

Adults' Perception of the New Coronavirus Pandemic, its Related Anxiety and Precautions: A Cross-Sectional Study with Adults from Turkey

Nursemin Unal¹, Betul Tosun², Raul Alberto Cordeiro³

¹Ankara Medipol University, Faculty of Health Sciences, School of Nursing, Turkey;

²Hasan Kalyoncu University, Faculty of Health Sciences, School of Nursing, Turkey;

³Polytechnic Institute of Portalegre, Nursing Department, Portugal

Key Words: anxiety, coronavirus, COVID-19 pandemic, perception, precautions.

Summary. The aim of the study was to identify the perceptions, anxiety and precautions of adults on new coronavirus disease 2019 (COVID-19) among adults from Turkey.

Design and Methods. This cross-sectional comparative study employed an online questionnaire survey to collect data.

Participants. The snowball sampling method was used to recruit a convenience sample of 1092 adult participants in Turkey.

Results. The participants were following the agenda on COVID-19, their perceptions were alerted, their anxiety level was quite high and they were well-informed about precautions. More women than men responded positively to the assumption that alcohol and smoking raise the effect severity for COVID-19 disease. Women in relation to men were more undecided about the real danger of COVID-19 as it is told. The anxiety that appears from the fear to be infected with the virus or die because of COVID-19 was higher in women than men. Everyday checks for COVID-19 symptoms were more relevant for higher school graduates than for respondents with university education and for the youngest group of respondents than for older ones. Perceptions and precautions of higher educated individuals were higher and more correct. A larger proportion of persons of older age (46–72 years) was more sure that COVID-19 was a disease which more severely manifests in men compared with women and less believed in a statement that COVID-19 disease was a political game controlled by developed countries in relation to other age groups. The youngest respondents ignored the fact that this pandemic was a wrath of God against corrupted communities at a larger extent than the older participants of the study.

Conclusion. There are significant differences in the perception of healthy adults from Turkey towards the new coronavirus disease, their anxiety caused from this and precautions that are applied for prevention of the infection in relation to their gender, age and education level. The findings of this study suggest that educational precautions should be taken for individuals with lower education and precautions for mental health promotion should be taken regarding women. Policymakers and healthcare professionals should announce the confirmed scientific information on COVID-19 pandemic to the public to prevent information pollution.

Introduction

In December 2019, a few cases of pneumonia of an unknown origin were reported from Wuhan city of Hubei State in China. A new coronavirus was the pathogen causing pneumonia and the World Health Organization (WHO) named it as coronavirus disease 2019 (COVID-19) (1). At first, the disease spread over the mainland of China and then the whole world rapidly. The WHO declared a public health emergency of international concern (PHEIC) on 30 January 2020 and the pandemic on 11 March 2020 (2, 3). The worldwide exact number

of cases being infected is blurry and it is cascading; however, as of the date of 16 August 2020, the number of infected individuals exceeded 21 294 845 and the number of deaths was 761 779 (4).

Even though the real transmission mode is still arguable, COVID-19 is thought to be a life-threatening infectious disease transmitted to human beings from vectors like bats (5). Centers for Disease Control and Prevention (CDC) (2020) announced the common symptoms of the disease as fever, coughing, dyspnoea; however, fatigue, muscle pain, sore throat, runny nose, loss of taste and smell, diarrhoea and tummy pain can also be rarely observed (6, 7). Symptoms are manifested commonly 5–6 days after the exposure to the agent; however, the incubation period can range from 2 days to 14

Correspondence to Nursemin Unal, Ankara Medipol University, Faculty of Health Sciences, School of Nursing, Talatpasa Boulevard, No 2, 06050, Altindag/Ankara, Turkey
E-mail: nurse_unal@hotmail.com

days (6, 7). The majority of the cases were pulled through with mild symptoms; however, respiratory failure, acute respiratory distress and death can be observed in severe cases (8). Disease exacerbates, particularly, in male, elderly, smoking patients who have medical comorbidities (9). The virus is transmitted by close contact and droplets released while coughing, sneezing or talking. Besides, it is reported that the transmission can take place by touching the mouth, nose or eye after touching a virus-infected surface or object (10).

Frequently washing hands with soap, using alcohol-based disinfectants in case washing is not possible, physical distancing (approximately 6 feet), covering the mouth with a tissue while coughing and sneezing and then disposing it immediately or using the inside of the elbow, avoiding the contact to the face, daily cleaning and disinfecting frequently used surfaces is recommended for disease prevention (5, 7, 11). However, it is also announced that wearing only a facial mask is not enough and other disease prevention precautions should be taken at the same time. Daily practice for wearing facial masks differs from country to country, putting the facial mask on and off, disposing it properly and maintaining hand hygiene after disposing are also critical (5).

While there is no specific immunization or antiviral treatment, management of COVID-19 is comprised of symptomatic treatment, supportive care and isolation (7). Highly infectious and drastically devastating COVID-19 raises anxiety in public as it has no specific vaccination or treatment. While scientific researches on COVID-19 are going on, the public gets informed about the disease from different sources including but not limited to radio, television, newspapers and social media and many fake, wrong legends and news spread like the virus itself (12). Thus, the knowledge, perception and precautions of individuals on COVID-19 differ in every individual. Wrong information, especially on disinfectants and personal protective equipment, leads to increased and inappropriate consumption of materials used in disease prevention and endangers health professionals who really need these materials (5).

Precautions should be taken for avoiding the dissemination of the disease in fight against the pandemic. For this purpose, authorities have declared various limitations affecting the daily life of individuals, unsettling the community and economy in Turkey. Individuals have found themselves in the situation that they have to cope with not only the risk of disease, but also many nested problems such as social isolation, economic problems and unemployment. In a comprehensive approach, knowledge, perception and prevention precautions of a community on the disease are important primarily

in individual protection and then the active contribution to the fight against the pandemic (13). This study aims to identify the perceptions, anxiety and precautions of adults on COVID-19.

Background

COVID-19 pandemic, which is a global threat to public health, corrupts the daily activities of billions of people in an unprecedented way. In pandemic times, all desperate efforts of individuals craving for information on the current status of the disease are not accepted as extraordinary in every nation. Especially when the community is not sufficiently and clearly informed by the official sources, people start to dig for information and they are often exposed to misinformation. Information pollution may lead to different perceptions among people and misinformation may elevate their anxiety (14). It is known that the knowledge level of individuals on the contagious disease has a crucial impact on developing protection behaviours. During this depressing period, given the importance of activities that limit the dissemination of contagious diseases, it is vital to wage a struggle for exploring the knowledge and practices of the community and evaluating their perceptions (15).

In a study from Nigeria, the knowledge of individuals from different cities on the source of the disease, mode of transmission, symptoms, their source of information and their protective behaviours was interrogated, and it is suggested that Nigerians were well-informed about COVID-19 (15). It is also reported in a study from Hong Kong that the perception of a risk of individuals was high and they took required precautions for individual protection (16). In China, where COVID-19 pandemic has originated, it is showed that one-third of the participants were experiencing mild or severe anxiety and the individuals who accessed current information on the disease and took prevention precautions such as facial masks and hand hygiene experienced less anxiety (17). In the United States and Great Britain, it is indicated that the community generally had good knowledge of the main mode of disease transmission and common symptoms of COVID-19; however, a significant portion of the community (from 25% to 54%) was still misinformed about avoiding the transmission of the infection (18).

This study provides the results on the perceptions, anxiety and precautions of Turkish adults on new coronavirus disease 2019 (COVID-19).

Methods

Settings and Participants. The data of this cross-sectional study were collected online due to the physical distancing and lockdown restrictions. An online data collection form was disseminated by

personal contacts of the researchers on instant messaging applications, social media accounts and internet platforms. In the next phase, the snowball sampling method was used, and the data collection form reached a nation-wide population living in different cities. The data collection form was filled by a convenience sample of 1104 Turkish citizens using smartphones and able to access internet from 75 different cities of Turkey on 23rd through 30th April 2020. Participants younger than 18 years old ($n = 5$) and those who submitted the form more than once ($n = 7$) were excluded from the sample and their forms were not included in the analysis. Data analysis was performed on totally 1092 participants in the study.

Data Collection. The online data collection form was developed by the researchers and it took almost 10 minutes to fill the form.

Measures. The first part of the data collection form included items on sociodemographic variables of the participants: 15 questions in total, but only the characteristics of gender, age, education status, smoking and having a close someone diagnosed with COVID-19 are reported in this article. The second part included perception, anxiety and precaution items. Sociodemographic variables were categorized in a standard way and items on perception, anxiety and precaution had three options: *Yes*, *No* and *Undecided*. The second part of the data collection form that consisted of 40 items was developed by the researchers in the light of the published articles (12, 18–21) and from the information highlighted about COVID-19 in visual and written media.

Perception questions determine the participants' understanding of COVID-19 as a highly infectious disease, their opinion about the absence of the specific treatment for COVID-19 and the fatality of the disease that is related with the power of the immune system. Anxiety questions were about feelings and reactions towards COVID-19: fear to be ill, abuse to media news on COVID-19, symptom checking, etc. Precaution questions were asked to learn participants' preventive habits at home, work and in social areas, i.e., hand washing and disinfecting, avoiding of dissemination, social physical distancing, etc.

The expressions used in the data collection form do not belong to a scale, and no total score was obtained. Since the statements are aimed to be specific to the COVID-19 pandemic, statements that are not included in the literature but are included in the social and print media were added.

Ethical Aspects. Ethical approval was obtained from the Scientific Research Ethical Board in the Faculty of Health Sciences (22 April 2020, No. 011) and permission was obtained from the Turkish Ministry of Health. In Turkey, permission from the Turkish Ministry of Health is required in order to

conduct scientific research related to COVID-19. The aim of the study and filling procedures of the form were given on the top of the form that was delivered online. There was an option at the beginning of the data collection form that the participants had to fill to agree that they understood and volunteered to participate. Besides, the authors of the study obtained permission from the authors for the research questions they used when creating the content of the questionnaire via e-mail.

Statistical Analysis. The data were analyzed by SPSS (Statistical Package for Social Sciences) for Windows 22.0 programme package. Descriptive statistics were presented in number, percentage, mean, standard deviation, minimum and maximum values. The chi-square test was used to compare the gender, education status and age groups. The Bonferroni correction was used to limit the possibility of getting a statistically significant result when testing multiple hypotheses. $P < 0.05$ was accepted as statistically significant.

Results

The study was completed with 1092 adult participants from Turkey. The mean age of the participants was 36.51 ± 11.12 years and 51.7% of them were men. More than half of the participants (77.6%) had a university and higher degree education. There were 31.3% smokers among the participants, and 9.5% of them had a close someone diagnosed with COVID-19 (Table 1).

Table 1. Characteristics of Participants ($n = 1092$)

	Mean \pm SD	Min–Max
Age (Years)	36.51 \pm 11.12	18.00–72.00
	n	%
Gender		
Female	527	48.3
Male	565	51.7
Education		
Elementary school	61	5.6
High school	184	16.8
University and higher	847	77.6
Smoking		
Yes	342	31.3
No	632	57.9
Ex-smoker	118	10.8
Has a close someone been diagnosed with COVID-19 infection		
Yes	104	9.5
No	988	90.5

Among the responses of the participants to the items on their perception on COVID-19 pandemic, the highest rate of *Yes* answers (97.7%) was observed for items *COVID-19 is a highly infectious disease* and *The effects of COVID-19 are more severe in patients with chronic diseases*. More than half of the participants (57.4%) knew that there is no specific treatment for COVID-19. The item *This disease is a political game controlled by devel-*

oped countries was responded with *Yes* by 22.4% of the participants and with *Undecided* by 36.0% of the participants. The item *COVID-19 is reproduced as a biologic weapon* was responded with *Yes* by 28.5% of the participants and with *Undecided* by 41.1% of the participants. The item *This pandemic is a wrath of God against corrupted communities* was responded with *Yes* by 23.8% of the participants (Table 2).

Table 2. Descriptive Statistics of the Participants' Perception, Anxiety and Precautions of the New Coronavirus Pandemic and COVID-19 (n = 1092)

		Yes	No	Undecided
		n (%)	n (%)	n (%)
Perception Questions				
Q1.	COVID-19 is a highly infectious disease.	1067 (97.7)	10 (0.9)	15 (1.4)
Q2.	There is no specific treatment for COVID-19.	627 (57.4)	244 (22.3)	221 (20.2)
Q3.	The fatality of COVID-19 is related with the power of the immune system.	1009 (92.4)	32 (2.9)	51 (4.7)
Q4.	The effects of COVID-19 are more severe in patients with chronic diseases.	1067 (97.7)	9 (0.8)	16 (1.5)
Q5.	COVID-19 is a disease which more severely manifests in men compared with women.	646 (59.2)	136 (12.5)	310 (28.4)
Q6.	The effects of COVID-19 are more severe in smokers.	998 (91.4)	28 (2.0)	66 (6.0)
Q7.	The effects of COVID-19 are more severe in alcohol consumers.	634 (58.1)	118 (10.8)	340 (31.1)
Q8.	Individuals only who contact with people coming from abroad catch this virus.	88 (8.1)	927 (84.9)	77 (7.1)
Q9.	The likelihood of getting COVID-19 of low-income individuals is higher.	177 (16.2)	816 (74.7)	99 (9.1)
Q10.	COVID-19 is not as dangerous as it is told.	72 (6.6)	924 (84.6)	96 (8.8)
Q11.	Media is exaggerating the COVID-19 pandemic.	95 (8.7)	893 (81.8)	104 (9.5)
Q12.	Healthcare professionals are exaggerating the COVID-19 pandemic.	21 (1.9)	1016 (93.0)	55 (5.0)
Q13.	COVID-19 is a political game controlled by developed countries.	245 (22.4)	454 (41.6)	393 (36.0)
Q14.	The reason of this pandemic is the efforts of developed countries to sell medication.	218 (20.0)	459 (42.0)	415 (38.0)
Q15.	COVID-19 is reproduced as a biologic weapon.	311 (28.5)	332 (30.4)	449 (41.1)
Q16.	This kind of pandemics is the nature's efforts to restore the balance.	271 (24.8)	404 (37.0)	417 (38.2)
Q17.	This pandemic is a wrath of God against corrupted communities.	260 (23.8)	523 (47.9)	309 (28.3)
Anxiety Questions				
Q18.	I am terrified of catching COVID-19.	669 (61.3)	343 (31.4)	80 (7.3)
Q19.	I am terrified of my loved ones to be diagnosed with COVID-19.	986 (90.3)	90 (8.2)	16 (1.5)
Q20.	I follow the news on COVID-19 all day long.	522 (47.8)	539 (49.4)	31 (2.8)
Q21.	Every day I check myself a couple of times for COVID-19 symptoms.	432 (39.6)	629 (57.6)	31 (2.8)
Q22.	I am terrified of dying because of COVID-19.	561 (51.4)	464 (42.5)	67 (6.1)
Q23.	I cannot keep my mind free of thinking about COVID-19.	299 (27.4)	742 (67.9)	51 (4.7)
Q24.	I am hopeful about avoiding the dissemination of COVID-19.	954 (87.4)	69 (6.3)	69 (6.3)
Q25.	My thoughts on COVID-19 do not distract me from my daily activities.	811 (74.3)	239 (21.9)	42 (3.8)
Q26.	I talk all day and every day about COVID-19 to anybody around me whether I am at home or out.	259 (23.7)	794 (72.7)	39 (3.6)
Q27.	I believe that everything will be alright again.	985 (90.2)	43 (3.9)	64 (5.9)

Table 2 continued

Precaution Questions				
Q28.	I think that the precautions taken to avoid dissemination of COVID-19 pandemic are necessary.	916 (83.9)	143 (13.1)	33 (3.0)
Q29.	I should frequently wash my hands with soap at least for 20 seconds.	1044 (95.6)	39 (3.6)	9 (0.8)
Q30.	I clean my hands with hand disinfectants for protection from COVID-19.	875 (80.1)	204 (18.7)	13 (1.2)
Q31.	I think that I should limit contact with people as much as possible to avoid the transmission of the virus.	1065 (97.5)	21 (1.9)	6 (0.5)
Q32.	Physical distancing would decrease the transmission risk of the virus when I leave home.	1064 (97.4)	20 (1.8)	8 (0.7)
Q33.	I think that it is possible to get free of COVID-19 by personal prevention precautions.	972 (89.0)	82 (7.5)	38 (3.5)
Q34.	Indoor common use areas should frequently be cleaned with bleach or disinfectants.	1013 (92.8)	41 (3.8)	38 (3.5)
Q35.	I think that letting fresh air into indoor facilities frequently would decrease the dissemination of COVID-19.	1017 (93.1)	48 (4.4)	27 (2.5)
Q36.	I should eat well to promote my immune system.	1066 (97.6)	18 (1.6)	8 (0.7)
Q37.	We can avoid transmission of droplets from the respiratory system by wearing a face mask where we are not alone.	1028 (94.1)	34 (3.1)	30 (2.7)
Q38.	Clothes must be kept in the fresh air at least 3 hours after coming home.	956 (87.5)	78 (7.1)	58 (5.3)
Q39.	During COVID-19 pandemic, I must wash my hands and face with soap when I come home.	1066 (97.6)	23 (2.1)	3 (0.3)
Q40.	During COVID-19 pandemic, when I think that I have symptoms of the disease, I must wear a mask and go to the closest medical facility.	1057 (96.8)	26 (2.4)	9 (0.8)

Among the responses of the participants to the items on their anxiety, 90.3% of the participants agreed with the item *I am terrified of my loved ones to be diagnosed with COVID-19* and 90.2% of them agreed with the item *I believe that everything will be alright again*. Nearly half of the participants (47.8%) were following the news on COVID-19 all day long and 27.4% of them responded that they were not able to keep their mind free of thinking about COVID-19 (Table 2).

In relation to the items on the protective precautions, it was observed that the participants were mainly well-informed about countermeasures; 95.6% of the participants knew that they should frequently wash their hands with soap at least for 20 seconds, 97.5% of them knew that they should limit their contact with people as much as possible to avoid the transmission of the virus, 97.4% of them knew that physical distancing would decrease the transmission risk of the virus when they leave home and 97.6% of them knew that they should eat well to promote their immune system (Table 2).

Women and men had significantly different opinions about some of the aspects of the new coronavirus. The larger proportion of women believed that the effect of the new disease was more severe in smokers ($P = 0.005$) and alcohol consumers

($P < 0.001$) and that this pandemic was a wrath of God against corrupted communities ($P < 0.001$). Although men at a larger part were sure that media was exaggerating the COVID-19 pandemic ($P = 0.014$), they were less supportive of the myths that COVID-19 disease was a political game controlled by developed countries ($P = 0.003$), that this pandemic was the efforts of developed countries to sell medication ($P = 0.005$) or efforts of nature to restore the balance ($P < 0.001$) (Table 3).

In comparison with the responses to items for perceptions, there were statistically significant differences among education groups for items *There is no specific treatment for COVID-19*, *COVID-19 is a disease which more severely manifests in men compared with women* and *The effects of COVID-19 are more severe in smokers* ($P < 0.001$, $P = 0.001$ and $P < 0.001$, respectively). University and higher degree graduates provided significantly more negative answers to the items *Individuals only who contact with people coming from abroad catch this virus* compared with elementary and high school degree participants ($P < 0.001$). Similarly, university and higher educated participants were significantly less undecided about the statement *This disease is not as dangerous as it is told* ($P = 0.027$) when compared with the respondents of high school education. More high

school graduates were in favour of the statements *This disease is a political game controlled by developed countries* and *The reason of this pandemic is the efforts of developed countries to sell medication* compared with university and higher degree ($P = 0.001$ and $P < 0.001$, respectively). Elementary school degree participants believed that *This pandemic is a wrath of God against corrupted communities* significantly more often than high school and university or higher degree graduates ($P < 0.001$) (Table 3).

There were statistically significant differences among age groups of the respondents and their responses to the perception items such as: *The effects of COVID-19 are more severe in patients with chronic diseases*, *COVID-19 is a disease which more severely manifests in men compared with women*, *The effects of COVID-19 are more severe in smokers*, *Media is exaggerating the COVID-19 pandemic*, *This disease is a political game controlled by developed countries* and *This pandemic is a wrath of God against corrupted communities*. A larger proportion of older age persons (46–72 years) were more sure that COVID-19 was a disease which more severely manifests in men compared with women ($P < 0.001$) and ignored the statement that COVID-19 disease was a political game controlled by developed countries much more often than other age groups ($P = 0.041$). The youngest respondents perceived this pandemic as a wrath of God against corrupted communities at a larger extent than the older ones (Table 3).

By assessing anxiety, the significant difference was found between men and women in relation to the fear of catching COVID-19 or die because of it ($P < 0.001$) where women were more terrified of that. Female respondents also provided the answers that they thought about COVID-19 ($P < 0.001$) and talked all day and every day about that ($P = 0.005$) significantly more than male respondents (Table 4).

High school graduates responded with *Yes* to item *Every day I check myself a couple of times for COVID-19 symptoms* more often than university or higher degree participants ($P < 0.001$) and that was a single difference in anxiety of the respondents in relation to their education level.

Likewise, participants aged 18–30 years old responded more often with *Yes* to item *Every day I check myself a couple of times for COVID-19 symptoms* in comparison with two other age groups of the participants ($P < 0.001$). The oldest participants (46–72 years) agreed more often that they were *terrified of catching COVID-19* compared with the youngest respondents ($P = 0.003$) (Table 4).

Analysis of the responses about preventive precautions revealed the significant differences in relation to gender, education and age groups of the study participants. A larger part of men compared with women responded that they were cleaning

hands with a disinfectant solution for prevention of COVID-19 ($P = 0.010$). However, female respondents were more familiar with the preventive means at housekeeping, i.e., cleaning of outdoor common use areas and keeping clothes at fresh air at least for 3 hours after coming home ($P = 0.031$ and $P < 0.001$, respectively) (Table 5).

The respondents with university or higher education were more serious about physical distancing that would decrease the transmission risk of the virus being not at home than elementary school graduates ($P = 0.037$).

The oldest participants aged 46–72 years were more supportive of the items *I think that the precautions taken to avoid dissemination of COVID-19 pandemic are necessary* ($P < 0.001$) and *Indoor common use areas should frequently be cleaned with bleach or disinfectants* ($P = 0.008$) than other two groups. The participants aged 31–45 years old were more undecided about the items *We can avoid transmission of droplets from the respiratory system by wearing a face mask where we are not alone* and provided fewer *No* answers to the item *During COVID-19 pandemic, I must wash my hands and face with soap when I come home* than the youngest respondents ($P = 0.029$ and $P = 0.031$, respectively) (Table 5).

Discussion

Assessing the perceptions and behaviours of communities is as crucial as defining the aetiology, symptoms, clinical manifestation and treatment options of the disease for management of the pandemic, planning and implementation of precautions and avoiding the dissemination of an infectious disease that has no specific treatment or vaccination yet (12, 16).

In this study, the participants were closely following the agenda on COVID-19, their perceptions were alerted, their anxiety level was quite high and they were well-informed about the required precautions. Community-based studies from different countries including China, Hong-Kong and India reveal similar results (12, 16, 22). However, only a few years ago, in 2015, it was reported that even the healthcare workers were insufficiently informed, and they had wrong beliefs during the Ebola virus pandemic (23). Similarly, after the H1N1 pandemic in 2016, a study from Trinidad and Tobago reported that a significant portion of the community was not aware of the severity of the pandemic and they were oblivious of the precautions (24). The declaration of COVID-19 as a global pandemic, its widespread effects on medical, social and economic life, not only limited in Asia, Europe or America but also globally, and increased access to the internet and social media for uncensored news are suggested to promote the awareness of the participants from Turkey like their counterparts all over the world.

Table 3. Comparison of Participants' Perception of the New Coronavirus Pandemic and COVID-19 in Relation to Gender, Education and Age

Perception Items	Gender		Test (χ^2) P	Education Status			Test (χ^2) P	Age Groups			Test (χ^2) P
	Female n (%)	Male n (%)		Elementary n (%)	High school n (%)	University- and higher n (%)		18-30 years old	31-45 years old	46-72 years old	
1. COVID-19 is a highly infectious disease.	Yes	512 (97.2)	555 (98.2)	59 (96.7)	183 (97.9)	825 (97.7)	375 (96.4)	460 (98.3)	232 (98.7)	5.894 0.207	
	No	7 (1.3)	3 (0.5)	0 (0)	0 (0)	10 (1.2)	6 (1.5)	2 (0.4)	2 (0.9)		
	UD	8 (1.5)	7 (1.2)	2 (3.3)	4 (2.1)	9 (1.1)	8 (2.1)	6 (1.3)	1 (0.4)		
2. There is no specific treatment for COVID-19.	Yes	294 (55.8)	333 (58.9)	30 (49.2) ^a	82 (43.9) ^a	515 (61) ^a	212 (54.5)	276 (59.0)	139 (59.1)	6.850 0.144	
	No	120 (22.8)	124 (21.9)	11(18.0) ^a	41 (21.9) ^a	192 (22.7) ^a	88 (22.6)	96 (20.5)	60 (25.5)		
	UD	113 (21.4)	108 (19.1)	20 (32.8) ^a	64 (34.2) ^b	137(16.2) ^b	89 (22.9)	96 (20.5)	36 (15.3)		
3. The fatality of COVID-19 is related with the power of the immune system.	Yes	490 (93.0)	519 (91.9)	55 (90.2)	171 (91.4)	783 (92.8)	354 (91.0)	433 (92.5)	222 (94.5)	3.926 0.416	
	No	14 (2.7)	18 (3.2)	4 (6.6)	6 (3.2)	22 (2.6)	16 (4.1)	12 (2.6)	4 (1.7)		
	UD	23 (4.4)	28 (5)	2 (3.3)	10 (5.3)	39(4.6)	19 (4.9)	23 (4.9)	9 (3.8)		
4. The effects of COVID-19 are more severe in patients with chronic diseases.	Yes	516 (97.9)	551 (97.5)	58 (95.1)	182 (97.3)	827 (98)	374 (96.1) ^a	462 (98.7) ^b	231 (98.3) ^{a,b}	13.541 0.003	
	No	6 (1.1)	3 (0.5)	1 (1.6)	1 (0.5)	7 (0.8)	4 (1.0) ^a	1 (0.2) ^a	4 (1.7) ^a		
	UD	5 (1.0)	11 (2.0)	2 (3.3)	4 (2.1)	10 (1.2)	11 (2.8) ^b	5 (1.1) ^{a,b}	0 (0) ^b		
5. COVID-19 is a disease which more severely manifests in men compared with women.	Yes	314 (59.6)	332 (58.8)	26 (42.6) ^a	93 (49.7) ^a	527 (62.4) ^b	183 (47.0) ^a	293 (62.6) ^b	170 (72.3) ^c	46.180 <0.001	
	No	65 (12.3)	71(12.6)	14 (23.0) ^a	28 (15.0) ^b	94 (11.1) ^b	66 (17.0) ^a	45 (9.6) ^b	25 (10.6) ^{ab}		
	UD	148 (28.1)	162 (28.7)	21 (34.4) ^{a,b}	66 (35.3) ^b	223 (26.4) ^a	140 (36.0) ^a	130 (27.8) ^b	40 (17.0) ^c		
6. The effects of COVID-19 are more severe in smokers.	Yes	496 (94.1) ^a	502 (88.8) ^b	46 (75.4) ^a	159 (85) ^a	793 (94.0) ^b	336 (86.4) ^a	441 (94.2) ^b	221 (94.0) ^b	26.996 <0.001	
	No	7 (1.3) ^a	21 (3.7) ^b	5 (8.2) ^a	8 (4.3) ^{ab}	15 (1.8) ^b	20 (5.1) ^a	2 (0.4) ^b	6 (2.6) ^a		
	UD	24 (4.6) ^a	42 (7.4) ^a	10 (16.4) ^a	20 (10.7) ^a	36 (4.3) ^b	33 (8.5) ^a	25 (5.3) ^{a,b}	8 (3.4) ^b		
7. The effects of COVID-19 are more severe in alcohol consumers.	Yes	335 (63.6) ^a	299 (52.9) ^b	36 (59.0)	99 (52.9)	499 (59.1)	217 (55.8)	277 (59.2)	140 (59.6)	1.921 0.750	
	No	37 (7.0) ^a	81 (14.3) ^b	6 (9.8)	19 (10.2)	193 (11.0)	45 (11.6)	46 (9.8)	27 (11.5)		
	UD	155 (29.4) ^a	185 (32.7) ^a	19 (31.1)	69 (36.9)	252 (29.9)	127 (32.6)	145 (31.0)	68 (28.9)		
8. Individuals only who contact with people coming from abroad catch this virus.	Yes	33 (6.3)	55 (9.7)	10 (16.4) ^a	26 (13.9) ^a	52 (6.2) ^b	28 (7.2)	40 (8.5)	20 (8.5)	3.087 0.543	
	No	457 (86.7)	470 (83.2)	45 (73.8) ^a	139 (74.3) ^a	743 (88.0) ^b	327 (84.1)	400 (85.5)	200 (85.1)		
	UD	37 (7.0)	40 (7.1)	6 (9.8) ^{a,b}	22 (11.8) ^b	49(5.8) ^a	34 (8.7)	28 (6.0)	15 (6.4)		

Table 3 continued

9. The likelihood of getting COVID-19 of low-income individuals is higher.	Yes	71 (13.5)	106 (18.8)	5.620	1	4 (23.0)	31 (16.6)	132 (16.0)	5.555	69 (17.7)	66 (14.1)	42 (17.9)	6.192
	No	407 (77.2)	409 (72.4)	0.060	38 (62.3)	140 (74.0)	638 (75.1)	284 (73.0)	0.235	284 (73.0)	366 (78.2)	166 (70.6)	0.185
	UD	49 (9.3)	50 (8.8)		9 (14.8)	16 (8.6)	74 (8.9)	36 (9.3)		36 (9.3)	36 (7.7)	27 (11.5)	
10. COVID-19 is not as dangerous as it is told.	Yes	35 (6.6) ^a	37 (6.5) ^a	6.301	8 (13.1) ^a	10 (5.3) ^a	54 (6.4) ^a	10.920	0.027	31 (8.0)	29 (6.2)	12 (5.1)	2.992
	No	434 (82.4) ^a	490 (86.7) ^a	0.043	47 (77.0) ^a	152 (81.3) ^a	725 (85.9) ^a	321 (82.5)		321 (82.5)	398 (8.5)	205 (87.2)	0.559
	UD	58 (11.0) ^a	38 (6.7) ^b		6 (9.8) ^{ab}	25 (13.4) ^b	65 (7.7) ^a	37 (9.5)		37 (9.5)	41 (8.8)	18 (7.7)	
11. Media is exaggerating the COVID-19 pandemic.	Yes	36 (6.8) ^a	59 (10.4) ^b	8.591	7 (11.5)	19 (10.2)	69 (8.2)	6.178	0.186	40 (10.3) ^a	45 (9.6) ^a	10 (4.3) ^b	9.642
	No	430 (81.6) ^a	463 (81.9) ^a	0.014	46 (75.4)	144 (77.0)	703 (83.3)	306 (78.7) ^a		306 (78.7) ^a	384 (82.1) ^{ab}	203 (86.4) ^b	0.047
	UD	61 (11.6) ^a	43 (7.6) ^b		8 (13.1)	24 (12.8)	72 (8.5)	43 (11.1) ^a		43 (11.1) ^a	39 (8.3) ^a	22 (9.4) ^{ab}	
12. Healthcare professionals are exaggerating the COVID-19 pandemic.	Yes	9 (1.7)	12 (2.1)	0.280	3 (4.9)	3 (1.6)	15 (1.8)	5.085	0.279	9 (2.30)	9 (1.9)	3 (1.3)	3.269
	No	492 (93.4)	524 (92.7)	0.870	53 (86.9)	173 (92.5)	7 (0.8)	360 (92.5)		360 (92.5)	440 (94.0)	216 (91.9)	0.514
	UD	26 (4.9)	29 (5.1)		5 (8.2)	11 (5.9)	39 (4.6)	20 (5.1)		20 (5.1)	19 (4.1)	16 (6.8)	
13. COVID-19 disease is a political game controlled by developed countries.	Yes	117 (22.2) ^a	128 (22.7) ^a	11.691	18 (29.5) ^{ab}	56 (29.9) ^b	171 (20.3) ^a	22.189	< 0.001	98 (25.2) ^a	103 (22.0) ^a	44 (18.7) ^a	9.946
	No	195 (37.0) ^a	259 (45.8) ^b	0.003	21 (34.4) ^{ab}	52 (27.8) ^b	381 (45.1) ^a	153 (39.3) ^a		153 (39.3) ^a	184 (39.3) ^a	117 (49.8) ^b	0.041
	UD	215 (40.8) ^a	178 (31.5) ^b		22 (36.1) ^a	79 (42.2) ^a	292 (34.6) ^a	138 (35.5) ^a		138 (35.5) ^a	181 (38.7) ^a	74 (31.5) ^a	
14. The reason of this pandemic is the efforts of developed countries to sell medication.	Yes	104 (19.7) ^a	114 (20.2) ^a	10.748	14 (23.0) ^{ab}	55 (29.4) ^b	149 (17.7) ^a	18.056	0.001	76 (19.5)	98 (20.9)	44 (18.7)	2.544
	No	198 (37.6) ^a	261 (46.2) ^b	0.005	22 (36.1) ^{ab}	59 (31.6) ^b	378 (44.8) ^a	171 (44.0)		171 (44.0)	184 (39.3)	104 (44.3)	0.637
	UD	225 (42.7) ^a	190 (33.6) ^b		25 (41.0) ^a	73 (39.0) ^a	317 (37.6) ^a	142 (36.5)		142 (36.5)	104 (44.3)	87 (37.0)	
15. COVID-19 is reproduced as a biologic weapon.	Yes	157 (29.8)	154 (27.3)	3.425	18 (29.5)	67 (35.8)	226 (26.8)	8.135	0.081	115 (29.6)	140 (29.9)	56 (23.8)	8.387
	No	134 (25.4)	198 (35.0)	0.064	17 (27.9)	44 (23.5)	271 (32.1)	119 (30.6)		119 (30.6)	126 (26.9)	87 (37.0)	0.078
	UD	236 (44.8)	213 (37.7)		26 (42.6)	76 (40.6)	347 (41.1)	155 (39.8)		155 (39.8)	202 (43.2)	92 (39.1)	
16. This kind of pandemics is the nature's efforts to restore the balance.	Yes	144 (27.3) ^a	127 (22.5) ^a	24.007	9 (14.8)	49 (26.2)	213 (25.2)	5.576	0.233	98 (25.2)	113 (24.1)	60 (25.5)	6.456
	No	156 (29.6) ^a	248 (43.9) ^b	< 0.001	28 (45.9)	61 (32.6)	315 (37.3)	155 (39.8)		155 (39.8)	157 (33.5)	92 (39.1)	0.168
	UD	227 (43.1) ^a	190 (33.6) ^b		24 (39.3)	77 (41.2)	316 (37.4)	136 (35.0)		136 (35.0)	198 (42.3)	83 (35.3)	
17. This pandemic is a wrath of God against corrupted communities.	Yes	144 (27.3) ^a	116 (20.5) ^b	19.573	32 (52.5) ^a	63 (33.7) ^b	165 (19.5) ^c	59.376	< 0.001	119 (30.6) ^a	97 (20.7) ^b	44 (18.7) ^b	21.832
	No	216 (41.0) ^a	307 (54.3) ^b	< 0.001	14 (23.0) ^a	61 (32.6) ^a	448 (53.1) ^b	155 (39.8) ^a		155 (39.8) ^a	237 (50.6) ^b	131 (55.7) ^b	< 0.001
	UD	167 (31.7) ^a	142 (25.1) ^b		15 (24.6) ^a	63 (33.7) ^a	231 (27.4) ^a	115 (29.6) ^a		115 (29.6) ^a	134 (28.6) ^a	60 (25.5) ^a	

χ^2 – chi-square; UD – undecided. The z test and Bonferroni correction were used for comparison of groups. In this table, if the letters (a, b and c) in the cells are the same, it means that there is no statistically significant difference between the cells. If the letters (a, b and c) are different in the cells, it represents a statistically significant difference between the cells.

Table 4. Comparison of Participants' Anxiety in Relation to the New Coronavirus Pandemic and COVID-19 and Their Gender, Education and Age

Anxiety Items	Gender		Test (χ^2) P	Education Status			Test (χ^2) P	Age Groups			Test (χ^2) P
	Female n (%)	Male n (%)		Elementary n (%)	High school n (%)	University and higher n (%)		18-30 years old	31-45 years old	46-72 years old	
18. I am terrified of catching COVID-19.	Yes	365 (69.3) ^a	304 (53.8) ^b	35 (57.4)	111 (59.4)	523 (62.0)	1.933	219 (56.3) ^a	291(62.2) ^{ab}	159 (67.7) ^b	15.801 0.003
	No	129 (24.5) ^a	214 (37.9) ^b	23 (37.7)	61 (32.6)	259 (30.7)	0.748	136 (35.0) ^a	153 (32.7) ^a	54 (23.0) ^a	
	UD	33 (6.3) ^a	47 (8.3) ^a	3 (4.9)	15 (8.0) ^a	62 (7.3)		34 (8.7) ^a	24 (5.1) ^a	22 (9.4) ^a	
19. I am terrified of my loved ones to be diagnosed with COVID-19 disease.	Yes	486(92.2)	500 (88.5)	58 (95.1)	168 (89.8)	760 (90.0)	6.554	354 (91.0)	427 (91.2)	205 (87.2)	8.946 0.075
	No	37 (7.0)	53 (9.4)	3 (4.9)	19 (10.2)	68 (8.1)	0.161	31 (8.0)	37 (7.9)	22 (9.4)	
	UD	4 (0.8)	12 (2.1)	0 (0)	0 (0)	16 (1.9)		4 (1.0)	4 (0.9)	8 (3.4)	
20. I follow the news on COVID-19 all day long.	Yes	251 (47.6)	271 (48.0)	35 (57.4)	91 (48.7)	396 (46.9)	2.187	199 (51.2)	218 (46.6)	105 (44.7)	4.170 0.383
	No	257 (48.8)	282 (49.9)	25 (41.0)	91 (48.7)	423 (50.1)	0.611	177 (45.5)	239 (51.1)	123 (52.3)	
	UD	19 (3.6)	12 (2.1)	1 (1.6)	5 (2.7)	25 (3.0)		13 (3.3)	11 (2.4)	7 (3.09)	
21. Every day I check myself a couple of times for COVID-19 symptoms.	Yes	189 (35.9)	243 (43.0)	30 (49.2) ^{ab}	105 (56.1) ^b	297 (35.2) ^a	33.582 < 0.001	188 (48.3) ^a	171 (36.5) ^b	73 (31.1) ^b	21.947 < 0.001
	No	322 (61.1)	307 (54.3)	28 (45.9) ^a	76 (40.6) ^a	525 (62.2) ^b		190 (48.8) ^a	285 (60.9) ^b	154 (65.5) ^b	
	UD	16 (3.0)	15 (2.7)	3 (4.9) ^c	6 (3.2) ^c	20 (2.9) ^c		11 (2.8) ^a	12 (2.6) ^a	8 (3.4) ^a	
22. I am terrified of dying because of COVID-19.	Yes	317 (60.2) ^a	244 (43.2) ^b	30 (49.2)	99 (52.9)	432 (51.2)	0.698	190 (48.8)	245 (52.4)	126 (53.6)	3.432 0.488
	No	179 (34.0) ^a	285 (50.4) ^b	26 (42.6)	77 (41.2)	361 (42.8)	0.952	169 (43.4)	198 (42.3)	97 (41.3)	
	UD	31 (5.9) ^a	36 (6.4) ^a	5 (8.2)	11 (5.9)	51 (6.0)		30 (7.7)	25 (5.3)	12 (5.1)	
23. I cannot keep my mind free of thinking about COVID-19.	Yes	185 (35.1) ^a	114 (20.2) ^b	20 (32.8)	45 (24.1)	234 (27.7)	3.964	104 (26.7)	126 (26.9)	69 (29.4)	0.611 0.962
	No	308 (58.4) ^a	434 (76.8) ^b	37 (60.7)	136 (72.7)	569 (67.4)	0.411	267 (68.6)	320 (68.4)	155 (66.0)	
	UD	34 (6.5) ^a	17 (3.0) ^b	4 (6.6)	6 (3.2)	41 (4.9)		18 (4.6)	22 (4.7)	11 (4.7)	
24. I am hopeful about avoiding the dissemination of COVID-19.	Yes	456 (86.5)	498 (88.1)	53 (86.9)	169 (90.4)	732 (86.7)	4.608	338 (86.9)	408 (87.2)	208 (88.5)	0.861 0.930
	No	29 (5.5)	40 (7.1)	6 (9.8)	7 (3.7)	56 (6.6)	0.330	27 (6.9)	28 (6.0)	14 (6.0)	
	UD	42 (8.0)	27 (4.8)	2 (3.3)	11 (5.9)	56 (6.6) ^a		24 (6.2)	32 (6.8)	13 (5.5)	
25. My thoughts on COVID-19 do not distract me from my daily activities.	Yes	403 (76.5)	408 (72.2)	47 (77.0)	137 (73.3)	627 (74.3)	0.802	288 (74.0)	344 (73.5)	179 (76.0)	7.391 0.117
	No	108 (20.5)	131 (23.2)	11 (18.0)	43 (23.0)	185 (21.9)	0.938	80 (20.6)	113 (24.1)	46 (19.6)	
	UD	16 (3.0)	26 (4.6)	3 (4.9)	7 (3.7)	32 (3.8)		21 (5.4)	11 (2.4)	10 (4.3)	
26. I talk all day and every day about COVID-19 to anybody around me whether I am at home or out.	Yes	139 (26.4) ^a	120 (21.2) ^b	18 (29.5)	51 (27.3)	190 (22.5)	9.708	107 (27.5)	103 (22.0)	49 (20.9)	5.837 0.212
	No	392 (68.7) ^a	432 (76.5) ^b	37 (60.7)	132 (70.6)	625 (74.1)	0.056	266 (68.4)	350 (74.8)	178 (75.7)	
	UD	26 (4.9) ^a	13 (2.3) ^b	6 (9.8)	4 (2.1)	29 (3.4)		16 (4.1)	15 (3.2)	8 (3.4)	
27. I believe that everything will be alright again.	Yes	466 (88.4) ^a	519 (91.9) ^a	55 (90.2)	168 (89.8)	762 (90.3)	6.809 0.003	348 (89.5)	424 (90.6)	213 (90.6)	2.544 0.637
	No	20 (3.8) ^a	23 (4.1) ^a	2 (3.3)	6 (3.2)	35 (4.1)	0.970	19 (4.9)	14 (3.0)	10 (4.3)	
	UD	41 (7.8) ^a	23 (4.1) ^b	4 (6.6)	13 (7.0)	47 (5.6)	0.914	22 (5.7)	30 (6.4)	12 (5.1)	

χ^2 - chi-square; UD - undecided. The z test and Bonferroni correction were used for comparison of 3 groups. In this table, if the letters (a, b, c, d and e) in the cells are the same, it means that there is no statistically significant difference between the cells. If the letters (a, b, c, d and e) are different in the cells, it represents a statistically significant difference between the cells.

Table 5. Comparison of Participants' Preventive Actions in Relation to the New Coronavirus Pandemic and COVID-19 and Their Gender, Education and Age

Precaution Items	Gender		Test (χ^2) P	Education Status			Test (χ^2) P	Age Groups			Test (χ^2) P
	Female n (%)	Male n (%)		Elementary n (%)	High school n (%)	University and higher n (%)		18-30 years old	31-45 years old	46-72 years old	
28. I think that the precautions taken to avoid dissemination of COVID-19 are necessary.	Yes	431 (81.8)	485 (85.8)	52 (85.2)	149 (79.7)	715 (84.7)	3.334	302 (77.6) ^a	395 (84.4) ^b	219 (93.0) ^c	26.720 < 0.001
	No	79 (15.0)	64 (11.3)	7 (11.5)	32 (17.1)	104 (12.3)	0.504	71 (18.3) ^a	58 (12.4) ^a	14 (6.0) ^a	
	UD	17 (3.2)	16 (2.8)	2 (3.3)	6 (3.2)	25 (3.0)		16 (4.1) ^a	15 (3.2) ^a	2 (0.9) ^a	
29. I should frequently wash my hands with soap at least for 20 seconds.	Yes	508 (96.4)	536 (94.9)	58 (95.1)	181 (96.8)	805 (95.4)	1.639	368 (94.6)	451 (96.4)	225 (95.7)	4.874 0.300
	No	16 (3.0)	23 (4.1)	3 (4.9)	5 (2.7)	31 (3.7)	0.802	17 (4.4)	12 (2.6)	10 (4.3)	
	UD	3 (0.6)	6 (1.1)	0 (0)	1 (0.5)	8 (0.9)		4 (1.0)	5 (1.1)	0 (0)	
30. I clean my hands with hand disinfectants for protection of COVID-19.	Yes	405 (76.9) ^a	470 (83.2) ^b	50 (82.0)	162 (86.6)	663 (78.6)	6.775	320 (82.3)	375 (80.1)	180 (76.6)	3.799 0.434
	No	112 (21.3) ^a	92 (16.3) ^b	10 (16.4)	23 (12.3)	171 (20.3)	0.148	64 (16.5)	87 (18.6)	53 (22.6)	
	UD	10 (1.9) ^a	3 (0.5) ^b	1 (1.6)	2 (1.1)	10 (1.2)		5 (1.3)	6 (1.3)	2 (0.9)	
31. I think that I should limit contact with people as much as possible to avoid the transmission of the virus.	Yes	518 (98.3)	547 (96.8)	58 (95.1)	183 (97.9)	824 (97.6)	4.941	379 (97.4)	462 (98.7)	224 (95.3)	8.135 0.870
	No	8 (1.5)	13 (2.3)	3 (4.9)	2 (1.1)	16 (1.9)	0.329	7 (1.8)	5 (1.1)	9 (3.8)	
	UD	1 (0.2)	5 (0.9)	0 (0)	2 (1.1)	4 (0.5)		3 (0.8)	1 (0.2)	2 (0.9)	
32. Physical distancing would decrease the transmission risk of the virus when I leave home.	Yes	516 (97.9)	548 (97.0)	57 (93.4) ^a	181 (96.8) ^a	826 (97.9) ^a	10.227	377 (96.9)	459 (98.1)	228 (97.0)	6.423 0.170
	No	8 (1.5)	12 (2.1)	4 (6.6) ^a	5 (2.7) ^{ab}	11 (1.3) ^b	0.037	6 (1.5)	8 (1.7)	6 (2.6)	
	UD	3 (0.6)	5 (0.9)	0 (0) ^a	1 (0.5) ^a	7 (0.8) ^a		6 (1.5)	1 (0.2)	1 (0.4)	
33. I think that it is possible to get free of COVID-19 by personal prevention precautions.	Yes	467 (88.6)	505 (89.4)	56 (91.8)	169 (90.4)	747 (88.5)	1.319	352 (90.5)	410 (87.6)	210 (89.4)	3.633 0.458
	No	38 (7.2)	44 (7.8)	4 (6.6)	12 (6.4)	66 (7.8)	0.858	23 (5.9)	43 (9.2)	16 (6.8)	
	UD	22 (4.2)	16 (2.8)	1 (1.6)	6 (3.2)	31 (3.7)		14 (3.6)	15 (3.2)	9 (3.8)	
34. Indoor common use areas should frequently be cleaned with bleach or disinfectants.	Yes	500 (94.9) ^a	513 (90.8) ^b	58 (95.1)	180 (96.3)	775 (91.8)	5.258	367 (94.3) ^a	441 (94.2) ^a	205 (87.2) ^b	13.725 0.008
	No	15 (2.8) ^a	26 (4.6) ^a	2 (3.3)	4 (2.1)	35 (4.1)	0.262	11 (2.8) ^a	14 (3.0) ^a	16 (6.8) ^b	
	UD	12 (2.3) ^a	26 (4.6) ^b	1 (1.6)	3 (1.6)	34 (4.0)		11 (2.8) ^a	13 (2.8) ^a	14 (6.0) ^a	
35. I think that letting fresh air into indoor facilities frequently would decrease the dissemination of COVID-19.	Yes	499 (94.7)	518 (91.7)	56 (91.8)	173 (92.5)	788 (93.4)	5.009	357 (91.8)	438 (93.6)	222 (94.5)	2.498 0.645
	No	20 (3.8)	28 (5.0)	5 (8.2)	7 (3.7)	36 (4.3)	0.286	19 (4.9)	20 (4.3)	9 (3.8)	
	UD	8 (1.5)	19 (3.4)	0 (0)	7 (3.7)	20 (2.4)		13 (3.3)	10 (2.1)	4 (1.7)	
36. I should eat well to promote my immune system.	Yes	519 (98.5)	547 (96.8)	59 (96.7)	184 (98.4)	823 (97.5)	3.414	378 (97.2)	459 (98.1)	229 (97.4)	4.476 0.345
	No	5 (0.9)	13 (2.3)	2 (3.3)	3 (1.6)	13 (1.5)	0.491	7 (1.8)	5 (1.1)	6 (2.6)	
	UD	3 (0.6)	5 (0.9)	0 (0)	0 (0)	8 (0.9)		4 (1.0)	4 (0.9)	0 (0)	
37. We can avoid transmission of droplets from respiratory system by wearing a face mask where we are not alone.	Yes	496 (94.1)	532 (94.2)	54 (88.5)	181 (96.8)	793 (94.0)	7.874	361 (92.8) ^a	450 (96.2) ^a	217 (92.3) ^a	10.761 0.029
	No	13 (2.5)	21 (3.7)	5 (8.2)	3 (1.6)	26 (3.1)	0.491	11 (2.8) ^a	11 (2.4) ^a	12 (5.1) ^a	
	UD	18 (3.4)	12 (2.1)	2 (3.3)	3 (1.6)	25 (3.0)		17 (4.4) ^a	7 (1.5) ^b	6 (2.6) ^{ab}	

Table 5 continued

38. Clothes must be kept in the fresh air at least 3 hours after coming home.	Yes	483 (91.7) ^a	473 (83.7) ^b	15.749 < 0.001	54 (88.5) 5 (8.2) 2 (3.3)	165 (88.2) 11 (5.9) 11 (5.9)	737 (87.3) 62 (7.3) 45 (5.3)	1.171 0.883	334 (85.9) 34 (8.7) 21 (5.4)	417 (89.1) 25 (5.3) 26 (5.6)	205 (87.2) 19 (8.1) 11 (4.7)	4.299 0.367	
	No	25 (4.7) ^a	53 (9.4) ^b										
39. During COVID-19 pandemic, I must wash my hands and face with soap when I come home	Yes	517 (98.1)	549 (97.2)	1.060 0.589	58 (95.1) 3 (4.9) 0 (0)	181 (96.8) 6 (3.2) 0 (0)	827 (98.0) 14 (1.7) 3 (0.4)	5.117 0.275	376 (96.7) ^a 13 (3.3) ^a 0 (0) ^a	461 (98.5) ^a 4 (0.9) ^b 3 (0.6) ^a	229 (97.4) ^a 6 (2.6) ^{a,b} 0 (0) ^a	10.598 0.031	
	No	9 (1.7)	14 (2.5)										
40. During COVID-19 pandemic, when I think that I have symptoms of the disease, I must wear a mask and go to the closest medical facility.	Yes	508 (96.4)	549 (97.2)	3.204 0.202	57 (93.4) 4 (6.6) 0 (0)	179 (95.7) 5 (2.7) 3 (1.6)	821 (97.3) 17 (2.0) 6 (3.2)	7.141 0.129	373 (95.9) 11 (2.8) 5 (1.3)	455 (97.2) 10 (2.1) 3 (0.6)	229 (97.4) 5 (2.1) 1 (0.4)	2.206 0.698	
	No	12 (2.3)	14 (2.5)										
	UD	7 (1.3)	2 (0.4)										
	UD												

χ^2 - chi-square; UD - undecided. The z test and Bonferroni correction were used for the comparison of 3 groups. In this table, if the letters (a, b and c) in the cells are the same, it means that there is no statistically significant difference between the cells. If the letters (a, b and c) are different in the cells, it represents a statistically significant difference between the cells.

Female participants thought that alcohol consumption and smoking were riskier in the course of COVID-19. According to the Tobacco Atlas and Global Alcohol Consumption Report of the WHO, the rate of alcohol and tobacco consumption among men is more than two times of the rate among women (25). This fact may explain the lower risk perception among male participants on the harm of these habits. In other items on perceptions, male participants less likely saw the COVID-19 pandemic as a danger and they more likely thought that media was exaggerating this pandemic. Also, male participants were not supporters of the sceptical and out of the box items such as *The reason of this pandemic is the efforts of developed countries to sell medication*, *This kind of pandemics is the nature's efforts to restore the balance* and *This pandemic is a wrath of God against corrupted communities*. Similarly, the difference between gender groups has been reported in other studies. Kwok et al. (2020) have found that more rapid adaptation of women to precautions and the difference in their perceptions compared with men are associated with their increased anxiety (16). A study on a health risk perception reported that adult women had an increased perception of the risk related to a disease, they used medical services more than men and they even had unrealistic interest and perceptions on health-related issues (26).

There were differences in responses to items on perceptions on the COVID-19 pandemic among education status groups. Our findings point that as the years of education increase, affirming responses increase for items *There is no specific treatment for COVID-19*, *COVID-19 is a disease which more severely manifests in men compared with women* and *The effects of COVID-19 are more severe in smokers*. Besides, university and higher educated participants had more negative responses to item *This disease is not as dangerous as it is told*. This fact suggests that higher education has a positive impact on access to correct information and a proper perception of risks related to the pandemic. Similarly, Roy et al. (2020) reports from India that knowledge and awareness of higher educated individuals and healthcare professionals on the pandemic were higher (12). In our study, primary school graduates also had more affirming responses to item *This pandemic is a wrath of God against corrupted communities*. This may be because the group with a low level of education believes more easily in speculative news about the pandemic in the visual and printed media. Li et al. (2020) report that easy access to information on the pandemic is associated with higher education and the awareness of the pandemic is promoted in higher educated individuals (13). Also, Khayriyyah and Chang Da (2020) report that perception and

knowledge on the COVID-19 pandemic are directly associated with education (27).

The participants aged 18–30 years old had more affirming responses to perception items *The effects of COVID-19 are more severe in patients with chronic diseases, COVID-19 is a disease which more severely manifests in men compared with women, The effects of COVID-19 are more severe in smokers, Media is exaggerating the COVID-19 pandemic* and *This pandemic is a wrath of God against corrupted communities* compared with the participants of other age groups. In our study, like in some similar studies (16, 18, 27), individuals using smartphones were accessed. According to a report from Turkey, almost all young adults aged over 18 years old own a smartphone and 18–30-year-old individuals are the most active social media users compared with other age groups (28). Therefore, perceptions of individuals aged 18–30 years old are already expected to be alerted in a population where digital communication channels on the internet and social media are utilized very actively and where individuals have easy access to any kind of information. However, as a matter of fact, in addition to the confirmed and trusted information, speculative, unrealistic or fake news can be disseminated in social media in a couple of seconds without any reliability filter (12, 29, 30). Individuals aged 18–30 years old may not consider the COVID-19 pandemic seriously and think that media is exaggerating the pandemic because they are not at the risk group in which COVID-19 infection is manifested more severely. Also, increased exposure to political and unrealistic news bombardment, which social media users are exposed to, may be the reason underlying this finding (31).

In our study, women were found to be more anxious about the pandemic compared with men. Female participants were terrified of catching and dying due to COVID-19 infection, and they were not able to keep their mind free of thinking of the pandemic and were talking about it all the time. In general, women are reported to be more anxious in daily life compared with men as a characteristic of gender (32, 33). It is suggested that the vulnerability and fragility of women leave them defenceless to environmental threats and lead to increased anxiety in depressing situations (26).

Assessing the anxiety related to the pandemic, we found that the participants with a low level of education, more than those with a high level of education, check their body for signs of COVID-19 several times a day. The fact that the higher the level of education and the higher level of knowledge may have led to increased self-confidence and a perception that the pandemic is more controllable in higher educated people. In a previous study, it was seen that healthcare professionals generally had

better awareness, positive attitudes towards epidemics/pandemics, and generally experienced low levels of anxiety (34). Similarly, Kong et al. (2020) have reported in their study with positive cases in hospitals that patients with a low level of education were more concerned and anxious about themselves (35). Contrary to findings of our study, there are studies reporting that the level of education increases the level of anxiety (13, 31, 36).

Due to the fact that COVID-19 is particularly affecting elderly people, individuals at older ages were expected to have higher anxiety (37). However, the participants aged 18–30 years old, in comparison with the oldest participants, were found to be more terrified of catching COVID-19 and control their body for COVID-19 signs more than other age groups. In Turkey, for individuals younger than 20 years old and older than 65 years old a lockdown restriction was declared at the early stages of the pandemic and individuals aged 21–64 years old were permitted to leave home during the pandemic. The participants aged 18–30 years old were mainly permitted to continue their daily life activities outside their homes and this may explain their increased anxiety. Also, their anxiety may be explained by exposure to involution via social media networks (31). Similarly, Lee (2020) reports on developing a COVID-19 anxiety scale that younger patients are more anxious than older patients without an explanation and need further investigation (36).

Most participants were found to know the required precautions. Men were more active using a disinfectant solution for hand hygiene but women demonstrated better knowledge of housekeeping preventive measures such as cleaning open use areas and taking care of clothes after coming home. In Turkey, women are almost always in the position of a housewife and their good housekeeping knowledge during the pandemic is important. Further investigation is necessary to clarify the reason why women use hand disinfection to protect themselves from COVID-19 less than men.

In our study, the single difference among the education level groups in their responses to the preventive measures was related to social distancing in order to decrease the transmission risk of the virus outside home. University and higher degree educated participants had more affirming responses to this item than elementary school respondents. It is suggested that as the level of education increases, the level of knowledge increases and, in line with increased knowledge, precautions are taken more seriously (12, 27).

In the analysis of responses to items on precautions among age groups, it was found that the participants aged 18–30 years old had less affirming responses to the necessity of the precautions taken, the

participants aged 46–72 years old had less affirming responses to bleach or disinfectant use for cleaning indoor common places and the participants aged 31–45 years old were at least undecided about facial mask use. These findings pointed out that 31–45-year-old participants were more aware of the required precautions. This may be due to fact that 31–45-year-old individuals take an active role in work life not only in Turkey but also worldwide (38, 39), their education level is high (13, 27), and generally they have to go out to supply the needs of the family.

The findings of our study have implications for policymakers and responders working in the field who should be interested in the perceptions, anxiety and precautions of citizens struggling with this extraordinary situation in Turkey. Accessing such a wide sample from 75 cities of 81 cities and the fact that such a study has not been done before makes this study valuable.

Limitations

The study is limited to the people who had smartphones and were able to access the Internet. This represents the educated population of the country. The perceptions, anxiety and precautions in uneducated people may be different from the findings of our study.

Conclusion

In general, Turkish healthy adults from our study had clear perceptions on COVID-19, they

experienced noteworthy high anxiety and they were well-informed about the required precautions to be taken. There were significant differences in the study respondents' perception towards the new coronavirus disease, their anxiety caused from this and precautions applied for prevention of the infection in relation to their gender, age and education level. In controlling the dissemination of the pandemic, additional educational precautions should be taken for individuals with lower education and precautions for mental health promotion should be taken regarding women. Since COVID-19 is not severely manifested in young individuals (despite the great risk for the dissemination of the pandemic they bear), they do not consider the precautions very much necessary. However, elderly individuals who are the main risk group for the COVID-19 disease are not well-informed about the required precautions.

Policymakers and healthcare professionals should announce the confirmed scientific information on the COVID-19 pandemic to the public to prevent information pollution. In addition to age, gender and education status, further analysis should be done on other socio-demographic characteristics of individuals to develop more effective policies for the fight against COVID-19 pandemic.

Statement of Conflict of Interest

The authors state no conflict of interest.

References

1. Wu F, Zhao S, Yu B, Chen Y, Wang W, Song Z, et al. A new coronavirus associated with human respiratory disease in China. *Nature* 2020;579(7798):265–9. <https://doi.org/10.1038/s41586-020-2008-3>
2. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [Internet]. 2020 [cited 26 August 2020]. Available from: [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov))
3. WHO announces COVID-19 outbreak a pandemic [Internet]. 2020 [cited 26 August 2020]. Available from: [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus)
4. Coronavirus Disease 2019 (COVID-19) Situation Report 209 [Internet]. 2020 [cited 26 August 2020]. Available from: https://www.who.int/docs/default-source/coronavirus/situation-reports/20200816-covid-19-sitrep-209.pdf?sfvrsn=5dde1ca2_2
5. Advice on the use of masks in the context of COVID-19: interim guidance, 6 April 2020 [Internet]. Apps.who.int. 2020 [cited 26 August 2020]. Available from: <https://apps.who.int/iris/handle/10665/331693>
6. Symptoms of coronavirus [Internet]. 2020 [cited 26 August 2020]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>
7. COVID-19 strategy update – 14 April 2020 [Internet]. Who.int. 2020 [cited 26 August 2020]. Available from: <https://www.who.int/publications-detail/covid-19-strategy-update---14-april-2020>
8. Holshue M, DeBolt C, Lindquist S, Lofy K, Wiesman J, Bruce H, et al. First Case of 2019 Novel Coronavirus in the United States. *N Engl J Med* 2020;382(10):929–36. <https://doi.org/10.1056/NEJMoa2001191>
9. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet* 2020;395(10223):507–13. [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7)
10. How COVID-19 spread. [Internet]. 2020 [cited 26 August 2020]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>
11. Protect yourself. Coronavirus Disease 2019 (COVID-19) – Prevention & Treatment [Internet]. Centers for Disease Control and Prevention. 2020 [cited 26 August 2020]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>
12. Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian J Psychiatr* 2020;102083. <https://doi.org/10.1016/j.ajp.2020.102083>
13. Li J, Yang A, Dou K, Wang L, Zhang M, Lin X. Chinese public's knowledge, perceived severity, and perceived controllability of the COVID-19 and their associations with emotional and behavioural reactions, social participation, and precautionary behaviour: a national survey. *BMC*

- Public Health 2020;20(1):1589. <https://doi.org/10.21203/rs.3.rs-16572/v1>
14. Torales J, O'Higgins M, Castaldelli-Maia J, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatr* 2020;66(4):317-20. <https://doi.org/10.1177/0020764020915212>
 15. Olapegba P, Ayandele O, Kolawole S, Oguntayo R, Gandi J, Dangiwa A, et al. A Preliminary Assessment of Novel Coronavirus (COVID-19) knowledge and perceptions in Nigeria. 2020. <https://doi.org/10.1101/2020.04.11.20061408>
 16. Kwok KO, Li KK, Chan HH, Yi YY, Tang A, Wei WI. Community responses during the early phase of the COVID-19 epidemic in Hong Kong: risk perception, information exposure and preventive measures. 2020. <https://doi.org/10.1101/2020.02.26.20028217>
 17. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020;323(11):1061-9. <https://doi.org/10.1001/jama.2020.1585>
 18. Geldsetzer P. Use of rapid online surveys to assess people's perceptions during infectious disease outbreaks: a cross-sectional survey on COVID-19. *J Med Int Res* 2020;22(4):e18790. <https://doi.org/10.2196/18790>
 19. Farhana KM, Mannan KA. Knowledge and perception towards Novel Coronavirus (COVID 19) in Bangladesh. *Int Res J Business Soc Sci* 2020;6(2):76-9. <https://doi.org/10.2139/ssrn.3578477>
 20. Aydemir N, Yakin I, Arslan HS. Developing AIDS knowledge and AIDS attitude scales and assessing their reliability and validity. *Studies in Psychology* 2018;38(1):73-93. <https://doi.org/10.26650/SP409425>
 21. Cırakoglu OC. The investigation of Swine Influenza (H1N1) pandemic related perceptions in terms of anxiety and avoidance variables. *Turkish Journal of Psychology* 2011; 26(67):49-64.
 22. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci* 2020;16(10):1745-52. <https://doi.org/10.7150/ijbs.45221>
 23. Abebe TB, Bhagavathula AS, Tefera YG, Ahmad A, Khan MU, Belachew SA, et al. Healthcare professionals' awareness, knowledge, attitudes, perceptions and beliefs about Ebola at Gondar University Hospital, Northwest Ethiopia: a cross-sectional study. *J Public Health Afr* 2016;7(2):570. <https://doi.org/10.4081/jphia.2016>
 24. Johnson EJ, Hariharan, S. Public health awareness: knowledge, attitude and behaviour of the general public on health risks during the H1N1 influenza pandemic. *J Public Health* 2017;25(3):333-7. <https://doi.org/10.1007/s10389-017-0790-7>
 25. The Tobacco Atlas. 7th ed. 2018 [Internet]. 2020 [cited 26 August 2020]. Available from: <https://tobaccoatlas.org/country/turkey/>
 26. Kim Y, Park I, Kang S. Age and gender differences in health risk perception. *Cent Eur J Public Health* 2018;26(1):54-9. <https://doi.org/10.21101/cejph.a4920>
 27. Khayriyyah MH, Chang Da W. Public knowledge, perception and communication behavior surrounding COVID-19 in Malaysia. *Advance: Social Sciences & Humanities, Sage Submissions*; 2020. <https://doi.org/10.31124/advance.12102816.v1>
 28. Digital in 2020 Global Digital Overview [Internet]. 2020 [cited 26 August 2020]. Available from: <https://wearesocial.com/digital-2020>
 29. Wagner MC, Boczkowski PJ. The reception of fake news: the interpretations and practices that shape the consumption of perceived misinformation. *Digital Journalism*. 2019;7(7):870-85. <https://doi.org/10.1080/21670811.2019.1653208>
 30. Vosoughi S, Roy D, Aral S. The spread of true and false news online. *Science* 2018;359(6380):1146-51. <https://doi.org/10.1126/science.aap9559>
 31. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen Psychiatr* 2020;33(2):e100213. <https://doi.org/10.1136/gpsych-2020-100213>
 32. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 2020;17(5):1729. <https://doi.org/10.3390/ijerph17051729>
 33. Huang L, Lei W, Xu F, Liu H, Yu L. Emotional responses and coping strategies of nurses and nursing college students during COVID-19 outbreak: a comparative study. *PLoS One* 2020;15(8):e0237303. <https://doi.org/10.1101/2020.03.05.20031898>
 34. Mishra P, Bhadauria US, Dasar PL, Kumar S, Lalani A, Sarkar P, et al. Knowledge, attitude and anxiety towards pandemic flu a potential bio weapon among health professionals in Indore City. *Przegl Epidemiol* 2016;70(1):41-5.
 35. Kong X, Zheng K, Tang M, Kong F, Zhou J, Diao L, et al. Prevalence and factors associated with depression and anxiety of hospitalized patients with COVID-19. 2020. <https://doi.org/10.1101/2020.03.24.20043075>
 36. Lee SA. Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Stud* 2020; 44(7):393-401. <https://doi.org/10.1080/07481187.2020.1748481>
 37. Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China [in Chinese]. *Zhonghua Liu Xing Bing Xue Za Zhi* 2020;41(2):145-51. <https://doi.org/10.3760/cma.j.isn.0254-6450.2020.02.003>
 38. The Tenth Development Plan 2014-2018 [Internet]. 2020 [cited 26 August 2020]. Available from: http://www.sbb.gov.tr/wpcontent/uploads/2018/10/10_IstihdamveCalisma-Hayati.pdf
 39. Population Projections, 2018-2020 [Internet]. 2020 [cited 26 August 2020]. Available from: <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=30567>

Received June 2020

Accepted August 2020