

Assessment on Awareness Towards Preventive Measures of COVID-19 in Sheka, South Nation Nationalities and Peoples of Region, Southwestern Ethiopia: Community Based Cross-Sectional Study

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Abstract

Background: The coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and it is the most important public health problem worldwide. A critical element in tackling the COVID-19 crisis is personal behavioral change. However, there is a paucity of evidence that shows peoples' awareness towards COVID-19 pandemic. Thus, this study aimed to assess the awareness level towards COVID-19 in Sheka, South nation nationalities, and peoples of the region (SNNPR), Southwestern Ethiopia.

Methods: A community-based cross-sectional study was employed 10th to 21th of April 2020. A total of 419 study participants included in this study. Both univariable and multivariable logistic regression analyses used to identify significant factors of awareness level. Variables with $p\text{-value} < 0.05$ were considered significant influences of the awareness.

Results: Of all respondents in the study, nearly half (49.4 %) of participants had an awareness of COVID-19. Sex, education level, religion, symptom, and knowing prevention methods were factors significantly associated with an understanding of COVID-19. Respondents who know all prevention methods (AOR: 8.1, 95%CI: 1.3-51.9) are more likely to aware of COVID-19 than its counterpart.

Conclusion: In this study, a low awareness level towards COVID-19 observed, and programs to improve awareness towards COVID-19 are essential to prevent and control the pandemic.

Background

The coronavirus is a big family of viruses and a source of illness ranging from the common cold to more severe diseases such as middle respiratory syndrome [1]. COVID-19 case reported first on 31 December 2019 in Wuhan city of China is a rapidly spreading infectious disease, which has now established a global pandemic. The pandemic affects all major world economies, predicting a big world economic crisis in 2020. Now, the virus is spreading to the entire world and can contaminate people of all stages of age. Older people and those with pre-existing medical conditions are more vulnerable to becoming severely ill with the virus [2–5]. COVID-19 has transmitted through droplets and fomites during close unprotected contact between an infector and healthy. The airborne spread has not reported for COVID-19, and there is no big driver of transmission based on available evidence [6].

Novel coronavirus case firstly happened in Ethiopia on the 13th March 2020, and the battle against COVID-19 is continuing in all parts of the country [7].

Declines in tourism and business travel, spillovers of weaker demand to other sectors and economies through trade and production linkages; supply-side disruptions to production and trade (which are distinct from demand-side shocks spilling over through trade and production linkages); and effects on health such as increased disease and mortality as well as shifts in health care spending [8–10]. The COVID-19 has affected educational systems worldwide, and it leads to the widespread closures of schools and

universities. The virus affects over 1.5 billion students worldwide, accounting for 87% of enrolled learners[11].

To date, there is no specific vaccine or treatment recommended to prevent COVID-19. Though messages related to COVID-19 transferred from health professionals and the concerned body frequently, still the utilization of preventive measures is low in our observation. A critical element in tackling the COVID-19 crisis is public behavior change. Behavior change requires that the public understands, accepts, and implement the recommended prevention methods. There is a paucity of evidence that shows the levels of individual awareness towards COVID-19 in Ethiopia. Thus, this study aimed to assess the awareness level towards COVID-19 in Sheka Zone, South nation nationalities and peoples of region, Southwestern Ethiopia.

Methods

Study area and design

The current study was conducted in Sheka Zone, South Nation Nationalities and Peoples of Region, Southwestern Ethiopia. The capital of the Zone, Masha, is located 951 Km to North West of Awassa, the capital of SNNPR and 676 km to Southwest of Addis Ababa. Sheka is bordered on the south by [Benchi-Sheko](#), on the west by the [Gambela Region](#), on the north by the [Oromiya Region](#), and on the east by [Kaffa](#). Administratively, the Zone is structured into three Woreda and two city administrations. A community-based cross-sectional study was employed 10th to 21th of April 2020. The study populations are all populations who are living in the study area, South Nation Nationalities peoples of Region, Southwestern Ethiopia

Sampling Procedure

The sample size calculated using a single population proportion formula considered confidence level, the margin of error, and expected maximum proportion[12]. The required sample size computed as is at 95% confidence level for normal distribution, which is 1.96, is a margin of error (5%). And 10 % none response rate considered. Thus, considering (a maximum proportion for the awareness of individuals about COVID-19 pandemic), the sample size for this study becomes $384.5 + 38.5 \sim 424$.

Data collection tools and procedure

The data were collected using a structured interviewer-administered questionnaire that was prepared based on the study objectives and conducted in the study area, South Nation Nationalities, and Peoples of Region, southwestern part of Ethiopia. The questionnaires translated into the local language that is Amharic. Six health extension workers involved for twelve days on the 10th to 21th, April 2020 G.c for data collectors. One-day training has given for data collectors and selected participants by the investigators to control the quality of data.

The study variables

The outcome variable was the awareness status of participants dichotomized as aware and not aware (measured from the knowledge of participants towards COVID-19). Aware when the participants showed knowhow about COVID-19 spreading on prevention and control mechanism and not aware when the participants showed poor understanding in the direction of COVID-19 spreading on prevention and control mechanism related questions.

The explanatory variables include socio-demographic factors such as age, sex, level of education, religion, source of income, prevention method used, knowing symptoms, use of quarantine, treatment, source of information, level of implementing of government and health professionals' declaration, and pre-existing health condition of participants measured from structural administered questionnaires.

Data analysis

Data were analyzed using the SPSS software package (version 20) [13]. Frequency distribution, percentage, and plots used to provide sound results. The chi-square test and binary logistic regression model were applied to examine the association between factors and the dependent variable. The logistic regression model used when the dependent variable or the response variable qualitatively expressed[14].

Binary logistic regression is the form of regression, which used when the dependent variable is dichotomous and the independent variables are any type. A binary variable has only two possible values, such as presence or absence of a particular event, in our study (the participants has awareness towards preventive measure of COVID-19 pandemic or not).

The odds are simply the ratio of the probabilities for the two possible outcomes[15]. If is the probability that an event will occur, and then $1 - p_i$ is the probability that an event will not occur.

$$odds = \frac{p_i}{1-p_i}.$$

Let in 2×2 tables, within row the odds of success are

$$odds_1 = p_1 / 1 - p_1$$

and within row the odds of success equal

$$odds_2 = p_2 / 1 - p_2.$$

The ratio of the odds from the two rows (odd ratio) given by

$$Odds\ Ratio = \theta = \frac{odds_1}{odds_2} = p_1 / 1 - p_1 / p_2 / 1 - p_2.$$

The Wald test is the most computing parameter estimation method used in fitting logistic regression method. After the model is fitted, the next important step is checking the model adequacy, therefore, the

study used the Hosmer-Lemeshow test[16].

Results

The socio-demographic characteristics of the study participants illustrated in Table 1. Four hundred-nineteen respondents participated in the survey. Among the respondents, 207 (49.4%) had awareness, and 212 (50.6%) did not have an understanding of COVID-19 pandemics, which was an almost equal proportion of awareness. Of the total respondents, males accounting, 97(46.9%), and females accounting, 110 (53.3%) had awareness towards COVID-19 pandemics whereas 68 (32.1%) of males and 144 (67.9%) of females did not have awareness about COVID-19. Table 1 also shows the distribution of age on awareness status. The majority of the respondents in the age group between 20 to 29 had awareness.

Table 1
Socio-demographic characteristics of the study participants (n = 419)

Awareness Status (%) Chi-square					
Variables Categories		Yes	No	df	P-value
Gender	Male	97 (46.9)	68 (32.1)	1	0.002
	Female	110 (53.1)	144 (67.9)		
Age	Less than 20	15 (7.2)	5 (2.4)	5	0.009
	20–29	88 (42.5)	65 (30.7)		
	30–39	59 (28.5)	89 (42.0)		
	40–49	31 (15.0)	34 (16.0)		
	50–59	8 (3.9)	11 (5.2)		
	>=60	6 (2.9)	8 (3.8)		
Education Level	Illiterate	33(15.9)	29 (13.7)	2	0.539
	Primary level	75 (36.2)	119 (56.1)		
	Secondary & above	99 (47.8)	64 (30.2)		
Religion	Orthodox	107 (51.7)	106 (50)	4	0.000
	Muslim	47 (22.7)	56 (26.4)		
	Catholic	22 (10.6)	4 (1.9)		
	Protestant	23 (11.1)	21 (9.9)		
	Others	8 (3.9)	25 (11.8)		
Source of income	Daily workers	59 (28.5)	68 (32.1)	2	0.089
	Trade	77 (37.2)	92 (43.4)		

Awareness Status (%) Chi-square					
	Salary	71 (34.3)	52 (24.5)		
Prevention	Partially used	158 (28)	95 (44.8)	2	0.001
Methods	Fully used	144 (69.6)	115 (54.2)		
used by individuals	No idea	5 (2.4)	2 (0.9)		
Treatment	Treatment	17 (8.2)	31 (7.4)	2	0.418
assumed by	No any treatment	137 (66.2)	269 (64.2)		
Participants	No idea	53 (25.6)	119 (28.4)		
Source of	Television	76 (36.7)	74 (39.9)	4	0.006
information	Radio	10 (4.8)	16 (7.5)		
	Health professional	64 (30.9)	37 (17.5)		
	All	55 (26.7)	77 (36.3)		
	No idea before	2 (0.9)	8 (3.7)		
Use of	Know	210 (99.1)	203 (98.1)	1	0.394
Quarantine	No idea	2 (0.9)	4 (1.9)		
Knowing symptom of COVID-19	High pulmonary pain and difficult to breath	2 (1)	10 (4.7)	3	0.002
	Fever & Dray Cough	27 (13)	40 (18.9)		
	All	131 (63.3)	99 (46.7)		
	No idea	47 (22.7)	63 (29.7)		
Pre-existing	Normal	167 (80.7)	157 (74.1)	7	0.015
health status	Diabetic Mellitus	8 (3.9)	12 (5.7)		
of participants	Addiction	11 (5.3)	2 (0.9)		

Awareness Status (%) Chi-square					
	Hypertension	7 (3.4)	15 (7.1)		
	HIV	4 (1.9)	6 (2.8)		
	Pregnancy	6 (2.9)	14 (6.6)		
	Seizure	1 (0.5)	4 (1.9)		
	Rental disease	3 (1.4)	2 (0.9)		
Level of implementation	Fair	98 (47.3)	123 (58.0)	4	0.004
	Medium	68 (32.9)	74 (34.9)		
perceived	High	22 (10.6)	8 (3.8)		
	Very high	13 (6.3)	3 (1.4)		
	No idea	6 (2.9)	4 (1.9)		

The educational level of respondents has an increasing proportion of awareness of the COVID-19 pandemic. The percentage of understanding is (15.9%) for non-educated participants, (36.2%) for primary educated participants and (47.8%) for respondents whose education level is secondary and above had an awareness of COVID-19. Whereas 13.7% are non-educated participants, 56.1% primary educated participants, and 30.2% secondary and above the educational level of participants had not awarded towards COVID-19 pandemic.

Concerning the source of informations, 76 (36.7%), 10 (4.8%), 64 (30.9%), 55 (26.7%) and 2 (0.9%) of respondents obtained information about COVID-19 from Television, Radio, Health professionals, and no source information respectively had an awareness of COVID-19 pandemic. Whereas 74 (39.9%), 16 (7.5%), 37 (17.5%), 77 (36.3%), and 8 (3.7%) of respondents obtained information from Television, Radio, Public Health professionals, and no idea respectively did not have awareness towards COVID-19 pandemic.

Table 1 also illustrates the distribution of different prevention methods recommended by the world health organization (WHO) used by the respondents. Thus, 158 (28%), 144 (69.6%) and 5 (2.4%) of respondents used prevention methods partially, fully used or apply all WHO recommended prevention methods and no idea for prevention or they did not apply WHO recommended prevention methods respectively had an awareness of COVID-19 diseases. Whereas 95 (44.8%), 115 (54.2%) and 2 (0.9%) of respondents used prevention methods partially, fully used or apply all WHO recommended prevention methods and no idea for prevention or they did not apply WHO recommended prevention methods respectively did not have awareness about COVID-19 pandemic.

The result also shows the most important of 210 (99.1%) of respondents well informed about the use of quarantine to control COVID-19, and 203 (98.1%) of the respondents also well informed about the use of quarantine, but did not have awareness about COVID-19 infection.

Table 1 also shows the pre-existing health status of respondents; the pre-existing health status of respondents were 324 (77.3%), 20 (4.8%), 13(3.1%), 22(5.3%), 10(2.4%), 20 (4.8%) and 5 (1.2%) respectively are normal, Diabetic Mellitus, addiction, hypertension, HIV, pregnancy, seizure, and Rental disease. People with diabetic miles, hypertension, HIV, and Rental disease patients considered to be at high risk of suspected to COVID-19 infection. Henceforth, these people should give special care to them and effectively apply WHO recommended prevention methods. Except for the source of income, treatment, use of quarantine or isolation, and educational level of respondents are statistically significantly associated with an awareness of respondents towards COVID-19 diseases at 5% significant level.

Figure 1 shows that the majority of respondents are healthy (currently have no disease) and expected to be less susceptible to the COVID-19 pandemic. Four hundred nineteen respondents interviewed and among that 4.77%, 1.19%, 5.25%, 2.39%, 4.77%, 1.19% and 3.10% of respondents whose there pre-existing medical conditions were pregnant, seizure, hypertension, HIV, Diabetic Miletus, rental disease, and addicted respectively are high risk for COVID-19.

Figure 2 shows that 54.18 percent of respondents fairly implemented, 34.37 percent applied in the medium, 7.19 percent applied highly implemented, 3.82 percent implemented too high, and 0.48 percent not implemented for government declaration towards COVID-19 pandemic. Thus, the results need much intervention to apply all prevention strategies towards COVID-19 to the individual.

Figure 3 showed that the probability of the individual's awareness towards COVID-19 is decreasing, whereas the chance that individuals will not aware of COVID-19 increases. It implies an awareness creation strategy to maximize the individual's awareness of COVID-19pandemic.

The χ^2 statistic with 8 degrees of freedom is 14.911, and the p-value is 0.06. Thus, the model well fitted the data (Table 2).

Table 2
Hosmer and Lemeshow Test
of good ness of fit

Chi-square	df	Sig.
14.911	8	0.061

A classification table used to distinguish accurately predicted value of awareness of respondents towards COVID-19 (Table 3). A classification table is indicating that the validity of predicted probabilities shown in (Table 3). The first two rows in Table 3 stand for the two possible outcomes, and the two columns under the heading predicted are for high and low probabilities.

Table 3
The Observed and the Predicted Frequencies for Awareness of Respondents towards COVID-19 by Logistic Regression with the Cutoff of 0.50

Observed		Predicted		
		Awareness		Percentage Correct
		yes	No	
Awareness	yes	148	59	71.5
	No	50	162	76.4
Overall Percentage				74.0
Note. Sensitivity = $148 / (148 + 59)\% = 71.5\%$. Specificity = $162 / (50 + 162)\% = 76.4\%$.				
False positive = $50 / (148 + 50)\% = 25.5\%$. False negative = $59 / (59 + 162)\% = 26.7\%$.				

The observation also held in the sensitivity (71. 5%) as compared to that of specificity (76.4%). Sensitivity measured the correct proportion of classified events (the awareness of individuals towards COVID-19). Specificity measures the true proportion of classified non-events (those not suggested for awareness of individuals towards COVID-19). Both false positive and false negative rates are a little more than 25%. The false positive and false-negative rate respectively measure the proportion of observing misclassified as events and miss classified as non-events. Thus, the overall correction prediction was 74% on the progress over the chance level to aware of the COVID-19 pandemic.

The results from multivariable analysis revealed that gender, religion, education level, understanding prevention methods were factors associated with awareness level of COVID-19. (Table 4).

Table 4

Parameter estimates of binary logistic regression using forward stepwise variable selection Method.

Variables	Categories	Estimate	S.E.	Wald	df	P-value.	AOR	95% C.I. for EXP(B)	
								Lower	Upper
Sex	Male (ref)								
	Female	0.743	0.247	9.061	1	0.003	0.476	0.293	0.772
education	Illiterate(ref)								
	Elementary	0.349	0.361	.933	1	0.334	0.706	0.348	1.431
	Secondary +	0.779	0.254	9.374	1	0.002	2.178	1.323	3.586
Religion	Orthodox (ref)			15.395	4	0.004			
	Muslim	1.238	0.493	6.300	1	0.012	0.290	0.110	0.762
	Catholic	1.048	0.522	4.026	1	0.045	0.351	0.126	0.976
	Protestant	2.879	0.749	14.771	1	0.000	0.056	0.013	0.244
	Others	1.327	0.576	5.301	1	0.021	0.265	0.086	0.821
Symptoms	Pulmonary and difficult to breath (ref)								
	fev, dry cough	1.718	0.979	3.076	1	0.079	5.572	0.817	37.991
	All	0.265	0.401	.436	1	0.509	1.303	0.594	2.857
	Don't know	0.541	0.285	3.593	1	0.058	0.582	0.333	1.019
	Partially(ref)								
	Fully used	2.095	0.946	4.908	1	0.027	8.127	1.273	51.871
	None of used	1.384	0.950	2.122	1	0.145	3.990	.620	25.673
*= P < 0.05 *									

The odds ratio (OR) of education (secondary and above) equal to $\exp(0.779) = 2.178$ (95% CI: 1.323, 3.586) (adjusted other variables). The respondents whose education status is secondary and above education level are 2.178 times more likely to aware of COVID-19 than respondents whose education status is illiterate (Table 4). The odds ratio (OR) of religion (catholic, protestant and others) respectively equal to $\exp(-1.238)$, $\exp(-1.048)$, and $\exp(-1.327) = 0.290$, 0.351 and 0.013 [95% CI: (0.110, 0.762); (0.013, 0.244) and (0.086, 0.281)] (adjusted others variables). The respondents whose religion, catholic,

protestant, and others respectively are 0.290, 0.351, and 0.013 times less likely to aware of COVID-19 pandemic than those respondents whose religion is orthodox (Table 4).

The odd ratio of prevention method (fully used) equal to $\exp(2.095) = 8.127$ (95%CI: 1.273, 51.871) (other variables are adjusted) is 8.127 times more likely to aware about COVID-19 pandemic than those respondents partially used (at most three prevention method have used).

Discussion

Now a day, the COVID-19 is spreading in the world dramatically. The Ethiopia government takes many measurements to tackle the impact of COVID-19 on any business sector and the wellbeing of individuals. It is, therefore, mandatory to explore the effects of COVID-19 in Ethiopia and to set out immediate priorities and longer-term strategies for appropriate interventions. Culturally, in Ethiopia, it is hard to apply all COVID-19 prevention strategies since the individual is a highly sociable, culturally indispensable one for each other, and the marketing system is traditional.

The COVID-19 is a current language spoken by almost all media all over the world. However, society still does not aware of the risk of COVID-19 pandemic. The study showed that 50.6% of participants did not have awareness about the COVID-19 disease. The overall correction prediction value was 74%. It is an improvement over the chance level to aware of the COVID-19 pandemic, and 26% chances did not aware of COVID-19. The current study is consistent with the study done in the awareness of the individual towards COVID-19 disease[17].

Hence, much effort needed to create awareness for the individual about COVID-19 by assessing socio-demographic factors and the individual's perception towards COVID-19 pandemic management. Quarantine is one mechanism to control the coronavirus pandemic. The study about ninety-nine percent of the societies have awareness about quarantine and expected to report the disease. The current study is consistent with the study done in Middle East Respiratory Syndrome Coronavirus epidemic impact on healthcare workers' risk perceptions, work and personal lives[18] and also consistent with the study conducted in Vietnam were 97.9% of the participants agree to quarantine[19].

According to the world health organization (WHO) advice, the individual expected to be high risk by COVID-19 pandemic if their current health status is pregnancy, seizure, hypertension, diabetic Miletus, addiction, HIV, chronic pulmonary and chronic renal disease. The study showed that seventy-seven percent of participants are healthy, and twenty-three percent of participants are at risk. Thus, special attention should be given to the high susceptible society in the town city administration by creating awareness about the COVID-19 pandemic (Fig. 1). According to this study, 0.48% of participants never implemented the government, and health professions taught how to prevent coronavirus pandemic prevention strategies (Fig. 2).

Currently, there is no vaccine to treat coronavirus pandemic. However, still, the individual believed that there is a vaccine to treat the disease. In the study, 8.2% of individuals assumed that there is a vaccine,

and these results show it very risks to manage the pandemic. The level of implementation of government and health professional declaration regarding COVID-19 pandemic overall prevention strategies are questionable since some individual was not still implementing the government declaration.

The awareness may be depending on religious aspects. Some religions may preach that the disease becomes from God and so that it is so hard to stop by government declaration and health profession. The model may tell us some religions are less aware (religion concern) than other religions even if we cannot recommend which religion is better. As is known, the Ethiopian religious association agreed to announce declaration for one month to pray to tackle the hidden war, which is an unseen enemy that attacks all individuals regardless of the religion in the World.

The study found that mass media and public health care workers were the most important sources of information for Sheka Zone, Tepi Town city administration individual's awareness towards COVID-19. These findings were similar to Myanmar adults study the familiar sources were social media and mass media[20]. Also in Hong Kong study in which their common sources were social platform and mass media but different with health care workers study in which their primary sources were not only social media but also official government websites[21], [22] and in Pakistan healthcare professionals study[23].

The multivariable binary logistic regression used to identify the factors influencing society's awareness of COVID-19. The results showed that gender, educational level, and preventive strategies are significant factors in the understanding of individuals. These findings were similar to the study conducted in Myanmar adults on awareness, perceived risk, and protective behaviors to COVID-19 and in Saudi Arabia[20], [24].

Conclusion

The find out about highlights the awareness status in Sheka, South Nation Nationalities' Peoples of Region, Tepi city administration, Southwestern part of Ethiopia and individuals presently practising concerning COVID-19 pandemic. The study assessed individuals' awareness and exercise in the direction of COVID-19 spreading prevention. According to our finding, the main factors for being aware are gender being female, education level being secondary and above level, religion, knowing symptoms of COVID-19 and prevention strategies. The study found that below half of the respondents (49.4%) agreed on the essential role of individuals in the prevention of COVID-19 spreading and they decided to inform suspected instances to any involved health care workers and follow the directions of the ministry of health authorities and the establishment policies to forestall the expansion. Also, the finding confirmed that more than half (50.6%) of the individual has no sufficient awareness and insufficient protecting exercise to prevent COVID-19 infection. The study found 54.18 per cent of the individual fairly implemented and 0.48 per cent of the individual did not put into effect the government declaration strategies to stop COVID-19 distribution and transmissions. The study was also capable of highlights gaps in the precise element of perception and preventive exercise that should centre in future attention and instructional campaigns.

The study recommends extra teaching involvement and movements are required for all individuals to help them with the awareness of the capacity of transmission, the symptoms and prevention strategies. The study also recommends the ministry of health authorities, public health care professionals, other countrywide and worldwide health organizations, mass media, social media and all concerned bodies to make promoting and put in force of all protecting and preventive exercise measures of COVID-19 distribution in the direction of the individual.

Abbreviations

COVID-19: Coronavirus Disease 2019

AOR: Adjusted Odd Ratio

WHO: World Health Organization

SNPPR: South Nation Nationalities and Peoples of Region

Declarations

Ethics approval and consent to participate

Written permission was obtained from Mizan-Tepi University, with reference number MTU/19/86//09/2020 to Tepi Town Public Health Office and then they approved it.

The Approval Committees Were:

1. Yideg Mamo, Chief Executive of Mizan-Tepi University, e-mail: mamoyideg@gmail.com
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The participants were told them about the study objectives and the provided information kept confidentially. They were also told them that they have the right to say no the interview even in the at the time of survey if they are inconvenient

Consent for publication

Not applicable

Availability of data and materials

The data will be given upon on request behalf of corresponding author.

Competing interests

No potential conflicts of interest declared.

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Authors 'contributions

Both authors were responsible for the conception, data analysis, and interpretation of the results, report, and preparation of the draft manuscript

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Figures

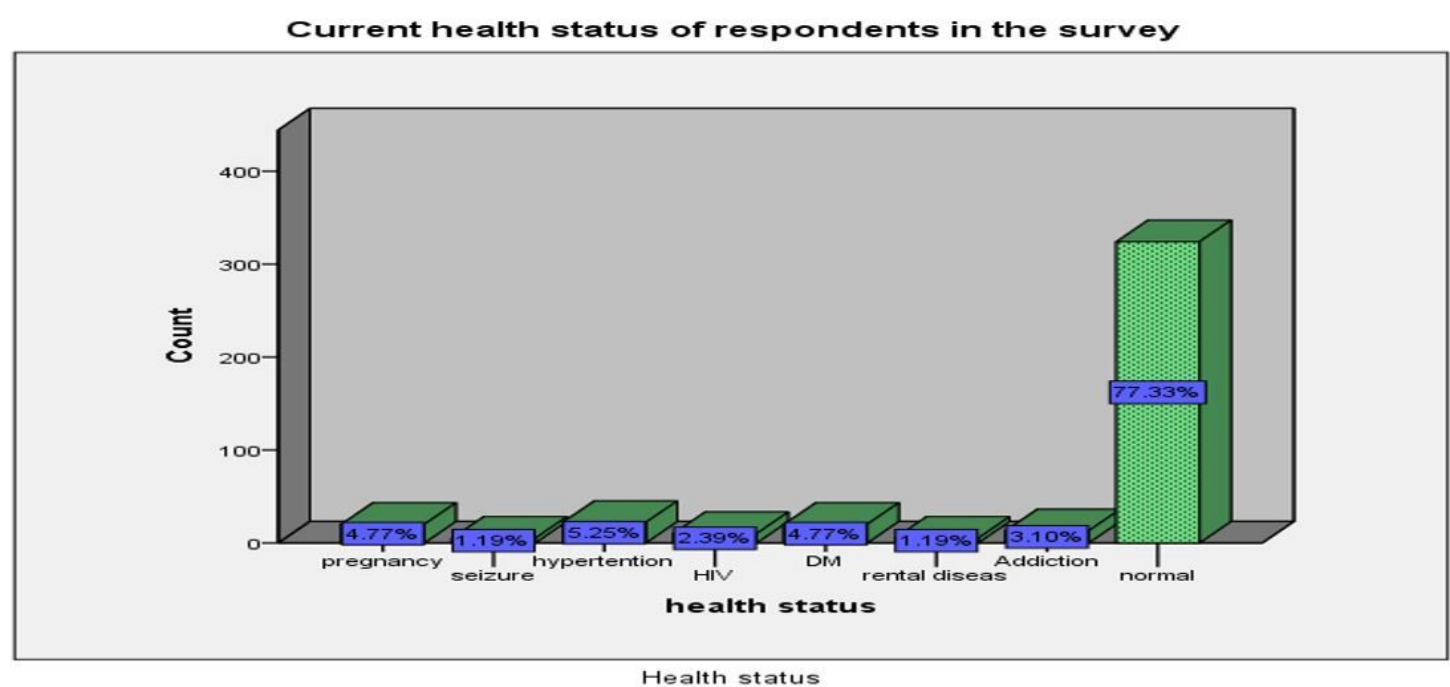


Figure 1

current health status of respondents.

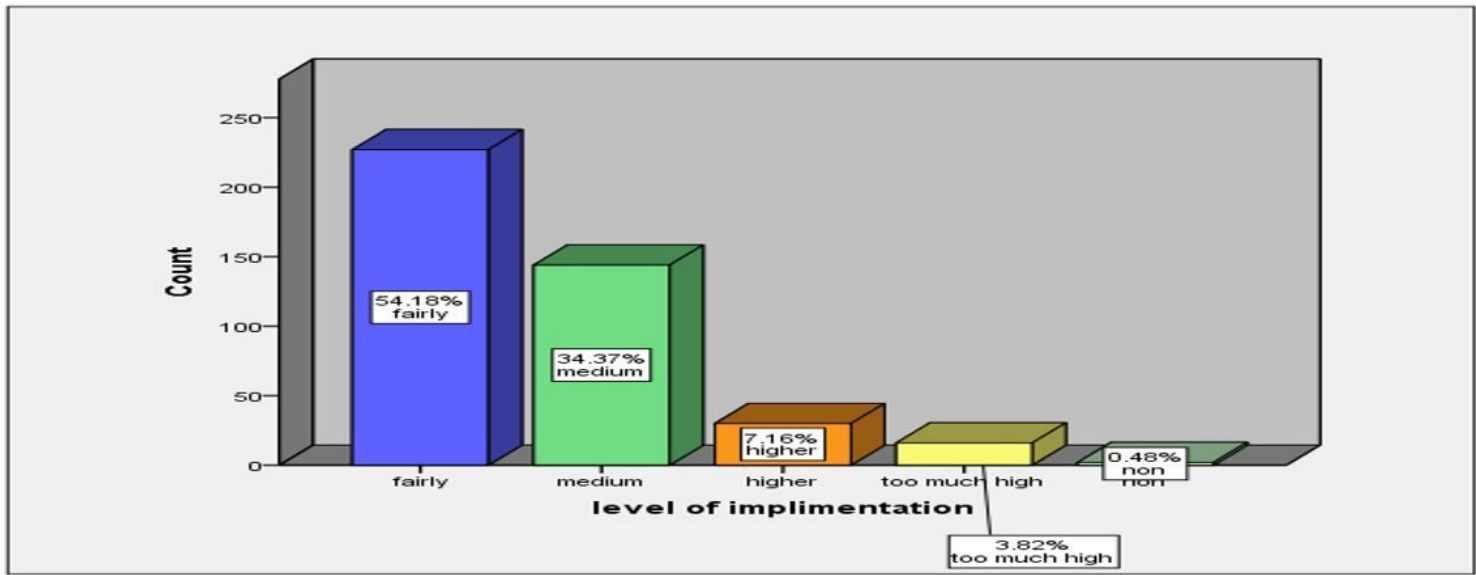


Figure 2

Level of implementation the government declaration regarding COVID-19 by individuals.

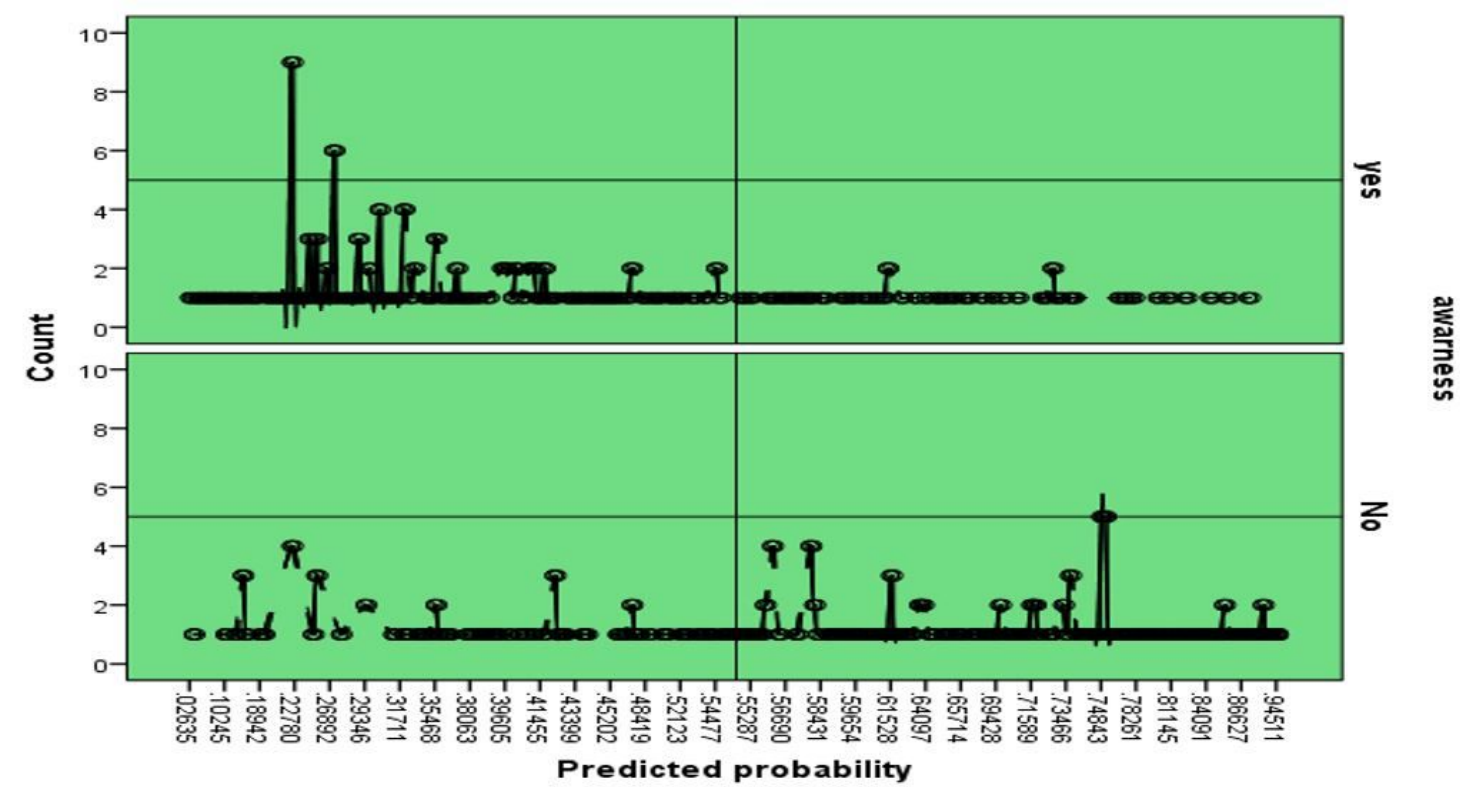


Figure 3

Predicted probability of individual towards COVID-19

Supplementary Files

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- [Questionnaire.docx](#)