Knowledge and attitude towards COVID-19 and its prevention in selected ten towns of SNNP Region, Ethiopia: Cross-sectional survey

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Abstract

Background

COVID-19 is highly infectious viral disease that can lead to main clinical symptoms like fever, dry cough, fatigue, myalgia, and dyspnea. Since there is no drug to cure the disease, focusing on improving community awareness related to prevention methods is crucial. But there was no regional level study addressing the reach of information, community knowledge and attitude related to COVID-19 and its prevention, and this study was done to inform and assist communication related to the disease responses during early introduction of the disease to the setting.

Methods

Community based cross sectional study was conducted in selected ten towns of SNNPR, Ethiopia. Multi-stage sampling was used to select 1239 participants. Semi-structured questionnaire was designed, pre-tested and uploaded to SurveyCTO data collection system with security patterns. Knowledge was assessed considering awareness about signs and symptoms, confirmatory test (laboratory test), what to do if there is a suspect, availability of drug to cure the disease, mechanisms of transmission, prevention methods and most at risk groups. Attitude was assessed using 11 statements including seriousness of disease, being at risk, possibility of prevention, and benefits of staying at health facilities. Descriptive statistics and binary logistic regression were performed to manage data using SPSS version 25.

Results

Almost all respondents (99.8%) heard about the disease. The mean score of knowledge was 52.3% (SD = 18.9) while the mean score attitude was 80.8% (SD = 6.48). Educational status, housing condition and marital status were associated with having good knowledge while occupation, housing condition, age and overall knowledge were associated with having positive attitude.
Conclusion

Even though almost all respondents had heard about the COVID-19, knowledge and attitude related to COVID-19 and its prevention were low. Awareness creation should be intensified using different local languages to improve community awareness, overcome misconceptions and minimize consequences of the disease.

Background

Coronaviruses are a large family of viruses that can cause a range of illnesses in humans, from the common cold to severe acute respiratory syndrome (SARS) [1]. Coronavirus disease 2019 (COVID-19) is highly infectious disease, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea [2].

Since the World Health Organization’s (WHO) declaration of COVID-19 as a pandemic, many efforts have been carried out to contain the virus [3]. But COVID-19 pandemic continues to cause huge social and economic impacts and stress on the healthcare system of all countries in the world [4, 5].

The WHO warned Africa for COVID-19 pandemic because of challenging conditions like high population density and lack of running water, and also presence of non-specific symptoms of COVID-19 that make it difficult to differentiate from endemic illnesses such as malaria and influenza [6]. In urban settings, there is high risk of transmission of the disease because of dense population, small informal dwellings, lack of access to clean water, presence of multi-generational households with shared sanitation facilities, high level of social mixing, and transient residents [7].

In Ethiopia, the first case of COVID-19 was registered in March, 2020. Since then, the ministry of health warned all regions to be ready to respond, both for prevention and control activities. As part of the responses, the regional health bureau of Southern Nations, Nationalities and People’s Region (SNNPR) in collaboration with partners conducted advocacies and social mobilizations through various methods to increase community awareness [3].

In addition, after the introduction of the disease to the region, the region prepared different quarantine, isolation and treatment centers to cut the disease transmission. But due to different psycho-social reasons, people were escaping from prepared centers, refused to be isolated and even to be tested. So, considering these points, this study was carried out to assess knowledge and attitude of the community and thereby to inform the taskforce and stakeholders during early introduction of the disease to the region.

Methods

Community based cross sectional study was conducted in selected ten towns of SNNPR from May 18 to June 10, 2020. SNNPR was the third largest region representing nearly 20% population of the country. It is the most diverse region in the country having more than 56 ethnic groups and languages as well as cultures. The region was administratively sub divided in to 18 zones, one city administration and seven special woredas. Currently, the SNNPR region is divided in to two administrative regions, Sidama and SNNPR.

Sample size was estimated by using a single population proportion formula at 95% confidence level assuming proportion of population with good knowledge to be 50% and
considering 5% margin of error and design effect of 3. The final sample size was 1268 after adding 10% non-response rate.

Multi-stage sampling was used to select study participants. First, ten towns were purposely selected based on the potential risk of COVID-19 in the region because of crowdedness and high population mobility. At the second stage, two kebeles from each town were selected. Kebeles are the smallest administrative units in the study setting. The calculated sample size was allocated to towns based on the size of the urban population. At the time of data collection, there was state of emergency but it was not strict and some people were moving in towns. To include population staying at home and those moving in the town, one-third of sample size was allocated to population walking in towns while two-thirds were allocated to population staying at home.

Kebeles in the towns were listed and random sample kebeles were selected from each town. Data collectors went to the center of selected kebeles and spin pen to select the direction and first house. The next household was selected from next adjacent block systematically and data collection continued until sample size allocated to population staying at home was fulfilled. Regarding population walking, every other person that the data collectors met while moving to the next block were selected and interviewed until sample size allocated to population walking was fulfilled. The interval for systematic selection of walking individuals was minimized because of the assumption that few people may move in towns because of state of emergency. Individuals residing in the selected kebeles at least for six months and age above 18 were considered eligible.

Semi-structured questionnaire was prepared by reviewing relevant literatures [7–9]. The prepared tool was shared with Hawassa University Scientific Advisory Committee (SAC) and comments were incorporated. Face and content validities were assessed by sharing final tool with regional level emergency operation center (EOC) that comprises experts from different international and local non-governmental organizations, Hawassa University, regional health bureau and technical advisory team (TAT) to check if tools can capture required data. The questionnaire was initially prepared in English, and then translated to Amharic. The translated version was again translated back to English language by different experts to check consistencies in the meaning of words and/or concepts. The questionnaire was pre-tested in similar towns but not included in actual study. The data collection tool was prepared with security patterns (must enter and skip commands) and uploaded to SurveyCTO data collection system. Training with field exercise was given to data collectors to have common understanding on data collection tool and process. Keeping COVID-19 prevention measures, face-to-face interview was conducted by nine data collectors who had BSc degree and above and experience in data collection. Field supervision and online monitoring were done daily to maintain data quality.

S1 File data was downloaded from SurveyCTO server and exported to SPSS for Windows version 25 for data management. Descriptive analysis was done to describe study participants and other variables and outputs were presented using frequency, percentage, means and standard deviations and displayed using tables and graphs. Knowledge questions were recoded to “yes” based on fulfillment of specific criteria (Table 6). For example, respondents’ knowledge about signs and symptoms was accepted if respondents answered fever, cough and difficulties in breathing as signs and symptoms. Finally, scores of knowledge and attitude were summed and mean (in percent) with standard deviation were presented. Both knowledge and attitude scores were categorized in to two groups based on mean score. Categories were recoded good or positive if score was equal to or above mean, and scores below mean were recoded poor or negative. Factors associated with good knowledge and positive attitude were assessed using binary logistic regression. Variables with p-value of less than or equal to 0.20 during bivariate
analysis were considered for multivariate analysis as used in similar studies [10–12]. Finally, variables with p-value less than 0.05 during multivariate analysis were reported as associated factors with adjusted odds ratio (AOR) and 95% confidence interval.

Ethical clearance was obtained from the Ethical Review Committee of Southern Nations Nationalities and People’s Regional Health Bureau. Official support letters was written to each study towns. Verbal consent was approved (because of its popularity in the study setting) and obtained from study participants. All collected data are kept confidential.

Results

A total of 1239 participants were included in the study, with overall response rate of 97.7%. From 1239 respondents interviewed, 833 (67.2%) were approached at home while 406 (32.8%) were approached while walking in the town.

Socio-demographic characteristics of respondents

About half, 657 (53%), of respondents were females and about two thirds, 795 (64.2%), were married (Table 1).

Sources of information

Almost all, 1236 (99.8%), respondents heard about COVID-19 within two months of introduction of the disease to the country. Majority (90.9%) of respondents heard about COVID-19 from TV, followed by radio (52.7%) and social media (31.1%) (Fig 1).

Knowledge about COVID-19 and its prevention

A. Signs and symptoms. From those who have heard about COVID-19, majority (93.4%) reported fever and nearly the same amount (92.2%) reported cough as signs and symptoms of COVID-19 while difficulties in breathing was reported only by about half (50.6%) of respondents. Other symptoms like weakness, headache, chest pain, sore throat and diarrhea were reported only by less than two fifths of respondents (Fig 2).

B. Confirmatory test. Respondents were asked about confirmatory test of COVID-19, that is how to confirm if a person has COVID-19 or not. About four fifths (81.0%) mentioned signs and symptoms while only two fifths (39.7%) mentioned laboratory test. Very few reported that it is not possible to confirm (2.1%) and not sure of test (0.7%).

C. What to do if there is a suspect. Respondents were asked to report what to do if they face a suspected case of COVID-19. Majority (96.1%) said that they will report to health facilities while 21.5% said that they will quarantine at home. Even though few respondents stated it, misconceptions and fears like “I will shout” were reported (Table 2).

D. Drugs to cure. Majority of respondents, 1201 (97.2%), reported that there was no drug to cure COVID-19 while 35 (2.8%) reported that there was drug to cure and mentioned modern drugs like chloroquine (15 people), traditional medicine like spices (13 people) and religious things like holy water and anointing oil (11 people).

E. Transmission. Almost all, 1218 (98.5%), respondents reported that COVID-19 is transmittable and majority (91.7%) reported being in close contact (less than 2m) with infected person as mechanism of transmission (Table 3).

F. Ways to prevent COVID-19 transmission. Nearly nine out of ten, 87.4% and 87.7%, respondents reported social distancing and keeping hands clean as COVID-19 prevention methods respectively while wearing mask was reported by about only one-third (36.8%) of respondents (Table 4).
G. Most at risk population. About two thirds (67.2%) and about half (54.2%) of respondents reported old ages and patients with underlying sickness as most at risk groups for COVID-19 respectively. About two-fifths (40.6%) reported highly exposed groups like health workers, mobile groups and caregivers (Table 5).

Knowledge summary

In summary, each of knowledge questions were recoded into “yes” based on fulfillment of basic points that should be addressed. For instance, knowledge about signs and symptoms was accepted (recoded as yes) if a person answered at least fever, cough and difficulties in breathing that are very common symptoms of COVID-19. Accordingly, less than half (45.3%) clearly reported these three signs and symptoms (Table 6). Finally, the mean score of knowledge was 52.3% (SD = 18.9).
Factors associated with knowledge about COVID-19 and its prevention

About half, 646 (52.1%), of respondents scored above mean and recoded as good knowledge. During bivariate analysis, all the seven independent variables had p-value of less than 0.20 and were considered for multivariate analysis. But during multivariate analysis, only educational
status, housing condition and marital status had p-value less than 0.05. “I don’t know” category of age and “others” category of occupation had association but overlooked because of their non-specificity (Table 7).

Married respondents were 31% less likely to have good knowledge as compared to single respondents (AOR and 95% CI: 0.69 [0.49–0.99]). Those respondents who attended secondary high school and who have certificate and above were 2.09 times (AOR and 95% CI: 2.09 [1.27–3.44]) and 3.43 times (AOR and 95% CI: 3.43 [2.01–5.83]) more likely to have good knowledge than respondents who did not attend formal education respectively. Moreover, respondents living in rental house were 2.57 times (AOR and 95% CI: 2.57 [1.38–4.81]) more likely to have good knowledge as compared to respondents living in private home.

Attitude towards COVID-19 and its prevention

Eleven different attitude statements were given to respondents and their agreement to statements was measured using Likert’s scale out of five, from strongly disagree to strongly agree. Majority of respondents agreed positively to the statements (Table 8) with mean score of 80.8% (SD = 6.48).

Factors associated with attitude towards COVID-19 and its prevention

Attitude of respondents was summarized similarly as that of knowledge level and about half, 603 (48.7%), respondents scored above mean and recoded as positive attitude. During bivariate analysis, as seen in the case of knowledge, all eight independent variables had p-value of less than 0.20 and were considered for multivariate analysis. After running multivariate analysis, occupation, housing condition, age and overall knowledge had p-value less than 0.05 (Table 9). As seen in the case of knowledge, “others” category of marital status had weak association but overlooked because of its non-specificity (Table 9).

Table 2. What to do if there is suspect.

| What to do if there is suspect | Frequency | Percent |
|-------------------------------|-----------|---------|
| Report to health facility     | 1188      | 96.1    |
| Quarantine at home            | 266       | 21.5    |
| Call to hotlines              | 55        | 4.4     |
| Give traditional medicines/spices | 17 | 1.4     |
| Report to police              | 15        | 1.2     |
| Others*                       | 25        | 2.0     |

Others

*—take to holy water, give mask, take to religious organization, give anointing oil, pray, shout

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Table 3. Mechanisms of transmission.

| Mechanism of transmission | Frequency | Percent |
|---------------------------|-----------|---------|
| Being in close contact (<2m) with infected person | 1134 | 91.7 |
| Touching contaminated utensils and greeting unclean hands | 1076 | 87.1 |
| Touching face with unclean hand | 642 | 51.9 |
| Others* | 15 | 1.2 |

*—Contact with animal, eating raw foods, sexual intercourse, sharing latrine, sweat and transplacental
Respondents living with others (flatmate) were 51% (AOR and 95% CI: 0.49 [0.27–0.88]) less likely to have positive attitude as compared to respondents living in private houses. Farmers were 9.78 times (AOR and 95% CI: 9.78 [2.59–36.87]) more likely to have positive attitude as compared to students, and older ages (46 and above) were 2.07 times (AOR and 95% CI: 2.07 [1.27–3.36]) more likely to have positive attitude as compared to younger ages (< 25). Moreover, respondents with good knowledge were 29% more likely (AOR and 95% CI: 1.29 [1.01–1.64]) to have positive attitude as compared to respondents with poor knowledge.

**Discussion**

This study was done with the objective of assessing knowledge and attitude related to COVID-19 to assist communication interventions in response to the disease prevention. Major findings included that almost all respondents (99.8%) heard about the disease and mean score of knowledge was 52.3% (SD = 18.9), ranging from zero to 100% while mean score of attitude was 80.8% (SD = 6.48).

More than nine from ten knew fever (93.4%) and cough (92.2%) as sign and symptoms of COVID-19 while difficulties in breathing was reported only by 50.6%, and only 45.3% reported the three common sign and symptoms (fever, cough and difficulties in breathing). Majority of respondents knew that a suspect should be reported to health facility (96.1%) and that there

**Table 4. Ways to prevent COVID-19 transmission.**

| Prevention methods                                      | Frequency | Percent |
|---------------------------------------------------------|-----------|---------|
| Social distancing                                       | 1080      | 87.4    |
| Keeping hands clean                                     | 1084      | 87.7    |
| Not touching face with unclean hands                    | 618       | 50.0    |
| Wearing masks                                           | 455       | 36.8    |
| Not greeting/touching contaminated things               | 65        | 5.3     |
| Wearing gloves                                          | 58        | 4.7     |
| Others                                                  | 13        | 1.1     |

* - Praying, taking hot drinks, impossible

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**Table 5. Most at risk population.**

| Risk group                                      | Frequency | Percent |
|-------------------------------------------------|-----------|---------|
| Old ages                                        | 830       | 67.2    |
| Patients with underlying sickness               | 670       | 54.2    |
| Exposed (health workers, mobile groups, caregivers) | 502  | 40.6    |
| Children                                        | 119       | 9.6     |
| Pregnant                                        | 29        | 2.3     |
| Street dwellers                                 | 39        | 3.2     |
| Poor                                            | 36        | 2.9     |
| Everyone                                        | 32        | 2.6     |
| Addicted people                                 | 25        | 2.0     |
| Developed (white people)                        | 20        | 1.6     |
| Others*                                         | 25        | 2.0     |

Others

* - males, rural area, young people

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### Table 7. Binary logistic regression of knowledge about COVID-19 and its prevention.

| Variable                        | Category          | Knowledge about COVID-19 and its prevention | COR 95%CI                  | AOR 95%CI*                                |
|---------------------------------|-------------------|---------------------------------------------|-----------------------------|-------------------------------------------|
|                                 | Poor              | Good                                        |                             |                                           |
| Sex                             | Male              | 266                                         | 316                         | 1                                         |
|                                 | Female            | 324                                         | 330                         | 0.86 [0.68–1.07]                          |
| Marital status                  | Single            | 162                                         | 208                         | 1                                         |
|                                 | Married           | 394                                         | 400                         | 0.79 [0.62–1.01]                          | 0.69 [0.49–0.99]                          |
|                                 | Others            | 34                                          | 38                          | 0.87 [0.52–1.44]                          |
| Educational status              | No formal education | 83                                         | 40                          | 1                                         |
|                                 | Primary (1–8)     | 137                                         | 112                         | 1.70 [1.08–2.67]                          |
|                                 | Secondary (9–12)  | 187                                         | 188                         | 2.09 [1.36–3.20]                          | 2.09 [1.27–3.44]                          |
|                                 | Certificate and above | 183                                         | 306                         | 3.47 [2.28–5.28]                          | 3.43 [2.01–5.83]                          |
| Occupation                      | Student           | 93                                          | 79                          | 1                                         |
|                                 | Farmer            | 21                                          | 7                           | 0.39 [0.16–0.97]                          |
|                                 | Merchant          | 156                                         | 159                         | 1.20 [0.83–1.74]                          |
|                                 | Employed          | 129                                         | 211                         | 1.93 [1.33–2.79]                          |
|                                 | House wife        | 109                                         | 97                          | 1.05 [0.70–1.57]                          |
|                                 | Daily laborer     | 25                                          | 17                          | 0.80 [0.40–1.59]                          |
|                                 | Pensioner         | 16                                          | 14                          | 1.03 [0.47–2.24]                          |
|                                 | Private           | 28                                          | 24                          | 1.01 [0.54–1.88]                          |
|                                 | Other             | 13                                          | 38                          | 3.44 [1.71–6.91]                          | 3.53 [1.63–7.67]                          |
| Housing condition               | Private           | 331                                         | 309                         | 1                                         |
|                                 | Rent              | 225                                         | 265                         | 1.26 [0.99–1.60]                          | 2.57 [1.38–4.81]                          |
|                                 | Flatmate          | 18                                          | 40                          | 2.38 [1.34–4.24]                          |
|                                 | Other             | 16                                          | 32                          | 2.14 [1.15–3.98]                          |
| Age category                    | ≤ 25              | 170                                         | 134                         | 1                                         |
|                                 | 26–30             | 100                                         | 114                         | 1.45 [1.02–2.06]                          |
|                                 | 31–35             | 70                                          | 75                          | 1.36 [0.91–2.02]                          |
|                                 | 36–40             | 68                                          | 79                          | 1.47 [0.99–2.19]                          |
|                                 | 41–45             | 42                                          | 32                          | 0.97 [0.58–1.61]                          |
|                                 | 46+               | 114                                         | 97                          | 1.08 [0.76–1.54]                          |
|                                 | I don’t know      | 26                                          | 115                         | 5.61 [3.46–9.08]                          | 5.71 [3.36–9.70]                          |
| Family size                     | ≤ 5               | 398                                         | 458                         | 1                                         |
|                                 | ≥ 6               | 192                                         | 188                         | 0.85 [0.67–1.08]                          |

*Non-significant cells are left empty to simplify table

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was no drug to cure the disease (97.2%). Even though some of knowledge responses were good, the mean score of knowledge was 52.3% (SD = 18.9) and it was low as compared to studies done in China [9], Saudi Arabia [8, 13], Nepal [14] and Malaysia [15]. The low level of awareness may indicate communities' low attention to the disease due to low disease incidence and/or inadequate health communication to the community.

Married participants had lower odds of having good knowledge as compared to single respondents, which might be due to better access to information by single groups. In addition, higher level of education was associated with good knowledge and is in line with other studies [16–18].

The mean level of attitude (80%) was also lower than the result of study done in China [9], which could also be due to less fear towards the burden that the disease was causing in the study area. Regarding factors associated with positive attitude, older ages (46 and above) were more likely to have positive attitude as compared to younger ages (< 25) and this might be due to higher emphasis given to the category as risk group and their willingness to prevent the disease. In addition, the respondents with good knowledge were more likely to have positive attitude than those with poor knowledge and is in line with previous study [19]. Moreover, farmers were more likely to have positive attitude as compared to students while respondents living with others (flatmates) were less likely to have positive attitude as compared to respondents living in private house and this might be due to small number of farmers and flatmates included in the interview.

The findings of both knowledge and attitude are alarming to the public as both scores were low in urban settings that have better access to media and information, and it is possible to imagine the status of rural setting where vast majority of population lives.

Even though this study covered majority of towns in the region, this study was limited in addressing smaller towns and rural areas that account for majority of regional population. In addition, the assumption of population size used during sample size allocation to population staying at home (two-third) and walking in town (one third) may not represent actual proportion and may vary from town to town. Moreover, though the tool was checked for face and content validity, it was not checked for construct validity.

Conclusions

Even though almost all respondents heard about the COVID-19, the level of knowledge and attitude related to COVID-19 and its prevention were low. Educational status, housing
Table 9. Binary logistic regression of attitude towards COVID-19 and its prevention.

| Variable                   | Category               | Attitude towards COVID-19 and its prevention | COR 95%CI | AOR 95%CI |
|----------------------------|------------------------|---------------------------------------------|-----------|-----------|
|                            |                        | Negative | Positive |           |           |
| Sex                        | Male                   | 277      | 305      | 1         | 1         |
|                            | Female                 | 356      | 298      | 0.76 [0.61–0.95] |           |
| Marital status             | Single                 | 186      | 184      | 1         | 1         |
|                            | Married                | 401      | 393      | 0.99 [0.77–1.27] |           |
|                            | Others                 | 46       | 26       | 0.57 [0.34–0.96] | 0.46 [0.25–0.84] |
| Educational status         | No formal education    | 59       | 64       | 1         | 1         |
|                            | Primary (1–8)          | 149      | 100      | 0.62 [0.40–0.96] |           |
|                            | Secondary (9–12)       | 193      | 182      | 0.87 [0.58–1.31] |           |
|                            | Certificate and above  | 232      | 257      | 1.02 [0.69–1.52] |           |
| Occupation                 | Student                | 92       | 80       | 1         | 1         |
|                            | Farmer                 | 3        | 25       | 9.58 [2.79–32.93] | 9.78 [2.59–36.87] |
|                            | Merchant               | 155      | 160      | 1.19 [0.82–1.72] |           |
|                            | Employed               | 166      | 174      | 1.20 [0.84–1.74] |           |
|                            | House wife             | 125      | 81       | 0.75 [0.50–1.12] |           |
|                            | Daily laborer          | 21       | 21       | 1.15 [0.59–2.26] |           |
|                            | Pensioner              | 18       | 12       | 0.77 [0.35–1.69] |           |
|                            | Private                | 30       | 22       | 0.84 [0.45–1.58] |           |
|                            | Other                  | 23       | 28       | 1.40 [0.75–2.62] |           |
| Housing condition          | Private                | 305      | 335      | 1         | 1         |
|                            | Rent                   | 261      | 229      | 0.78 [0.63–1.01] |           |
|                            | Flatmate               | 36       | 22       | 0.56 [0.32–0.97] | 0.49 [0.27–0.88] |
|                            | Other                  | 31       | 17       | 0.50 [0.27–0.92] |           |
| Age category               | ≤ 25                   | 165      | 139      | 1         | 1         |
|                            | 26–30                  | 103      | 111      | 1.28 [0.90–1.82] |           |
|                            | 31–35                  | 70       | 75       | 1.27 [0.86–1.89] |           |
|                            | 36–40                  | 74       | 73       | 1.17 [0.79–1.74] |           |
|                            | 41–45                  | 32       | 42       | 1.56 [0.93–2.60] |           |
|                            | 46+                    | 93       | 118      | 1.51 [1.06–2.14] | 2.07 [1.27–3.36] |
|                            | I don’t know           | 96       | 45       | 0.55 [0.37–0.85] |           |
| Family size                | ≤ 5                    | 430      | 426      | 1         | 1         |
|                            | ≥ 6                    | 203      | 177      | 0.88 [0.69–1.12] |           |
| Overall knowledge          | Poor                   | 313      | 277      | 1         | 1         |
|                            | Good                   | 320      | 326      | 1.15 [0.92–1.44] | 1.29 [1.01–1.64] |

- Non-significant cells are left empty to simplify table

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Condition and marital status were associated with good knowledge while occupation, housing condition, age and overall knowledge were associated with positive attitude. Awareness creation should be intensified through different local languages to overcome misconceptions, improve community awareness and minimize the consequences of the disease.

Supporting information

S1 File.

( palabras no incluidas en el documento )
S2 File.
(XLSX)

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