

# Individuals' coronavirus disease knowledge levels: A cross-sectional survey in eleven countries

Metin Yıldız<sup>1</sup>, Abraham Tanimowo<sup>2</sup>, Marco Monti<sup>3</sup>, Mehmet Salih Yildirim<sup>4</sup>, Ram Bahadur Khadka<sup>5</sup>, Asma Hasan Sbaïh<sup>6</sup>, Çiğdem Müge Haylı<sup>7</sup>, Muhammad Tayyeb<sup>8</sup>, Sweta Majumder<sup>9</sup>, Anis Uddin<sup>10</sup>, Tajudeen Oluwafemi Noibi<sup>11</sup>, Güray Okyar<sup>1</sup>

<sup>1</sup>Department of Nursing, Agri Ibrahim Cecen University School of Health, Agri, Turkey

<sup>2</sup>Child and Adolescent Health Track, Institute of Child Health, College of Medicine, University of Ibadan, Oyo state, Nigeria

<sup>3</sup>Manchester Institute of Biotechnology and School of Chemistry, University of Manchester, Manchester, United Kingdom

<sup>4</sup>Vocational School of Health Services, Agri Ibrahim Cecen University School of Health, Agri, Turkey

<sup>5</sup>Faculty of Management, Tribhuvan University, Bagmati Province, Nepal

<sup>6</sup>Engineering and Information Technology Department, Palestine Ahliya University, Bethlehem, Palestine

<sup>7</sup>Department of Nursing, Cyprus Science University, Cyprus

<sup>8</sup>Department of Anesthesia, College of Medical Technology, Medical Teaching Institutions Bacha Khan Medical College, Mardan, Pakistan

<sup>9</sup>Social Work Department, Vidyasagar University, Kolkata, India

<sup>10</sup>Department of Law, Southern University, Chittagong, Bangladesh

<sup>11</sup>Department of Architecture and Urban Studies, Autonomous University of Ciudad Juárez, Chihuahua, Mexico

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Corresponding author:

Metin Yıldız.

E-mail: [yildizz.metin@gmail.com](mailto:yildizz.metin@gmail.com);

ORCID: 0000-0003-0122-5677

## Abstract

**Objective:** This descriptive cross-sectional survey determined the individuals' coronavirus disease knowledge levels in eleven countries.

**Material and methods:** This cross-sectional study was conducted with one thousand forty-three (n=1043) individuals between November and December 2020. Data were collected through an online form with questions on coronavirus disease knowledge.

**Results:** This study revealed that the mean score of coronavirus disease knowledge level was 10.50±3.59. The level of knowledge of coronavirus disease was also found to be statistically higher among nationality (Turkey (Agri), Azerbaijan (Baku), Palestine (Hebron), Nigeria (Ibadan), Pakistan (Charsadda), India (Punjab), Bangladesh (Chittagong), Mexico (Chihuahua), Nepal (Kathmandu), Turkish Republic of Northern Cyprus (Girne) and Italy (Chieti), information channel for coronavirus disease (television/radio, internet, brochure/poster, scientific works), and how stressful do you feel due to coronavirus disease (p<0.001). Furthermore, a negative correlation was found between coronavirus disease knowledge level and age (p <0.001).

**Conclusion:** In this study, it was found that the knowledge level of coronavirus disease was moderate.

**Key words:** coronavirus disease, countries, information level

## Introduction

Coronaviruses are zoonotic viral pathogens that can be found in cats, dogs, bats, pigs, poultry and rodents, can be transmitted from animals to humans, can cause respiratory and gastrointestinal system infections, and rarely, diseases with hepatic, neurological and nephrotic involvement. Although it is known that coronaviruses, especially HCoV-229E (named after a student specimen coded 229E), HCoV-NL63 (Nether Land 63), HCoV-OC43 (Organ Culture 43), and HCoV-HKU1 (Hong Kong University 1) subtypes, generally cause mild upper

respiratory tract infections in humans and rarely more severe lower respiratory tract infections, it has been shown that they may be responsible for very serious clinical pictures defined as severe acute respiratory syndrome [Severe Acute Respiratory Syndrome (SARS)] in 2003 and Middle East Respiratory Syndrome (MERS) in 2012 [1-5]. The examination, which started with the World Health Organization (WHO) China Country Office reporting the presence of pneumonia cases whose cause could not be determined with existing tests on December 31, 2019 in Wuhan city in Hubei province of China,

revealed that the agent is a new coronavirus that causes infection in humans on January 7, 2020 [1-6]. The causative virus has been named 2019-nCoV (2019-novel coronavirus) by WHO and SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2) by the International Virus Taxonomy Committee, the disease caused by the virus has been defined as COVID-19 (coronavirus disease-2019) [1,7].

The coronavirus pandemic has caused anxiety and panic in people all over the world. This pandemic, which caused many changes in everyone's life, turned into distance education instead of face-to-face education in children, and a way of working from home instead of office work for adults. On the other hand, the uncertainty about the disease increased people's anxiety and concerns [8]. Coping with COVID-19 infections and reducing deaths requires a multidisciplinary approach in which healthcare, government and society play a joint role. During the pandemic process, attention should be paid to the secondary effects of the virus rather than its direct effects [9].

It is very important to detect and diagnose COVID-19 in a timely manner. That is why it is of great importance for the nurses and healthcare practitioners who will diagnose the virus to have information about it. Diagnostic errors are relatively common in primary care, and these errors cause serious harm to patients [10].

Many countries have taken measures to prevent the spread of the virus. In addition, the citizens about these measures were constantly informed by the press and the published information guides [11].

While the hard times were overcome, the state constantly warned its citizens by saying "mask, distance, hygiene" rules. The institutions, which were equipped with important powers during pandemic periods, also carried out public information and awareness activities during this period. Of course, in the spread of the disease, citizens have some responsibilities during the pandemic process. The most important of these is the level of knowledge about the disease. This study was conducted to determine the level of knowledge of individuals in different countries about coronavirus disease.

## Material and methods

**Design of the study:** The study adopted an online cross-sectional survey design to determine the coronavirus disease knowledge among individuals' in eleven countries of the world.

**Area of the study:** This work was carried out in eleven (11) countries around the world; Turkey (Agri), Azerbaijan (Baku), Palestine (Hebron), Nigeria (Ibadan), Pakistan (Charsadda), India (Punjab), Bangladesh (Chittagong), Mexico (Chihuahua), Nepal (Kathmandu), Turkish Republic of Northern Cyprus (Girne) and Italy (Chieti). The countries included in the study were selected with the convenience sampling method.

**Population for the study:** The study population comprises individuals in the indicated cities located in the eleven (11) selected countries of the world. Turkey (Agri), Azerbaijan (Baku), Palestine (Hebron), Nigeria (Ibadan), Pakistan (Charsadda), India (Punjab), Bangladesh (Chittagong), Mexico (Chihuahua), Nepal (Kathmandu), Turkish Republic of Northern Cyprus (Girne) and Italy (Chieti).

**Sample for the study:** The sample comprised of one thousand forty-three (n=1043) individuals who were conveniently selected from the indicated cities located in the eleven (11) counties. In the power analysis, the required sample size was calculated as 384 people at 95% confidence level and 5% confidence interval.

**Instrument for data collection:** An online google form designed by the researcher was used to gather the primary data. The survey comprises of two forms:

**Demographic characteristics form:** It consists of questions on information that can be used to classify the respondents.

**Knowledge test for coronavirus disease:** This test was created to measure the knowledge level of individuals about coronavirus disease. A minimum of 0 and a maximum of 20 points can be obtained from the scale consisting of 20 questions. True, false and I don't know options are found in the scale and 1 point is taken from the true option and 0 points are taken from the wrong and I don't know option. The increase in the score indicates that the level of knowledge has increased. For this research the Cronbach Alpha value was found to be 0.72.

**Method of data collection:** The researcher explained the purpose of the research to the respondents and obtained verbal consent from the respondents. The online google form prepared by the researchers was then administered to those individuals who agreed to participate in the research.

**Method of data analysis:** IBM SPSS V25 program was used in the statistical analysis of the study. Analyzed is made with SPSS-25 program installed in a university in Turkey. In the research, descriptive features are presented with number (n) and percentage (%). Continuous variables are specified with their mean, standard deviation, minimum and maximum values. Necessary normality tests were performed in the process of analyzing the data and it was understood that the data showed normal distribution (kurtosis and skewness -1.5 to +1.5) [12]. Independent Samples t test was used for binary groups in normally distributed data. The One Way Variance (ANOVA) test was also used for data with more than two continuous variables and normally distributed. In paired comparisons of multiple groups, one of the post-hoc tests, Bonferroni test was used for homogeneous distribution and Games-Howell for non-homogeneous data. Pearson correlation test was used to determine the linear relationship between variables and severity of the relationship. P value of <0.001 was considered statistically significant.

**Ethical approval:** This study was approved by the Agri Ibrahim Cecen University Scientific Research Ethics Committee with the protocol number (Date: 30.11.2020 and Number: 160). The study was conducted in accordance with the ethical standards established in the Declaration of Helsinki.

## Results

Table 1 showed that 12.5 % of the study were citizens of Nigeria, 56.6% were male, 76.2%, were single and 81.3 % of the respondent completed a higher education. 23.2% of the respondent doesn't work and 48.8% have income equal to expense, 75.6% having a health insurance. 66.9% respondent stated that they get information from the internet and 50.3% indicated a moderate level of coronavirus-related stresses. The Table also further revealed that the mean age of the respondent was 27.12±9.38 and the mean knowledge level for coronavirus disease was 10.50±3.59 (Table 1).

A comparison of the demographic characteristics of the participants and their knowledge of coronavirus disease is presented in Table 2. In our study, a statistically significant difference was found between nationality and coronavirus disease knowledge level (p<0.001). In the post hoc analysis (Games-Howell) conducted to determine the origin of the difference between the groups in terms of countries;

Table 1

The demographic characteristics of the respondents' (N = 1043)

Variables		n	%
<b>Nationality</b>	Turkey	130	12.5
	Mexican	72	6.9
	Pakistan	104	10.0
	Palestine	87	8.3
	Nigeria	140	13.4
	Bangladesh	81	7.8
	Nepal	88	8.4
	Azerbaijan	103	9.9
	Turkish Republic of Northern Cyprus (TRNC)	73	7.0
	India	89	8.5
	Italy	76	7.3
<b>Gender</b>	Female	447	42.9
	Male	590	56.6
	Other	6	0.6
<b>Marital status</b>	Single	795	76.2
	Marrried	219	21.0
	Separated	14	1.3
	Divorced	5	0.5
	Widow/Widower	10	1.0
<b>Education Level</b>	Primary education	60	5.8
	Secondary education	138	12.9
	Higher education	848	81.3
<b>Income rate</b>	Less than income	457	43.8
	Income equal to expense	509	48.8
	More than income	77	7.4
<b>Health Insurance</b>	Yes	788	75.6
	No	255	24.4
<b>Job</b>	Health personnel	120	11.5
	Civil Servant	69	6.6
	Pensioner	14	1.3
	Self Employed	109	10.5
	Doesn't work	242	23.2
	Housewife	73	7.0
	Other	416	39.9
<b>Information channel for coronavirus disease</b>	Television/Radio	230	22.1
	Internet	698	66.9
	Brochure/poster	51	4.9
	Scientific works	64	6.1
<b>How stressful do you feel due to coronavirus disease</b>	Low	256	24.5
	Middle	525	50.3
	High	262	25.1
		X±SD	
<b>Age (Years)</b>		27.12±9.38	
<b>Knowledge Level for Coronavirus Disease</b>		10.50±3.59	

(Mean, Standart deviation, Frequencies)

Turkey's mean score was found to be significantly higher than Palestine, Nigeria and Italy. It was determined that the mean score of Mexico was significantly higher than Palestine, Nigeria and Italy. It was determined that Pakistan's mean score was significantly higher than Palestine, Nigeria and Italy. It was determined that Palestine's mean score was significantly lower than Turkey, Mexico, Pakistan, Azerbaijan, and Turkish Republic of Northern Cyprus TRNC. Nigeria's mean score was found to be significantly lower than Turkey, Mexico, Pakistan, Azerbaijan and TRNC. It was determined that the mean score of Bangladesh was significantly lower than Azerbaijan and TRNC. It was determined that the mean score of Nepal was significantly lower than that of Azerbaijan and TRNC. It was determined that the mean score of Azerbaijan was significantly higher than Palestine, Nigeria, Bangladesh, Nepal, India and Italy. It was determined that India's

mean score was significantly lower than Azerbaijan and TRNC. It was determined that the mean score of the Turkish Republic of Northern Cyprus (TRNC) was significantly higher than Palestine, Nigeria, Bangladesh, Nepal, India and Italy. It was determined that Italy's mean score was significantly lower than Turkey, Mexico, Pakistan, Azerbaijan and TRNC.

In our study, a statistically significant difference was found between the information channel for coronavirus disease and coronavirus disease knowledge level ( $p < 0.001$ ). In the post hoc analysis (Bonferroni) conducted to determine the origin of the difference between the groups in terms of information channel for coronavirus disease, the mean score of the Brochure/poster was found to be significantly lower than TV/radio and Scientific studies.

Table 2

Comparison of Individuals' Demographic Characteristics and Knowledge Level Points for Coronavirus Disease

Variables		n	$\bar{X}\pm SD$	Statistic
Nationality	Turkey	130	11.64±3.79	<b>F=19.118</b> <b>p= 0.000</b>
	Mexican	72	11.80±3.37	
	Pakistan	104	11.73±3.91	
	Palestine	87	8.59±3.54	
	Nigeria	140	9.27±3.05	
	Bangladesh	81	9.45±4.29	
	Nepal	88	9.75±2.37	
	Azerbaijan	103	12.41±2.22	
	Turkish Republic of Northern Cyprus (TRNC)	73	9.73±3.88	
	India	89	12.43±2.91	
	Italy	76	8.56±2.11	
	Gender	Female	447	
Male		590	10.25±3.82	p=0.036
Other		6	10.50±0.54	
Marital status	Single	795	10.35±3.65	F=2.755
	Married	219	11.15±3.42	p=0.027
	Separated	14	9.14±3.34	
	Divorced	5	9.60±1.67	
	Widow/Widower	10	10.30±1.05	
Education Level	Primary education	60	9.45±5.95	F=4.454
	Secondary education	138	10.04±3.12	p= 0.012
	Higher education	848	10.65±3.42	
Income rate	Less than income	457	10.36±3.62	F=3.220
	Income equal to expense	509	10.48±3.57	p= 0.040
	More than income	77	11.48±3.42	
Health Insurance	Yes	788	10.50±3.31	t=0.002
	No	255	10.50±4.35	p=0.999
Job	Health personnel	120	11.23±3.17	<b>F=2.531</b> <b>p= 0.019</b>
	Civil Servant	69	10.86±3.06	
	Pensioner	14	10.35±4.14	
	Self Employed	109	9.66±3.30	
	Doesn't work	242	10.42±3.43	
	Housewife	73	9.80±3.27	
	Other	416	10.63±3.93	
Information channel for coronavirus disease	Television/Radio	230	11.02±3.63	<b>F=8.314</b> <b>p= 0.000</b>
	Internet	698	10.34±3.60	
	Brochure/poster	51	8.82±2.89	
	Scientific works	64	11.70±3.19	
How stressful do you feel due to coronavirus disease	Low	256	9.79±3.53	<b>F=7.789</b> <b>p= 0.000</b>
	Middle	525	10.60±3.53	
	High	262	10.99±3.67	

Independent Samples t Test, One-Way ANOVA.

Table 3

Relationship Between Knowledge Level for Coronavirus Disease and Age

	r	Age (Years) p
Knowledge Level for Coronavirus Disease	<b>-0.108</b>	<b>0.000</b>

Pearson Correlation Test

In our study, a statistically significant difference was found between how stressful do you feel due to coronavirus disease and coronavirus disease knowledge level ( $p < 0.001$ ). In the post hoc analysis (Bonferroni) performed to determine the origin of the difference between the groups in terms of how stressful do you feel due to coronavirus disease, the average score of the group expressing low stress was found to be significantly lower than all groups.

A statistically significant relationship was found between coronavirus disease knowledge level and age ( $p < 0.001$ ) (Table 3).

## Discussion

In this study, the coronavirus disease knowledge levels of individuals in different countries were determined.

In this study, the coronavirus disease knowledge level

mean score was found to be 10.50±3.54. It was found that studies in the literature also recorded the findings in accordance with our study [13-15], however, in the knowledge level studies about the virus conducted by Bhagavathula et al. [16], Rehman, Ghani & Rehman [17], and Abebe and Ebola [18], they found that individuals have a poor level of knowledge. This situation is thought to inform the relevant ministries and local administrations in all countries to harness the use of the media in creating a more informed society. Naveena, 2015 reported that the media play an important role both at local and international level in that it serves as the link between health workers and the entire public. The mass media effectively persuades targeted audiences to adopt new behaviors or perform the role of critical information reminder and it also keeps the public updated [19].

In our study, a statistically significant difference was found between nationality and coronavirus disease knowledge level ( $p<0.001$ ). It suggests that the reason for being low in some countries and high in some countries may be that individuals do not have access to information or that the information accessed may be disinforming.

In our study, a statistically significant difference was found between the information channel for coronavirus disease and coronavirus disease knowledge level ( $p<0.001$ ). This suggests that individuals' information may have been limited to poster / brochure. In addition, they think that their level of knowledge is lower due to the fact that they do not have enough information about updating and following new developments.

In our study, a statistically significant difference was found between how stressful do you feel due to coronavirus disease and coronavirus disease knowledge level ( $p<0.001$ ). This suggests that they do not need to do research because they do

not experience stress and their knowledge level is lower due to their lack of effort to access information.

In our study, a negative correlation was found between coronavirus disease knowledge level and age. This situation is thought to be due to the fact that older individuals follow the information from social media and are exposed to information pollution more, and that young people have more information about the content of coronavirus disease. According to Olum et.al., 2020 age and news media were factors associated with knowledge of coronavirus disease [20].

## Limitations

The study is limited to 11 countries and the number of developed countries is small.

## Conclusion

The study concluded that the level of coronavirus disease knowledge was average. Despite the impact of COVID-19 pandemic, the average knowledge of respondents observed in this study calls for further education of the global population as the battle strife to bring the pandemic under control.

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