nets. Other 284(69%) households sometimes clean stagnant water around their house and 229(55.9%) never participate in community malaria prevention campaign. The 257(62.7%) always visit health facilities when sick and only 48(11.7%) never visit health facility (Fig6).

Table 3: practice of malaria prevention measures in Pigniwudo town 2021(n= 413)

Malaria prevention questions	Never(0)	Sometimes(1)	Always(2)
	N (%)	N (%)	N (%)
How often do you sleep in insecticide treated mosquito net?	47(11.4)	163(39.8)	200(48.8)
How often do you visit health facility when you or your families fall sick?	48(11.7%)	105(25.6)	257(62.7)
How often do you use anti-mosquito spray (IRS) in Your house?	132(32.2)	236(57.6)	42(10.2)
How often do you screen windows?	89(21.7)	193(47.1)	128(31.2)
How often do you cut bushes around your house?	24(5.9)	268(65.4)	118(28.8)
How often do you drain stagnant water around your home?	30(7.3)	284(69.3)	96(23.4)

How often do you participate in malaria prevention campaign?	229(55.9)	167(40.7)	14(3.4)
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The community's overall practice score was 153 (37.3%) for poor practice and 257 (62.7%) for good practice. The figure below indicates the overall malaria prevention practices among households in Pigniwudo town from the 410 participants that heard about malaria within one year (fig 6).

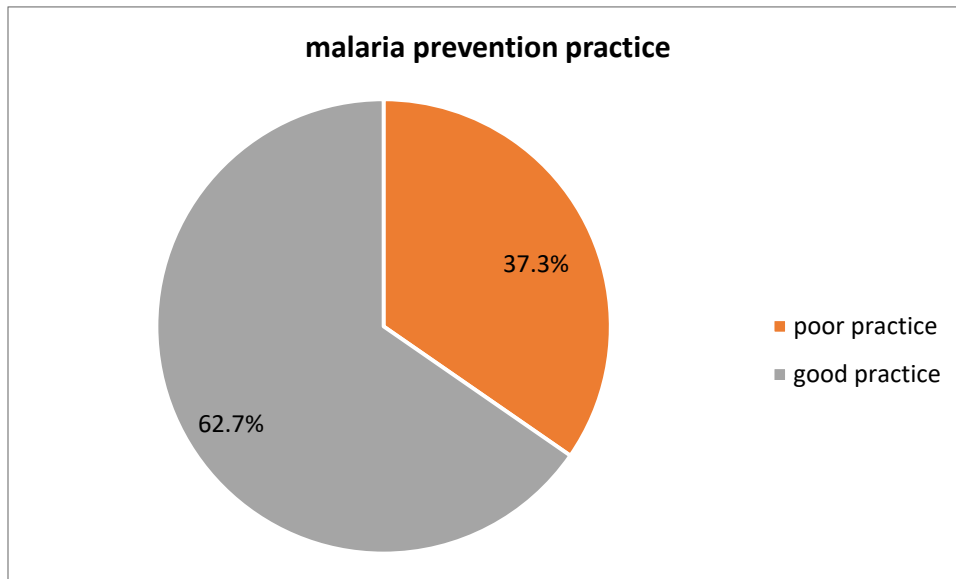


Figure 4: distribution of malaria practice level amongst households in Pigniwudo town, 2021(n= 413)

3.3. Information source of community towards malaria

The 410(99.3%) of 413 participants answered that they heard about malaria in last 12 months and 328 of them heard malaria information from health facilities,228 participants heard from mass media and 259 were heard from social meetings and family(fig 4).

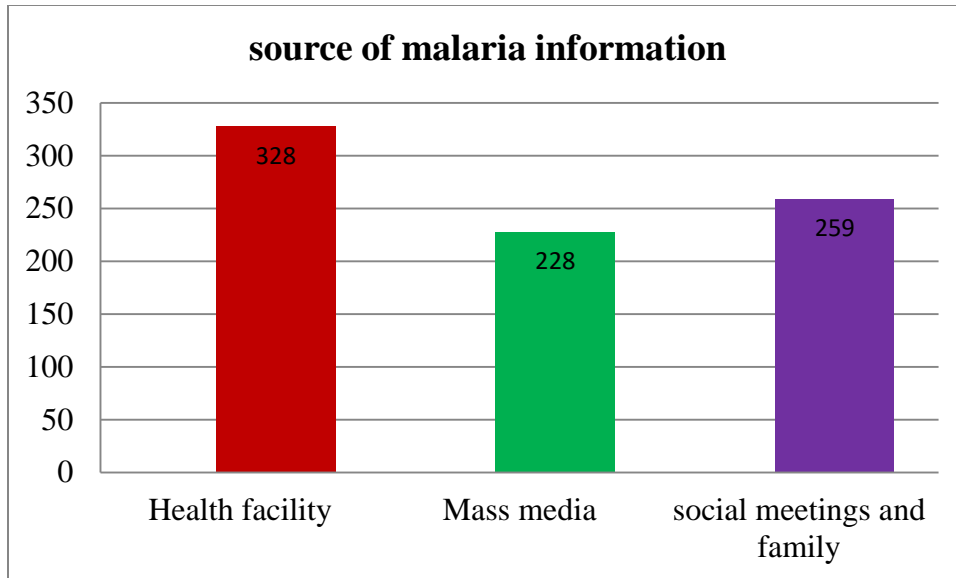


Figure 5: source of information for malaria of participants in Pigniwudo town, 2021

3.4. Knowledge about malaria prevention and control methods

From 410 participants that heard about malaria last 12 months, 403(97.6) of participants were knew that fever, chills, headache, loss of appetite and back or joint pain are main sign and symptoms of malaria and vomiting and weakness accounts 61%. Mosquito 394(95.4%) accounted the major cause for malaria. Majority 384(93.7%) answered mosquito bite as modes of transmission and 402(97.8%) answered bite and transmit malaria is the major role of mosquito. From 372(90.7%) knew breeding site of mosquito, stagnant water and swampy areas and waste materials accounted 306(82.3%), and 210(56.5%) respectively. from 410 heard about malaria last 12 months, 394(96.1%) knew the biting time of mosquito and 326(82.7%) answered its biting time as night. From 410 participants that heard about malaria in the last 12 months, 374(91.2%) said that malaria is preventable. The 326(87.2%) knew ITN as one of preventive methods of malaria followed by 274(73.3%) indoor residual house spraying and 256(68.4%) mosquito breeding source reduction. The 265(65.1%) knew that pregnant and children are groups mostly affected by malaria (Table 3).

Table 4: Knowledge on malaria prevention measures in Pigniwudo town, 2021(n=413)

Variable	Frequency	Percent %
Heard about malaria		
Yes	410	99.3
No	3	
Signs and symptoms of malaria		
Fever, chills, loss of appetite and joint pain	403	98.3
Vomiting and weakness	249	60.7
Urine color change	164	40
Causes for malaria		
Mosquito	394	96
Other than mosquito	236	57.6
Know breeding site		
Yes	372	90.7
No	38	9.3
Breeding site		
Stagnant water and swampy areas	306	82.3
Waste materials	210	56.5
Know biting time		
Yes	394	96.1
No	16	3.9
Time of biting		
Day	7	1.8
Night	326	82.7

Any time	61	15.5
Malaria preventable		
Yes	374	91.2
No	36	8.8
Knowledge on preventive methods		
Use mosquito net	326	87.2
Indoor residual house spraying	274	73.3
Source reduction	256	68.4
Anti-malaria drugs	230	61.5
Over all knowledge		
Good knowledge	270	66
Poor knowledge	140	34

Table 4: knowledge on malaria prevention practices continued

3.5. Attitude of participants towards malaria

Attitude level was determined by comparing one's attitude score against the mean attitude score. Attitude score of 23 and above 23 is determined to be positive attitude whereas that below 22 labeled as negative attitude. Accordingly, 254(62%) of the study participants had positive attitude while 156 (38%) had negative attitude towards malaria in terms of its susceptibility, seriousness or threat, treatment, prevention and control (Table5).

Table 5: attitude towards malaria prevention measures in Pigniwudo town 2021(n= 413)

Attitude measuring questions	Agree N (%)	Strongly agree N (%)	Disagree N (%)	Strongly disagree N (%)
I think that Malaria is a life-threatening disease	144(35.1)	164(40)	88(21.5)	14(3.4)
Malaria is a communicable disease	113(27.6)	155(37.8)	114(27.8)	28(6.8)
I think the best way to prevent myself getting malaria is to avoid getting mosquito bites	186(45.4)	177(43.2)	46(11.2)	1

I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria	159(38.8)	230(56.1)	18(4.4)	3
I am sure that self-treatment may dangers my health	116(28.3)	155(37.8)	120(29.3)	19(4.6)
In my opinion, children and pregnant women are at higher risk of Malaria	15(38)	216(52.7)	28(6.8)	10(2.4)
I think that one can't recover spontaneously from Malaria without any treatment	87(21.2)	186(45.4)	109(26.6)	28(6.8)
I think that malaria can't transmit through contact	140(34.1)	156(38)	92(22.4)	22(5.4)
I might be at a greater risk if not sleep inside ITN at night	180(43.9)	174(42.4)	43(10.4)	13(3.2)
I think that it is dangerous when malaria medicine is not taken completely	141(34.4)	192(46.8)	65(15.9)	12(2.9)
Seek for advice when get malaria	228(55.6)	153(37.3)	25(6.1)	4(1)
I seek treatment when get malaria	212(51.7)	172(42)	20(4.9)	6(1.5)
I think that I should have blood test if I have fever	150(36.6)	216(52.7)	44(10.7)	
Over all attitude				
Positive attitude	254(62)			
Negative attitude	156(38)			

From the participants 252(62%) and 156(38%) had positive and negative attitudes respectively. The figure below shows the overall attitude of community In Pigniwudo town towards malaria prevention practices that was the result of the sum of all attitude related questions (fig7).

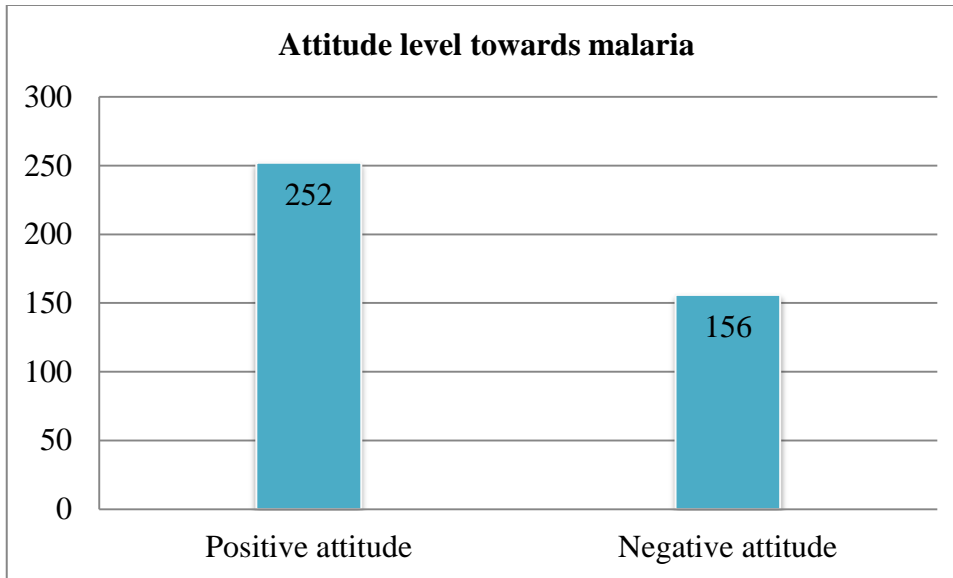


Figure 6: distribution of Distribution of attitude level towards malaria amongst study participants, Pigniwudo town, 2021(n= 410).

3.6. Factors Associated with malaria prevention practices among households in Pigniwudo town, Gambella region, Southwest Ethiopia, 2021

The variables age, the level of education that the participant had attained, sex, occupation, marital status, religion, knowledge of the malaria-breeding site and knowledge about the time of mosquitoes biting, knowledge of malarial modes of transmission and knowledge on malaria as a preventable disease were selected as candidate variables for multivariable logistic regression analysis. By using variables that have P-value less than 0.05 in multivariable logistic regression, age, sex, marital status, knowing breeding site of mosquito and knowing preventability of malaria had independently determined malaria prevention practice among households in study area. Age of respondent found to have statistically significant associations with malaria prevention practices. Ages between 35 and 44 were 4.886 times more likely practice malaria prevention measures than those ages 18-24 [AOR=4.886, 95% CI=(2.435, 9.805)]. Marital status had also significantly associated with malaria prevention practices. Married had 6.93 times more likely to practice malaria prevention methods than single and un-married ones [AOR=6.93, CI=(3.6, 13.285)]. Female were 1.74 more likely to practice the prevention measures than males with [AOR=1.74, CI=(1.035, 2.295)] and occupation of participant were significantly associated with

malaria prevention practices. The odds of having good practice was 3.7 times among respondents who know mosquito breeding site than that do not know [AOR=3.700, CI = (1.482, 9.235)]. The participant's knowledge level was significantly associated with malaria prevention practices. Respondents thinks malaria as preventable disease were 4.04 times more likely to use malaria prevention methods than that think it as not preventable disease [AOR=4.04, CI= (1.502, 10.731) (Table 6).

Table 6: Associations between selected factors and malaria prevention practices among households in Pigniwudo town, Gambella region, south west Ethiopia, 2021(413)

Variable	Response	Practice		COR(95%CI)	AOR(95%CI)	P-value
		Good	Poor			
Age	18-24	37	60		1	
	25-34	140	51	4.452(2.646, 7.489)	4.523(2.546, 8.032)	<0.001*
	35-44	60	33	2.948(1.646, 5.320)	4.886(2.435, 9.805)	<0.001*
	>=45	20	9	3.604(1.484, 8.749)	5.812(2.029, 16.65)	0.005*
Sex	Male	126	106		1	
	Female	131	47	2.345(1.538, 3.575)	1.74(1.035, 2.295)	0.036*
Marital status	Single	55	75		1	
	Married	202	78	3.531(2.286, 5.457)	6.93(3.615, 13.285)	0.028*
occupation	Gov.t employee	93	68		1	
	Farmer/ho usewife	31	14	1.619(0.180, 3.275)	6.612(2.564,17.05)	<0.001*
	Private employees	133	71	1.370(0.895,2.095)	3.484(1.838, 6.605)	<0.001*
Know breeding site	No	9	30		1	
	Yes	248	123	6.721(3.094, 14.5)	3.7(1.482, 9.235)	0.005*
Is malaria preventable	No	15	21		1	
	Yes	242	132	2.567(1.280, 5.146)	4.014(1.502, 10.71)	0.006*

**significant at P-Value <0.05, COR, crude odd ratio, AOR, adjusted odd ratio*

4. DISCUSSION

This study assessed the factors affecting the malaria prevention practices among communities of Pigniwudo town, Gambella region, south-west Ethiopia: One of malaria endemic area in the Ethiopia. It discovered that the community is implementing a variety of preventive measures that are integrated with the health-care system. One of the practice and prevention mechanisms related to communities' understanding of malaria is the use of ITNs, drainage of stagnant water, home spray/application of repellent, and health care seeking for fever as designed by the government.

Age, sex, and marital status of participants plus knowledge of breeding site of mosquito, knowledge of malaria as preventable disease and occupation were independently and significantly determined implementation of malaria prevention measures in the community.

This study found that 328(80%) of participants heard about malaria from health facility, from health professionals than other sources. This is higher than the study conducted in Amhara region, Belesa (Aragie, 2020). This is because; the communities in the study area are no more accessible to other information sources, like mass media.

The majority, 379 (98.6%) of the study participants correctly identified fever, headache, chills, sweating and malaise to be the most common signs and symptoms of malaria. This is higher than the finding from Nigeria, where 65.2 percent of respondents indicated fever with shaking as common malaria symptoms(35). and that of Botswana, where 88.7 percent of respondents had some basic understanding of malaria signs and symptoms(37), and another study conducted in Pawe District, North West Ethiopia, in which about 84.7% and 83% of the respondents stated fever and headache respectively as the most common primary symptoms associated with malaria(47). This study is consistent with study done in Areka town, whose fever, headache, chills, sweating and malaise accounted 94% of the most common signs and symptoms of malaria and 94.4% in Shewa Robit town(29,34).

This study shows that 91.2% of participant answered that malaria is preventable, and this matches with study done in Belesa and Woreta town in Ethiopia(16,26).In this study the 62.7% of the study participants that always seek medical care when they or their family members get

sick. This is high when compared to two studies done in Ethiopian, 55.9% and 54.7%(17,49). Only 48.8 percent of participants who possessed ITNs always slept inside them; this finding is lower than studies conducted in Assosa town and outside, at Tumbi hospital in Tanzania, where 58% percent and 76% of respondents used bed nets as the most common malaria protective measures, respectively(17,18). This is due to a lack of availability as well as a failure to employ available nets due to discomfort and high temperatures in the environment or it may be because not fear of mosquito bite or the beliefs of mosquito still bite while using ITNs. On the other hand only 57.2% households in this study sometimes sprayed by anti-mosquito spray, which is lower than other reports in north eastern Ethiopia Shewa Robit town, which is 78.9%(29). This may be due to a program change made by the health care system from entire house-to-house spray to selective house spray. As a result, community healthcare providers might apply similar practices through health education initiatives. However, this is higher than two studies done in Gurage zone and Hawassa city administration whose 50% and 33.7% of households sometimes sprayed by IRS(2,39).

Around 70% of the study participants were actively participated in drainage of stagnant water and 65% cleaning bushes surrounding their house. This is a little bit lower than the study in Southern region(39), but greater than study done in Tanzania and Uganda(17,49). This may due to not knowing the negative consequences of the disease. Around 55.9% of participants never participate in malaria prevention campaign, this result, not-participate in malaria prevention campaign is highest than studies conducted in Ethiopia and Uganda(7,16,22), the reason behind this might be there was no strong leadership, participatory and community inclusive implementation program. But it is nearly similar to study done in Hawassa city(2). The overall practice of malaria prevention through different strategies was much higher than previous findings(34,49). This can explained by intense preventive measures under taking by the government and non-governmental organizations through ITN distribution, availability of health care facilities and the environment itself played a major role in malaria prevention programs.

In this study, the participants of ages above 24 are 4.45 times more likely to have good practice than age's between 18-24. This is in line with report from Thailand(44), but study in Uganda shows ages between 35-44 and 45+ were less likely to practice malaria prevention methods

compared to those ages between 18-24(27). This might related with as these age groups are more educated and they are more close to health information than others are and they are married ones, therefore all household responsibility belongs to them and they may receive bed net to them and for their children. On the other hand, participants that know breeding site were 3.7 times more likely practice prevention methods than those do not know the breeding site of mosquito. Because no similar study had found suggest and it might be because who know breeding site of mosquito, prevent mosquito breeding by reducing source of breeding. Females are 1.74 times more likely to practice the prevention mechanisms in contrast to males and the study in West Belesa shows The odds of having good practice is decreased by 35% among female respondents as compared to male respondents(28). Women are responsible for all home activities in this area; they take care for their children and take them to the hospital for treatment, they clean their homes as usual Ethiopian women do and clean the environment, and they have enough information on ITN use from health facilities during ANC follow-up, making them more responsible for malaria prevention activities. Farmers and private employees are 6.612 and 3.48 times more likely than government employees to use malaria prevention practice is. This difference could be due to the low cost of prevention methods, accessibility of methods in the community, and community knowledge of where prevention methods are available, as well as not prioritizing malaria over other diseases in employed areas.

Malaria is preventable, and those who know this have four times better malaria prevention practices than those who do not. Other studies in Ethiopia and other Africa countries shows also good knowledge is positively related to good malaria prevention practice(27,34). This could be justified, as participants that know malaria is preventable also know the modes of transmission, risk factor, seriousness of the disease and mechanisms of prevention and this may elevate probability of practicing preventive activities. Individuals who have knowledge on that malaria as preventable have a good motives in prevention mechanisms.

5. Strength

Since the study as cross-sectional study design, the study has done in short period and multiple outcome factors studied once. This study showing the prevalence of malaria and its preventive

measures are very important for NGOs and planners for planning and allocating resources. This study gives a preliminary evidence for future advanced studies.

6. Limitations

The limitation of this study is, as it is a cross-sectional study in which risk not measured directly and unable to establish causality. Here practice has measured from household report; it could be good if it was collected from observation and qualitative, part included. The recall bias related to some variables and social desirability bias may further inflate the practice of malaria prevention measures among households. My research did not include where society obtains ITN and when it replaced. The study did not examine socioeconomic and hospital-related factors that may be contributing to the malaria prevention gap.

7. Conclusion

The overall malaria prevention practice of the study participants has found to be 62.7%. Though the practice of malaria prevention measures obtained in this study was comparable to prior studies, it is lower than the predetermined strategic objective of the Ethiopian operational plan; possible reasons for this include poor awareness and misuse of preventive methods. The study participants who slept under an ITN had levels that were somewhat below than the targets of the national operational plan for malaria, which was to have levels over 80%. Around 70% of the study participants were actively participated in drainage of stagnant water and cleaning bushes surrounding their house and around 55% of community never participates in malaria prevention campaign. This may related with the community misconception about malaria and its preventive options and not actively initiation of society by community health workers. Being female and married and having knowledge on mosquito breeding site and malaria is preventable disease were positively associated with malaria prevention practices.

Recommendations: As a major strategy for achieving the intervention programs intended plan, it has recommended focusing on common misconceptions of communities concerning malaria causes, modes of transmission, and clinical manifestations through community participation activities. This recommendation is for planners, health workers, community and other stakeholders. Therefore, further to increase the practice of malaria planners undertaken measures

at household level, ITN distribution programs should be strengthened, the house-to-house spray program should cover larger geographical areas and many NGOs in the community are also encouraged to project their image and collaborate with society and the community should take an active role in total community led campaign programs. Moreover, further increase in net use between all age and gender sub-groups should be considered and health workers should provide health education to the society in the planned manner. Furthermore, increasing academic knowledge should have considered addressing those who have a lack of information and those who are illiterates. Researchers are also encouraged to conduct better malaria research, with a focus on Pigniwudo hospital health staff and with a mixed study design.

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Consent form

Data Collector:

Greeting: My name is _____ I am working temporarily as a data collector with Temesgen Mulu from Department of Epidemiology, faculty of public health, institute of health, Jimma University, which is conducting study research on **Malaria prevention practices and associated factors in Pigniwudo town**. Therefore, we are requesting your consent to participate in this study.

The information that you will give us in this study will contribute to identifying the level and factors affecting malaria prevention at a community level in Pigniwudo town. In participating in this study, you will be required to answer questions in this questionnaire that will take about a few minutes to answer. No names will be used on the questionnaire and individual responses will be kept confidential. Only the researcher and the research advisors will have access to them. There are no risks associated with this study. Participation is voluntary, and you are free to withdraw from the study if you wish with no resultant penalties. If you are interested to participate in this study, please sign the consent form provided and then respond to the questions asked.

Participant: I have agreed to participate in this study. I understand that all information will be confidential and anonymous. I have given the opportunity to ask questions and know that I am free to withdraw my consent at any time.

Your honest and genuine participation in responding to the questions prepared is very important & highly appreciated.

_____ (signature of respondent certifying that data collector has accepted to participate in the study).

_____ (signature of data collector certifying that respondent has given informed consent written and verbally).

ANNEX1: Questionnaire English version

Date ____/____/____

Part I: Socio-demographic Characteristics

S.no	Questions	Alternatives	Skip
101	How old are you?		
102	Sex	1. .Male 2. Female	
103	What is your current marital status?	1. Single 2. Married 3. Divorced 4. Widowed	
104	What is your educational status?	1. Cannot read and write 2. 5-8 th 3. 9-12 th 4. Diploma and above	
105	What is your occupation?	1. Government employee 2. Private employee 3. Housewife/farmer 4. NGO employee 5. other specify_____	
106	Total household members	_____	
107	What is your responsibility in the household?	1.Head 2.Wife/ Husband 3.Daughter/son 4.Others, specify_____	

108	What is your Religion?	1. Orthodox 2. Protestant 3. Catholic 4. Muslim 4. Other, specify_____	
109	What is your Ethnicity?	1. Angwa 2. Amhara 3. Oromo 4. Tigre 5. Gurage 6. Other, specify_____	
110	Total number of < 5-year children in the Household		
111	Total pregnant women in the household		

Part II- Knowledge about malaria prevention and control measures

Q200	Have you heard of Malaria in 12 months?	1. Yes 2. No	If no skip to Q414
Q201	Information source? (1.yes, 2.no)	1. Health facilities	
		2. Radio, TV/ newspapers	

		3. social meetings and families	
Q202	What are the signs and symptoms Of malaria? (yes, No)	1. fever, chills, headache, loss of appetite, and back/joint pain	
		2. vomiting, and weakness	
		3. dark red or black urine, and jaundice	
		4. other	
Q203	What is the cause for malaria	1. Mosquito	

		2. other than mosquito	
Q204	What is/are the impact/consequences of malaria		
Q205	What is/are modes of malaria transmission	1. Mosquito bite 2. Others 3. Do not know	
Q206	What is the role of Mosquitoes?	1. Bite and transmit malaria 2. Other 3. Do not know	
Q207	Do you know the Breeding site for Mosquito vectors?	1. Yes 2. No	If no skip to Q209
Q208	If yes for Q207, Where is the breeding site?	1. Stagnant water and swampy areas 2. Waste materials	(Yes, no)
Q209	Do you know the Biting time of mosquito?	1. Yes 2. No	If no skip to Q211
Q210	If yes to Q209, when is the biting time?	1. Day 2. Night 3. Any time	

Q211	Is malaria a preventable disease?	<ol style="list-style-type: none"> 1. Yes 2. No 	If no skip to Q303
Q212	If yes to Q211, what are preventive methods do you know.	1. Use ITN	
		2. Indoor residual house spraying	
		3. Source reduction	
		4. Anti-malaria drugs	
213	Groups most affected by malaria	<ol style="list-style-type: none"> 1. Pregnant and children 2. Others 	

Part 3: the practice of protective measures about malaria

Q301	How often do you clean/cut bushes around your house?	<ol style="list-style-type: none"> 1. Always 2. Sometimes 3. Never 	
Q302	How often do you clean stagnant water near your house	<ol style="list-style-type: none"> 1. Always 2. Sometimes 3. Never 	
Q303	How often do you participate in malaria prevention campaigns?	<ol style="list-style-type: none"> 1) Always 2) Sometimes 3) Never 	

Q304	How often do you sleep in an insecticide treated mosquito net (ITN)?	1) never 2) sometimes 3) always	
Q305	How often do you visit health facility when you and your family fall sick?	1) Never 2) Sometimes 3) Always	
Q306	How often do you screen windows?	1) Never 2) Sometimes 3) Always	
Q307	How often do you use insecticide residual spray (IRS)	1) Never 2) Sometimes 3) Always	

Part 4: Attitude towards malaria prevention measures

Sno.	Questions measuring attitude	Agree	Strongly agree	Disagree	Strongly disagree
400	I think that Malaria is a life-threatening disease				
401	Malaria is a communicable disease				
402	I think the best way				

	to prevent myself from getting Malaria is to avoid getting mosquito bites				
403	I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria				
404	I am sure that self-treatment may dangers my health				
405	In my opinion, children and pregnant women are at higher risk of Malaria				
406	I think that one can't recover spontaneously from Malaria without any treatment				
407	malaria can't transmit through contact				
408	It is a great risk if not sleep under ITN				
409	Not completing malaria treatment is				

	dangerous				
410	Seek for advice when I get Malaria				
411	Seek treatment when getting malaria				
412	I can buy anti-Malaria drugs from the drug shop/pharmacy to treat myself when I get Malaria				
413	I think that I should have a blood test if I have a fever				

የፈቃድ ቅጽ

ሚጃ ሰብሳቢ :-

ሰላምታ! _____ በፕሮጀክቱ ከተማ በወጣ ማላላክል ልምዶች እና ተጓዳኝ ሁኔታዎች ላይ የጥናት ምርመራ ከሚከተሉት ከኤፕሚዮሎጂ ማህጋያ ፣ ከሕዝብ ጠፍ ፋኩልቲ ፣ ተሚኒስቴር ኮሌጅ ፣ ከተማን ማላ ጋር የሚጃ ሰብሳቢ ሆኖ ለጊዜው እየሠራሁ ነው። ስለዚህ በዚህ ጥናት ውስጥ ለመሳተፍ ፈቃድዎን እንጠይቃለን።

በዚህ ጥናት ውስጥ የሚጠቀሙ ሚጃ በፕሮጀክቱ ከተማ በሚከተሉት ሰብሳቢዎች የወጣ በሽታን ደረጃ እና ምክንያቶች ለመለየት አስተዋፅኦ ያደርጋል። በዚህ ጥናት ውስጥ በመሳተፍ ፣ በዚህ ማጠቃለያ ውስጥ ለጥያቄዎች ማለስ ለመስጠት ጥቂት ደቂቃዎችን ይወስዳል። በማጠቃለያ ላይ ምንም ስሞች አይጠቀሙም እና የግለሰብ ምላሾች በሚጠቀሙ ይቀመጣሉ። እነሱን የሚያገኙት ተሚኒስቴር እና የምርመራ አማካሪዎች ብቻ ናቸው። ከዚህ ጥናት ጋር የተያያዙ አደጋዎች የሉም።

ተሳታፊ - በዚህ ጥናት ለመሳተፍ ተስማምቻለሁ። ሁሉም ሚጃዎች ሚጠቃሚ እና ስም እንደሚጠቀስ እረዳለሁ። ጥያቄዎችን ለመጠየቅ እና በማንኛውም ጊዜ ፈቃዴን ለመሻር ነፃ እንደሆንኩ በማወቅ ፈቃዴን ሰጥቻለሁ። ለተዘጋጁት ጥያቄዎች ምላሽ ለመስጠት የእርስዎ ሐቀኛ እና እውነተኛ ተሳትፎ በጣም አስፈላጊ እና በጣም የተከበረ ነው።

Annex II: Questionnaire Amharic version

ክፍል አንድ-ሚበራዊ እና ስነ-ሕዝብ ባህሪ ዎች

ተ.ቁ	ጥያቄዎች	ምርጫ	ዝላል
101	ዕድሜ		
102	ጾታ	<ol style="list-style-type: none"> 1. ወንድ 2. ሴት 	
103	የጋቢቻ ሁኔታ	<ol style="list-style-type: none"> 1. ያለገባ 2. ያገባ 3. የተፋታ 4. ባሉዋ የሞተባት 	
104	የትምህርት ደረጃ	<ol style="list-style-type: none"> 1. ማንበብና ማጻፍ አልችልም 2. 2.5-8 ኛ 3. 9-12 ኛ 4. 4. ዲፕሎማ እና ከዚያ በላይ 	
105	ስራ	<ol style="list-style-type: none"> 1. የመንግስት ሰራተኛ 2. የግል ሠራተኛ 3. የቤት እማኝ/ገበሬ 4. መንግስታዊ ያልሆነ ድርጅት ሰራተኛ 	
106	የቤተሰብ ቁጥር		
107	ሐላፊነት	<ol style="list-style-type: none"> 1. ራስ 2. ማከት/ባል 3. ልጅ 4. ሌሎች ፣ ይግለጹ 	
108	ጎይማዎች	<ol style="list-style-type: none"> 1. አርቶዶክስ 2. ፕሮቴስታንት 3. ካቶሊክ 4. ማህሊም 5. ሌላ ፣ ይግለጹ 	

109	ብሔር	<ol style="list-style-type: none"> 1. አኝዋ 2. አምሳሪ 3. አሮሞ 4. ትግረ 5. ጉራገ 6. ለላ 	
110	ከአማካኝ ዓመቱ በታች ህጻናት ቁጥር		
111	ነፍሴ-ጤ እናቶች ቁጥር		

ክፍል ሁለት- ስለ ወባ ማላክል እና ቁጥጥር እርምጃዎች እወቀት

ተ.ቁ	ጥያቄዎች	ምርጫ	ዝላል
200	ስለ ወባ ሰምቶ ያወቃሉ	<ol style="list-style-type: none"> 1. አዎ 2. አይ 	አይ ከሆነ ጥቁ 401 ህድ
201	የወባ በሽታ መረጃ ምንጮች (አዎ፣ አይ)	<ol style="list-style-type: none"> 1. ጤና ተቆማት 2. ማናኛ ብዙሃን 3. ማህበራዊ ስብሰባዎች እና ቤተሰቦች 	
202	የወባ በሽታ ምልክቶች ምን ድንናቸው (አዎ፣ አይ)	<ol style="list-style-type: none"> 1. ትኩሳት፣ ራስ ምታት፣ ብርድ ብርድ ማለት፣ አፕታይት መቀነስ 2. ትወክትና የሰውነት ማዘል 3. የውሃ ሽንት ቀለም መቀየር 4. ሌላ 	
203	የወባ በሽታ ምን ስኬት ምን ድንናው	<ol style="list-style-type: none"> 1. የወባውትንኝ 2. ከወባውትንኝ 	

		ጠቅላይ	
204	የወጣ በሽታ ምን ተጽዕኖ ያሳድራል		
205	የወጣ ስርጭት ዘዴዎች ምን ድናቸው	<ol style="list-style-type: none"> 1. የወጣው ትንንኝ ንክሻ 2. ሌሎች 3. ምን እንደሆነ አላወቅም 	
206	የወጣ ትንንኝ ማጠቃለያ ምን ድነው	<ol style="list-style-type: none"> 1. ነክሻ ወጣን ማስተላለፍ 2. ሌላ 3. አላወቅም 	
207	የወጣ ትንንኝ ማራቢያ በታን ያወቃሉ	<ol style="list-style-type: none"> 1. አዎ 2. አይ 	አይ ከሆነ ቁ209 ይህዱ
208	ቁ207 አዉከሆነ የት ነው የሚታሰብው	<ol style="list-style-type: none"> 1. የተኛበት ወሃና እርጥብ በታወቀ 2. ቆሻሻ ቁሳቁሶች 3. ሌላ 	
209	የወጣን ትንንኝ የንክሻ ግዜን ያወቃሉ	<ol style="list-style-type: none"> 1. አው 2. አይ 	አይ ከሆነ ቁ211 ይህዱ
210	ለ ቁ209 አዎ ከሆነ ፣ የንክሻ ጊዜ ማቆየት ነው?	<ol style="list-style-type: none"> 1. ቀን 2. ማታ 3. በዩትኛውም ሰዓት 	
211	ዩወጣን በሽታ ማስለከል ይቻላል	<ol style="list-style-type: none"> 1. አዎ 2. አይ 	አይ ከሆነ ቁ303 ይህዱ
212	ለ ቁ211 አዎ ከሆነ ፣ የማስለከያ ዘዴዎች ምን እንደሆኑ ያወቃሉ?	<ol style="list-style-type: none"> 1. አጎበርን ማጠቃለያ 2. ቤት ውስጥ ጥፀረ ወጣ ማድሃኒቶችን 	

		<p>ሞር ጩታ</p> <p>3. የ ወባ ትንኝ የ ምን ጩታ መቀነስ</p> <p>4. ፀረ ወባ መድኃኒቶችን መግባቀም</p>	
213	በ ወባ በሽታ በብዛት የ መገባቱ የ ህብረተሰብ ክፍሎች	<p>1. ነፈሴ ፀር እና ቶችና ህፃናት</p> <p>2. ሌሎች</p>	

ክፍል 3 - ስለ ወባ የ መከላከያ እርምጃዎችን መለመድ

ተ.ቁ	ጥያቄዎች	ምር ጩ	ዝላል
301	በቤትዎ ዙሪያ ቁጥቁጦዎችን ምን ያህል ያጸዳሉ/ይቆርጡ?	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	
302	ከቤትዎ አጠገብ የቆመ ውሃ ምን ያህል ጊዜ ያጸዳሉ	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	
303	በ ወባ በሽታ መከላከል ዘመቻዎች ውስጥ ምን ያህል ጊዜ ይሳተፋሉ?	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	
304	በ ፀረ -ተባይ መድኃኒት በተያዘው የ ወባ ትንኝ መረብ (ITN) ውስጥ ምን ያህል ጊዜ ይተኛሉ?	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	
305	እርስዎ እና ቤተሰብዎ ሲታመሙት ጊዜ የጠፍተዋል ምን ያህል ይጎበኛሉ?	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	
306	መከላከያዎችን ምን ያህል ጊዜ ያጠራሉ?	<p>1. ሁሌም</p> <p>2. አንዳንድ ጊዜ</p> <p>3. በጭራሽ</p>	

307	ተባይ ማጥፊያ (አይኦርኤስ) ምን ያህል ጊዜ ይጠቀማሉ?	1. ሆሌም 2. አንዳንድ ጊዜ 3. በጭራሽ	
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ክፍል 4 ለወባ ማላከል እርምጃዎች አመለካከት

ተ.ቁ	ጥያቄዎች	እስ ማማላሁ	በጣም እስ ማማላሁ	አልስ ማም	በጣም አልስ ማም
400	ወባ ለሕይወት አስጊ የሆነ በሽታ ይመክላል				
401	ወባ ተላላፊ በሽታ ነው				
402	እኔ ራሴን ወባ እንዳያገኝ ለማላከል ከሁሉ የተሻለው መንገድ ከትንኝ ንክሻ ሚቅ ይመክላል				
403	ሙታ በአጎ በር ወስጥ ሙታች አንዱ ከወባ በሽታ የማላከል ዘዴ ነው ብዬ አምናለሁ				
404	እርግጠኛ ነኝ ራሴን በራሴ ማክምጠፍ ዬ ለይጉዳት				

	ያመጣል				
405	በእኔ እምነት ልጆች እና እርጉዝ ሴቶች በወባ በሽታ የመጋለጥ እድላቸው ከፍተኛ ነው				
406	አንድ ሰው ያለህ ህክምና ከወባ በሽታ በድንገት ማግኘት የመይችል ይመክላችል				
407	ወባ በመካከት ሊተላለፍ አይችልም				
408	በ ITN ስር ካልተኛ ትልቅ አደጋ ነው				
409	የወባ ህክምናን አለማጠናቀቅ አደገኛ ነው				
410	ወባ ሲይዘኝ የምክር አገልግሎት ፈልጌ አውቃለሁ				
411	ወባ በሽታ ስይዘኝ				

	ወደያው ህክምና አገኛለሁ				
412	ራሴን ከወባ በሽታ ለመከላከል መድኃኒቶችን ከሱቆችና ከግል ፓርሜንት መግዛት አለብኝ ብዬ አስባለሁ				
413	የትኩሳት ስሜት ስሰማኝ የደምና መፍ ሰጥኛ መሞረ መረ አለብኝ ብዬ አውቃለሁ				

Annex II: Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other University and that all sources of materials used for the thesis have been fully acknowledged.

Name: _____

Signature: _____

Name of the institution: _____

Date of submission: _____

This thesis has been submitted for examination with my approval as University advisor

1. Name HENOK ASSEFA (Assistant Professor) Date _____

Signature of first advisor: _____

Name Mamo Nigatu (BSc, MPH)

Signature of second advisor: _____

Date _____