



Knowledge, attitude, practice and their associated determinants, in relation to updated coronavirus illness 19 prevention and control among Dessie town residents in the South Wollo Zone of Northeast Ethiopia: community-based cross-sectional study

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Background: Coronavirus disease 19 is an emerging respiratory disease caused by a novel coronavirus. The two strains of coronavirus were severe acute respiratory syndrome-coronavirus, and Middle East respiratory syndrome-coronavirus. A sudden outbreak of coronavirus disease 2019 (COVID-2019) caused by infection with severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2). The objective of this study was to analyse the community's knowledge, attitude, and practice and their associated determinants, in relation to updated COVID19 prevention and control in South Wollo Zone, Ethiopia.

Materials and methods: Community-based prospective cross sectional study was conducted from 10 April to 30 July 2020. The study population was selected from Dessie town and 423 samples were collected using systemic random sampling technique through self-administered questionnaire and verified, coded, and entered into epidata software and it export to SPSS for analysis. To summarise descriptive statistics frequencies, percentage, mean, and median were used and presented with tables, charts, and figures.

Results: The participation rate was 93.6%. Among the respondents 53.5% had solid knowledge; 50% had a positive attitude, and 45.2% had good COVID19 practice. Single marital status [adjusted odds ratio (AOR) (95% CI) = 0.487 (0.294–0.809)] and physical labour in occupation [AOR (95% CI) = 2.87 (1.003–8.214)] were both linked to strong COVID19 knowledge. Age of 30–34 [AOR (95% CI) = 2.264 (1.04–4.92)], age of 45–49 [AOR (95% CI) = 4.79 (1.22–18.77)], good knowledge [AOR (95% CI) = 1.58 (1.01–2.498)], good practice [AOR (95% CI) = 2.88 (1.754–4.72)] were significantly associated with adequate attitude, in the other hand sex [AOR (95% CI) = 3.03 (1.72–5.34)], educational status [AOR (95% CI) = 26.23 (3.83–179.84)], jobless occupation [AOR (95% CI) = 0.212 (0.079–0.572)], age, and adequate attitude were all linked to good coronavirus disease practice 19.

Conclusions: More than half, half, and less than half of the participants, respectively, had knowledge, attitude, and practice of COVID19 in Dessie town.

Keywords: associated determinants, attitude, COVID-19, knowledge, knowledge's, knowledgeable, knowledgeably, practice

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Introduction

Coronavirus disease 2019 (COVID-19) is an emerging respiratory disease caused by a novel coronavirus. There are two strains of coronavirus that have been found to infect humans. These strains were severe acute respiratory syndrome-coronavirus (SARS-CoV), and Middle East respiratory syndrome-coronavirus (MERS-CoV). A sudden outbreak of COVID-2019 caused by infection with SARS-CoV-2^[1].

The coronavirus disease 2019 is highly infectious, and the main clinical symptoms of the virus include fever, dry cough, fatigue, myalgia, dyspnoea, and breathing difficulty. In China, 18.5% of the patients with COVID-19 develop to the severe stage, which is characterised by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, bleeding, and coagulation dysfunction. The epidemiology of COVID-19 has recently become clear as incident cases continue to rise^[2,3].

The WHO confirmed that the outbreak of the coronavirus epidemic was associated with the Huanan South China Seafood Marketplace, but there is no specific animal association was identified^[4]. Scientists immediately started to research the source of the new coronavirus, and the first genome of COVID-19 was published by the research team led by Prof. Yong-Zhen Zhang, on 10 January 2020^[5].

COVID-19 is easily transmitted in the community, and the proportion of infections leading to severe illness is especially high among adults over 50 and those with comorbid health conditions. Although rare, severe cases have been reported in younger people^[6]. According to a WHO report, among the cases of COVID-19 80% of cases are mild, whereas 20% of infections result in clinically severe cases that have the potential to overwhelm already overburdened health facilities^[7].

The latest guidelines from Chinese health authorities describe three main transmission routes for COVID-19. These transmission routes were first, droplets transmission, second, contact transmission, and third, aerosol transmission.

Droplets transmission has been reported when respiratory droplets, such as those produced when an infected person coughs or sneezes, are ingested or inhaled by people in close proximity. Contact transmission can occur when a person touches a virus-infected surface or object and then touches their mouth, nose, or eyes. Aerosol transmission, on the other hand, may occur when respiratory droplets mix into the air, forming aerosols, and may cause infection when high doses of aerosols are inhaled into the lungs in a relatively closed environment^[8].

There are three necessary steps to control the transmission of infectious disease outbreak. These steps include controlling infectious sources, blocking the transmission routes, and protecting the susceptible population, but such steps should be taken once^[2].

To ensure the ultimate success of COVID-19 prevention, people must adhere to these control measures, which is heavily influenced by their knowledge and practises regarding COVID-19 in accordance with KAP theory^[9,10]. The SARS outbreak suggests that knowledge and practice towards infectious diseases are associated with levels of panic emotion among the population, which can further complicate attempts to prevent the spread of the disease^[11,12]. There is a problem with wearing masks and going to crowded places because a study in China and Nepal found that 3.6% and 15.3% went to crowded places, respectively, while 2.0% and 49.9% did not wear masks when leaving home recently. People living in areas affected by the COVID-19 epidemic, such as older adults and rural residents, are more likely to have inadequate knowledge and inappropriate COVID-19 prevention practice^[12,13].

The national health commission of China indicates the mortality rate among confirmed cases in China was 2.1% whereas outside China was 0.2%. The mortality rate among hospital-based admitted patients ranged 11–15%^[3,14–16]

Ethiopia is one of the thirteen African countries which the WHO has identified as the top risk affected by COVID-19, but with limited resources against COVID-19^[17]. The knowledge and practice of COVID-19 among the community in Dessie will be poor because, as we have observed, most people do not follow the principles derived from WHO and the Ethiopian Minister of Health, and they mostly go to crowded places and do not wear

HIGHLIGHTS

- Among the participants 53.5% of responders had good knowledge; 50.0% had a positive attitude, and 45.2% of the participant had good practice.
- Among the factors related with COVID 19 prevention and control, Single marital status and physical labor in occupation were both linked to strong COVID19 knowledge; good knowledge, Good practice were significantly associated with adequate attitude; sex, educational status, occupation, age, and adequate attitude were all linked to good corona virus disease practice 19.

masks when going outside, which is due to a lack of community knowledge.

Since the beginning of the COVID-19 outbreak, there has been a concerted effort in the community to better understand the virus and the disease. It is amazing how much knowledge about a new virus has been gained in such a short period of time. However, as with any new disease, significant knowledge gaps remain. The source of infection, pathogenesis and virulence of the virus, transmissibility, risk factors for infection and disease progression, diagnostics, clinical management of severely and critically ill patients, and the effectiveness of prevention and control measures are all unknown to the public.

To facilitate outbreak management of COVID-19 there is an urgent need to understand the public's awareness of COVID-19 at this critical moment. In this study, we were investigated the knowledge, attitude and practice towards COVID-19 of Dessie town community during the rapid rise period of the COVID-19 outbreak. The spread of the new coronavirus and its impacts on human health becomes high, so the proposal was done in community has respond rapidly about the knowledge, attitude and practice of the new virus.

The study was provide good perceptions and adequate knowledge of COVID-19 in improving case prevention. They govern and enhance the success of targeted interventions to control and prevent the virus and its route of transmission especially among populations at risk, through adopting healthy lifestyles changes. It was given the the important of preparing preventing schedule and plan for those hihgly risk for novel coronavirus disease 19 and early implementation of strategies to reverse abnormal physiological findings and prevent complications.

The finding obtained from this study was give different data about the cause and knowledge as well as practice of COVID-19 prevention, therefore it will be used for government and non government health institution to plan and take intervention measurement to prevent the occurrence of the virus. The study also used for the community directly to understand the transmission, awareness, and prevent them self from such virus. This study was also help as a base line for supervisors, trainers, policy makers and for further studies, because it was has the base line data regarding the outbreak virus.

The study was important to reframe the context of the study and examine practice and knowledge of COVID-19 prevention from a community perspective. This was providing an opportunity to explore substantively the practice and knowledge of

Table 1
Socio demographic characteristics of community population (n = 396) living in Dessie town, Ethiopia, 2020.

Variables	Response	
	Frequency	Percent (%)
Sex	Male	174 43.9
	Female	222 56.1
Age	Age 20–24	136 34.3
	Age 25–29	86 21.7
	Age 30–34	63 15.9
	Age 35–39	53 13.4
	Age 40–44	16 4.0
	Age 45–49	18 4.5
	Age 50–54	10 2.5
	Age 55–59	4 1.0
	Age 60–64	6 1.5
Marital status	Married	228 57.6
	Single	147 37.1
	Divorced	14 3.5
	Widowed	7 1.8
Religion	Orthodox	158 39.9
	Muslim	235 59.3
	Protestant	2 0.5
Ethnicity	Amhara	385 97.2
Educational Status	Illiterate	20 5.1
	Reading and writing only	12 3.0
	Grade 1–4	13 3.3
	Grade 5–8	49 12.4
	Up to high school	100 25.3
	Up to preparatory	40 10.1
	Diploma	51 12.9
	First degree	72 18.2
Occupation	Master and above	39 9.8
	Physical labour	104 26.9
	Governmental employ	84 21.8
	NGO employ	80 20.8
	Merchant	13 3.4
	Student	15 3.9
	Housewife	26 6.7
Source of information	Jobless	9 2.3
	Television	326 82.3
	Radio	52 13.1
	Health professional	121 30.6
	News	31 7.8
Individual	117 29.5	

coronavirus disease 19 to community populations and to describe their practice of preventive strategies.

The main aim of this study was to assess knowledge, attitude, and practice and their associated determinants, in relation to updated coronavirus illness 19 prevention and control among Dessie town residents in the South Wollo Zone of Northeast Ethiopia.

Materials and methods

This manuscript work has been reported in line with the STROCSS criteria and it is registered in www.researchregistry.com with the unique identification number (UIN) of researchregistry8337^[18].

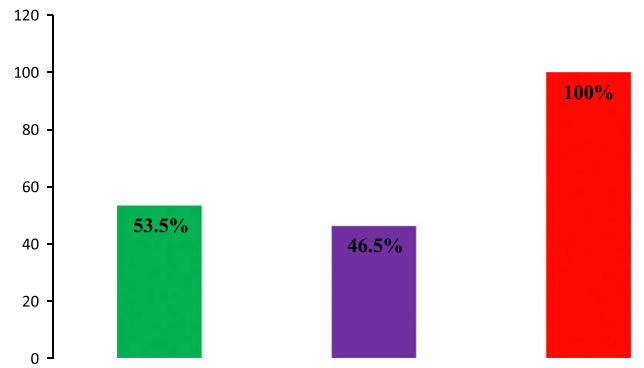


Figure 1. Knowledge of community populations (n = 396) towards novel coronavirus 19 disease prevention and control in Dessie Town, South Wollo Zone, Northeast Ethiopia, Ethiopia, 2020.

A community-based cross-sectional study design was conducted from 10 April to 30 July 2020. All individuals whose age was greater than 19 years and those who lived in Dessie for at least 6 months were eligible for the study. On the other hand, individuals whose age was less than 18, individuals who had been critically ill, and those who lived in Dessie for less than 6 months were not included under the study.

The sample size was determined using the formula for a population proportion with a 95% confidence interval, a margin of error of 5%, and Prevalence is 50% (0.5), N is 136,056. The calculated sample size was 384. By adding a 10% non-response rate and incomplete, lost questionnaire; the final sample size was 423.

There are five sub-cities in Dessie town. Using a simple random sampling technique, three sub-cities were selected among five sub-cities. Then a proportional number of participants was allocated for each selected sub-city. Then a participant was selected by systematic random sampling based on every K value.

A self-administered quantitative questionnaire was used to collect the data. The questionnaires used for this study were closed-end questions. The tool used for this particular study was adopted from the study in China, knowledge, and practice regarding COVID-19^[12]. The questionnaire was checked by health professionals of senior experts to check the consistency of the questionnaire. The questionnaire used for data collection contains a self-administered questionnaire. The questionnaire contained four sections which include the community sociodemographic characteristics, knowledge of respondents, attitude of subjects and practice of participants of COVID-19 prevention of control. The sociodemographic section contained seven items; the knowledge of respondents section contained 12 items, attitude of respondents had fifteen items, and the practice of participants contained fifteen items. Totally the questionnaire contained 49 items. The questionnaire was used to level the community’s COVID-19’S knowledge, attitude and practice. We scored knowledge and attitude of respondents through estimating mean of computed knowledge and attitude questions, respectively, on the other hand practice was scored through estimating median of practice questions. Knowledge was scored with mean of (8.41 ± 1.379) knowledge questions and attitude was scored with mean of (8.4 ± 1.88) on the other hand practice was scored with median of ^{f[11]} practice questions.

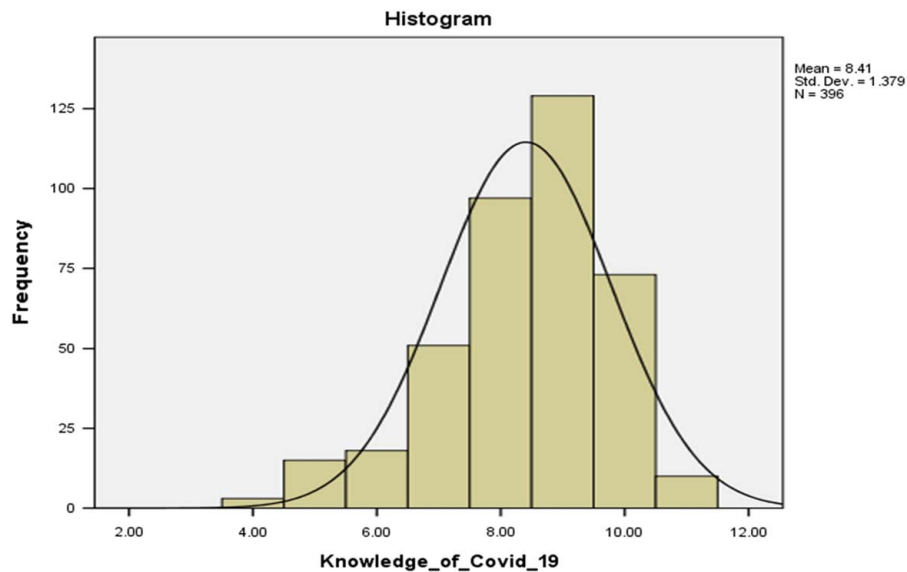


Figure 2. Data distribution of knowledge of community populations ($n = 396$) towards novel. coronavirus 19 disease prevention and control in Dessie town, South Wollo Zone, Northeast Ethiopia.

Data were collected by nine health professionals who were recruited from different health centres, hospitals and university and two trained masters' health professional supervisors. The principal supervisors assisted and coordinated the data collectors as well as the participant individuals during data collection. Data were collected from the individuals from the community that were selected from each kebele. The principal investigator and supervisor was take the responsibility of coordinating the community participants and discussing the purpose of the study then based on their willingness to participate, the principal supervisor was given orientation on why

to fill the questionnaire then, the questionnaire was clarify any difficulty during the data collection, and. Finally, completed questionnaire was returned to the data collectors.

To ensure data quality, it applied the activity of checkup the format, pattern, and duplication of the questionnaire before distributing the data collector. A 5% pretest among the sample size was conducted in the Kombolcha community to test the consistency of the questionnaire. Four days of training were given to data collectors about the proper handling of data.

Data collectors were assigned from the South Wollo health centre, governmental hospitals, and Wollo University. Close

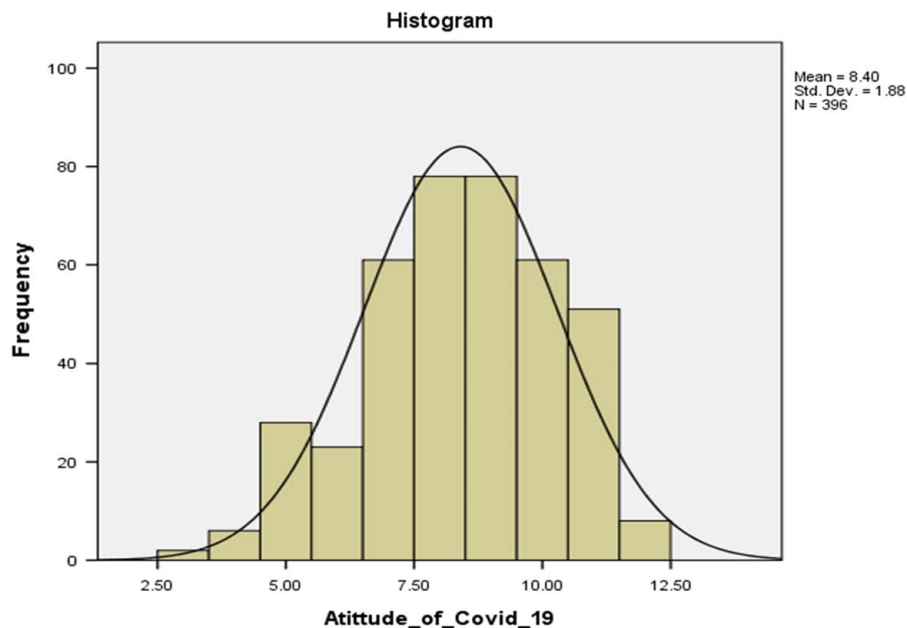


Figure 3. Data distribution of attitude of community populations ($n = 396$) towards novel. coronavirus 19 disease prevention and control in Dessie town, South Wollo Zone, Northeast Ethiopia.

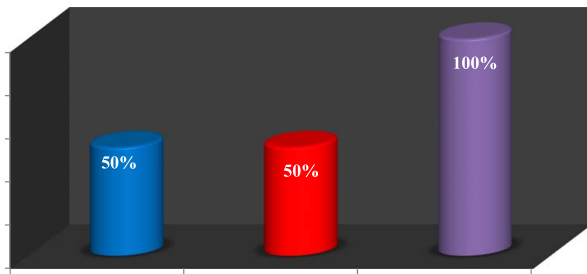


Figure 4. Attitude of community populations ($n=396$) towards novel coronavirus 19 disease. prevention and control in Dessie town, south Wollo zone, northeast Ethiopia, Ethiopia, 2020.

supervision by two trained MSc health professionals was done during the data collection procedure and proper recording was performed. As well as immediate checkup was carried out and any unfilled data were filled immediately. Data were placed properly in a secure and safe place.

The data entry was conducted using Epidata 3.1 and exported into SPSS version 23 for data cleaning and analysis. To summarise, descriptive statistics frequencies, percentages, median and mean were used, and tables, charts, and figures were used for data presentation. Cross-tabulation was used to assess the proportion of dependent variables.

According to this study, good knowledge was calculated and stated as respondents' knowledge above its mean \pm SD (8.41 ± 1.379) of 12(knowledge questions. Poor knowledge was calculated as study subjects' knowledge below its mean \pm SD (8.41 ± 1.379) of 12 knowledge questions^[19,20]. Adequate attitude: estimated through respondents' attitude above mean \pm SD (8.4 ± 1.88) of 15 attitude questions. Inadequate attitude estimated participants' attitude below mean \pm SD (8.4 ± 1.88) of 15 attitude questions^[19,20]. Good Practice is study participants' practice above median level (11) of 15 practice questions. Poor Practice is estimated as

respondents' practice below median level (11) of 15 practice questions^[19,20].

Results

A total of 423 questionnaires were distributed to the population living in Dessie town. Among those, 396 participants were involved and making a response rate of 93.6% and the remaining 6.4% were considered non-respondents due to incompleteness and inconsistency of the respondents.

Sociodemographic characteristics of study participants

More than half of the respondents, 222 (56.1%) were females. The mean age of respondents was 30.23 ± 9.9 years with the minimum and maximum age of 20 and 70, respectively. Three hundred eighty-five (97.2%) of the participants were Amhara in ethnicity. A significant number 100 (25.3%) of the respondents were educated up to high school. With regard to the marital status of the respondents, 228 (57.6%) were married and 7 (1.8%) were widowed. Ninety seven (24.5%) of the participants were governmental employed, whereas twenty six (6.6%) were non-governmental employed (Table 1).

Knowledge of community population towards corona virus 19

The mean of the community population's knowledge towards corona virus prevention and control was 8.41 with a SD of 1.379 (Fig. 1). Two hundred twelve (53.5%) of the participants had good knowledge of corona virus 19, while 184 (46.5%) had poor knowledge of corona virus 19 (Fig. 2).

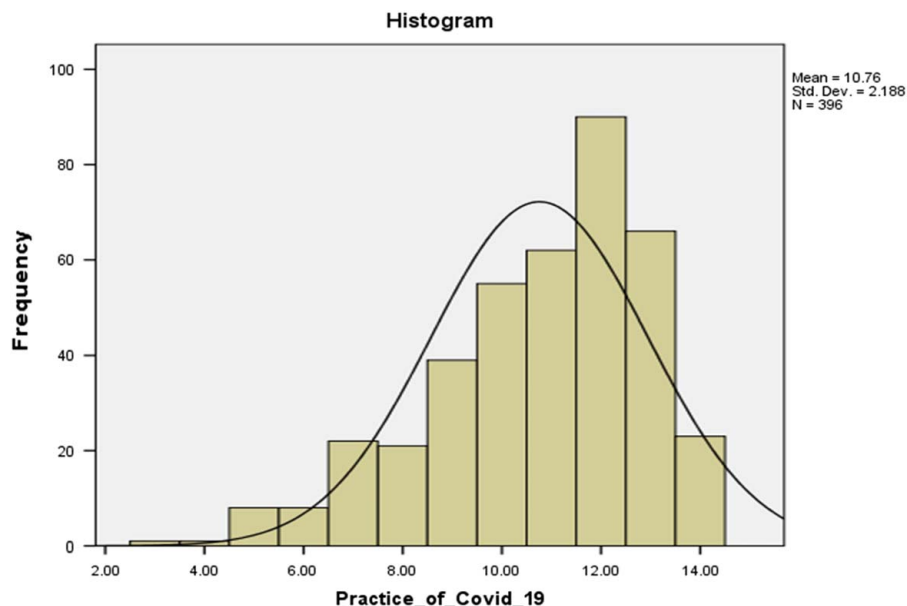


Figure 5. Data distribution of practice of community populations ($n=396$) towards novel coronavirus 19 disease prevention and control in Dessie town, South Wollo Zone, Northeast Ethiopia.

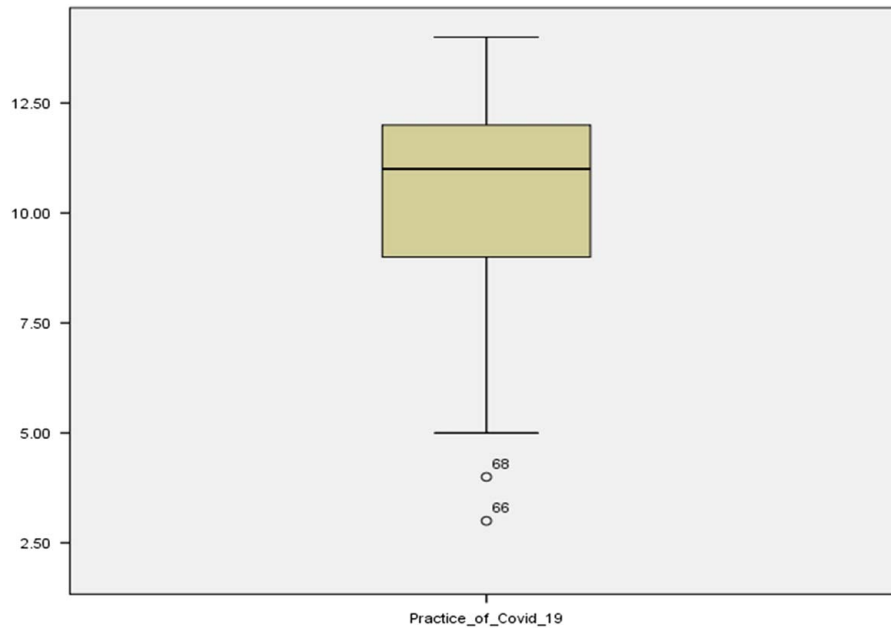


Figure 6. Interquartile range of practice of community populations ($n = 396$) towards novel coronavirus 19 disease prevention and control in Dessie Town, South Wollo Zone, Northeast Ethiopia, Ethiopia, 2020.

Attitude of community population towards corona virus 19 prevention and control

The mean attitude of the community population toward corona virus 19 prevention and control was 8.4 with the SD of 1.88 (Fig. 3). One hundred ninety eight (50.0%) of community participation had adequate attitude and 198 (50%) of community participation had inadequate attitude of corona virus 19 (Fig. 4).

Practice of community population toward corona virus 19

The median of the community practice regarding corona virus 19 prevention and control was 11(Fig. 5). Among the community participants, those 179 (45.2%) had good practice of corona virus 19 prevention and control, while 217 (54.8%) had poor practice of corona virus 19 prevention and control (Fig. 6) and (Fig. 7).

Factors associated with knowledge towards Corona Virus 19

In bivariable analysis, marital status, educational status, occupation, attitude, and practice that were candidates for multivariable logistic regression with P less than 0.25. The multivariable logistic regression analysis was performed by entering all candidates of bivariable analysis in to multiple logistic regressions with the dependent variable. The results revealed that marital status [single adjusted odds ratio (AOR) (95% CI) = 0.487 (0.294–0.809)], occupation (physical labour [AOR (95% CI) = 2.87 (1.003–8.214)], were found to have a statistically significant association with novel coronavirus 19 disease (Table 2).

Factors associated with attitude towards coronavirus 19

In bivariable analysis, marital status, educational status, occupation, age categorisation, knowledge, and practice were candidate for multivariable logistic regression with P less than 0.25.

In multivariable analysis, age of 30–34 AOR (95% CI) = 2.264 (1.04–4.92), age of 45–49 AOR (95% CI) = 4.79 (1.22–18.77), knowledge AOR (95% CI) = 1.58 (1.01–2.498), practice AOR (95% CI) = 2.88 (1.754–4.72) were found to have statistically significant association with adequate attitude of coronavirus 19 disease prevention and control (Table 3).

Factors associated with practice towards coronavirus 19

In bivariable analysis, sex, educational status, occupation, age categorisation, knowledge, and attitude were candidates for multivariable logistic regression with $P < 0.25$.

In multivariable analysis, females AOR (95% CI) = 3.03 (1.72–5.34), educational level with grade “1–4” had AOR (95% CI) = 26.23 (3.83–179.84), those with jobless being jobless found with AOR (95% CI) = 0.212 (0.079–0.572)), age of 25–29 AOR (95% CI) = 0.074 (0.011–0.49) , and those having adequate attitude AOR (95% CI) = 3.042 (1.835–5.043) were found to have statistically significant

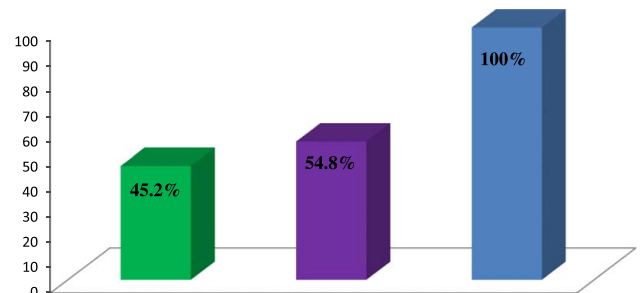


Figure 7. Practice of community populations ($n = 396$) towards novel coronavirus 19 disease prevention and control in Dessie town, South Wollo Zone, Northeast Ethiopia, Ethiopia, 2020.

Table 2**Bivariable and multivariable analysis of factors associated with knowledge of novel coronavirus 19 among community (n = 396) in Dessie town, south wollo zone, Northeast Ethiopia, 2020.**

Variable		Knowledge of COVID		COR (95% CI)	AOR (95% CI)
		Good (212)	Poor (184)		
Marital status	Widowed	2	5	0.276 (0.052–1.451)	0.634 (0.101–3.971)
	Single	63	84	0.517 (0.339–0.786)	0.487 (0.294–0.809)
	Divorced	12	2	4.133 (0.904–18.9)	3.654 (0.742–17.99)
	Married	135	93	1	1
Educational status	Illiterate	8	12	0.515 (0.172–1.541)	0.416 (0.101–1.708)
	Read and write	8	4	1.545 (0.398–6.003)	0.853 (0.163–4.461)
	Grade 1–4	4	9	0.343 (0.09–1.308)	0.202 (0.038–1.074)
	Grade 5–8	27	22	0.948 (0.407–2.12)	0.518 (0.172–1.559)
	Up to high scho	61	39	1.209 (0.571–2.558)	0.939 (0.35–2.521)
	Up to preparator	21	19	0.854 (0.352–2.072)	0.817 (0.293–2.282)
	Diploma	30	21	1.104 (0.475–2.566)	0.92 (0.341–2.482)
	First degree	31	41	0.584 (0.266–1.283)	0.656 (0.284–1.516)
	Master and above	22	17	1	1
Occupation	NGO employ	17	9	2.009 (0.816–4.946)	1.685 (0.649–4.376)
	Merchant	31	29	1.137 (0.597–2.166)	1.177 (0.518–2.678)
	Student	25	26	1.023 (0.519–2.015)	1.355 (0.583–3.15)
	House wife	28	26	1.146 (0.589–2.23)	1.075 (0.442–2.617)
	Jobless	35	31	1.201 (0.642–2.247)	1.121 (0.5–2.509)
	Physical labour	28	13	2.291 (1.062–4.943)	2.87 (1.003–8.214)
	Gov'tal employ	47	50	1	1
Attitude	Adequate attitude	117	81	1.566 (1.052–2.33)	1.552 (0.996–2.417)
	Inadequate attitude	95	103	1	1
Practice	Good practice	104	75	1.4 (0.939–2.085)	1.226 (0.769–1.953)
	Poor practice	108	109	1	1

AOR, adjusted odds ratio; COR, crude odd ratio.

The bold values are indicated that there is significant association between the dependent and independent variables.

association with good practice of novel coronavirus 19 disease prevention and control (Table 4).

Discussion

This study was a community-based cross-sectional study design to assess knowledge, attitude, and practice and associated factors towards novel corona virus disease 19 in Dessie town community populations. Among the study participants, 212 (53.5%) had good knowledge with confidence interval of (95% CI; 48.58%, 58.42%), 198 (50%) with confidence interval of (95% CI: 45.08%, 54.92%) had adequate attitude, and 179 (45.2%) with confidence interval of (95% CI: 40.3%; 50.1%) had good practice of COVID-19 prevention and control.

Knowledge, attitude, and practice of coronavirus disease 19

Our study findings indicated that most of the community participants were knowledgeable about Corona virus disease 19 prevention and control. This study found that the knowledge was better than the study in Bangladeshi (29.2%). The possible explanation may be that the majority occupation of Bangladeshi participants were students (44.5%) but such a majority became less knowledgeable; but the majority of this study were physical labour and had good knowledge. Among the participants who had good knowledge, more than half had

poor attitudes, but in this study^[21]. The finding was less than the study in India (54.4%)^[22], because 3.9% of this study was student and 20.1% of physical labour, but in India 49% of the participants were students and they had good knowledge. So, knowledge of COVID-19 is an essential component in the provision of prevention and control of coronavirus disease 19.

The adequate attitudes of Dessie community (50%) were better than the study in Bangladeshi (35%) and India (43.8%)^[21,22]. The possible explanation behind this difference was that 61% of Bangladeshi participants were male in sex and that had inadequate attitudes. So the level of attitude in Bangladeshi was lower than in this study.

The good practice of this study finding was lower than half of the participants, but it was greater than the study in Bangladeshi (35.3%)^[21]. The reason may be 82.2% of Bangladeshi participants had wrong concepts and misinformation from the internet and media in their understanding of the cause of the emergence of COVID-19. In addition knowledge and attitude of Bangladeshi was lower than this study. So the participants practice also poor practice than this study. The participants in Bangladeshi have poor awareness on the expectation of high fatality and high contagion and also most of the respondent could not decide the priority of government's action in preventing the disease^[21]. The finding was less than in the study in India (66.4%)^[22]. This is due to the population in India were more fear of getting infection, habitual practice of maintaining personal hygiene and family pressure^[22].

Table 3
Bivariable and multivariable analysis of factors associated with attitude of novel coronavirus 19 among community (n = 396) in Dessie town, south wollo zone, Northeast Ethiopia, 2020.

Variable		Attitude of COVID-19		COR (95% CI)	AOR (95% CI)
		Adequate (198)	Inadequate (198)		
Marital status	Widowed	0	7	0.000 (0.00–)	0.00 (0.000–...)
	Single	75	72	0.954 (0.63–1.445)	1.14 (0.65–2.03)
	Divorced	4	10	0.366 (0.112–1.202)	0.28 (0.074–1.1)
	Married	119	109	1	1
	Illiterate	13	7	2.67 (0.872–8.171)	5.12 (0.77–33.85)
Educational status	Read and write	2	10	0.288 (0.055–1.492)	0.27 (0.04–1.81)
	Grade 1–4	6	7	1.232 (0.348–4.359)	0.784 (0.15–4.10)
	Grade 5–8	31	18	2.476 (1.045–5.867)	1.866 (0.56–6.22)
	Up to high scho	58	42	1.985 (0.936–4.209)	1.352 (0.48–3.79)
	Up to preparator	17	23	1.063 (0.434–2.599)	0.891 (0.294–2.7)
	Diploma	26	25	1.495 (0.644–3.469)	1.301 (0.44–3.78)
	First degree	29	43	0.969 (0.439–2.143)	0.89 (0.36–2.16)
	Master and above	16	23	1	1
	Occupation	Gov'tal employ	42	55	0.598 (0.286–1.248)
NGO employ		10	16	0.489 (0.18–1.333)	0.591 (0.16–2.08)
Merchant		27	33	0.64 (0.288–1.424)	0.616 (0.23–1.63)
House wife		29	25	0.908 (0.401–2.054)	1.606 (0.54–4.70)
Jobless		37	29	0.999 (0.455–2.19)	1.107 (0.39–3.12)
Student		29	22	1.032 (0.45–2.364)	1.953 (0.76–5.00)
Physical labour		23	18	1	1
Age categorisation		Age 25–29	44	42	1.111 (0.647–1.907)
	Age 30–34	35	28	1.326 (0.728–2.416)	2.264 (1.04–4.92)
	Age 35–39	26	27	1.021 (0.541–1.927)	1.44 (0.627–3.3)
	Age 40–44	9	7	1.364 (0.48–3.871)	2.34 (0.656–8.39)
	Age 45–49	12	6	2.121 (0.753–5.978)	4.79 (1.22–18.77)
	Age 50–54	2	8	0.265 (0.054–1.294)	0.41 (0.058–2.9)
	Age 54–59	0	4	0.000 (0.000–)	0.000 (0.000–...)
	Age 60–64	2	4	0.53 (0.094–2.992)	0.95 (0.136–6.64)
	Age > 64	2	2	1.061 (0.145–7.748)	12.888 (0.000–...)
Knowledge	Age 20–24	66	70	1	1
	Good knowledge	117	95	1.566 (1.052–2.33)	1.58 (1.01–2.498)
	Poor knowledge	81	103	1	1
Practice	Good practice	115	64	2.901 (1.925–4.373)	2.88 (1.754–4.72)
	Poor practice	83	134	1	1

AOR, adjusted odds ratio.
 The bold values are indicated that there is significant association between the dependent and independent variables.

Associated factors of knowledge, attitude, and practice of COVID-19

According to this study, good knowledge of coronavirus disease 19 was less likely to occur among those who were single than those who were married.

This study showed that age groups of 30–34 and 45–49 were more likely to have adequate attitudes than age groups 20–24. This is supported by the study in Paraguay, and Saudi Arabia^[23,24]. The possible explanation may be age increases as the individual's attitude becomes increased. The study indicated that the participants who were knowledgeable they had adequate attitudes; this is supported by the study in, Paraguay, and Saudi Arabia^[23,24].

Associated factors towards practice of COVID-19 prevention and control

According to this study, good practice for COVID-19 is more likely to occur among those age groups of 25–29, 30–34, 35–39, 45–49,

and 50–54 than 20–24. This was supported by the study in Bangladeshi age groups of 26–35, above 65 and in Saudi Arabia with age groups of 30–39, 40–49, and 50–59^[21,23]. In this study female has good practice of corona virus disease19 prevention and control than male. This finding was supported by the study in Paraguay, and Bangladeshi^[21,24]. This may be most female, house makers and house wives and mostly they spent their time on television and gather better information and convert it into good practice, but the study in Saudi Arabia was male, had good practice^[23].

In this study merchants, housewives, and the jobless were more likely to do good practice than physical labour, but the study in Bangladeshi was only housewives were associated with practice^[21]. The possible explanation may be housewives have more time to spend on television and gather better information and convert it into better.

Limitation of the study

There may be social desirability bias in the study population due self-administer questionnaire.

Table 4

Bivariable and multivariable analysis of factors associated with practice of novel corona virus 19 among community ($n = 396$) in Dessie town, south wollo zone, Northeast Ethiopia, 2020.

Variable	Practice of COVID-19		COR (95% CI)	AOR (95% CI)	
	Good (179)	Poor (217)			
Sex	Female	120	102	2.293 (1.522–3.456)	3.03 (1.72–5.34)
	Male	59	115	1	1
Educational status	First degree	22	50	3.85 (1.22–12.154)	2.86 (0.82–9.96)
	Diploma	25	26	8.413 (2.608–27.13)	7.382 (1.92–28.4)
	Up to preparatory	16	24	5.833 (1.735–19.61)	7.193 (1.75–29.52)
	Up to high school	55	45	10.69 (3.535–32.35)	12.0 (3.2–44.95)
	Grade 5–8	33	16	18.04 (5.466–59.58)	24.96 (5.81–107.28)
	Grade 1–4	8	5	14.0 (3.054–64.184)	26.23 (3.83–179.84)
	Read and write	4	8	4.375 (0.897–21.33)	4.52 (0.64–32.02)
	Illiterate	12	8	13.125 (3.34–51.52)	16.02 (2.58–99.29)
Occupation	Master and above	4	35	1	1
	Gov'tal employ	26	71	0.134 (0.059–0.306)	0.665 (0.214–2.066)
	NGO employ	10	16	0.229 (0.08–0.655)	0.882 (0.238–3.265)
	Merchant	28	32	0.321 (0.136–0.76)	0.316 (0.11–0.909)
	Student	34	17	0.733 (0.297–1.81)	0.844 (0.254–2.802)
	House wife	25	29	0.316 (0.132–0.757)	0.232 (0.078–0.688)
	Jobless	25	41	0.224 (0.095–0.524)	0.212 (0.079–0.572)
	Physical labour	30	11	1	1
	Age 20–24	76	60	0.633 (0.112–3.575)	0.164 (0.025–1.096)
	Age 25–29	31	55	0.282 (0.049–1.627)	0.074 (0.011–0.49)
Age categorisation	Age 30–34	23	40	0.287 (0.049–1.693)	0.089 (0.013–0.612)
	Age 35–39	24	29	0.414 (0.07–2.457)	0.083 (0.012–0.583)
	Age 40–44	8	8	0.5 (0.07–3.55)	0.134 (0.015–1.214)
	Age 45–49	6	12	0.25 (0.035–1.775)	0.031 (0.003–0.284)
	Age 50–54	3	7	0.214 (0.024–1.877)	0.041 (0.004–0.449)
	Age 54–59	0	4	0.000 (0.000–...)	0.000 (0.000–...)
	Age 60–64	4	2	1	1
Knowledge	Good knowledge	104	108	1.4 (0.939–2.085)	1.366 (0.832–2.245)
	Poor knowledge	75	109	1	1
Attitude	Adequate attitude	115	83	2.901 (1.925–4.373)	3.042 (1.835–5.043)
	Inadequate attitude	64	134	1	1

AOR, adjusted odds ratio.

The bold values are indicated that there is significant association between the dependent and independent variables.

Conclusion and recommendations

Above half of respondents had good knowledge, and only half of subjects had good attitudes, but below half of residents had good practice towards novel coronavirus disease 19 among communities living in Dessie town. Variables such as, age, sex, educational status, occupation knowledge, and practice were statistically significant with KAP for coronavirus 19 prevention and control.

Our gratitude recommendation were provided to Dessie town health administration should give continuous community awareness program on practice of coronavirus disease 19 prevention and control to Dessie town population. It should continue training for community population regarding attitude and practice of COVID-19 prevention and control.

This study recommends further studies and community service based on the findings on COVID-19. Additionally, there is a need for research inquiry to identify more factors that contribute to varying levels of knowledge, attitude and practice on Coronavirus disease 19 prevention and control.

This study finding recommend that community awareness program should be continued and given on practice of coronavirus disease 19 prevention and control to Dessie

town population with collaboration of the University college of medicine and health science, and Dessie town health administration.

This study also recommends that, Dessie sub-city and kebele should give training to town population regarding attitude and practice of COVID-19 prevention and control.

Research ethics and patient to consent

Ethical clearance was obtained from Research and Community service of University, College of Medicine And Health Science, Research, Community Services and Postgraduate Coordinator. The reference number for this approval letter is RCSPG/120/2020. After getting permission from each respective of Dessie town administration and sub-city, informed oral consent was obtained from the study participants; this is because after explaining the study purpose, procedure, duration and other detail explanation participants; was interested to give oral consent.

Consent

Yes.

Source of finding

None.

Author contribution

M.Z. participated in writing proposal, analysed the data, wrote the result and discussion. E.B. wrote the discussion and prepared manuscript. L.T. participated in analysing the data, writing result and prepared manuscript. B.D. prepared tables and figures as well as the manuscript.

Conflicts of interest disclosure

The authors declare that they have not competing interests.

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2. Unique Identifying number or registration ID: researchregistry8337 Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-the-registry#home/>

Guarantor

Mulusew Zeleke Belay.

Availability of data and materials

Datasets used for analysis for this study are available from the corresponding authors on reasonable request.

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