

Community risk perception and health-seeking behavior in the era of COVID-19 among adult residents of Harari regional state, eastern Ethiopia

SAGE Open Medicine

Volume 9: 1–11

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/20503121211036132

journals.sagepub.com/home/smo



Addis Eyeberu¹ , Dechasa Adare Mengistu² , Belay Negash³, Addisu Alemu³, Degu Abate⁴, Temam Beshir Raru³, Alemayehu Deressa Wayessa³, Adera Debela¹, Nebiyu Bahiru³, Helina Heluf¹, Mohammed Abdurke Kure¹, Ahmedmenewer Abdu⁴ , Amanuel Oljira Dulo¹, Habtamu Bekele¹ , Kefelegn Bayu², Saron Bogale⁵, Genanaw Atnafe¹, Tewodros Assefa⁵, Rabuma Belete⁴, Mohammed Muzeyin² , Haftu Asmerom⁴, Mesay Arkew⁴, Anumein Mohammed⁴, Henock Asfaw¹, Barkot Taddesse¹, Daniel Alemu¹, Dawit Yihun⁵, Shambel Nigussie Amare⁵, Jemal Yusuf Kebira³, Siraj Aliyi Adem¹, Gebisa Dirirsa², Saba Hailu Girmay³, Abduro Godana⁵, Deribe Bekele Dechasa¹ and Yadeta Dessie³

Abstract

Background: COVID-19 brought significant challenges to public health. It changed the view of global health and safety, trust in the healthcare system, and clients' willingness to seek healthcare. To contain the course of the COVID-19 pandemic and its detrimental effects, understanding peoples' health behavior, especially healthcare-seeking, and determining the community risk perception is very important. Thus, this study aimed to determine the health-seeking behavior, community's risk perception to COVID-19 pandemics, and factors influencing the community risk perception in Harari regional state, Ethiopia.

Methods: Community-based cross-sectional study was conducted from 5 to 30 February 2021. A total of 1320 adult (>18years) participants were selected using systematic random sampling. The data were collected using an online kobo collect toolbox and analyzed using descriptive statistical tests. Chi-square test and multiple binary logistic regression were applied to examine the difference between variables. A p -value < 0.05 was considered to be of statistical significance.

Results: The study included 1296 respondents >18 years old. The overall prevalence of willingness to seek healthcare in the study area was 35.6% (95% CI: 33%–38.3.0%). The mean cumulative score of risk perception was 30.5 (SD ± 7.25) with the minimum and maximum score of 13 and 63, respectively. A total of 656 (50.6%) of the participants had low-risk perceptions concerning COVID-19. The study found a statistically significant association between risk perception and sociodemographic characteristics (age, educational status, and income), and knowledge of the respondents.

¹School of Nursing and Midwifery, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

²Department of Environmental Health, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

³School of Public Health, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

⁴Department of Medical Laboratory Sciences, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

⁵School of Pharmacy, College of Health and Medical Sciences, Haramaya University, Harar, Ethiopia

Corresponding author:

Dechasa Adare Mengistu, Department of Environmental Health, College of Health and Medical Sciences, Haramaya University, Harar 235, Ethiopia. Emails: dechasaadare@gmail.com; Dechasa.Adare@haramaya.edu.et



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

Conclusion: The overall prevalence of willingness to seek healthcare was 35.6%. Healthcare intervention aimed to contain the COVID-19 pandemic should consider the factors associated with the study area. Similarly, the study found a low-risk perception among the community that needs critical action to manage the COVID-19 pandemic and to protect the community as a whole. Thus, it is necessary to improve community risk perception through health education.

Keywords

Risk perception, COVID-19, coronavirus, 2019, SARS-CoV-2, community risk perception

Date received: 17 May 2021; accepted: 12 July 2021

Background

The global epidemic of coronavirus disease 2019 (COVID-19) has presented a major threat to public health worldwide.¹ COVID-19 is the result of an infection with severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2) that was first isolated and identified in patients who were exposed to a seafood market in Wuhan City, China, in December 2019.² Similar to the findings related to SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV), SARS-CoV-2 is believed to cross species to initiate primary human infections; it is now spread primarily by human-to-human transmission.³ Due to its rapid spread from China to many countries worldwide, COVID-19 was declared a global pandemic by the World Health Organization (WHO)⁴ on 11 March 2020.

The disease is highly infectious, and its main clinical symptoms include fever, cough, and dyspnea. Approximately 20% of those hospitalized needed to be admitted to the intensive care unit (ICU) for critical management for severe stage, which is characterized by acute respiratory distress syndrome, acute cardiac injury, acute kidney injury, shock, and secondary infections.⁵ Epidemiologically, the distribution of the disease is exponentially growing across the globe. Since the first reported case on 31 December 2019, it has resulted in over 2,465,517 deaths and over 111 million infections globally as of 20 February 2020.⁶

In Ethiopia, the first confirmed COVID-19 case was reported on 13 March 2020, of a 48-year-old Japanese man, who had traveled from Japan to Burkina Faso and who then arrived in Ethiopia. Three weeks into the outbreak, cases were noted among people without a history of travel to COVID-19 endemic countries but who were in contact with confirmed cases.⁷ As of 16 February 2021, there were 148,490 confirmed cases of COVID-19 and a total of 2223 deaths.⁸ The Government of Ethiopia has implemented a variety of policy actions and precautionary measures to control the spread and mitigate the impact of the COVID-19 pandemic. Despite efforts to scale-up public health interventions to contain and mitigate the spread of coronavirus in Ethiopia, new cases have continued to emerge. Gaps and negligence in applying the COVID-19 preventive measures among the public have been observed.^{9,10}

Understanding individuals' perceived risk is important in terms of effective control of an outbreak of infectious

diseases.¹¹ The motivation to protect oneself from disease is related to the perceived threat. The perceived threat is derived from both how people feel vulnerable to develop a certain condition and how severe it would be for them to be affected.¹² A lower perceived risk leads to lower adherence, whereas people with higher levels of risk perception are significantly more likely to be willing to comply with specific public health behaviors.^{11,13}

The primary aim of this study was to assess the community risk perception of COVID-19 infection and factors influencing this risk perception among adult residents of Harari regional state.

Materials and methods

Study area and period

The study was conducted in Harari regional state, which is one of the 10 regional states found in Ethiopia, from 5 to 30 February 2021. The region is located 510 km far away from Addis Ababa, the capital city of Ethiopia. The region is divided into nine *woredas* with three of them being rural and six being urban.

The urban districts are subdivided into 19 *kebeles* (the lowest administrative division in the country), and the rural districts are subdivided into 17 peasant associations (which is equivalent to *kebeles* in urban cases). The total population (2021 projection based on the 2007 Census, CSA) of the region is 270,000 of which 136,000 are males and 134,000 are females.

Study design

Community-based cross-sectional study design was employed.

Source population

Harari regional state adult residents were a source population.

Study population

All adult residents living in selected *kebeles* of Harari regional state aged ≥ 18 years old formed the study population.

Inclusion and exclusion criteria

Inclusion criteria. Residents living in selected households as heads or any other household members >18 years old and available during data collection were included in the study.

Exclusion criteria. People who left their house for some reason and were seriously ill during data collection were excluded from the study.

Sample size determination and sampling technique

The sample size was calculated by using the single population proportion formula ($n = (Z\alpha/2)^2 p(1-p)/d^2$), where n is the minimum sample size required, p is the estimated proportion of risk perception, and $Z\alpha/2$ is the value of the standard score at 95% confidence interval (1.96); the assumptions of confidence level are at 95%=1.96, a margin of error (d)=0.03, design effect=2, and non-retrieval rate=10%. For this study, $p=53.4\%$ (the proportion of community risk perception in Ethiopia) was used.¹⁴ The number of households included in the study was calculated as

$$n = 2 * z^2 * p (1-p) / d^2$$

Thus $n = 2(1.96)^2 \times 0.534(1-0.534)/(0.04)^2 = 1195$.

Including 10% contingency (non-response rate) which is 120, the sample size was 1315. Therefore, the final sample size was 1315 households.

A multistage sampling technique was used for sampling the study participants. From 9 *woredas*, 13 *kebeles* were selected using the simple random sampling (lottery) method. Then from the selected *kebeles*, 1315 households were allocated proportionally. Each study participant (HH) was selected using a systematic random sampling method, and then, an eligible individual within the selected household was included in the study. Using this technique, a total of 1315 eligible individuals for the study were obtained from the households included in the survey.

Data collection method

A questionnaire was created online by the investigators using an online survey portal, Kobo toolbox (Harvard Humanitarian Initiative, Cambridge, MA). The questionnaire was valid and reliable as it was adapted from the WHO and UNICEF documents relating to COVID-19 preparedness and response¹⁵ and similar researches.^{7,14,16} Furthermore, the data collection tool (questionnaire) was pretested to check its clarity, sequence, applicability, and validity. A brief introductory orientation was given to the study participants by data collectors about the purpose of the study. An explanation was given about the importance of their involvement, volunteer individuals were interviewed, and then the data were filled in by data collectors using an online survey portal. The data were collected by 30

well-trained undergraduate students under the guidance of 8 MSc holding superiors and 8 investigators.

Operational definitions

Knowledge of the participants regarding COVID-19 was determined based on the questions developed for the knowledge section by calculating the sum score.¹⁷ Participants who correctly answered below or equal to the mean were considered as having poor knowledge, whereas those who had answered above the mean were considered as having good knowledge.

Risk perception regarding COVID-19 was measured using Likert-type scales. The respondents rated their levels of agreement with different statements. Furthermore, the cumulative risk perception score was computed. Based on the mean score, the risk perception is categorized as high for those who score above the mean, and low for those who score mean or below.^{17,18}

The practice of COVID-19 prevention method was measured using 10 questions. The respondents rated how often they were following the preventive methods recommended by WHO on five scales: none (1), rarely (2), sometimes (3), frequently (4), and always (5). Then, the cumulative practice score was computed. Based on the mean score, the practice of COVID-19 preventive methods was categorized as good for those who scored above the mean, and poor for those who scored mean or below.¹⁸

Data analysis and quality control

A descriptive statistical test was used to provide a clear distribution of the data. Numerical variables were measured as mean, median, interquartile range, and standard deviations, while categorical variables were expressed as frequency and percentages. Chi-square test was done to examine the differences between the categorical variables. Finally, multiple binary logistic regression was applied to examine the effects of independent variables on community risk perception and expressed as odds ratio (OR) and 95% confidence interval (CI). A p -value < 0.05 was considered as statistically significant.

Results

Sociodemographic characteristics

A total of 1296 respondents participated in the study at a response rate of 98.03%. The median age of the study participants was 32 years with an interquartile range of 14 years.

There were 657 (50.7%) male respondents, 953 (73.5%) of the participants were married, 785 (60.6%) were urban residents, 403 (31.1%) had attended primary, and 513 (39.6%) had completed secondary education or above. The average monthly income of the study participants was 3120 Ethiopian birrs. A total of 1246 (96.1%) study participants were living with one or more persons in the house (Table 1).

Table 1. Sociodemographic characteristics of the study participants in Harari regional state, Ethiopia, 2021 (n = 1296).

Variables (n = 1296)	Category	Frequency	%
Age	18–25	311	24
	26–35	501	38.7
	36–45	310	23.9
	Above 45	174	13.4
Sex	Male	657	50.7
	Female	639	49.3
Address	Urban	785	60.6
	Rural	511	39.4
Marital status	Single	228	17.6
	Married	953	73.5
	Widowed	43	5.6
	Divorced	72	3.3
Educational status	No education	380	29.3
	Primary school	403	31.1
	Secondary school	263	20.3
	College and above	250	19.3
Occupational status	Housewife	273	21.1
	Merchant	279	21.5
	Government employee	123	9.5
	Private employee	278	21.5
	Farmer	220	17
	Others	123	9.5
Number of family living together	Alone	50	3.9
	More than one	1246	96.1
Average monthly income	≤5000 ETB	1064	82.1
	5001–10,000 ETB	209	16.1
	>10,000 ETB	23	1.8

ETB: Ethiopian Birr; Others: student, no job.

Knowledge of the community regarding COVID-19

Among 1296 study participants, 1274 (98.3%) of them had heard about the new emerging coronavirus and 1040 (80.2%) knew that COVID-19 was the name of the virus; for 900 of the participants (69.3%), the kind of information that they received about the disease was about the symptoms of the new coronavirus disease; while 989 (76.3%) of the participants got information from TV, which was the most trusted source of information, at 912 (70.4%).

Among the study participants, n = 1296 gave the response for the current study, 781 (60.3%), 752 (58%), 885 (68.3%), and 454 (35%) of the participants were those who answered that COVID-19 could be transmitted via inhalation of a droplet from infected people, through airborne, through direct contact with infected people, and through touching of infected surfaces, respectively.

The mean sum score of knowledge items was 9.3 (SD ± 3.21) with minimum and maximum scores of 0 and 20, respectively. Among the 1296 respondents, 707 (54.6%) of them had poor knowledge while 589 (45.4%) had good knowledge (Table 2).

Source of information about COVID-19

Respondents were asked their source of information about the status of COVID-19 and the means of prevention methods to reduce the risk of COVID-19 infection. It was found that 76.3%, 54.6%, 43%, and 43.4% of the respondents reported that they got information about COVID-19 from television, radio, families, and friends, and health professionals, respectively. The participants reported that the kind of information they received from those media were about the symptoms of the disease (69.4%), mode of transmission of the disease (69.3%), how to protect themselves from disease (62.7%), preventive mechanisms (34.3%), and risks and complications (18.2%).

Risk perception regarding COVID-19

In all, 1067 (82.3%) of the respondents perceived that adults were more at risk than others, while 41.7% of the participants believed that children aged <5 years were more at risk than others (Figure 1).

In all, 790 (61.0%) of the respondents strongly agreed that the risk of new coronavirus is very dangerous; 424 (32.7%) of the study participants agreed that they are more likely to become sick with the new coronavirus; 626 (48.3%) of the participants strongly agreed that COVID-19 causes more deaths than other respiratory diseases; and 550 (42.4%) of the participants agreed that their health would be severely damaged if they contracted coronavirus. The mean cumulative score of risk perception was 30.5 (SD ± 7.25) with the minimum and maximum scores of 13 and 63, respectively; 656 (50.6%) of the participants had low-risk perceptions concerning COVID-19 (Table 3).

Willingness to seek healthcare among the study participants

In all, 462 (35.6%) (95% CI: 33%–38.3.0%) of the participants showed willingness to seek healthcare if they developed any kind of disease symptoms during the COVID-19 pandemic. Of these, 39.4%, 33.8%, 14.9%, and 11.9% of the participants preferred a health center, hospital, private clinic, and traditional healer for seeking the treatment, respectively. Among those participants who showed willingness to seek health care, 364 (78.8%) were reported to seek healthcare immediately as the illness started. Furthermore, 890 (68.7%) of the participants reported self-treatment practice.

Practice of COVID-19 preventive measure and self-efficacy

A total of 479 (37.0%) of the respondents wash their hands with water and soap sometimes and 153 (11.2%) of the respondents were not wearing a facemask at work or outside the home always. Out of the total respondents (n = 1296),

Table 2. Knowledge of COVID-19 among adult residents of Harari regional state, Ethiopia, 2021 (n = 1296).

Variables (n = 1296)	Category	Frequency	%
Have you ever heard about the new coronavirus disease (COVID 19)?	Yes	1274	98.3
	No	22	1.7
Cause of disease	Correct	1040	80.2
	Incorrect	256	19.8
Can the virus transmit through the following routes?			
Blood transfusion	Yes	66	5.1
	No	1230	94.9
Droplet from infected person	Yes	781	60.3
	No	515	39.7
Airborne	Yes	752	58
	No	544	42
Direct contact with the infected person	Yes	885	68.3
	No	411	31.7
Touching contaminated object	Yes	454	35
	No	842	65
Mosquito bite	Yes	24	1.9
	No	1272	98.1
Eating contaminated food/drinking contaminated water	Yes	61	4.7
	No	1235	95.3
Are the following the symptoms of coronavirus?			
Fever	Yes	1017	78.5
	No	279	21.5
Cough	Yes	1179	91
	No	117	9
Shortness of breath and difficulty in breathing	Yes	670	51.7
	No	626	48.3
Muscle pain	Yes	233	18
	No	1063	82
Headache	Yes	650	50.2
	No	646	49.8
Diarrhea	Yes	90	6.9
	No	1206	93.1
Are the following measures/methods used to prevent COVID 19?			
Wash hand regularly with alcohol or soap and water	Yes	1093	84.3
	No	203	15.7
Cover mouth and nose when coughing or sneezing	Yes	110	8.5
	No	1186	91.5
Avoid contact with anyone who has a cough and fever	Yes	726	56
	No	570	44
Maintain physical distance	Yes	54	4.2
	No	1242	95.8
Avoid unprotected direct contact	Yes	63	4.9
	No	1233	95.1
Cook food/drink treated water	Yes	809	62.4
	No	487	37.6
Sleep under mosquito net	Yes	27	2.1
	No	1269	97.9

738 (56.9%) did not wear a glove at all, while 223 (17.2%) wore it rarely, 7.1% wore it frequently, and 3.8% wore gloves always (Table 4).

The mean cumulative score of the practices of COVID-19 preventive measures was 24.7 (SD \pm 7.8); 664 (51.2%) of the respondent's practice of preventive measures was poor.

Out of the 1296 respondents, only 206 (15.9%) were almost certain that they can wash their hands with water and soap or with sanitizers; 124 (9.6%) of the respondents reported that they certainly maintain distancing anywhere. The mean of the cumulative score of self-efficacy items was 9.03(SD \pm 3.07) (Table 4).

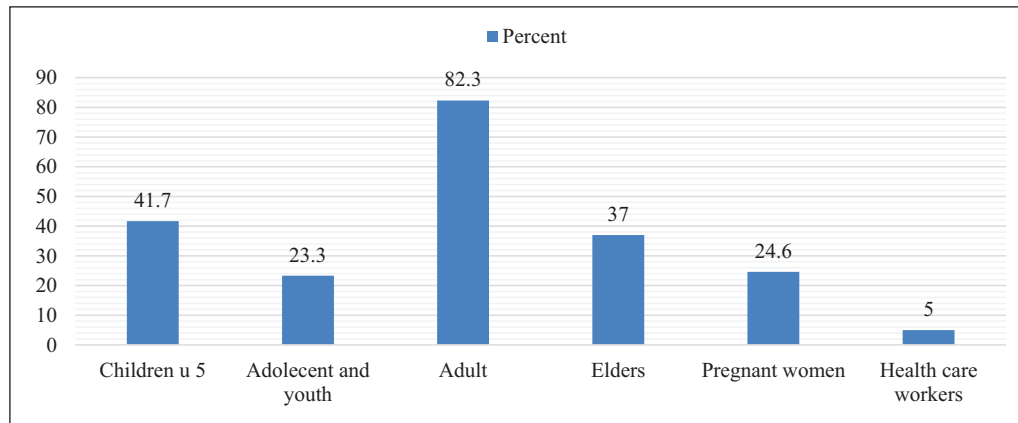


Figure 1. Perception of the participants regarding who are at most risk to get the coronavirus 2019.

Table 3. Risk perception toward COVID-19 among adult residents of Harari regional state, Ethiopia, 2021 (1296).

Statements (n = 1296)	Category	Frequency	%
New coronavirus risk is very dangerous	Strongly agree	790	61.0
	Agree	383	29.6
	Neutral	70	5.4
	Disagree	39	3.0
	Strongly disagree	14	1.1
I think that I am likely to become sick with the new coronavirus	Strongly agree	399	30.8
	Agree	424	32.7
	Neutral	248	19.1
	Disagree	170	13.1
	Strongly disagree	55	4.2
I think that COVID-19 causes more deaths than other respiratory diseases	Strongly agree	626	48.3
	Agree	446	34.4
	Neutral	148	11.4
	Disagree	50	3.9
	Strongly disagree	26	2.0
I think that work exposes me more to COVID-19	Strongly agree	436	33.6
	Agree	632	48.8
	Neutral	156	12.0
	Disagree	3	2.0
	Strongly disagree	69	5.3
I think getting sick with the coronavirus can be serious	Strongly agree	593	45.8
	Agree	517	39.9
	Neutral	94	7.3
	Disagree	74	5.7
	Strongly disagree	18	1.4
I think my health will be severely damaged if you contract coronavirus	Strongly agree	431	33.3
	Agree	550	42.4
	Neutral	122	9.4
	Disagree	137	10.6
	Strongly disagree	56	4.3
I think it is not possible to recover from coronavirus disease	Strongly agree	155	12.0
	Agree	311	24.0
	Neutral	144	11.1
	Disagree	493	38.0
	Strongly disagree	193	14.9

(Continued)

Table 3. (Continued)

Statements (n = 1296)	Category	Frequency	%
I think If I am caught with coronavirus, I cannot manage my daily activities	Strongly agree	333	25.7
	Agree	554	42.7
	Neutral	177	13.7
	Disagree	207	16.0
	Strongly disagree	23	1.9.0
I think people may stigmatize me if I get sick due to coronavirus	Strongly agree	527	40.7
	Agree	527	40.7
	Neutral	149	11.5
	Disagree	67	5.2
	Strongly disagree	26	2.0
I think that I will contract coronavirus if I do not take any preventive measure	Strongly agree	401	30.9
	Agree	651	50.2
	Neutral	141	10.9
	Disagree	91	7.0
	Strongly disagree	12	0.9
I think that I will contract coronavirus if I come into contact with a coronavirus patient	Strongly agree	444	34.3
	Agree	680	52.5
	Neutral	115	8.9
	Disagree	47	3.6
	Strongly disagree	10	0.8
I think that the coronavirus will not affect very many people in the area I am currently living	Strongly agree	266	20.5
	Agree	490	37.8
	Neutral	241	18.6
	Disagree	243	18.8
	Strongly disagree	56	4.3

Factors associated with risk perception toward COVID-19

In the bivariate model, risk perception was significantly associated with the age of the participants, address, educational status, marital status, income level, and knowledge of COVID-19. To control the effect of confounders, variables including age, address, educational status, marital status, income, knowledge of COVID-19, the practice of COVID-19 preventive measures, and self-efficacy on preventive measures of

Table 4. Practice of COVID-19 preventive measure among adult residents of Harari regional state, Ethiopia, 2021 (n = 1296).

Questions (n = 1296)	None	Rarely	Sometimes	Frequently	Always
	N (%)	N (%)	N (%)	N (%)	N (%)
How often do you maintain physical distance?	310 (23.9)	453 (35.0)	393 (30.3)	86 (6.6)	54 (4.2)
How often do you avoid larger gatherings?	332 (25.6)	484 (37.3)	364 (28.1)	84 (6.5)	32 (2.5)
How often do you avoid touching your face, eyes, mouth, and nose?	270 (20.8)	392 (30.2)	410 (31.6)	173 (13.3)	51 (3.9)
How often do you wash your hands with water and soap or sanitizers?	102 (7.9)	277 (21.4)	479 (37.0)	281 (21.7)	157 (12.1)
How often do you avoid contact with people who had fever and cough?	156 (12.0)	319 (24.6)	333 (25.7)	265 (20.4)	223 (17.2)
How often do you wear a facemask when you are at work or outside the home?	153 (11.8)	289 (22.3)	471(36.3)	238 (18.4)	145 (11.2)
How often do you avoid using public transportation?	482 (37.2)	328 (25.3)	319 (24.6)	132 (10.2)	35 (2.7)
How often do you avoid unprotected contacting (touching) of frequently contacted surfaces?	318 (24.5)	371 (28.6)	424 (32.7)	134 (10.3)	49 (3.8)
How often do you stay home to prevent COVID-19 infection?	464 (35.8)	384 (29.6)	285 (22.0)	103 (7.9)	60 (4.6)
How often do you use gloves at work?	738 (56.9)	223 (17.2)	194 (15.0)	92 (7.1)	49 (3.8)
Self-efficacy to COVID-19 preventive measures					
Questions	Certainly not	Probably not	Perhaps not-Perhaps	Probably yes	Most certainly
Do you think that you manage to handwash with water and soap or sanitizer frequently?	144 (11.1)	266 (20.5)	132 (10.2)	548 (42.3)	206 (15.9)
Do you think that you manage to stay at home?	255 (19.7)	366 (28.2)	205 (15.8)	361 (27.9)	109 (8.4)
Do you think that you manage to maintain distancing anywhere?	196 (15.1)	353 (27.2)	201 (15.5)	422 (32.6)	124 (9.6)

N: sample size.

COVID 19 were selected for multivariate logistic regression. Age of the respondents, address, educational status, marital status, income, and knowledge of COVID-19 were significantly associated with risk perception.

The age of the respondents was significantly associated with risk perception regarding COVID-19. Respondents aged 18–25 and 26–35 were 1.8 times (AOR=1.8, 95% CI (1.163, 2.8)) and 1.8 times (AOR=1.84, 95% CI (1.27, 2.66)) more likely to have low-risk perception regarding COVID-19 when compared with those aged 45 years old, respectively. However, respondents aged 36–45 years were 0.64 (AOR=0.64, 95% CI (0.43, 0.95) times less likely to have low-risk perception compared to those who aged >45 years.

The address of the respondents was significantly associated with risk perception. Respondents who came from the rural areas was 1.62 times (AOR=1.62, 95% CI (1.24, 2.10)) more likely to have low-risk perception regarding COVID-19 compared with respondents who came from the urban areas. Educational status was also significantly associated with risk perception regarding COVID-19. Participants who had no formal education and primary education were 1.9 times (AOR=1.93, 95% CI (1.29, 2.87)) and 1.44 times (AOR=1.44, 95% CI (1.01, 2.05)) more likely to have low-risk perceptions compared with those respondents having college and above educational status, respectively. Similarly, participants with income of ≤5000 ETB and 5001–10,000

ETB had 0.15- and 0.22-times lower odds of having low-risk perception regarding COVID-19 compared with those who had an income >10,000 ETB (AOR=0.15, 95% CI (0.05,0.45)) and (AOR=0.22, 95% CI (0.07, 0.69)), respectively.

The odds of having a lower risk perception regarding COVID-19 among participants who had poor knowledge was 0.50 times that of participants who had good knowledge (0.39, 0.63) (Table 5).

Discussion

The current study aimed to determine the community risk perception toward COVID-19 among the community in Harari Regional State, Eastern Ethiopia. Among the study participants interviewed, 501(38.7%) were aged ranging from 26 to 35 years, and 380 (29.3%) had no formal education. However, another study conducted in Nigeria reported a higher proportion of study participants who had completed a degree 471 (30.35%).¹⁹ The difference may be due to the data collection tools employed to collect data, since the current study was conducted using a questionnaire (face-to-face interview).

Among the study participants (1296), 781 (60.3%) answered that COVID-19 could be transmitted via inhalation of a droplet from infected people, which was lower than the finding of another study conducted in China, which reported

Table 5. Factors associated with community risk perception toward COVID-19 among adult residents of Harari regional state, Ethiopia (n = 1296).

Variables (n = 1296)		Risk perception			AOR (95% CI)
		Low	High	COR (95% CI)	
Age	18–25	177	134	1.66 (1.145, 2.42)*	1.81 (1.163, 2.8)**
	26–35	289	212	1.72 (1.12, 2.43)*	1.84 (1.27, 2.66)**
	36–45	113	197	0.72 (0.50, 1.1)*	0.64 (0.43, 0.95)*
	Above 45	77	97		
Address	Rural	294	217	1.58 (1.27, 1.98)**	1.62 (1.24, 2.10)**
	Urban	362	423		
Educational status	No formal education	204	176	1.45 (1.05, 2.0)*	1.93 (1.29, 2.87)**
	Primary	206	197	1.31 (1.00, 1.80)	1.44 (1.01, 2.05)*
	Secondary	135	128	1.3 (0.9, 1.87)	1.40 (0.6, 2.03)
	Collage and above	111	139		
Marital status	Widowed/divorced	41	74	0.49 (0.31, 0.77)*	0.84 (0.58, 1.22)
	Married	493	460	0.94 (0.70, 1.26)	0.66 (0.43, 1.01)
	Single	121	106		
Income	≤5000 ETB	529	535	0.21 (0.07, 0.62)**	0.15 (0.05, 0.45)**
	5001–10,000 ETB	108	101	0.225 (0.074, 0.68)**	0.22 (0.07, 0.69)**
	> 10,000 ETB	19	4		
Knowledge level	Poor	315	392	0.58 (0.47, 0.73)**	0.50 (0.39, 0.63)**
	Good	341	248		
Practice of preventive measures	Poor	328	335	1.1 (0.88, 1.49)	0.94 (0.73, 1.20)
	Good	328	305		
Self-efficacy to preventive measures	Poor	343	362	1.19 (0.955, 1.50)	0.86 (0.67, 1.09)
	Good	313	278		

COR: crude odds ratios; AOR: adjusted odds ratio; CI: confidence interval; ETB: Ethiopian Birr.

*Significant at ≤ 0.05 ; **significant at < 0.01 .

that 2734 (96.1%) of the respondents knew that COVID-19 could be transmitted from person to person.²⁰ Similarly, the current study found 752 (58.0%) of the respondents reported airborne as a transmission route for COVID-19; this was lower than the finding of another study conducted in China, which found that 2730 (96.0%) of respondents reported breathing and droplets as a transmission route for COVID-19.²⁰ The variation may be related to the difference in sources of information, educational status of the respondents, and timely access to the information that can all play a major role in controlling the COVID-19 pandemic.

The current study found that 1173 (90.5%) of the respondents perceived (strongly agreed and agreed) that the risk of new coronavirus was very dangerous, which was in line with the finding of another study conducted in Ethiopia that reported 87.5% of respondents to perceive that COVID-19 is a serious disease.⁷ However, another study conducted in China found 94.4% of respondents reported a high level of perceived severity of COVID-19 that was agreed with the findings of the current study.²¹ The difference may be related to the variation in the health information system, educational status of the respondents, and rumors in the community that contributes to COVID-19 pandemic management.

In all, 424 (32.7%) of the study participants agreed that they were more likely to become sick with the new coronavirus, which was inconsistent with the finding of another

study conducted in Ethiopia reporting that 446 (85.6%) of respondents perceived that COVID 19 is a serious disease.⁷ The difference may be related to the scope of the study and increasing rumors in the community, which can all be obstacles in controlling the COVID-19 pandemic.

The current study found that 656 (50.6%) of the respondents had low-risk perceptions concerning COVID-19, which was in line with the finding of another study which reported that 222 (53.4%) of respondents had high-risk perceptions concerning COVID-19.¹⁴ In all, 626 (48.3%) of the participants strongly agreed that COVID-19 causes more deaths than other respiratory diseases, which was relatively consistent with the finding that another study conducted in Ethiopia found more than half (53.4%) of respondents agreed that COVID-19 causes more deaths than other respiratory diseases.¹⁴

Furthermore, more than 1067 (2.3%) of the respondents perceived that adults were more at risk than others, while 41.7% of the participants believed that children aged < 5 years were more at risk than others. However, another study conducted in Ethiopia reported that 149 (45.1%) of the respondents perceived that children were at moderate risk of COVID-19 and 578 (62.2%) of respondents perceived that youth are at a moderate risk of COVID-19 respectively.²²

The study also found that 1051 (81.17%) of respondents believed that they would contract COVID-19, which was

higher than the finding of another study conducted in Nigeria, which found that 89 (26.0%) of respondents reported that they could contract COVID-19.²³ Furthermore, the current study found 651 (50.2%) of respondents who believed that they would contract COVID-19, which was higher than the finding of another study conducted in India which reported that 16.3% of the respondents perceived that they were at risk of contracting COVID-19.²⁴ The variation may be related to the misunderstanding or rumors in the community regarding COVID-19.

Furthermore, the current study found 76.3% of respondents got information about COVID-19 from the TV, which was in line with the findings of another study conducted in Ethiopia which found that 81.0% of respondents reported TV to be a source of COVID-19-related information. However, another study conducted in Malawi reported radio and conversations with friends as the most common sources of COVID-19-related information.²⁵

The prevalence of healthcare-seeking behavior in the current study is consistent with the previous findings reported in Brazil (33.6%),²⁰ Bangladesh (35.1%),²⁶ and China (35.4%).²⁷ However, the result of the current study is lower than the findings reported in Hubei, China (85.7%),²⁸ Iran (75.2%),²⁹ United Kingdom (64.3%),³⁰ and Egypt (60%).³¹ The possible explanation may be due to the differences in the communication platform to inform the people about where to go if they developed the symptoms and institutional trust among the study participants. Better information access may enhance participants' decision making, which in turn positively affects their healthcare-seeking behaviors.²³

On the contrary, the current study shows an association of risk perception with some sociodemographic variables (age and educational status). That is, respondents who had no formal education were 1.9 times more likely to have low-risk perceptions compared with those respondents having college and above educational status. This may be due to access to false information and rumors from various social medias that may lead to low-risk perception in the community. The result of the current study agreed with the findings of other studies conducted in India, which reported a statistical association between risk perception and age and educational status.²⁴ Similar to the current study, the study conducted in Iran³² also reported a correlation between risk perception and knowledge of the respondents.

According to a study done in south Ethiopia,¹⁴ risk perception was associated with age ($\beta=0.10$; 95% CI: 0.02, 0.18) and knowledge of COVID-19 ($\beta=0.50$, 95% CI: 0.23, 0.76), which was in line with the finding of the current study which found a statistically significant association between age (ranged from AOR; 0.64 to 1.81) and knowledge of the respondents (AOR: 0.50). Respondents aged 36–45 years are 0.64 times less likely to have low-risk perceptions compared with those aged >45 years. Overall, the study found low-risk perception among the community and various determinant factors related to COVID-19. Thus, the local and federal

governments should take appropriate measures such as giving health education to increase positive attitudes, to increase community risk perception. The limitation of this study is that it might not indicate a cause–effect relationship because the study design was cross-sectional. Due to the nature of this study design, we cannot assess how risk perceptions change over time. Also, there might be the risk of social desirability bias since individual behaviors have public health implications and the data were collected through self-reports.

Conclusion

In general, the current study found that about half (50.6%) of the respondents had low-risk perceptions concerning COVID-19 and significant differences in risk perception among different ages, educational statuses, and knowledge of the respondents. Thus, it is necessary to improve community risk perception to manage the COVID-19 pandemic.

Acknowledgements

The authors extend their deepest thanks to Haramaya University, College of Health and Medical Science staff for providing their constructive support.

Author contributions

A.E. conceived the idea and contributed to data analysis. D.A.M., B.N., T.B.R., A.D.W., A.D., N.B., H.H., M.A.K., A.A., A.O.D., H.B., K.B., S.B., G.A., T.A., and R.B. contributed to the data review and data analysis. D.A.M., M.M., H.A., M.A., A.M., H.A., B.T., D.A., D.Y., S.N.A., J.Y.K., S.A.A., G.D., S.A.G., A.G., and D.B.D. contributed to drafting or writing, and editing the article. A.E., D.A.M., D.A., A.A., and Y.D. contributed to writing, editing, and critically revising the article. All co-authors contributed to data analysis and drafting. Finally, all authors read and approved the final version of the article to be published and agreed on all aspects of this work.

Availability of data and materials

Almost all data are included in this study. However, additional data will be available from the corresponding author on reasonable request.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

Ethical approval for this study was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) of College of Health and Medical Sciences of Haramaya University (protocol number: IHRERC/015/2021).

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Informed consent

Written informed consent was obtained from legally authorized representatives before the study. Written informed consent was obtained from all subjects before the study.

ORCID iDs

Addis Eyeberu  <https://orcid.org/0000-0002-3147-3770>

Dechasa Adare Mengistu  <https://orcid.org/0000-0002-0076-5586>

Ahmedmenewer Abdu  <https://orcid.org/0000-0002-0477-2206>

Habtamu Bekele  <https://orcid.org/0000-0001-9839-1908>

Mohammed Muzeyin  <https://orcid.org/0000-0003-1492-7512>

Supplemental material

Supplemental material for this article is available online.

References

- Wang J, Sato T and Sakuraba A. Coronavirus disease 2019 (COVID-19) meets obesity: strong association between the global overweight population and COVID-19 mortality. *J Nutr* 2021; 151(1): 9–10.
- Wu F, Zhao S, Yu B, et al. A new coronavirus associated with human respiratory disease in China. *Nature* 2020; 580(7803): E7.
- Shi Y, Wang G, Cai XP, et al. An overview of COVID-19. *J Zhejiang Univ Sci B* 2020; 21: 343–360.
- World Health Organization. WHO coronavirus disease (COVID-19) dashboard, 2020, <https://www.who.int/>
- Rodriguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E, et al. Clinical, laboratory and imaging features of COVID-19: a systematic review and meta-analysis. *Travel Med Infect Dis* 2020; 34: 101623.
- Worldometer. Real time world statistics, <https://www.worldometers.info/>
- Asnakew Z, Asrese K and Andualem M. Community risk perception and compliance with preventive measures for COVID-19 pandemic in Ethiopia. *Risk Manag Healthc Policy* 2020; 13: 2887–2897.
- EPHI. Status update on COVID19 Ethiopia February 16, 2021, <http://www.covid19.ephi.gov.et/status-update-on-covid19-ethiopia-february-16-2021/>
- Deressa W, Worku A, Amogne W, et al. Knowledge and perceptions of COVID-19 among government employees in Ethiopia, 2020, pp. 1–31, <https://www.medrxiv.org/content/10.1101/2020.11.12.20230615v1.full.pdf>
- Deressa W, Worku A, Abebe W, et al. Risk perceptions and preventive practices of COVID-19 among healthcare professionals in public hospitals in Ethiopia, 2020, pp. 1–33, <https://www.medrxiv.org/content/medrxiv/early/2020/11/03/2020.10.30.20223180.full.pdf>
- Cvetković VM, Nikolić N, Radovanović Nenadić U, et al. Preparedness and preventive behaviors for a pandemic disaster caused by COVID-19 in Serbia. *Int J Environ Res Public Health* 2020; 17(11): 4124.
- Vai B, Cazzetta S, Ghigliano D, et al. Risk perception and media in shaping protective behaviors: insights from the early phase of COVID-19 Italian outbreak. *Front Psychol* 2020; 11: 563426.
- De Wilton A, Kilich E, Chaudhry Z, et al. Delayed healthcare seeking and prolonged illness in healthcare workers during the COVID-19 pandemic: a single-centre observational study. *BMJ Open* 2020; 10(11): e040216.
- Asefa A, Qanche Q, Hailemariam S, et al. Risk perception towards COVID-19 and its associated factors among waiters in selected towns of southwest Ethiopia. *Risk Manag Healthc Policy* 2020; 13: 2601–2610.
- UNICEF. RCCE action plan guidance: COVID-19 preparedness and response, 2019, <https://www.unicef.org/media/65936/file/Preparedness>
- Azene ZN, Merid MW, Muluneh AG, et al. Adherence towards COVID-19 mitigation measures and its associated factors among Gondar city residents: a community-based cross-sectional study in northwest Ethiopia. *PLoS ONE* 2020; 15(12): e0244265.
- Fetansa G, Etana B, Tolossa T, et al. Knowledge, attitude, and practice of health professionals in Ethiopia toward COVID-19 prevention at early phase. *SAGE Open Med* 2021; 9: 1–9.
- Wolff K, Larsen S and Øgaard T. How to define and measure risk perceptions. *Ann Tour Res* 2019; 79: 102759.
- Iorfa SK, Ottu IF, Oguntayo R, et al. COVID-19 knowledge, risk perception, and precautionary behavior among Nigerians: a moderated mediation approach. *Front Psychol* 2020; 11: 566773.
- Macinko J, Woolley NO, Seixas BV, et al. Health care seeking due to COVID-19 related symptoms and health care cancellations among older Brazilian adults: the ELSI-COVID-19 initiative. *Cad Saude Publica* 2020; 36(Suppl. 3): e00181920.
- Ning L, Niu J, Bi X, 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. *BMC Public Health* 2020; 20: 1751.
- Kebede Y, Birhanu Z, Fufa D, et al. Myths, beliefs, and perceptions about COVID-19 in Ethiopia: a need to address information gaps and enable combating efforts. *PLoS ONE* 2020; 15(11): e0243024.
- Ilesanmi O and Afolabi A. Perception and practices during the COVID-19 pandemic in an urban community in Nigeria: a cross-sectional study. *PeerJ* 2020; 8: e10038.
- Kuang J, Ashraf S, Das U, et al. Awareness, risk perception, and stress during the COVID-19 pandemic in communities of Tamil Nadu, India. *Int J Environ Res Public Health* 2020; 17(19): 7177.
- Banda J, Dube AN, Brumfield S, et al. Knowledge, risk perceptions, and behaviors related to the COVID-19 pandemic in Malawi. *Demogr Res* 2021; 44: 459–480.
- Lopez-Pena P, Davis CA, Mobarak AM, et al. Prevalence of COVID-19 symptoms, risk factors, and health behaviors in host and refugee communities in Cox's Bazar: a representative panel study. *Bull World Health Organ* 2020, https://www.who.int/bulletin/online_first/20-265173.pdf
- Yang J, Gong H, Chen X, et al. Health-seeking behaviors of patients with acute respiratory infections during the outbreak of novel coronavirus disease 2019 in Wuhan, China. *Influenza Other Respir Viruses* 2021; 15: 188–194.
- Wong LP, Wu QH, Chen X, et al. The role of institutional trust in preventive and treatment-seeking behaviors during the 2019 novel coronavirus (2019-nCoV) outbreak among residents in Hubei, China, 2020, <https://www.medrxiv.org/content/10.1101/2020.02.15.20023333v1.full.pdf>

29. Kakemam E, Ghoddoosi-Nejad D, Chegini Z, et al. Knowledge, attitudes, and practices among the general population during COVID-19 outbreak in Iran: a national cross-sectional online survey. *Front Public Health* 2020; 8: 585302.
30. Geldsetzer P. Knowledge and perceptions of COVID-19 among the general public in the United States and the United Kingdom: a cross-sectional online survey. *Ann Intern Med* 2020; 173(2): 157–160.
31. Abdelhafiz AS, Mohammed Z, Ibrahim ME, et al. Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). *J Community Health* 2020; 45(5): 881–890.
32. Honarvar B, Lankarani KB, Kharmandar A, et al. Knowledge, attitudes, risk perceptions, and practices of adults toward COVID-19: a population and field-based study from Iran. *Int J Public Health* 2020; 65(6): 731–739.