



Knowledge and Attitude towards COVID-19, Face Mask Use Practice and Associated Factors among Metu Health Science College Trainees: Cross-sectional Study.

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Abstract

Background: The coronavirus disease has become a major global public health issue. Correct knowledge and attitudes are of paramount importance in enhancing preventive practice. Among the COVID-19 prevention techniques, mask-wearing is considered the most recommended. In the country of Ethiopia, even though different works of literature are available about COVID-19, there is still limited information on knowledge and attitude towards COVID-19 and face mask use practice among health care trainees in health training institutions and colleges.

Objectives: To assess the knowledge and attitude towards COVID-19, face mask use practice, and associated factors among Metu Health Science College (MHSC) trainees, Southwest Ethiopia, 2022.

Methods: A cross-sectional study was conducted among MHSC trainees from Jan. 24 to Mar. 7, 2022. The sample size for this study was 257 and the sampling method used was systematic random sampling after proportional allocation of samples to each departments. Data were collected by using a self-administered and structured questionnaire. Data were entered using Epi-Data Version 3.1 and analysis was carried out by Stata. Descriptive statistics were computed. Univariate and multi-variable logistic regression analyses were used to identify factors associated with the dependent variable. A p-value of less than 0.05 was used to declare statistical significance using an AOR with a 95% CL.

Results: The overall adequate knowledge and favorable attitude towards COVID-19 and proper face mask use practice were 66.26%, 51.22%, and 72.76% respectively. The factors associated with trainees' knowledge about COVID-19 were age group 20-24 years old (AOR=3.21, 95% CI:1.52-6.75) and 25 and above years old (AOR4.550= 95% CI: (1.854, 11.166)), completing certificate and above (AOR=3.35, 95% CI: 1.82-6.16) and being first year, (AOR=2.39, 95% CI: 1.05-5.47). The predictors of attitude towards COVID-19 were being 2nd-year college duration (AOR=2.21, 95% CI: 1.18-4.11), average monthly income >1500 ETB (AOR=4.63, 95% CI: 2.27-9.44) and having previous experience on IPC (AOR=2.22, 95% CI:1.19-4.11). Again the predictors of mask use practice were age 20-24 years old (AOR=2.19, 95% CI: 1.04-4.63), being employed (AOR= 2.64, 95% CI: 1.12-6.25) and being married (AOR=4.10, 95% CI: 1.91-8.82).

Conclusion: The knowledge as well as attitude of participants towards COVID-19 and mask use practice was low. The factors associated with participants' knowledge of COVID-19 were age group, educational status and college duration. Also predictors of attitude towards COVID-19 were college duration, average monthly income and having previous experience on IPC whereas the predictor of mask use practice were employment status, age group, and marital status. So, an effective strategy should be developed to enhance the trainees' knowledge and attitude towards COVID-19 and mask use practice.

Keywords: Knowledge, Attitude, COVID-19, Face Mask, Face mask use practice, MHSC

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Abbreviations

AOR: _____ Adjusted Odds Ratio

ARDS: _____ Acute Respiratory Distress Syndrome

CDC: _____ Diseases Prevention and Control

CI: _____ Confidence Interval

COR _____ Crude Odds Ratio

CoV2 _____ Corona Virus 2

COVID-19: __ Corona-Virus Disease 2019

EMOH _____ Ethiopian Ministry of Health

ETB: _____ Ethiopian Birr

HCWs: _____ Health Care Worker

HEW: _____ Health Extension Worker

HIA: _____ Health Information Administration

IAB: _____ Ilu Aba Bor

IPC: _____ Infection Prevention and Control

IRB: _____ Institutional Review Board

KAP: _____ Knowledge Attitude and Practice

LR: _____ Logistic Regression

MHSC: _____ Metu Health Science College

PPE: _____ Personal Protective Equipment

SARS-CoV-2: __ Severe Acute Respiratory Syndrome Corona-Virus -2

TVET: _____ Technical and Vocational Education and Training

USA: _____ United State of America

WHO: _____ World Health Organization

1. Introduction

1.1. Background

The coronavirus disease (COVID-19) caused by coronavirus-2 (CoV-2), has become a major global public health issue(1). The disease course is unpredictable and ranges from asymptomatic to mild respiratory infections to pneumonia and even to acute respiratory distress syndrome (ARDS)(2). Person-to-person transmission by inhalation or contact with droplets emerged as a leading source of infection(3). It is affecting all age groups, but elderly people are more at risk (4). The virus has no effective treatment. However, several vaccines are currently available to decrease the spread and severity of the pandemic(5).

The World Health Organization (WHO) declared COVID-19 a ‘pandemic’ on 11, March 2019 as a public health emergency of international concern. The outbreak has not only resulted in a serious death toll but also triggered a range of social and psychological reactions, imposing immeasurable consequences on socioeconomic impacts(6). A high rate of transmission makes it difficult to control. It affects more than 355.6 million people globally, 10.8 million people in Africa, and 462,514 people in Ethiopia, making it the 3rd highest hit in Africa, based on the WHO report of January 2022(7).

For any infectious disease outbreak, the standard precautions are considered the first-line defense of controlling the outbreak(4). To control COVID-19, proper use of masks, hand hygiene, and social distancing have proved extremely useful in most countries. Among other practices, mask-wearing is considered the most recommended practice for infection control and breaking the transmission chain of COVID-19(8). Face masks use (both medical and cloth masks) and respirators are strongly recommended as a standard for transmission-based safety measures(9). However, proper use of a face mask is critical to preventing the spread. According to the WHO, improper use and inappropriate discarding of this mask increase the degree of spread(10).

In addition to different COVID-19 prevention measures, people must have adequate knowledge and attitude for a successful control over COVID-19(11). Knowledge of disease can influence attitudes and practices(12). So, correct knowledge and attitudes have paramount importance to prevent the transmission of the virus by enhancing the preventive practice of people(13). In Ethiopia, limited studies have been conducted to date to address the knowledge and attitude as well as the prevention measures of COVID-19 of health care trainees (14). Hence this study assessed the knowledge and attitude about COVID-19, face mask use practice, and associated factors among Mettu health science college trainees (MHSC) 2022.

1.2. Statement of the problem

The COVID-19 pandemic was the greatest public health crisis in a century(15). The spread of the virus has shown exponential growth(16). Earlier reports showed a 26.4% and 4.1% risk of dying among individuals aged above 60 and below 45years respectively(17). The outbreak has not only resulted in a serious death toll but also triggered a range of social and psychological reactions, imposing immeasurable consequences on society(6). Globally, More than 213,345,924 people were infected, and 4,454,131 deaths were reported on August 24, 2021(18). In Africa, 5,399,250 confirmed cases and 140,574 deaths have been reported(19). As of December 1, 2021, Ethiopia had reported 371,672 confirmed cases of COVID-19 and 6,771 deaths(20).

To control COVID-19 a variety of public health and hygiene measures have been initiated; the most visually noticeable perhaps is the wearing of face masks. The medical research on the use of face masks as against SARS-CoV-2 transmission and adopted as one of the measures to reduce the COVID-19 spread(21). But in the usage of face masks, there are several limitations. A web-based survey conducted in Ethiopia indicated that the overall magnitude of correct use of facemask among health professionals was 10.1%(22). As to local area available information, a study conducted in households of Ilu Aba Bor (IAB) and Buno Bedele Zones in 2021 indicated that the majority(38.1%) of the respondents had a low face mask practice (23). A study conducted in the Sidama region state in 2020 indicated that age, marital status, educational status, occupation, and monthly income had a significant association with good knowledge and marital status, educational status, and knowledge about COVID-19 were found to be independently associated with good practice of COVID-19(24).

Given all these impacts there is no specific medicine recommended to prevent or treat them (7). In December 2020, several vaccines were authorized and now begun vaccination in several countries around the world(25). Preventive measures are the only available means to control the spread of the virus and minimize its impacts (7). So, increasing the level of knowledge and attitude by applying preventive measures to control COVID-19 infection is the most critical intervention(26).

Regarding COVID-19 despite the presence of guidelines, training, and materials prepared by WHO, MOH, and others, significant numbers of health care trainees remain to have limited knowledge and negative attitude about COVID-19(27). Also, limited studies have been conducted to date to address the practice of trainees towards the prevention measures of COVID 19 in the country including face mask use practice (14). There for, this study assessed the level of knowledge and attitude about COVID-19, the current status of face mask use, and associated factors among trainees in MHSC.

1.3. Significance of Study

The emerging disease, COVID-19, affected all aspects of life including educational institutions and colleges. As there has been no effective treatment, the available means remain prevention and control methods. For this to be effective the knowledge and attitude towards the disease that influences the preventive practice as well as the level of important practice itself such as mask use practice of the risk and less reached segment of the population needs special attention than anybody else. There for, this study on knowledge and attitude towards COVID-19, face mask use practice, and associated factors among MHSC generated the information about trainees that would be used as a baseline for college administrative bodies and supports prevention and control of the COVID-19 if the recommendations would be implemented. In turn, the study findings would benefit the participants if the identified factors were focused on controlling the spread of the disease. The concerned government bodies and partners would also use the findings and play their shares in equipping the trainees on identified gaps that would benefit not only trainees but also the society as a whole. Also, it was expected that the findings of the study would support existing finding and serve as a reference for interested reasearcher about the topics.

2. Review of Related Literature

2.1. Knowledge and attitudes towards COVID -19

Knowledge of the disease including causes, signs/symptoms, and the possible methods of prevention can facilitate the proactive application of preventive measures (28). It can influence attitudes and practices, and incorrect attitudes directly increase the risk of infection (23). A study conducted in North Ethiopia, 2020 indicated that fever (383 (94.6%)), cough (348 (85.3%)), and shortness of breath (335 (82.1%)) were as commonest symptoms of COVID-19 (27).

A Cross-sectional Study done among College Students in Amhara Region, Ethiopia in 2020 indicated that age group, marital status was a predictor of knowledge; marital status, educational level, and college duration were a predictor of attitude; field of study and college duration was a predictor of practice towards COVID-19(14).

A study conducted among Mizan-Teppi university students in 2020 indicated that field of study associated with knowledge about COVID-19 and field of study, completing college and above, and monthly income were associated with positive attitudes towards COVID-19(28).

A study conducted among patients of a selected hospital Sidama region state in 2020 indicated that age, marital status, educational status, occupation, and monthly income had a significant association with good knowledge and marital status, educational status, and knowledge about COVID-19 were found to be independently associated with good practice of COVID-19 prevention approaches among chronic disease patients at a P-value of <0.05(24).

A cross-sectional Survey conducted in Uganda indicated Out of 1763 participants, 1479 (83.9%) scored 19-27 and were therefore highly knowledgeable about covid-19 followed by 257 (14.6%) moderately knowledgeable and 27 (1.5%) poorly knowledgeable(29).

2.2. Face mask wearing practice

A good prevention practice might result in decreased morbidity, mortality, and delayed spread of the disease(30). Given high rates of presumed community transmission of COVID-19 and evidence for asymptomatic transmission, there have been moves toward the use of universal use of face masks, focusing on the potential for innovation and knowledge sharing from an infection prevention perspective, which could enhance safety in the current COVID-19 pandemic (23). A study conducted in Kombolcha Town and Dessie City in Amhara Regional State in the north-central part of Ethiopia indicated that the

proportion of taxi drivers who wore a facemask was 54.68% and those who did not wear facemask were 45.32% (31)

A community-based cross-sectional study conducted among residents of Bahir Dar towns in the Amhara region, North Ethiopia, 2020, showed that educational status, occupational status, level of knowledge, and attitude were found to be significantly associated with mask wearing practice (32).

A study conducted in Addis Ababa among health workers in 2020 indicated that 66.7% of respondents had a poor practice of face mask utilization. The difference in usage in professional categories are nurses 48.20% (the good practice of face mask use was higher), medical doctors 9.60%, midwives 30.1% (the proportion of poor face mask use was higher among midwives), and health officers 19.10%. More than half 59.6% of the professionals removed their face masks if there is a need to talk to the patient while 77.7% of the store used a mask in a bag for later use if not sick. One-third of 33.3% of the study participants do not wear a face mask in public places and 372 (91.3%) of them wore face masks on hospital premises. A significant number of 37.0% of health professionals do not clean their hands before wearing their face masks and more than half 57.1% (233) of them check the inside and outside of the mask before wearing it. Close to three-fourths 71.6% of them did not clean their hands after taking off the mask and 77.0% re-used a single-use mask (9).

A study conducted in conducted in Northwest Ethiopia indicated that the overall COVID-19 preventive practice among HCWs found was to be 38.7%, about 84% of the participants washed their hands frequently with soap/hand sanitizers before and after contacting patients and entering their home and 36.3% of healthcare providers were not using a face mask in the working place(33).

A web-based cross-sectional survey conducted in Ethiopia indicated that the overall magnitude of correct use of facemasks among health professionals was 10.1%. About 30% and 42% did not wear facemask before contact with patients and in the patient transit areas, respectively. Most (60.6%) of health professionals adjust their facemask during patient care. The majority (87.8%) of them use disposable facemasks more than one time(22). This study will assess the mask use practice of trainees.

The study conducted in the USA in 2019 indicated that there was a significant decline in daily COVID-19 growth rate after the mandating of face covers in public with the effect increasing over time after the orders were signed, also projected the number of averted COVID-19 cases with the mandates for face mask use in public by comparing actual cumulative daily cases with daily cases predicted by the model if none of the states had enacted the public face cover mandate at the time they did (34).

A cross-sectional study conducted in Hong Kong in 2017 showed that the performance of the participants in terms of technique was unsatisfactory. None of the participants could correctly perform all 12 steps. On average, they could correctly perform six out of 12 steps. The majority of the participants did not perform hand hygiene before putting on (91.5%), taking off (97.3%), or after disposing of (91.5%) the face mask. Two-thirds of the participants (63.6%) touched the face mask after securing it. Similarly, two-thirds of the participants (70.3%) touched the body of the face mask instead of the elastic bands whilst taking the face mask (35)

2.3. Associated factors with face mask use practice

Face masks were considered an effective method of preventing respiratory infections like coronavirus infection. Identifying knowledge regarding face mask utilization is very important to identify gaps and intervene immediately to control the spread of the infection(9). Good knowledge and a positive attitude regarding the use of personal protective measures should lead to the proper practice of Infection Prevention and Control(IPC) (36).

A study conducted in Northwest Ethiopia, 2020 among healthcare workers indicated that sex, years of working experience, and attitude were found to be significantly associated with poor COVID-19 preventive practice(37).

A cross-sectional study conducted in Brazil indicated that being a woman continued as a factor associated with the more frequent use of masks, presenting approximately twice the likelihood of wearing masks, while having contact with people presenting respiratory symptoms increased approximately 1.8 times the likelihood of wearing masks. Being a woman also remained a factor associated with the reuse of surgical masks, though, the reuse of surgical masks was two times less likely among women than in the population(38).

2.3.1. Knowledge and attitude towards face mask use practice

People's knowledge, attitudes, and practices regarding the disease are the keys to ensuring success in the battle against the deadly disease. More knowledge was also found to be correlated with more optimistic attitudes toward COVID-19 preventive practices(39).

A study conducted in Addis Ababa, the capital city of Ethiopia, among health workers in police health facilities in 2020 indicated Sex, educational level, and profession were found to be significantly associated with knowledge about face masks used with a P-value < 0.05(9).

A cross-sectional survey carried out in Dhaka City in Bangladesh, 2020 indicated that the knowledge score was positively along with significantly correlated with the score of both attitudes and practice(39)

An institutional-based cross-sectional study on awareness and knowledge of COVID-19 in Egypt, 2020 indicated that the correlation coefficient, existing between the major knowledge, attitude, and practice variables were analyzed. A weak positive correlation was observed between attitude and practice and this result appeared to be highly significant ($r = 0.2$; $p < 0.01$). However, no correlation appeared to exist between knowledge and attitudes or knowledge and practice(40).

A community-based cross-sectional study conducted in selected woredas of Ilu Ababor and Buno Bedele Zones, Southwest Ethiopia, 2020: indicated that a total of 420 individuals responded to the attitude questions; among them, the majority (39%) of them have a moderate attitude and almost one third (33.3%) of them had a high attitude towards prevention of COVID-19 (23).

2.3.2. Other Factors associated with facemask wearing

A cross-sectional study conducted in Dessie City and Kombolcha Town in north-eastern Ethiopia, 2020: indicated that the factors of marital status, fear of COVID-19, belief in the effectiveness of facemasks, and presence of government pressure to wear a facemask showed significant association with facemask wearing among taxi drivers (31).

Institution based cross-sectional study conducted in selected public health facilities in Ilu Abba Bor and Buno Bedelle Zones, Southwest Ethiopia, 2020 indicated that gender, educational status, profession, years of service, knowledge of COVID-19, and availability of personal protective equipment were significantly associated with good infection prevention practices (41)

2.4. Conceptual framework

This was a conceptual framework used to show the relationships between the dependent variables and the independent variables in the study.

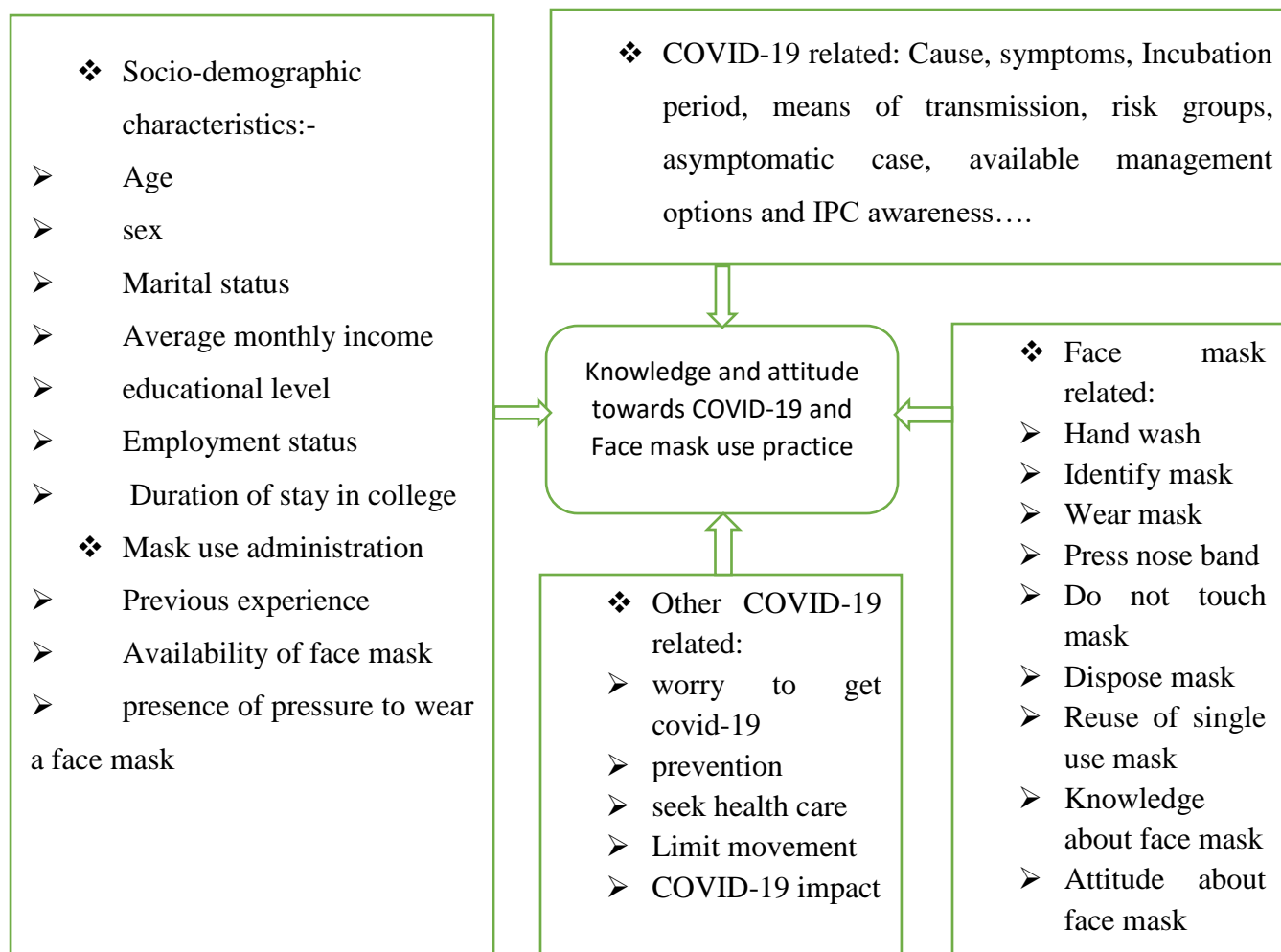


Figure-1: Conceptual framework showing relationships between outcome variables and independent variables in a study among MHSC in Illu Aba Bor Zone, Southwest Ethiopia, 2022 (Adapted from the article (42)).

3. Objectives

3.1. General objectives

To assess knowledge and attitude towards COVID-19, face mask use practice, and associated factors among MHSC trainees in IAB Zone, Southwest Ethiopia, 2022.

3.2. Specific objectives

- To assess the level of knowledge about COVID-19 among MHSC trainees, IAB Zone, Southwest Ethiopia, 2022.
- To assess the attitude towards COVID-19 of MHSC trainees, IAB Zone, Southwest Ethiopia, 2022.
- To determine the magnitude of face mask use practice of MHSC trainee, IAB Zone, Southwest Ethiopia, 2022.
- To identify factors associated with knowledge of COVID-19 among MHSC trainees, IAB Zone, Southwest Ethiopia, 2022
- To assess factors associated with attitude towards COVID-19 among MHSC trainees, IAB Zone, Southwest Ethiopia, 2022.
- To predict the associated factors with face mask wearing practice among MHSC trainees, IAB Zone, Southwest Ethiopia, 2022.

4. Methods and Materials

4.1. Study area and period

The study was conducted in MHSC that found in Metu town Illubabor Zone Oromia Regional state southwest of Ethiopia. Mettu town is located 600 kilometers far from Addis Ababa, the capital city of the country. The college was established in 1966. to train junior health professionals and up-graded to college level in 2004. Currently, the college was providing technical and vocational training for Health Extension Workers (HEW), pharmacy technicians, laboratory technicians, and Health Information Administration (HIA). The staff organizations of the college were trainer males (29) 78.38% and females (8) 21.62% and administrative office staff males (18) 43.9% and females (23) 56.1% making a total staff number of 78. At the time of data collection, the college was provided training for 597 trainees. This study was conducted from Jan 24 to Mar 7, 2022.

4.2. Study design

A cross-sectional study was conducted.

4.3. Population

4.3.1. Source population

All trainees of the Metu health science college.

4.3.2. Study population

Trainees of the MHSC who were available during the data collection period and fulfilled inclusion criteria.

4.4. Inclusion and exclusion criteria

Inclusion criteria: Trainees who were attending a class during the data collection period.

Exclusion criteria: Trainees who were not attending a class due to health problem (if hospitalized) were excluded from the study.

4.5. Sample size determination

The sample size was determined by using the single population proportion formula by considering the following statistical assumptions:

Confidence level (CI), 95% ($Z = 1.96$, the corresponding Z-score for the 95% CI)

P1 = proportion of knowledge about COVID-19 to be = 50% (43)

P2 = Proportion of favorable attitude towards of COVID-19 to be = 65.7% (27)

P3 =Proportion of face mask use practice to be = 54.6% (31).

Margin of error (D) 5% = 0.05

n = initial sample size

Using the following single proportion formula:

$$n = \frac{(Z_{\alpha/2})^2 * p(1-p)}{(D)^2} \text{ and}$$

Correction formula $n_f = n / (1+n/N)$ since study population was less than 10,000 as indicated and summarized in table blow and there for the largest sample size was taken (257) to maximize the final sample size.

Table-1: Sample size calculation by using single proportion formula for different variables of study of MHSC trainees in Illu Aba Bor Zone, Southwest Ethiopia, 2022.

Variable Used	P (Proportion)	CI = 95%	d= 0.05	n=initial sample size	nf =final sample size	After adding non-response rate=10%	Remark
Knowledge of COVID-19	50%	1.96	0.05	384	234	257	√
Attitude towards COVID-19	65.7%	1.96	0.05	343	218	240	
Face mask use	54.6%	1.96	0.05	381	233	256	

The sample size for the second objective using Epi-Info-7:

Factors	CI	Power	The ratio of unexposed to exposed	% in unexposed	% in exposed	OR	Sample	Ref.
Marital status (Married)	95	80	0.74	40.4	65.3	2.77	143	(31)
Fear of COVID-19 (Yes)	95	80	0.59	35.5	66	3.52	102	(31)

4.6. Sampling technique

The systematic random sampling technique was used to select sampled trainees after proportional allocation to the size of trainees at each department of Metu Health Science College (MHSC). The active departments in college with their trainees were Health Extension Worker (HEW) with 445 trainees, Health Information Administration (HIA) with 52 trainees, Laboratory technician with 50 trainees, and pharmacy technician with 50 trainees.

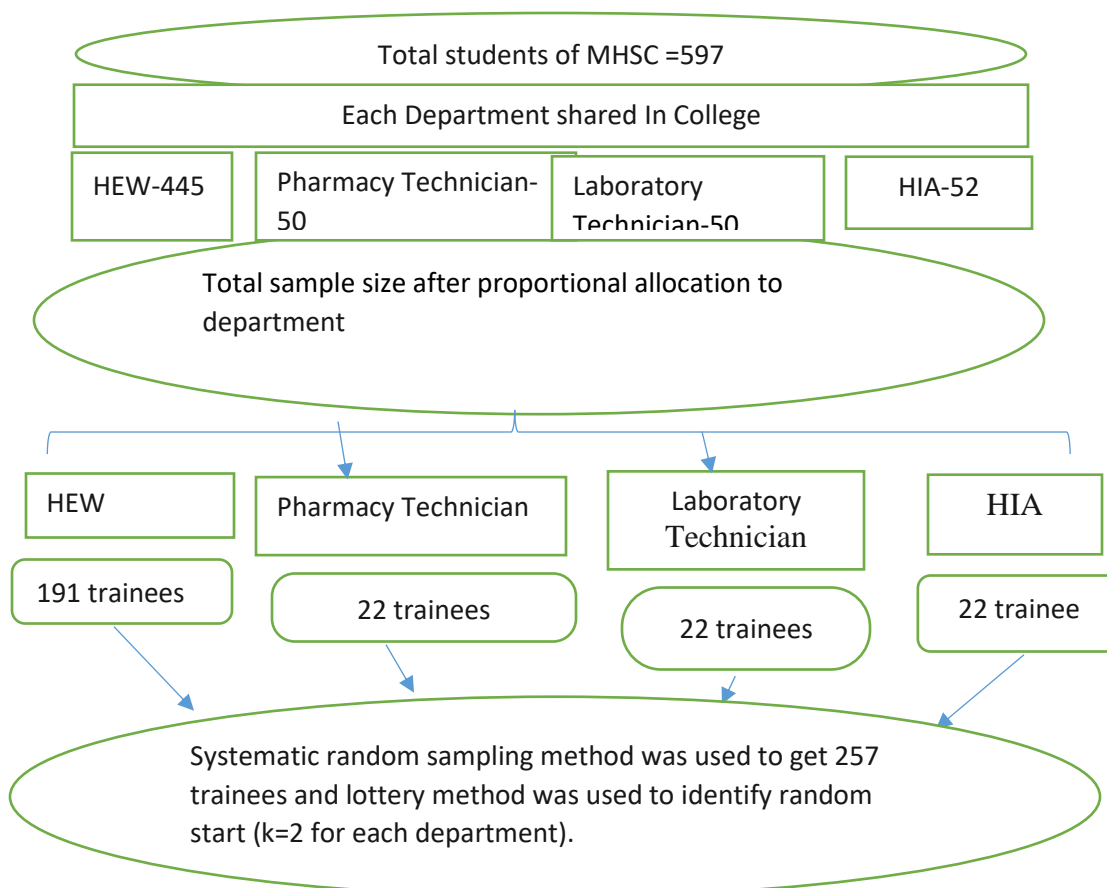


Figure-2: Indicating sampling technique, the total number of trainees as well as final sample size with its proportional allocation to the size of trainees to each department at MHSC in Illubabor zone, Southwest Ethiopia, 2022.

In the above figure-2: the sampling technique with its proportional allocation to the size of trainees to each department at MHSC, proportional allocation to the size of trainees to each department of the college was done by using the formula;

$$n_i = (n/N) * N_i \quad \text{where;}$$

1. n = total sample size of the study (257 trainees),
2. N = total target population for study (total number trainees of MHSC=597),
3. N_i = total trainees of each department,
4. n_i =sample size from each department as pictorially indicated above.

The interval, $K=N/n$, where, N = total number of trainees at each department and n = number of allocated sample size from each department was, for HEW will be 2 ($445/191 = 2.33$), for pharmacy technician 2 ($50/22= 2.27$) for laboratory technician 2 ($50/22= 2.27$), for HIA 2 ($52/22=2.36$). The first sampled trainees from each department (one trainee out of the first two trainees) were selected by the lottery method and then sampled trainees were selected systematically from each department until the required sample size was reached.

4.6. Data collection procedure

Data were collected using structured and self-administered questionnaires adapted from different works of literature (44), (10). Six trainer (BSc holder) of the college were trained to be a data collectors and assigned by shifting from one department to another department to inform, administer, and collect the questionnaire by check completeness at the point of data collection. A supervisor, health informatics (MSc), was assigned to oversee the data collection process. The principal investigator coordinated and supervised all activities and re-checked the completeness and consistency of the response to questionnaires.

4.7. Study Variables

4.7.1. Dependent variables

The dependent variables of this study were: knowledge about COVID-19, attitude towards COVID-19, and face mask use practice

4.7.2. Independent variables:

- Independent variables categorized under socio-demographic variables and related were age, sex, marital status, educational level, employment status, year of staying in college, previous experience and average monthly income
- Independent variables related to mask administration were availability of personal protective equipment such as a mask, previous experience on IPC, and presence of government pressure to wear a facemask.
- Independent variables of related to COVID-19 were Cause, symptoms, Incubation period, means of transmission, risk groups, asymptomatic case, available management options, and IPC awareness
- Independent variables of other COVID-19 related were worry to get covid-19, prevention, seek health care, Limit movement, COVID-19 impact, and belief in the effectiveness of facemasks
- Independent variables under Face mask were hand wash, identify mask, wear mask, press nose band, do not touch the mask, dispose mask, reuse of single-use mask, knowledge about face mask and attitude about face mask

4.8. Operational definition

Trainees: were candidates of the Technical and Vocational Education and Training (TVET) program who were taking short or long-term training and would be certified with levels II, III, IV, and V, and the term was equivalent to students.

A face mask can be any type of mask used by trainees for the primary function of reducing the transmission of particles or droplets by providing some breathing barrier to the mouth and nose that have been utilized for reducing the transmission of the respiratory pathogen (45).

Medical masks: Surgical or procedure masks that were flat or pleated; and also N95 facemasks affixed to the head with straps that go around the ears or head or both (46).

Non-medical masks: Masks made out of different combinations of fabrics (cloth), layering sequences, and available in diverse shapes (46).

Knowledge about COVID-19: About 18 questions on knowledge of COVID-19 such as Cause, symptoms, Incubation period, means of transmission, risk groups, asymptomatic case, available management options, and IPC awareness were asked. Each correct answer in the item category was given a score of 1 and each incorrect response was given a score of 0. The final score was determined and the labels were assigned based on the results. A correct answer of >14.5 out of 18 questions (>80%) was

considered adequate knowledge, while an incorrect response of ≤ 14.4 ($\leq 80\%$) was considered inadequate knowledge(10).

Attitude towards COVID 19: A total of nine questions including worry to get covid-19, preventability, seeking health care, Limit movement, and COVID-19 impact were asked to assess attitude towards about COVID- 19. The 5-point Likert scale response options, scored from 1 to 5, strongly disagreed, disagree, neutral, agree, and strongly agree were used. Overall attitude score was dichotomized using the median score as the cut-off point because the data violate the normality assumptions with highly skewed (-1.67). Participants are categorized as having a favorable attitude if they have a median and above score, otherwise unfavorable attitude towards COVID-19.

Proper Face mask use practice: was assessed by 14 questions based on the World Health Organization (WHO) guidance on the correct use of face masks(10) such as Hand washing before and after masking, identifying the inside and outside of the mask, wear mask, press nose band, do not touch the mask, dispose mask and do not reuse the single-use mask. Each correct response scored 1 and each incorrect response scored 0. The correct response of >11 out of 14 questions ($>80\%$) was considered proper mask use practice and the incorrect response of ≤ 11 out of 14 questions ($\leq 80\%$) was considered as improper mask use practice(10).

Knowledge about face masks: was assessed by asking a face mask questions including purpose, the correct way of use, number of layers, how long it can be used, and effectiveness of cloth masks as compared to medical masks. For the convenience of analyses, each correct response in the knowledge category was scored 1, and each incorrect response was scored 0. The final score was calculated and then labeled based on the score (out of 9). The correct response of >7.3 out of 9 questions ($>80\%$) were considered good knowledge and ≤ 7.2 ($\leq 80\%$) was considered poor knowledge (9)

The Attitude of Face Mask Utilization: Respondents were asked eight questions including necessity and effectivity of Face mask at preventing potentially infectious droplets from spreading, encouraging mask-wearing, worry, and fear of COVID-19 to describe their level of agreement in a five-scale response formatted from “strongly disagree” to “strongly agree”. The 5-point Likert scale response options, scored from 1 to 5, strongly disagreed, disagree, neutral, agree, and strongly agree. Participants are categorized as having a positive attitude if they have a mean and above score, otherwise a negative attitude towards COVID-19 (9)

4.9. Data processing and analysis

The data were checked for completeness, edited, coded, and entered using Epi-Data version 3.1 and exported to Statistical Package for Social Science (SPSS) version 20 and Stata software for statistical analysis. Descriptive statistics such as frequency and percentage were computed for all variables and mean and standard deviation was also calculated for quantitative variables. The association between each independent variable and the outcome variable was assessed by using multivariable logistic regression. Stepwise backward variable selection was used. All variables with P-value ≤ 0.25 in the univariate were included in the final model of multivariable analysis to control all possible confounders. Adjusted odds ratio (AOR) along with 95% Confidence intervals (CI) was computed and P-value < 0.05 was considered to declare factors that have a statistically significant association with the outcome by using multivariable logistic analysis in the multivariable regression. The log-likelihood ratio test was used to select the best model. Finally; the result was presented in the form of narration and tables.

4.10. Data quality assurance

To maintain the quality of the data, a structured questionnaire was prepared in the English language first and then translated into the local language, Afaan oromoo, and then translated back to the English language to check consistency with the original questionnaire by language experts. Then the translated versions were used for data collection. The training was given to the data collector and supervisor. Orientation was given to trainees during the data collection date concerning the objective of the study, how to fill their choice, and the importance of complete data in information processing. The collected data were reviewed and checked for completeness and consistency by the supervisor and principal investigator. The questionnaire was modified from pre-existing articles, and also pretest was conducted on 13 trainees (5% of the sample size) at a private college, Green Computer College, trainees at Mettu town 02 Kebele.

4.11. Ethical consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of Jimma University, the Faculty of public health, school of postgraduates, and then a formal letter was written from the department of epidemiology to MHSC for necessary co-operation to began the study. Before data collection, COVID-19 protocol risk communication was done by the data collectors. Then trainees were asked for written consent after informing the objective of the study and confidentiality issues (personal identification was not used in a way that might threaten the respondent) and also informed that there was no payment/incentive for in participating the study.

4.13. Dissemination

The finding of the study would be presented to Jimma University, Institute of Health, Faculty of Public Health, Department of Epidemiology. It would also be communicated to the rest of staff members and students through the University library. The result of the study would again be disseminated to MHSC, IAB Zonal Health Bureau, and Oromia Regional Health Bureau (ORHB) through a soft copy. Also an attempt would be made to publish the findings.

5. Results

Socio-Demographic Characteristics of participants

Out of 257 sampled trainees, 246 (95.71%) participated in this study. Among them 112 (45.53%) participants were found in the 20-24 years age group and 51 (20.73%) participants were found below the 19 years age category. The mean and standard deviation of participants' age was 23.20 and ± 0.299 with a minimum of 17 and a maximum of 42 years. As to the marital status of participants, 111(45.1%) were married and 135 (54.9%) were not married. Concerning the educational background of trainees, 117(47.6%) had completed high school and 129 (52.4%) had completed certificate or above entry to the recent training. As to the employment status, 99 (40.2%) of participants were employed (up-grading especially HEWs and HIA) and the rest were not employed. Finally about 104 (42.3%) of participants had earned above 1000 Birr and 44 (17.9%) had earned 1000-1500 Birr as a average monthly income. The mean income of participants' were 2309.79 Birrs ± 153.2143 Birrs (as indicated in table-2).

Table-2: Socio-demographic characteristics of participants in MHSC in IAB Zone, Southwest Ethiopia, 2022.

Variables	Classification	Value(n=246)
Sex	Male	33 (13.4%)
	Female	213 (86.6%)
Age categories Mean(SD)=23.20 (± 0.299)	< 19 years	51 (20.73%)
	20-24 years	112 (45.53%)
	25 and above years	83 (33.74%)
Marital status	Not married	135 (54.9%)
	Married	111 (45.1%)
Ethnicity	Oromo	237 (96.3%)
	Other	9 (3.7%)
Educational status	Completed high school	117 (47.6%)
	Completed Certificate and above	129 (52.4%)
Occupation	Not employed	147 (59.8%)
	Employee	99 (40.2%)
Average monthly Income in ETB Mean (SD) = 2309.79 (± 153.21)	<1000	98 (39.8%)
	1000-1500	44 (17.9%)
	>1500	104 (42.3%)
Religion	Orthodox	81 (32.9%)
	Muslim	92 (37.4%)
	Protestant	67 (27.2%)
	Other(Wakefata)	6 (2.4%)

Mask use practice administration-related variables

Out of the total respondents, 231 (93.9%) said that mask is available while 15 (6.1%) said mask did not available. Their response to the presence of pressure to wear a mask at college was 187 (76.0%) said Yes and 59 (24%) said No. About 159 (64.6%) trainees had previous experience on IPC as being up-grading trainees whereas 87 (35.4%) had no experience on IPC as indicated table-3 below.

Table-3: Mask uses practice administration-related variables of trainees of MHSC in Ilu Aba Bor Zone, Southwest Ethiopia, 2022.

Variables	Responses	Value
n		246
Is there availability of a mask	Yes	231 (93.9%)
	No	15 (6.1%)
Pressure to wear a facemask	Yes	187 (76.0%)
	No	59 (24.0%)
Experience in infection prevention	Yes	159 (64.6%)
	No	87 (35.4%)

Level of knowledge of participants about COVID-19

Out of 246 participants, 239 (97.2%) said COVID-19 is a viral infection and 244 (99.2%) said it is a contagious disease. Regarding clinical symptoms of COVID19 241 (98.0%) agree with fever, cough, shortness of breath, and fatigue and the rest do not. All participants (100%) agreed that touching an object or surface can infect by the COVID19 virus. About 239 (97.2%) responded positively that the COVID19 virus spreads via respiratory droplets but the rest did not. Generally the overall knowledge level of participants were 162 (66%) had adequate and 84 (34%) had inadequate knowledge levels (the detailed findings were included in table-4 below).

Table-4: Response of trainees to knowledge items at MHSC in Ilu Aba Bor Zone, Southwest Ethiopia, 2

Variables	Response category (n=246)	
	Yes (%)	No (%)
COVID19 is contagious	244 (99.2)	2 (0.8)
COVID19 is a virus infection	239 (97.2)	7 (2.8)
The symptoms of COVID19 are fever, cough, shortness of breath, and fatigue	241 (98.0)	5 (2.0)
Stuffy nose, runny nose, and sneezing are less common symptom of COVID-19 virus	119 (48.4)	127 (51.6)
COVID19 symptoms appear within 2 to 14 days	228 (92.7)	18 (7.3)
Early symptomatic and supportive treatment can help COVID19	237 (96.3)	9 (3.7)
Not all persons with COVID19 will develop severe cases	207 (84.1)	39 (15.9)
Touching or shaking the hands of an infected person would result in the infection	244 (99.2)	2 (0.8)
Touching an object or surface can infect by the COVID19 virus	246 (100.0)	
The COVID19 virus spreads via respiratory droplets	239 (97.2)	7 (2.8)
Persons with COVID19 cannot infect the virus others if he has no symptom	99 (40.2)	147 (59.8)
Wearing masks when moving out of the home is important to prevent the infection	232 (94.3)	14 (5.7)
Children and young adults do not need to take measures to prevent the infection	40 (16.3)	206 (83.7)
Avoid going to crowded places can prevent the COVID-19 infection	151 (61.4)	95 (38.6)
Washing hands with soap or sanitizer (60%) is important to prevent COVID-19	244 (99.2)	2 (0.8)
Traveling to an infectious area or having contact with someone who traveled to an area where the infection is present is a risk of developing an infection	244 (99.2)	2 (0.8)
Isolation and treatment of people infected with COVID-19 reduce the spread of virus	240 (97.6)	6 (2.4)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place	239 (97.2)	7 (2.8)
Over all knowledge adequacy	162 (66)	84 (34)

The attitude of participants towards COVID-19

Out of the total participants, 73 (29%) agree and 33 (13.4%) strongly disagree that they were worried that they might get Covid-19. Also, 175 (71.1%) strongly agree, 55 (22.4%) agree 4 (1.6%) neutral and disagree and 8 (3.3%) strongly disagree to if they develop symptoms of Covid19 they would seek to visit health facilities. Again 114 (46.3%) strongly agree and 11 (4.5%) disagree to the Outbreak had impacted

their study. Generally, the overall attitude score of the participants was classified as unfavorable attitude (120 (48.78%)) and favorable attitude (126 (51.22%)) towards COVID-19. The detailed findings were presented in Table 5 below.

Table-5: Response to attitude items and overall attitude score of participants of MHSC in Ilu Aba Bor Zone, Southwest Ethiopia, 2022.

COVID-19 Attitude Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Worried that you might get Covid19	33 (13.4%)	49 (19.9%)	37 (15.0%)	73 (29.7%)	54 (22.0%)
COVID19 is a preventable disease	7 (2.8%)	6 (2.4%)	18 (7.3%)	3 (29.7%)	126 (51.2%)
If they develop symptoms of Covid19 I will seek to visit HF.	8 (3.3%)	4 (1.6%)	4 (1.6%)	55 (22.4%)	55 (22.4%)
Limit of the movement decreases the transmission	20 (8.1%)	23 (9.3%)	34 (13.8%)	79 (32.1%)	90 (36.6%)
Students on campus are invincible for Covid19	94 (38.2%)	54 (22.0%)	28 (11.4%)	43 (17.5%)	27 (11.0%)
The outbreak has impacted your study	22 (8.9%)	11 (4.5%)	36 (14.6%)	63 (25.6%)	114 (46.3%)
Consumptions of raw vegetables and wild animal products have no role in the transmission of Covid-19	86 (35.0%)	60 (24.4%)	20 (8.1%)	38 (15.4%)	42 (17.1%)
Listening and following the direction of state and local authorities	8 (3.3%)	13 (5.3%)	8 (3.3%)	68 (27.6%)	149 (60.6%)
Health education can play an important role in COVID-19 prevention	8 (3.3%)	3 (1.2%)	1 (0.4%)	31 (12.6%)	203 (82.5%)
Overall attitude score	Unfavorable attitude score			120 (48.78%)	
	Favorable attitude			126 (51.22%)	

Knowledge about Face Mask

Knowledge about the face masks of participants were classified as inadequate knowledge about face masks (197 (80.08%)) and adequate knowledge about face masks (49 (19.92%)).

Attitude about face mask

Out of the total study participants, 123 (50%) had a positive attitude toward face masks and 123 (50%) had a negative attitude toward face masks.

Face mask use practices of trainees

Among total participants, 168 (68.3%) clean their hands before masking while 78 (31.7%) did not clean their hands before masking. The majority (234 (95.1%)) did not remove their mask if there was a need to talk to the patient whereas 12 (4.9%) remove their mask if there was a need to talk to the patient. About 227 (92.3%) Confirmed the metal nose band on the top but 19 (7.7%) did not it. When placing the loop around the ear 233 (94.7%) did it while 13 (5.3%) did not. Also as to Pulling the top and bottom of the mask to extend the folds 171 (69.5%) did it whereas 75 (30.5%) did not. As to Pressing the noseband 223 (90.7%) did it and 23 (9.3%) did not. As to those who did not touch the mask, 193 (78.5%) did not it but 53 (21.5%) did it. As to the removal of the mask from the face touching only the bands 230 (93.5%) did it and 16 (6.5%) did not it. As to avoid pulling the mask up over my forehead or down over my chin, 225 (91.5%) did it whereas 21 (8.5%) did not. As to identifying the inside and outside mask before wearing the mask, 243 (98.8%) did it but 3 (1.2%) did not do it. Also, about 211 (85.8%) participants Cleaned their hands after taking off the mask and 35 (14.2%) did not Clean their hands after taking off the mask. As for reusing a single-use mask 107 (43.5%) did it but 139 (56.5%) did not. Related to disposal of the mask when soiled or wet, 218 (88.6%) disposed of the mask when soiled or wet but 28 (11.4%) did not dispose of the mask when soiled or wet. Also about drinking or eating while masking about 226 (91.9%) did not eat, drink or smoke while wearing the mask. Finally, the response of participants about when they wore a face mask, 192 (78.0%) started at home, 35 (14.2%) started from entry to college, and 19 (7.7%) in class. Generally, the overall mask use practice of participants could be categorized as proper mask use practice (179 (72.76%)) and improper mask use practice (67 (27.24%)) (As presented in table-6 below).

Table-6: The response of participants to mask use practice items and overall mask use practice score of MHSC trainees in Ilu Aba Bor Zone, Southwest Ethiopia, 2022.

Variables	Response category (n=246)	N (%)
Before doing a mask clean their hands	Yes	168 (68.3)
	No	78 (31.7)
Remove his or her mask if there is a need to talk	Yes	12 (4.9)
	No	234 (95.1)
Confirm the metal nose band on the top	Yes	227 (92.3)
	No	19 (7.7)
Place the loop around the ear	Yes	233 (94.7)
	No	13 (5.3)
Pull the top and bottom of the mask to extend the folds	Yes	171 (69.5)
	No	75 (30.5)
Press the noseband	Yes	223 (90.7)
	No	23 (9.3)
Do not touch the mask	Yes	193 (78.5)
	No	53 (21.5)
Remove the mask from the face touching only the bands	Yes	230 (93.5)
	No	16 (6.5)
Avoid pulling the mask up over my forehead or down over my chin	Yes	225 (91.5)
	No	21 (8.5)
Before wearin identified the inside and outside mask	Yes	243 (98.8)
	No	3 (1.2)
Clean hands after taking off	Yes	211 (85.8)
	No	35 (14.2)
Reused a single-use mask	Yes	107 (43.5)
	No	139 (56.5)
Dispose of the mask when soiled or wet	Yes	218 (88.6)
	No	28 (11.4)
Do not eat drink or smoke while wearing the mask	Yes	226 (91.9)
	No	20 (8.1)
Wearing a face mask in public area against COVID19	Yes	227 (92.3)
	No	19 (7.7)
When you wear a face mask	starting from home	192 (78.0)
	starting from entry	35 (14.2)
	At class	19 (7.7)
Overall mask use practice score	Improper mask use practice	67 (27.24)
	Proper mask use practice	179 (72.76)

Associated factors to knowledge and attitude towards COVID-19 and face mask practice

In the bivariate analysis age group, college duration, the field of study, income category, pressure to wear a mask, attitude towards mask use practice, knowledge about mask use practice, and educational status were significantly associated with trainees' knowledge about COVID-19 at $p < 0.25$. Likewise, experience on previous IPC, duration in college, marital status, age category, educational status, income category, field (department) of study, availability of masks, knowledge about covid-19, and knowledge about masks were significantly associated with trainees' attitudes towards COVID-19 in a bivariate analysis at $p < 0.25$. Also, marital status, educational level, employment status, presence of pressure to wear a mask, previous experience on IPC, age group, college stay, income category, knowledge score about mask, knowledge score about COVID-19, and income were significantly associated with the practice towards Covid-19 prevention (mask use practice) in a bivariate analysis at $p < 0.25$

Trainees' knowledge level of COVID-19 and its associated factor

The multivariable logistic regression analysis indicated that first-year college duration, the background of educational status (completing certificate and above, especially for HEWs and HIA), and age categories being 20-24 years old and being 25 and above years old were significant determinants of knowledge about COVID-19. Even after controlling for potential confounders, those trainees who had college duration first year were 2.396 times more knowledge about COVID-19 than second-year trainees in college (AOR= 2.396, 95% CI: (0.49, 5.470)). Also, the odds of knowing about COVID-19 among the educational background of trainees who completed certificate and above were 3.353 times more as compared to completed high school (AOR=3.353,95% C.I.(1.823, 6.168)). Again in this study, trainees in the age category 20-24 years were 3.208 times higher odds (AOR= 3.208, 95% CI (1.523, 6.757)) and those in the age group 25 and above were 4.550 times higher odds (AOR4.550= 95%CI (1.854, 11.166)) of adequate knowledge level as compared to age group 16-20 years (see table-7).

Table-7: Multivariate and univariate analysis factors associated with knowledge about COVID-19 of participants among MHSC trainees in Ilu Aba Bor Zone, Southwest Ethiopia, 2022.

Predictors list	Predictors categories	level of knowledge		COR (95%CI)	AOR (95% CI.)
		Adequate	Inadequate		
Pressure to wear mask	Yes	130 (79.8%)	57 (68.7%)	1.00	1.00
	No	33 (20.2%)	26 (31.3%)	0.56(.31-1.01)	0.54 (0.28-1.05)
College Duration	1 st year	93 (57.1%)	48 (57.8%)	3.46(1.89-6.06)	2.39 (1.05-5.47)*
	2 nd year	70 (42.9%)	35 (42.2%)	1.00	1.00
Average income category in ETB	<1000	57 (35.0%)	41 (49.4%)	1.00	1.00
	1000-1500	30 (18.4%)	14 (16.9%)	1.54(.72-3.26)	1.68 (0.71-4.01)
	>1000	76 (46.6%)	28 (33.7%)	1.95(1.08-3.52)	1.98 (0.93-4.20)
Educational level	completed H/school	61 (37.4%)	56 (67.5%)	1.00	1.00
	completed certificate or above	102 (62.6%)	27 (32.5%)	0.29(1.98-6.06)	3.35 (1.82-6.16)*
Age category	16-20 years	22 (13.5%)	29 (34.9%)	1.00	1.00
	20-24 years	78 (47.9%)	34 (41.0%)	3.02(1.52-5.99)	3.21 (1.52-6.75)*
	25 and above years	63 (38.7%)	20 (24.1%)	4.15(1.96-8.77)	4.55 (1.85-11.16)*

KEY: COR- Crude Odds Ratio, AOR- Adjusted Odds Ratio, * - P-value < 0.05

Trainees' attitude score towards COVID-19 and its associated factor

Multivariable logistic regression analyses were applied to assess the effects of the dependent variable on attitude towards COVID-19. As shown in Table 8 after adjusting for confounding variables in the multivariate analysis, college duration of the second year, having previous experience on IPC, and average income category above 1500 ETB were significant positive association with attitude towards COVID-19. The Odds of having a positive attitude towards COVID-19 were 2.20 times higher among 2nd-year trainees as compared with 1st-year trainees in MHSC college (AOR= 2.205, 95% CI. (1.183, 4.110)). Trainees having a positive attitude towards COVID-19 were 2.218 times more likely with having previous experience on IPC when compared to those not having previous experience on IPC (AOR= 2.218, 95%CI (1.197, 4.111)). Finally, the trainees who had average monthly income greater than 1500 birr were 4.633 more likely to have a positive attitude towards COVID-19 compared with those trainees who had average monthly income less than 1000 birr in this study in the MHSC(AOR=4.633, 95%CI (2.273, 9.442))(see table-8 below).

Table-8: Multivariate and univariate analysis factors associated with attitude towards COVID-19 of participants among MHSC trainees in Ilu Aba Bor Zone, Southwest Ethiopia, 2022

List of variables	Categories of variables	Attitude score		COR (95%CI)	AOR (95% CI)
		Favorable	Unfavorable		
College stay (duration)	2 nd year	62 (49.2%)	43 (35.8%)	1.73 (1.04, 2.89)	2.21 (1.18, 4.11)*
	1 st year	64 (50.8%)	77 (64.2%)	1.00	1.00
Experience on IPC	Yes	94 (74.6%)	65 (54.2%)	2.48 (1.45, 4.25)	2.22 (1.19, 4.11)*
	No	32 (25.4%)	55 (45.8%)	1.00	1.00
Average monthly income category in ETB	<1000 Birr	42 (33.3%)	56 (46.7%)	1.00	1.00
	1000-1500 Birr	10 (7.9%)	34 (28.3%)	.39 (0.17, .88)	.44 (0.18, 1.04)
	>1500 Birr	74 (58.7%)	30 (25.0%)	3.28 (1.83, 5.89)	4.63 (2.27, 9.44)*
Pressure to wear a mask	Yes	97 (77.0%)	90 (75.0%)	.89 (0.49, 1.61)	1.57 (0.79, 3.12)
	No	29 (23.0%)	30 (25.0%)	1.00	1.00
Knowledge category	Inadequate	41 (32.5%)	42 (35.0%)	1.00	1.00
	Adequate	85 (67.5%)	78 (65.0%)	1.11 (0.67, 1.89)	0.97 (0.51, 1.83)
Educational background	completed high school	57 (45.2%)	60 (50.0%)	1.21 (0.73, 1.99)	1.17 (0.64, 2.15)
	completed certificate or above	69 (54.8%)	60 (50.0%)	1.00	1.00

Key: COR- Crude Odds Ratio, AOR- Adjusted Odds Ratio, * - P-value < 0.05

Trainees' mask use practice score toward COVID-19 and its associated factor

Multivariate logistic regression analysis showed that a significant positive association was observed between employed (up-grading) trainees, being the age group of 20-24 years, married trainees, and mask use practice. Employed (up-grading) participants were 2.64 times more likely to use facemask when compared to unemployed (generic) participants (AOR=2.640, 95% CI. (1.116, 6.246)). Again those participants in the age group 20-24 years were 2.195 (95% CI: 1.040, 4.633) times more likely to use face masks than those participants in the age group 16-20 years old. Also, the odds of mask use practice among married participants were 4.1 (95% CI: 1.905, 8.822) times higher than unmarried participants (Table-9).

Table-9: Trainees' mask use practice score towards COVID-19 and its associated factor among MHSC trainees in Ilu Aba Bor Zone, Southwest Ethiopia, 2022.

Variables	Categories of variables	Mask use Practice score		COR (95% CI)	AOR (95% CI)
		Proper	improper		
Employment status	Unemployed	91 (50.8%)	56 (83.6%)	1.00	1.00
	Employed	88 (49.2%)	11 (16.4%)	4.92(2.42-10.01)	2.64(1.12-6.25)*
Age categories	16-20 Years	28 (15.6%)	23 (34.3%)	1.00	1.00
	20-24 years	82 (45.8%)	30 (44.8%)	1.85(1.02-3.35)	2.19(1.04-4.63)*
	25 and above	69 (38.5%)	14 (20.9%)	4.11(1.13-14.97)	1.54(0.59-4.03)
College duration	1 st Year	111 (62.0%)	30 (44.8%)	2.01(1.14-3.55)	0.93(0.24-3.565)
	2 nd Year	68 (38.0%)	37 (55.2%)	1.00	1.00
Knowledge about face mask	Inadequate	141 (78.8%)	56 (83.6%)	1.00	1.00
	Adequate	38 (21.2%)	11 (16.4%)	1.37(0.65-2.87)	1.08(0.88-1.34)
Marital status	Married	99 (55.3%)	12 (17.9%)	5.67(2.84-11.31)	4.10(1.90-8.82)*
	Unmarried	80 (44.7%)	55 (82.1%)	1.00	1.00

Key: COR- Crude Odds Ratio, AOR- Adjusted Odds Ratio, * - P-value < 0.05

6. Discussion

As to knowledge about COVID-19 of trainees, 239 (97.2%) participants said that COVID-19 is a viral disease. This finding was higher than a study conducted in Mizan-Teppi university students, 2020 that found 350 (78.4%) of the students mentioned the causes of Covid-19 as a virus(28). The difference observed might be due to the study period because the former one was conducted a year later than the outbreak period when enough information was not reached to a major population in the later.

Again 241 (98.0%) participants said that the symptoms of COVID-19 includes fever, cough, shortness of breath, and fatigue. This finding was higher than study conducted in Sidama regional state that found: Most (93.8%) of the study participants were aware that the common symptoms of the COVID-19 are fever, dry cough, shortness of breath, and myalgia(24). The observed difference might be due to the type of study population, experience, or educational status of participants.

Also to the overall knowledge of participants, 83 (34%) had inadequate knowledge and 163 (66%) had adequate knowledge of COVID-19. This finding was lower than a study conducted among hospital nurses in North Ethiopia, 2020 that stated 84.9% of nurses had adequate knowledge, and the rest had inadequate knowledge on COVID-19(42). The difference might be subjected to variation in the cut-points to measure the adequate and inadequate knowledge levels. Besides, the discrepancies might be due to differences in sample size or study settings between the two studies.

Also again, trainees in the age category 20-24 years were 3.208, trainees in the age category 25 and above years 4.5 times higher odds of adequate knowledge level than those in the age group 16-20 years. This finding was similar to a study conducted in Mizan-Teppi University students, 2020 that stated: The finding revealed that those respondents who were ≥ 30 years old were 5.8 times more likely to have good knowledge about COVID-19 than those who were 20–24 years old (28), this similarity showed that the odds having good knowledge increase from lower age category to higher age category that might be due to having additional educational backgrounds, experience or having an interest in search for further information than their counterparts.

The odds of knowing about COVID-19 among the educational background of trainees who completed certificate and above were 3.353 times more as compared to completed high school. This finding was consistent with the study done in northwest Ethiopia, 2020 that found attaining college and above was significantly associated with knowledge about COVID-19(47), observed similarities showed that one higher educational level would have a better knowledge of COVID-19 that may be due to having better exposure to information or having a training than others.

College duration was also a predictor of knowledge about COVID-19 in this study. This finding is in line with a study conducted among students of Ethiopian higher education institutions, 2020 that found a multivariable logistic regression analysis revealed that study years were statistically significant concerning knowledge about prevention of COVID-19 (48), the fact was that as the duration of college increases trainees were more exposed to further information that intern increase their overall knowledge.

Also concerning the attitude of trainees, Out of participants 73 (29%) agree that they were worried that they might get Covid-19. This result was lower than a study conducted in Mizan-Teppi university students in 2020: about 50% of the students agreed that they are worried for might be getting COVID-19(28), the observed variation was might be due to the study period that now a time trainees had more information than ever or got a chance vaccination about COVID-19 that enhance their confidence.

Also, about 175 (71.1%) strongly agree to visit health facilities if they develop symptoms of Covid-19. This result was higher than an above similar study that stated that: 268 (66.7%) agree for visiting the health facility when they develop symptoms(28). the inconsistency might be due to the difference in study population of both studies that the recent one were health trainees indicating a better perception to seek care for COVID-19 infection than the former one.

The overall attitude score of participants toward COVID-19 was classified as 120 (48.78%) unfavorable attitude and 126 (51.22%) favorable attitude. These results were lower than those among hospital nurses in North Ethiopia, 2020 who stated 61(36.7%) have unfavorable attitudes and 105(84.9%) had a favorable attitude toward COVID-19 (42). The observed variations may be subjected to difference in the cut-points to measure the unfavorable and favorable attitude levels. Besides, the variations might be due to differences in sample size and/or study settings.

The Odds of having a positive attitude towards COVID-19 were 2.20 times higher among 2nd-year trainees as compared with 1st-year trainees in MHSC college. This finding were similar with study done in Mizan-Teppi University in 2020: respondents in their fourth year of study were 2.8 times more likely to have a positive attitude to COVID-19 prevention methods than second-year respondents (28). The consistency showed that among different cohorts as academic staying increases the probability of having a positive attitude would also increases.

Having a high monthly income was also positively associated with attitude towards covid-19. This result is in line with a study done among Mizan-Teppi University students in 2020: the students who have greater than 1500 ETB as average monthly income have positive attitudes than the students who have

average monthly income of 1000-1500 ETB (28). The observed similarity indicated that as the average monthly income improved their attitude towards COVID-19 also improved than the counterparts.

Finally having previous IPC experience was also associated with having positive attitude towards COVID-19. This finding was similar with study conducted in Nepal in 2020: a predictor of positive attitude was online course related to novel COVID-19 such as IPC training (49), indicating having previous exposure to other disease prevention technique was improved the participants' attitude.

The result also indicated that almost all (227 (92.3%) participants used a face mask. This finding was similar to a study conducted at Wachemo University students, 2021 that found: 687(89.9%) of the participants used medical masks to protect themselves from COVID- 19 pandemic (50), the consistency showed that the majority of study participants were implementing face masks as one component of COVID-19 prevention protocol across educational institutions.

The overall mask use practice of participants' was 179 (72.76%). This result was lower than the study conducted among Wachemo University students in 2021 that stated: participants 's overall practice was 684 (89.5%) (50). The observed difference might be due to difference in the cut-values to measure the proper mask use practice and improper mask use practice levels. Besides, the discrepancies might be due to variation in the sample size and study settings between the two studies.

The odds of mask use practice among married participants were 4.1 times higher than unmarried (mainly single) participants. This result was similar to a study done in North Ethiopia that said: Married participants were 2.75 times more likely to practice COVID-19 prevention methods as compared to those currently unmarried (51), and observed similarities indicated that married trainees' were more responsive to mask use as a preventive measure to COVID-19 than unmarried trainees'.

Also, occupation or employment status was positively associated with mask use practice. This finding was consistent with the study done in Sidama regional state: the occupation of the public employee was positively associated with COVID-19 prevention and control practice (52). The consistency indicated that employed (up-grading) trainees better applied masks use practice as preventive measures of COVID-19 than unemployed (generic) trainees which might be due to their affordability difference.

Age group was also positively associated with mask use practice. This finding was in line with a study conducted in Oromia Regional State, 2021 that founded: being greater than age group of 36–45 years was four times more likely to have good adherence to COVID-19 preventive techniques compared to those aged 18–25 years old (53). This similarity showed that as age increases the adherence to preventive practices also increases.

7. Limitations

The study used a cross-sectional study design; therefore, the finding was about a single point of time which might be showed different results if other timeframe had been chosen and it was planned to reduce these changes by including all important possible variables. Another limitation of this study might be a social desirability bias in case of mask use practice responses.

8. Conclusion and Recommendation

8.1. Conclusions

The result showed that the majority of trainees were familiar with the causes and symptoms of COVID-19. But their overall knowledge about COVID-19 was low. The factors associated with participants' knowledge of COVID-19 were age group, educational status and college duration. Concerning the attitude of trainees towards COVID-19, few students were worried about getting COVID-19 infection, majority of them agreed with seeking health if they got an infection and their overall attitude towards COVID-19 was low. Also predictors of attitude towards COVID-19 were college duration, average monthly income and having previous experience on IPC. Almost all trainees used face masks as a preventive measure against COVID-19 but their overall proper mask use practice was low. Factors associated with mask use practice in this study were employment status, age group, and marital status.

8.2. Recommendations

Depending on the findings, the author recommends the following to respective concerned bodies:

1. To college trainer and other staff:
 - To improve the overall knowledge of trainees about COVID-19 and underpinning knowledge about mask use by providing awareness creation programs and reading resources.
 - To give priority to age less than 19 years old, those who completed high school, and first-year trainees than others.
 - To work on improving the attitude of trainees towards COVID-19 by working with Zonal, regional, and partners focusing on college duration, monthly income, and previous experience on IPC.
2. To IAB Zone health office and Oromia RHB:
 - To provide posters that show proper mask use practice and post them in a visible area in college compound and also support in availing face mask to trainees and play their contribution in improving mask use practice of trainees.
3. To MOH:
 - To include COVID-19 in the educational curriculum to equip trainees with knowledge and attitude towards COVID-19 and face mask use practice.

4. To concerned partners:
 - To give training opportunities for trainees on proper mask use practice special for age less than 19 years old, generic trainees, and unmarried trainees.
5. To trainees themselves:
 - To get the right information to improve their knowledge and attitude about COVID-19 and also improve their mask use practice as per the standards and be a model professional in the area in the future.
6. To researchers:
 - To conduct a further study on the identified gaps and other uncovered associated factors with other designs.

9. References

1. Sohn Y, Jeong SJ, Chung WS, Hyun JH, Baek YJ, Cho Y, et al. Assessing Viral Shedding and Infectivity of Asymptomatic or Mildly Symptomatic Patients with COVID-19 in a Later Phase. *J Clin Med*. 2020;9(9):2924.
2. Shao S, Zhou D, He R, Li J, Zou S, Mallery K, et al. Risk assessment of airborne transmission of COVID-19 by asymptomatic individuals under different practical settings. *J Aerosol Sci* [Internet]. 2021;151(September 2020):105661. Available from: <https://doi.org/10.1016/j.jaerosci.2020.105661>
3. Kronbichler A, Kresse D, Yoon S, Hwa K, Effenberger M, Il J. International Journal of Infectious Diseases Asymptomatic patients as a source of COVID-19 infections : A systematic review and meta-analysis. *Int J Infect Dis* [Internet]. 2020;98:180–6. Available from: <https://doi.org/10.1016/j.ijid.2020.06.052>
4. AL-Rawajfah OM, Al-Mugeed KA, Alaloul F, Al-Rajaibi HM, Al Omari O. COVID-19 knowledge, attitude, and precautionary practices among health professional students in Oman. *Nurse Educ Pract* [Internet]. 2021;52(February):103041. Available from: <https://doi.org/10.1016/j.nepr.2021.103041>
5. Chereka AA, Demsash AW, Ngusie HS, Kassie SY. Informatics in Medicine Unlocked Digital health literacy to share COVID-19 related information and associated factors among healthcare providers worked at COVID-19 treatment centers in Amhara region , Ethiopia : A cross-sectional survey. *Informatics Med Unlocked* [Internet]. 2022;30(January):100934. Available from: <https://doi.org/10.1016/j.imu.2022.100934>
6. Ning L, Niu J, Bi X, Yang C, Liu Z, Wu Q, et al. The impacts of knowledge , risk perception , emotion and information on citizens ' protective behaviors during the outbreak of COVID-19 : a cross-sectional study in China. 2020;1–12.
7. Andarge E, Fikadu T, Temesgen R, Shegaze M, Feleke T, Haile F, et al. Intention and Practice on Personal Preventive Measures Against the COVID-19 Pandemic Among Adults with Chronic Conditions in Southern Ethiopia : A Survey Using the Theory of Planned Behavior. 2020;1863–77.
8. Li Q, Silver C, Miao Y, Zeng X, Wu C, Wu J. Effects of mask wearing on anxiety of teachers affected by COVID-19 : A large cross-sectional study in China. *J Affect Disord* [Internet].

- 2021;281(September 2020):574–80. Available from: <https://doi.org/10.1016/j.jad.2020.11.113>
9. Tadesse T, Tesfaye T, Alemu T, Haileselassie W. Healthcare worker's knowledge, attitude, and practice of proper face mask utilization, and associated factors in police health facilities of Addis Ababa, Ethiopia. *J Multidiscip Healthc*. 2020;13:1203–13.
 10. Seid Yimer T, Gebrehana Belay H. Knowledge and practice of health care providers towards proper face mask utilization to minimize the extent of covid-19 infection in amhara region referral hospitals, Ethiopia. *J Multidiscip Healthc*. 2021;14:1583–91.
 11. Natnael T, Adane M, Alemnew Y, Andualem A, Hailu F. COVID-19 knowledge, attitude and frequent hand hygiene practices among taxi drivers and associated factors in urban areas of Ethiopia. *PLoS One* [Internet]. 2021;16(8 August):1–19. Available from: <http://dx.doi.org/10.1371/journal.pone.0253452>
 12. Tadesse DB, Gebrewahd GT, Demoz GT. Knowledge , attitude , practice and psychological response toward COVID- 19 among nurses during the COVID-19 outbreak in northern Ethiopia ,. *New Microbes New Infect* [Internet]. 2020;38:100787. Available from: <https://doi.org/10.1016/j.nmni.2020.100787>
 13. Deressa W, Worku A, Amogne W, Getachew S, ... Knowledge and perceptions of COVID-19 among government employees in Ethiopia: a cross-sectional study. *Ethiop J ...* [Internet]. 2021;1–31. Available from: <https://www.ajol.info/index.php/ejhd/article/view/222699%0Ahttps://www.ajol.info/index.php/ejhd/article/download/222699/210102>
 14. Tadesse AW, Abebe NM, Tadesse SE, Wube MC, Abate AA. Preventive Practice and Associated Factors towards COVID-19 among College Students in Amhara Region , Ethiopia : A Cross- Sectional Study. 2019;2(December).
 15. Mahalik JR, Bianca M Di, Harris MP. Men ' s attitudes toward mask-wearing during COVID-19 : Understanding the complexities of mask-ularity. 2022;
 16. Kebede Y, Yitayih Y, Birhanu Z, Mekonen S, Ambelu A. Knowledge, perceptions and preventive practices towards COVID-19 among Jimma University Medical Center visitors, Southwest Ethiopia. 2020;1–22.
 17. Owusu M, Sylverken AA, Ankrah ST, El-duah P, Ayisi-boateng NK, Yeboah R, et al. Epidemiological profile of SARS-CoV-2 among selected regions in Ghana : A cross-sectional

- retrospective study. 2020;1–15. Available from: <http://dx.doi.org/10.1371/journal.pone.0243711>
18. Asres F, Umata B. COVID - 19 vaccines : awareness , attitude and acceptance among undergraduate University students. *J Pharm Policy Pract* [Internet]. 2022;6:1–7. Available from: <https://doi.org/10.1186/s40545-021-00397-6>
 19. Gashaw Mehret W, Libsuye Yalgaw Z. Knowledge, attitude and practice towards facemask use amid the COVID-19 pandemic among public transport drivers in Debre-Tabor town, Ethiopia. *J Community Med Heal Solut*. 2022;3(1):001–10.
 20. Strupat C, Shigute Z, Bedi AS, Rieger M. Willingness to take COVID-19 vaccination in low-income countries: Evidence from Ethiopia. *PLoS One* [Internet]. 2022;17(3 March):1–14. Available from: <http://dx.doi.org/10.1371/journal.pone.0264633>
 21. Martinelli L, Kopilaš V, Vidmar M, Heavin C, Machado H, Todorović Z, et al. Face Masks During the COVID-19 Pandemic: A Simple Protection Tool With Many Meanings. *Front Public Heal*. 2021;8(January):1–12.
 22. Tekalegn Y, Sahiledengle B, Bekele K, Tesemma A, Aseffa T, Engida ZT, et al. Correct use of facemask among health professionals in the context of coronavirus disease (Covid-19). *Risk Manag Healthc Policy*. 2020;13:3013–9.
 23. Dugassa M, Amsalu B, Tamiru S, Negera E, Gada A, Tsegaye T. Knowledge , Attitude and Practice of Covid-19 Prevention and Associated Factors among House Holds In Ilu Ababor and Bunno Bedele Zones , Southwest Knowledge , Attitude and Practice of Covid-19 Prevention and Associated Factors among House Holds In Ilu Aba. 2021;(April).
 24. Id YS, Ejeso A, Dejene S, Ayalew M. on mental health among patients with chronic health conditions at selected hospitals of Sidama regional state , Ethiopia. 2022;237:1–16. Available from: <http://dx.doi.org/10.1371/journal.pone.0269171>
 25. Al-Qerem WA, Jarab AS. COVID-19 Vaccination Acceptance and Its Associated Factors Among a Middle Eastern Population. *Front Public Heal*. 2021;9(February):1–11.
 26. Ayele AD, Mihretie GN, Belay HG, Teffera AG, Kassa BG, Amsalu BT. Knowledge and practice to prevent COVID-19 and its associated factors among pregnant women in Debre Tabor Town Northwest Ethiopia, a community-based cross-sectional study. *BMC Pregnancy Childbirth*. 2021;21(1):1–12.
 27. Ayanaw B, Id K, Adane A, Tilahun YT, Kassahun A, Ayele AS, et al. Knowledge and attitude

towards COVID-19 and associated factors among health care providers in Northwest Ethiopia. PLoS One [Internet]. 2020;15(8):1–12. Available from: <http://dx.doi.org/10.1371/journal.pone.0238415>

28. Resistance D. Knowledge , Attitudes , and Practices Toward Covid-19 and Associated Factors Among University Students in Mizan Tepi University , 2020. 2021;349–60.
29. Ssebuufu R, Sikakulya FK, Binezzero SM, Wasingya L, Nganza SK, Ibrahim B, et al. Awareness, knowledge, attitude and practice towards measures for prevention of the spread of COVID-19 in the Ugandans: A nationwide online cross-sectional Survey. medRxiv. 2020;1–28.
30. Policy H. Practice and Attitude Towards COVID-19 Prevention and Divine Belief Among Residents in Ethiopia : Cross-Sectional Survey. 2021;987–95.
31. Natnael T, Alemnew Y, Berihun G, Abebe M, Andualem A, Ademe S, et al. Facemask wearing to prevent COVID-19 transmission and associated factors among taxi drivers in Dessie City and Kombolcha Town, Ethiopia. PLoS One [Internet]. 2021;16(3):e0247954. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/33711038>
32. Minyiwab GW. Community ' s Mask Wearing Practice and Its Associated Factors for COVID-19 prevention in Metropolitan city , Northwest , Ethiopia. Prim Heal Care. 2021;11(7):1–6.
33. Kassie BA, Adane A, Kassahun EA, Ayele AS, Belew AK. Poor COVID-19 Preventive Practice among Healthcare Workers in Northwest Ethiopia , 2020. 2020;2020(March).
34. Lyu BW, Wehby GL. Community Use Of Face Masks And COVID-19: Evidence From A Natural Experiment Of State Mandates In The US. 2020;1419–25.
35. Dires A, Addis SG, Getachew Tesema Y. Perceived Efficacy of COVID-19 Prevention Measures and Intention to Use Among Chronic Disease Patients in Northeast Ethiopia, 2020. 2020;1–26. Available from: <https://doi.org/10.21203/rs.3.rs-73649/v1>
36. Hossain MA, Rashid MU Bin, Khan MAS, Sayeed S, Kader MA, Hawlader MDH. Healthcare Workers' Knowledge, Attitude, and Practice Regarding Personal Protective Equipment for the Prevention of COVID-19. J Multidiscip Healthc. 2021;Volume 14:229–38.
37. Song LJ, Xu S, Xu SL, Sun Z, Liu W. Psychology of wearing face masks to prevent transition of COVID-19. 2020;1–3.
38. Pereira-ávila FMV, Lam SC, Góes FGB, Gir E, Pereira-Caldeira NMV, Teles SA, et al. Factors

associated with the use and reuse of face masks among brazilian individuals during the covid-19 pandemic. *Rev Lat Am Enfermagem*. 2020;28:1–9.

39. Islam S, Emran GI, Rahman E, Banik R, Sikder T, Smith L, et al. Knowledge , attitudes and practices associated with the COVID-19 among slum dwellers resided in Dhaka City : a Bangladeshi interview-based survey. 2020;1–13.
40. Hamza MS, Badary OA, Elmazar MM. Cross - Sectional Study on Awareness and Knowledge of COVID - 19 Among Senior pharmacy Students. *J Community Health [Internet]*. 2021;46(1):139–46. Available from: <https://doi.org/10.1007/s10900-020-00859-z>
41. Dereje T, M S, D O, S D, G B, K B. Knowledge and preventive practices towards Covid- 19 and associated factors among healthcare workers in selected health facilities of Illu Aba Bor and Buno Bedelle Zones , Southwest Ethiopia. 2020;1–17.
42. Getaneh D., Fetene S. SE. Assessment of Knowledge, Attitude and Associated Factors toward COVID-19 among Nurses Who Work in South Gondar Zone, Hospitals, Northwest Ethiopia 2020, Institution-based cross- sectional Study. *Dejen*. 2020;21(1):1–9. Available from: <http://mpoc.org.my/malaysian-palm-oil-industry/>
43. Id YK, Yitayih Y, Birhanu Z, Mekonen S. Knowledge , perceptions and preventive practices towards COVID-19 early in the outbreak among Jimma university medical center visitors , Southwest Ethiopia. 2020;77:1–15. Available from: <http://dx.doi.org/10.1371/journal.pone.0233744>
44. Haftom M, Petrucka P, Gemechu K, Mamo H, Tsegay T, Amare E, et al. Knowledge, attitudes, and practices towards covid-19 pandemic among quarantined adults in Tigray region, Ethiopia. *Infect Drug Resist*. 2020;13:3727–37.
45. Lee LYK, Lam EPW, Chan CK, Chan SY, Chiu MK, Chong WH, et al. Practice and technique of using face mask amongst adults in the community: A cross-sectional descriptive study. *BMC Public Health*. 2020;20(1):1–11.
46. Id SH, Id MA. Facemask-wearing behavior to prevent COVID-19 and associated factors among public and private bank workers in Ethiopia. 2021;350:1–14. Available from: <http://dx.doi.org/10.1371/journal.pone.0259659>
47. Taddese AA, Azene ZN, Merid MW, Muluneh AG, Geberu DM, Kassa GM, et al. Knowledge and attitude of the communities towards COVID-19 and associated factors among Gondar City

- residents, northwest Ethiopia: A community based cross-sectional study. PLoS One [Internet]. 2021;16(4 April):1–11. Available from: <http://dx.doi.org/10.1371/journal.pone.0248821>
48. Berihun G, Berhanu L, Adane M. Knowledge , Attitude , and Preventive Practices Towards COVID-19 Among Students of Ethiopian Higher Education Institutions. 2021;2123–36.
 49. file:///C:/Users/tsc/Desktop/pone.0242126.pdf Tamang N, Rai P, Dhungana S, Sherchan B. COVID-19 : A National Survey on Perceived Level of Knowledge , Attitude and Practice among Frontline Medical Professionals in Nepal. BMC Public Health. 2020;20(1905):1–10.
 50. Markos Y, Id L, Abame DE. Knowledge , attitudes , and practices of face mask utilization and associated factors in COVID-19 pandemic among Wachemo University Students , Southern Ethiopia : A cross-sectional study. 2021;223:1–17. Available from: <http://dx.doi.org/10.1371/journal.pone.0257609>
 51. Sema A. Practice of COVID-19 Prevention Measures and Associated Factors Among Residents of Dire Dawa City , Eastern Ethiopia : Community-Based Study. 2021;219–28.
 52. Yoseph A, Tamiso A, Ejeso A. Knowledge, attitudes, and practices related to COVID-19 pandemic among adult population in Sidama Regional State, Southern Ethiopia: A community based cross-sectional study. PLoS One [Internet]. 2021;16(1 January):1–19. Available from: <http://dx.doi.org/10.1371/journal.pone.0246283>
 53. Abeya SG, Barkesa SB, Sadi CG, Gameda DD, Muleta FY, Tolera AF, et al. Adherence to COVID-19 preventive measures and associated factors in Oromia regional state of Ethiopia. PLoS One [Internet]. 2021;16(10 October 2021):1–26. Available from: <http://dx.doi.org/10.1371/journal.pone.0257373>



Appendix-I: Questionnaire: An English version

Introduction: Information sheet and written consent form.

Hello Hi, my name is Mr. Shimelis Negewo from Jimma University. I am researching Knowledge about the asymptomatic transmission of COVID-19, face mask wearing practice, and associated factors among Metu health science college trainees, as partial fulfillment for a Master's Degree in Public Health in field epidemiology.

You have been randomly selected to participate in this study. This self-administered questionnaire will probably take a while. If you do not have time to do it right now, we can arrange to come back later. I would like to assure you that the choice of your response will be strictly confidential and that the information collected from you will be used only in scientific reports without any mentioning of your identification including your name. There is no harm or incentive paid for participation but finally, the supervisor will give you information about the asymptomatic transmission of COVID-19 and face mask-wearing practice

Information gathered from the study will be used to know the knowledge about asymptomatic COVID-19 cases and face mask use practice in the COVID-19 prevention programs that promote the well-being of all the trainees and the community here.

Therefore, I hope you will give accurate answers! I appreciate your help in responding to these survey questions and attempting all of them and thanks again!!

Do you have any questions? Can I proceed with the Questions?

Yes _____ (Thank and continue), No _____ (Thank and stop).

Questionnaire code _____, Time started _____, Time finished _____ Date _____ / _____ /2022.

PART I: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE TRAINEES OF METU HEALTH SCIENCE COLLEGE

S/No	Questions	Responses	Remark
101	Sex	1. Male 2. Female	
102	Age of the respondent	_____year.	
103	Department(field of study)	_____	
104	Duration in college	<ol style="list-style-type: none"> 1. 1-6 month 2. 7-12 month 3. 13-18 month 4. 19-24 month 5. > 24 months 	
105	Marital status	<ol style="list-style-type: none"> 1. Single 2. Married 3. separated 4. Divorced 5. Widowed 	
106	Educational level	<ol style="list-style-type: none"> 1. 10th complete 2. 12thcomplete(preparatory) 3. 10^{+2 or 3} 4. degree holder and above 	
107	Employment status	<ol style="list-style-type: none"> 1. unemployed 2. Employed 3. Entrepreneur 4. Student/trainees 5. Merchant 6. 99.Others(specify)_____ 	
108	Your monthly income	_____birr.	
109	Religion	<ol style="list-style-type: none"> 1. Orthodox 2. Muslim 3. Protestant 4. Wakefata 99. Others specify_____ 	
110	Ethnicity	<ol style="list-style-type: none"> 1. Oromo 2. Amhara 	

		3. Tigre 4. Gurage 99.Others[specify]_____	
111	Is there availability of PPE such as a face mask?	1. Yes, 2. No	
112	Is there the presence of government pressure to wear a facemask?	1. Yes, 2. No	
113	Do you have any previous experience in infection prevention	1. Yes, 2. No	

PART II: KNOWLEDGE ABOUT COVID-19 RESPONSE OF THE TRAINEES OF METU HEALTH SCIENCE COLLEGE.

S/N	Questions	Response	Remark
201	Do you know that COVID-19 is contagious?	1. Yes, 2. No	
202	COVID-19 is a virus infection	1. Yes, 2. No	
203	The main clinical symptoms of COVID-19 are fever, cough, shortness of breath, and fatigue	1. Yes, 2. No	
204	Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus	1. Yes, 2. No	
205	COVID-19 symptoms appear within 2–14 days	1. Yes, 2. No	
206	Currently, there is no effective treatment or vaccine for COVID-2019, but early symptomatic and supportive treatment can help most patients to recover from the infection	1. Yes, 2. No	
207	Not all persons with COVID-19 will develop severe cases. Those who are elderly, have chronic illnesses, and with suppressed immunity are more likely to be severe cases	1. Yes, 2. No	
208	Touching or shaking the hands of an infected person would result in the infection by the COVID-19 virus	1. Yes, 2. No	
209	Touching an object or surface with the virus on it, then touching your mouth, nose, or eyes with the unwashed hand would result in the infection by the COVID-19 virus	1. Yes, 2. No	
210	The COVID-19 virus spreads via respiratory droplets of infected individuals through the air during sneezing or coughing of infected patients	1. Yes, 2. No	
211	Persons with COVID-19 cannot infect the virus others if he has no any symptom of COVID-19	1. Yes, 2. No	

212	Wearing masks when moving out of the home is important to prevent the infection with COVID-19 virus	1. Yes, 2. No	
213	Children and young adults do not need to take measures to prevent infection by the COVID-19 virus	1. Yes, 2. No	
214	To prevent the COVID-19 infection, individuals should avoid going to crowded places such as public transportations, religious places, Hospitals, and Workplaces	1. Yes, 2. No	
215	Washing hands frequently with soap and water for at least 20 seconds or using an alcohol-based hand sanitizer (60%) is important to prevent infection with COVID-19	1. Yes, 2. No	
216	Traveling to an infectious area or having contact with someone who traveled to an area where the infection is present is a risk of developing an infection	1. Yes, 2. No	
217	Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	1. Yes, 2. No	
218	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place	1. Yes, 2. No	

PART-III: ATTITUDE ABOUT COVID-19 RESPONSE OF THE TRAINEES OF METU HEALTH SCIENCE COLLEGE.

S/N	Questions	Response	Remark
301	Worried that you might get Covid-19?	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
302	COVID-19 is a preventable disease.	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
303	If i develop symptoms of Covid-19, I will seek to visit HF.	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
304	Limit of the movement decreases the transmission?	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
305	Students in campus are invincible for Covid-19?	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
306	Outbreak has impacted your study?	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	

307	Consumptions of raw vegetables and wild animal products have no role in transmissions of Covid-19?	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
308	Listening and following the direction of state and local authorities	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	
309	Health education can play an important role in COVID-19 prevention	S. Disagree 2. Disagree 3. Nutral 4. Agree 5. S. Agree	

PART-IV: KNOWLEDGE ABOUT FACE MASK USE OF RESPONDENT TRAINEES OF METU HEALTH SCIENCE COLLEGE.

S/NO.	Questions	Response	Remark
401	Which is the correct way of using surgical face mask to protect against COVID-19?	1. White side facing out 2. White side facing in	
402	How many layers are there in a surgical mask?	1. Two 2. Three 3. Four	
403	Can wearing a surgical mask protect you from COVID-19?	1. Yes 2.No	
404	Which layer acts as a filter media barrier?	1. First layer 2. Middle layer 3. Last layer	
405	Which type of masks actually protect against COVID-19	1. 95% BFE and PFE 2. 97% BFE and PFE 3. 99% BFE and PFE	
406	How long can you wear a surgical mask?	1. 8 hours 2. 4 hours	
407	For proper wearing, to which extent the surgical mask should cover?	1. Nose only 2. Nose and mouth 3. Nose, mouth, and chin	
408	What is the purpose of the metal strip on a surgical mask?	1. No purpose 2. To fit on the nose 3. To fit on the chin	
409	Is the cloth facial mask as effective as a regular surgical facial mask?	1. Yes 2. No	

PART-V: ATTITUDE ABOUT FACE MASK RESPONSE OF THE TRAINEES OF METU HEALTH SCIENCE COLL

S/N	Questions	Response
501	Facemask is necessary for COVID-19 prevention	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree
502	Wearing a well-fitting face mask is effective in preventing COVID-19?	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree
503	Encourage wearing face mask	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree
504	Difficult to communicate with face mask on	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree
505	People might misinterpret your expressions	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree
506	Fear of COVID-19	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S. agree
507	Belief in the effectiveness of facemasks	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S. agree
508	Worried one of your family members may get an infection	1.S.Disagree 2.Disagree 3.Neutral 4.Agree 5.S.agree

PART VI: FACE MASK WEARING PRACTICE OF THE TRAINEES OF METU HEALTH SCIENCE COLLEGE

S/NO.	Questions	Response	Remark
601	Before doing a mask, clean their hands	1. Yes 2. No	
602	Remove his/her mask if there is a need to talk to the patient.	1. Yes 2. No	
603	Confirm the metal nose band on the top	1. Yes 2. No	
604	Place the loop around the ear	1. Yes 2. No	
605	Pull the top and bottom of the mask to extend the folds	1. Yes 2. No	
606	Press the noseband	1. Yes 2. No	
607	Do not touch the mask	1. Yes 2. No	
608	Remove the mask from the face touching only the bands	1. Yes 2. No	
609	Avoid pulling the mask up over my forehead or down over my chin	1. Yes 2. No	
610	Before wearing the mask identified the inside and outside mask	1. Yes 2. No	
611	Clean hands after taking off	1. Yes 2. No	
612	Re-used a single-use mask	1. Yes 2. No	
613	Dispose of the mask when soiled/wet	1. Yes 2. No	
614	Do not eat drink/smoke while wearing the mask	1. Yes 2. No	
615	Do you wear a face mask in public places to protect yourself against COVID-19	1. Yes 2. No	
616	When you wear face mask	1. Starting from home 2. Starting entry of school 3. At class	
617	Do you wear a surgical mask (face mask) always at school time	1. Yes 2. No	



Appendix-I: Fuula Gaggaaffii Afaan Oromoo

Akkam jirtaa? Ani Maqaan koo Shimallis Nagawoon jedhama. Barataa Univarsiitii Jimmaatti. Amma qorannoo beekumsaa fi ilaalcha Koovid 19, itti fayyadama Maaskii afaani akkasumas sababoota isaa jedhu irratti Leenjifamtoota Kolleejjii Saayinsii fayyaa mattuu irratti xiyyeeffate kanan qo'achaa jiru dha.

Akkataan filannoon ati itti filatamte Faduulii dhaanii. Gaggaaffiin qophaa'e kun ofii kee itti aanee kan guuttu ta'a. Gaggaaffiin ati guuttu icciitiin isaa eegamaa dha jechhuun maqaan keefi eenyuummaan kee as keessatti hin guutamu. gaggaaffi guutamuuf kaffaltiin kaffalamuu hin jiru garuu mallattoolee Koovid 19, akkaataa ittisa dhibee Kooviid 19 fi Maaskii afaanii itti fayyadaman barumsi isiniif kennama.

Deebiin ati kennitu fiixaan ba'umsa qo'annoo kanaaf shoora guddaa waan qabuuf xiyyeeffadhuu guuti.

Gaaffii qabdaa? Gara gaggaaffichaatti itti fufnuu?

Tole _____ (Galatoomi, itti fufi), Laakii _____ (galatoomi, dhaabi).

Kooddii gaggaaffichaa _____, yeroo jalqabbii _____, yeroo itti dhumu _____

Guyyaa _____ / _____ /2022.

KUTAA-I: Gaggaffii Hawwaasummaa fi Diinagdee

Lakk	Gaaffiilee	Deebii	Ibsa
101	Saala	1. Dhiira 2. Dhalaa	
102	Umurii	_____.	
103	Dippartimantii	_____	
104	Turtii kolleejjii keessa turte	1. 1-6 j'a 2. 7-12 j'a 3. 13-18 j'a 4. 19-24 j'a 5. > 24 j'a	
105	Haala gaa'elaa	1. Qofaa 2. Fuudhera/heerumera 3. Adda baheera 4. Hiikeera 5. Gursummaa/Gursummeetti	
106	Sadarkaa barnootaa	1.10 th 4.12 th /Qophaayinaa 2.10 ^{+2 or 3} 4.Digirii fi isaa ol	
107	Haala hojii	1.kan hin mindeffamne 2.Kan miindeffame/te 3.Hojii uumaa 4.Lenjifamaa/tuu 5.Daldalaa 6.99.Gara biraa(ibsi)_____	
108	Galii kee ji'aan meeqa argattaa?	_____ qarshii.	
109	Amantaan kee maalii?	1. Ortoodoksii 2. Muusliima 3. Pirootestaantii 4. Waaqeffataa 99.Gara biraa(ibsi)_____	
110	Qomoon kee maalii?	1. Oromoo 4. Gurage 2.Amhara 99.Gara biraa (ibsi) ____ 3. Tigire	
111	Maaskiin afaanii jiraa?	1. Eyyee 2. Lakki	
112	Maaskii akka godhataniif isin dirqamsiisuu?	1. Eyyee 2. Lakki	
113	Kana dura muxannoo ittisa dhibee daddarbanii qabdaa?	1. Eyyee 2. Lakki	

Kutaa-II: Gaggaffii beekumsaa waa'ee Koovid 19 irratti xiyyeeffatu.

Lakk.	Gaggaaffii	Deebii	Ibsa
201	Dhibeen Kooviid 19 akka nama irraa gara namaatti daddarbu beektaa?	1. Eyyee 2. Lakki	
202	Kooviid 19 dhibee vaayirasiiti	1. Eyyee 2. Lakki	
203	Mallattooleen bebbeekamoon dhibee Kooviid 19 Ho'ina qaamaa, qufaa, afuura ciccituu, fi dhadhaabbii dha	1. Eyyee 2. Lakki	
204	Mallattooleen funyaan cufamuu, furriin funyaan keessaa coccobuu fi haxxiffachuun mallattoolee utaallooti. garuu mallattoolee Kooviid 19 miti.	1. Eyyee 2. Lakki	
205	Mallattooleen Koovid 19 guyyoota 2-14tti mul'atu.	1. Eyyee 2. Lakki	

206	Yeroo amma kana qorichii Kooviid 19 yaaluuf gargaaru hin jiru garuu gargaarsi yaalaa mallattoolee Kooviid 19f ni kennama.	1. Eyyee 2. Lakki	
207	Namoonni dhibee Koovid 19n qabaman hundi mallattoolee ciccimoo hin agarsiisan. namoota dandeettii dhukkuba of irraa ittisuu isaani gadi bu'aa fi manguddoowwan ta'e malee.	1. Eyyee 2. Lakki	
208	Nama dhibee Koovid 19 qabu harka wal fuudhuu fi qaqqabuun dhibichaaf nama saaxila	1. Eyyee 2. Lakki	
209	Harka nama dhibee Kooviid 19 qabu fuudhuun, meeshaalee akkasumas harka keenya osoo hin dhiqatiin Afaan keenyaa qaqqabuun dhibichaaf nama saaxila	1. Eyyee 2. Lakki	
210	Dhibeen Kooviid 19 karaa afuuraan yeroo namni haxxiffatu ykn qufa'u gara nama fayyaatti darba.	1. Eyyee 2. Lakki	
211	Namni dhibee Kooviidiin qabamee osoo mallattoo hin agarsiisiin dhibee sana daddabarsuu hin danda'u	1. Eyyee 2. Lakki	
212	Yeroo manaa ala baanu Maaskii afaani kaawwachuun tatamsa'ina dhibee Kooviid 19 ittisuu dandaha.	1. Eyyee 2. Lakki	
213	Ijoollee fi dargaggoon ittisa dhibee Kooviid 19 kessatti hirmaachuun irraa hin eegamu.	1. Eyyee 2. Lakki	
214	Kooviid 19 ittisuuf namni kamiyyuu bakka namni baay'atu akka geejibaa, dhaabbilee amantaa, Hospitaalaa fi bakkeewwan hojii deemuu hin qabu.	1. Eyyee 2. Lakki	
215	Harka keenya saamuunaa fi bishaaniin ammas ammas yoo xiqqaate sekondii 20f dhiqachuun YKN Saanitaayizarii 60% fayyadamuun dhibee Kooviid 19 ittisuuf gargaara.	1. Eyyee 2. Lakki	
216	Bakka dhibeen daddarbaan jirutti deemuu fi nama bakka dhibeen daddarbaan kun jiru irraa dhufe waliin wal xuxxuqii taasisuun dhibee daddarbaa sanaaf nama saaxila.	1. Eyyee 2. Lakki	
217	Nama dhibee Kooviid 19 qabu adda baasanii yaaluun tatamsa'ina dhibee Sanaa gadi buusa.	1. Eyyee 2. Lakki	
218	Namni walxuxxuqqii nama dhibee kooviid 19 waliin qabu hatattamaan adda baafamuu qaba.	1. Eyyee 2. Lakki	

PART-III: Gaggaaffilee ilaalchaa waa'ee Kooviid 19 irratti barattoota KFSM

Lakk	Gaaffiilee	Deebii
301	Dhibee Koovid 19f saaxilameera jettee dhiphate jirta.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
302	Dhibee Kooviid 19 ittisuun ni danda'ama.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
303	Yoon mallattoo Kooviid 19 of irratti arge mana yaalaan deema.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala

304	Sochii garagaraa daangessuun dhibee Kooviid 19 hir'isu dha.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
305	Barattoonni Kaampaasii keessaa dhibee kooviidiif saaxilamoo miti.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
306	Weerarri Kooviid 19 barnoota kee irratti dhiibbaa uumeera.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
307	Kuduraalee hin bilchaatiinii fi foon dheedhiin tatamsa'ina Kooviid 19 irratti dhiibbaa hin qaban.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
308	Dhaabbilee bulchiinsaa dhaggeeffachuufi hordofuun ittisa dhibee Kooviid keessatti Barbaachisummaan isaanii guddaadha.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
309	Barumsi fayyaa ittisa dhibee Kooviid iddoo olaanaa qaba.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala

PART-IV: Gaggaaffii Beekumsa itti fayyadamaa maaskii waliin jiruu barattoota Kolleejjii saayinsii fayyaa mattuu.

S/N	Questions	Response	Remark
401	Akkataa kawwannaan maaskii isa kamtu sirrii dha?	1. Fuullii gara adii 3. kara alaa 2. Fuulli kara adii kara keessaa	
402	Maaskiin Surgikaalii baqqaana meeqa qabaa?	1. lama 2. Afur 3. sadii	
403	Maaskii sargikaalaa kaawwachuun dhibee Kooviid 19 ittisa?	1. Eyyee 2. Lakki	
404	Baqqana maaskii sarjikaalaa keessaa isa kamtu calaluuf gargaaraa?	1. Baqqaana jalqabaa 2. Baqqana gidduu 3. baqqaana dhumaa	
405	Gosa maaskii isa kamtu Kooviid 19 ittisuuf gargaaraa?	1. 95% BFE fi PFE 2. 97% BFE fi PFE 3. 99% BFE fi PFE	
406	Maaskii sarjikaalaa saa'atii meeqaaf kaawwachuun danda'amaa?	1. Saa'atii 8 2. Saa'atii 4	
407	Maaskiin sirriin kam haguuguu qabaa?	1. Funyaan qofa 2. Afaaniif funyaan 3. Funyaan,Afaan fi hephee	
408	Faayidaan shiboo maaskii keessa jirtuu maalii?	1.faaayidaa hin qabdu 2. maaskicha funyaan irratti qabuuf 3. maaskicha hephee irrattin qabuuf	
409	Maaskiin carqii irraa hojjetame akkuma maaskii sarjikaalaa tajaajila wal fakkaataa kenna?	1. Eyyee 2. Lakki	

PART-V: Gaggaaffii ilaalchaa itti fayyadama maaskii irratti jiruu barattoota kolleejjii saayinsii fayyaa mattuu

S/ N	Questions	Response
501	Maaskiin dhibee kooviid 19 ittisuuf gargaara.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
502	Maaskii sirritti afaaniif funyaan haguugdu kaawwachuun dhibee kooviid 19 ittisuuf gargaara	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
503	Maaskii akka godhatuuf nama jajjabeessuun gaariidha.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
504	namni Maaskii kaawwatu sagalee baasee dubbachuu hin ulfaata.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
505	Maaskii kaawwattee yeroo haasoftu namni haasaa kee sirrii hin dhaga'u.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
506	Kooviid 19 sodaachuun barbaachiisaa dha.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
507	Bu'a qabeessummaa Maaskii irratti amanuun gaariidha.	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala
508	Maatii keessa namni tokko Kooviid 19n qabamuu waan danda'uuf sodaachuu	1 Baay'eenmorma 2 Nanmorma 3 Hinbaabsa/Yaada hinqabu 4 Ittinwaliigala 5 Baay'een ittinwaliigala

PART-VI: Gaggaaffilee Barteewwan itti fayyadama maaskii barattoota kolleejjii saayinsii fayyaa mattuu.

S/NO.	Questions	Response
601	Maaskii osoo hin kaawwatiin harka dhiqachuu	1. Eyyee 2. Lakki
602	Yoo dubbachuu barbaadde maaskii Afaan irraa baasi	1. Eyyee 2. Lakki
603	Shiboon Maaskii keessa jirtu kara funyaanii ooluu qaba	1. Eyyee 2. Lakki
604	Hiituun maaskii kara gurraa ooluu qaba.	1. Eyyee 2. Lakki
605	Maaskii bal'isuuf masskicha irraa fi jala isaa wal irraa harkisi.	1. Eyyee 2. Lakki
606	Shiboon kara funyaanii walitti qabamuu qaba.	1. Eyyee 2. Lakki
607	Maaskii harkaan hin tuqiin.	1. Eyyee 2. Lakki
608	Maaskii yeroo of irraa baastu hiituu isaa qofa qabi.	1. Eyyee 2. Lakki
609	Maaskii gara addaatti ykn gadi gara hepheetti harkisuun sirrii miti.	1. Eyyee 2. Lakki
610	Osoo maaskii hin godhatiin keessoo isaa fi kara ala isaa adda baasuu.	1. Eyyee 2. Lakki
611	Erga maaskii of irraa baastee harka dhiqachuu.	1. Eyyee 2. Lakki

612	Maaskii takkaa fayyadamamu/use and through/ irra deebinee kaawachuun harbaachisaa dha.	1. Eyyee 2. Lakki
613	Maaskii jiidhe/ dhangala'aa tuqe/ gatau	1. Eyyee 2. Lakki
614	Yeroo maaskii kaawwannee jirruu, nyaachuun dhuguun ykn xuuxuun hin danda'amu.	1. Eyyee 2. Lakki
615	Bakka namoonni walitti qabamanitti dhibee Kooviid 19 ittisuuf kaawwattaa?	1. Eyyee 2. Lakki
616	Yeroo hunda mana barumsaatti Maaskii kaawwata/godhata	1. Eyyee 2. Lakki
617	Maaskii yoom kawwattaa?	1. manaa yeroon bahu 2. yeroon Kolleejjii seenuuf jedhu 3. kutaa keessatti

Declaration Form

I here by declare that this thesis was my original work and all resources of material used in document have been duly acknowledged.

Principal investigator: Shimelis Negewo (BSc).

Date ; Sep 22, 2022 Signature: _____

This thesis was approved by advisors namely:

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Date: _____ Signature: _____

2. Co-advisor: Abraham Lomboro (BSc, MPH).

Date: _____ Signature: _____