Geriatric Nursing 43 (2022) 45–50

Contents lists available at ScienceDirect

Geriatric Nursing

journal homepage: www.gnjournal.com

Special issue on Infectious Disease:
From Prevention to Management

Fear of coronavirus and health literacy levels of older adults during the COVID-19 pandemic

Sultan Ayaz-Alkaya, PhD[a,*], Hanifi Dülger, MScN[b]

[a] Gazi University, Faculty of Health Sciences, Department of Nursing, Ankara, Turkey
[b] Bartın University, Vocational College of Health Services, Bartın, Turkey

ARTICLE INFO

Article history:
Received 8 September 2021
Received in revised form 29 October 2021
Accepted 3 November 2021
Available online 11 November 2021

Keywords:
COVID-19
Fear
Health literacy
Pandemic
Older adult

ABSTRACT

This study aimed to examine the fear of coronavirus and the health literacy levels of older adults during the pandemic. The sample consisted of 304 older adults from five family health centers in Turkey between April and May 2021. The data were collected using the Fear of COVID-19 Scale and the Health Literacy Scale. The fear of COVID-19 was found to be higher in women, those with chronic diseases, and those who found the epidemic measures insufficient ($p < 0.05$). The health literacy level was found to be higher in those with high education level, those in the 65-74 age group, and those with not using regular medicine ($p < 0.001$). The health literacy of older adults was a slightly above moderate level and the fear of COVID-19 was at a moderate level. Health literacy levels of older adults may be increased with written, visual, and verbal health trainings.

Introduction

The novel coronavirus, which is the main agent of the COVID-19, causes severe acute respiratory syndrome, and has taken the whole world under its influence in a short time.[1,2] Although the risk of transmission of the disease is similar in all age groups, the severity and lethal effect of the symptoms vary according to age and immune system.[3] Due to the weakening of both the anatomical and physiological natural defense systems and the immune system against pathogenic microorganisms with increasing age, COVID-19 cases have been seen more frequently in older adults.[4-6] The decrease in T-cell number and functions due to shrinkage of the thymus gland with age and the decrease in B lymphocytes responsible for the humoral response may increase the severity of COVID-19.[5]

The world is aging. Globally, the rate of the population aged 65 years or over is expected to increase from 9.3% in 2020 to around 16% in 2050.[7] In Turkey, the proportion of older adults within the whole population is increasing, too. Turkish Statistical Institute reported that the rate of the population aged 65 and over was 9.5% in 2020. The population of older adults is predicted to increase to 11% in 2023 and 16.3% in 2040.[8] Older adults are a more vulnerable group and have a higher risk of death from the COVID-19. According to the data of Ministry of Health, older adults constitute 11% of the reported patients and 72% of deaths.[9]

After the first case was seen in Turkey on March 11, 2020, various measures were taken across the country for all people, but especially for older adults. A partial curfew was introduced for older adults and those with chronic diseases.[10] Moreover, other measures including quarantine, isolation, wearing mask, social distance, and hand hygiene were implemented. Health information about the pandemic was also provided to them during this process. Programs, radio spots, posters, videos, and public service announcements related to the prevention of COVID-19 were prepared by the Ministry of Health and performed through mass media such as TV, radio, and social media. Guidelines regarding COVID-19 measures were published by the Ministry of Health.[11] Additionally, posters and brochures were prepared by non-governmental organizations and shared on online platforms.

The rapid transmission of this previously unknown pandemic has caused panic, anxiety, and worry. Each passing day has brought an increased number of COVID-19 patients and deaths, while the unknown prognosis and duration of this pandemic has caused much fear.[12] Older adults whose close friends and family members were diagnosed with COVID-19 were more fearful.[13] Disinformation created by false news spread through social media. The internet has been one of the most damaging issues to the fight against the COVID-19 pandemic, causing increased fear among people.[14,15] This increase in misleading medical advice or misinformation on the transmission, treatment, and control of the COVID-19 has become a difficult issue

*Corresponding Author at: Emek Bişkek Cad., 6. Cad, No:2, 06490 Çankaya, Ankara, Turkey.
E-mail addresses: sultan@gazi.edu.tr, ayaz_sultan@hotmail.com (S. Ayaz-Alkaya), hdulger@bartin.edu.tr (H. Dülger).

https://doi.org/10.1016/j.gerinurse.2021.11.001
0197-4572/$ – see front matter © 2021 Elsevier Inc. All rights reserved.

for authorities all over the world. The World Health Organization reported that misinformation and extreme fear are two of the biggest challenges faced during the pandemic process and advised governments to share accurate information quickly and transparently to reduce fear.[16-18] In this time of the COVID-19 pandemic, in which information is changing rapidly and continuously, uncertainties are increasing, and a rapid behavior change by the world population is required.[19] Therefore, health literacy has become an extremely important issue.

The concept of health literacy is defined as the social and cognitive skills that determine the motivation and ability of an individual to access and understand health-related information and to use this information in a way that improves health.[20,21] Health literacy is a focal issue for health systems to be prepared for situations that require rapid response in the fight against disease.[19,22] In the studies conducted before the pandemic, the health literacy level of older people differed. Some studies reported that the majority of older people had inadequate or limited health literacy levels.[23-25] For example, a study conducted in Ontario, Canada found that over 82% of older adults did not have sufficient health literacy.[24] Another study performed with 1396 older adults in China found that health literacy level of older adults was low.[25] According to the Turkey Health Literacy Level and Related Factors Survey, the health literacy level of 24.9% of older adults was problematically limited, and that 65.5% of them had inadequate health literacy.[26] However, some studies found that the health literacy level of older people was at a moderate level.[27-29] For this reason, it was wondered whether there was a change in the health literacy level of older adults during the pandemic process.

There are previous studies conducted before the pandemic regarding health literacy level of older adults,[23-25] and several studies related to fear of COVID-19 during the pandemic.[9,13,29,30] However, a gap exists in the literature regarding whether there is a relationship between fear of COVID-19 and health literacy levels in older adults during the pandemic. It is thought that determining the fear of COVID-19, health literacy levels, and the associated factors in older adults could lead to an increase in the awareness of older adults about the prevention and control of the disease, and guide healthcare professionals in their education of older adults.

The present study was conducted to evaluate the fear of COVID-19 and health literacy levels of older adults during the COVID-19 pandemic. Research questions were:

1. What is the level of older adults' fear of coronavirus during the COVID-19 pandemic?
2. What is the health literacy level of older adults during the COVID-19 pandemic?
3. Is there a relationship between older adults' fear of coronavirus and health literacy levels?
4. What are the factors associated with the fear of coronavirus and health literacy levels of older adults?

Methods

Study design and participants

This research was conducted as a cross-sectional study. The population of the study consisted of older adults who utilized five different family health centers in a city of Turkey between April and May 2021. Power analysis was performed based on the information in a previous study.[29] The estimated sample size based on G power software was calculated as 135 participants, using a small effect size of 0.3, a power level of 0.95, and a significance level of 0.05. A total of 378 older adults were invited to the study. Of these older adults, 42 refused to participate, 17 were not literate, 4 older adults had visual and hearing impairments, and 11 older adults completed the instruments incorrectly or incompletely. The study was completed with 304 older adults.

Inclusion criteria were: 1) Being 65 years old and over, 2) being literate, and 3) agreeing to participate in the study. Exclusion criteria were: 1) Having visual and hearing impairment, or 2) having a neuropsychiatric problem.

Instruments

The data were collected using the personal information form, the Fear of COVID-19 Scale, and the Health Literacy Scale. The personal information form consisted of 10 questions to determine the participants' sociodemographic characteristics such as age, gender, education level, marital status, income, presence of chronic disease, regular medicine use, smoking status, having COVID-19 vaccination, and sufficiency of epidemic measures such as curfews, wearing masks, social distance, prohibition related to wandering in open spaces or parks, and traveling by public transportation.

The Fear of COVID-19 Scale was developed by Ahorsu et al.[14] in 2020. The Turkish validity and reliability study was carried out by Ladikli et al.[31] and the Cronbach's alpha value was found to be 0.86. Test-retest reliability coefficient was 0.86. In the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) coefficient (KMO= 0.87) and the Bartlett Test of Sphericity indicated that the data set was suitable for factor analysis (χ^2 (21) = 3277,328; $p < 0.001$). The applicable age scale of the scale is wide and can be used on adults and older adults. The scale consists of one dimension and 7 items. The questions are scored from 1 to 5 (1-Strongly disagree. . .5-Strongly agree) by using a 5-point Likert-type scaling. The scale has no reverse scored item. A score between 7 and 35 is obtained from the scale. There is no cut-off score of the scale. A high score from the scale indicates that the level of fear of COVID-19 is 'high'. Cronbach's alpha value was found to be 0.89 in the present study.

The 47-item Health Literacy Survey in Europe (HLS-EU) was developed by Sorensen et al.[32] in 2013. The Turkish validity and reliability of the scale was tested by Aras and Bayık[29] in 2017 and the Cronbach's alpha value was found to be 0.92 and 0.62-0.79 for the subscales. Test-retest reliability coefficient was 0.74 ($p \leq 0.05$). Kaiser-Meyer-Olkin value of 0.89 and Barlett's test (X2= 2187.116, p= 0.001) result showed that the sample was adequate for exploratory and confirmatory factor analysis. The scale consists of 25 items and four sub-dimensions (Access to Information, Understand Information, Appraising/Evaluating, and Apply/Use). A minimum 25 and maximum 125 points are obtained from the scale. The items in the scale are answered as "5: I have no difficulty, 4: I have little difficulty, 3: I have some difficulty, 2: I have a lot of difficulties, and 1: I am not able to do it/I have no skill/It is impossible". There is no cut-off score of the scale. While low scores indicate insufficient, problematic, and poor health literacy; high scores indicate adequate and very good health literacy. In the current study, the Cronbach's alpha value was found to be 0.96.

Data Collection

The data were collected between April and May 2021. Instruments were prepared both in written form and as an online survey with Google Forms. Before administering the instruments, older adults who were admitted to the family health centers, but did not use a smartphone were informed about the study by one of the researchers. Their written consent was obtained, and they were asked to complete the instruments. Older adults who used smartphone were informed about the study face-to-face by the researcher, and the consent form and instruments were sent online. After the consent was obtained by adding a button "I agree/disagree with

participation in the study", they were asked to complete the instruments. The implementation of the data collection tools took an average of 15-20 minutes.

Ethical Dimension

Ethical approval from the Bartin University Social and Human Sciences Ethics Committee (Decision No: 2021-SBB-0099) and institutional permissions were obtained to conduct the study. Participation in the study was on a voluntary basis.

Data Analysis

The statistical analysis of the data was performed with the IBM SPSS Statistics for Windows version 25.0 (IBM Corp., Armonk, NY). The independent variables of the study were the sociodemographic characteristics of older adults. The dependent variables were the fear of COVID-19 and health literacy levels. Number, percentage, mean, and standard deviation were used as descriptive statistics. The conformity of the data to the normal distribution was evaluated with the Kolmogorov-Smirnov test. The relationship between health literacy and fear of COVID-19 was determined by the Pearson Correlation Coefficient. Univariate and multiple linear regression analysis was performed to examine the relationships of the fear COVID-19 and health literacy variables using independent variables. Independent variables that were significant in the univariate linear regression analysis ($p < 0.10$) were included in the multiple linear regression analysis. Backward selection method was used for selection of independent variables in multiple linear regression analysis. All the categorical variables were recoded into a new variable by using dummy coding. The level of significance (p) was considered as (p) 0.05.

Results

Of the older adults, 60.2% were male, 71.4% were in the age of 65-69 years, 75% were married, 49.7% were primary school graduates, 64.5% had an equal income and expense, 65.5% had a chronic disease, 73% used medicine regularly, 18.1% were smokers, 48.7% had the COVID-19 vaccine, and 73.4% did not find epidemic measures sufficient (Table 1).

The fear of COVID-19 mean score was 20.39 (SD = 6.61) (the highest and lowest scores attainable on this scale are 7-35), and the health literacy mean score was 92.71 (SD = 22.68) (the highest and lowest scores attainable on this scale are 25-125). When subgroups of health literacy scale were examined; the mean score of access/obtain information was 17.91 (SD = 6.03) (min:5-max: 25), understand information mean score was 24.26 (SD = 7.42) (min:7-max: 35), process/appraise information mean score was 30.49 (SD = 7.95) (min:8-max: 40), and apply/use information mean score was 20.04 (SD = 4.61) (min:5-max: 25) (Table 2). Mean scores obtained from the fear of COVID-19, the health literacy scale, and sub-groups were at a moderate level or slightly above a moderate level.

There was a negative weak relation between the fear of COVID-19 and health literacy (r = -0.117, p= *0.042*), access/obtain information (r = -0.146, p= *0.011*), and understand information (r = -0.140, p= *0.014*). However, there was no significant relation between the fear of COVID-19, process/appraise information (r = -0.105, $p > 0.05$), and apply/use information (r = 0.024, $p > 0.05$).

Univariate regression analysis was performed for each independent variable (age, gender, marital status, education level, income, having chronic disease, regular medicine use, having COVID-19 vaccine, sufficiency of epidemic measures, and health literacy) before running the multiple linear regression analyses for the fear of COVID-19 (Table 3). The variables that were statistically significant in univariate regression analysis (gender, having chronic disease, regular medicine use, having COVID-19 vaccine, and sufficiency of epidemic measures, health literacy) were included in multiple linear regression analysis (Table 3). Independent variables which were significant (having chronic disease, gender, and sufficiency of epidemic measures) in the multiple regression model explained approximately 8% of the variance for fear of COVID-19 (Adjusted R^2 = 0.08, F = 9.495, $p < 0.001$). The fear of COVID-19 was higher in women (β = 0.159), those who had a chronic illness (β = 0.163), and those found epidemic measures insufficient (β = 0.159).

Univariate regression analysis was performed for each independent variable (age, gender, marital status, education level, income, having chronic disease, regular medicine use, having COVID-19 vaccine, sufficiency of epidemic measures, and fear of COVID-19) before running the multiple linear regression analyses for health literacy (Table 4). The variables that were statistically significant in univariate regression analysis (age, education level, having chronic disease, regular medicine use, having COVID-19 vaccine, and fear of COVID-19)

Table 1
Descriptive characteristics of older adults (n = 304)

Characteristics	n	%
Gender		
Female	121	39.8
Male	183	60.2
Age groups		
65-69 years	217	71.4
70-74 years	36	11.8
75 years	23	7.6
80 years and over	28	9.2
Marital status		
Married	228	75.0
Single	76	25.0
Education level		
Literate	71	23.4
Primary school	151	49.7
Secondary school	33	10.9
High school	31	10.2
Undergraduate	18	5.9
Income		
Income is less than expense	91	29.9
Income is equal to expense	196	64.5
Income is more than expense	17	5.6
Having chronic disease		
Yes	199	65.5
No	105	34.5
Regular medicine use		
Yes	222	73.0
No	82	27.0
Smoking		
Yes	55	18.1
No	249	81.9
Having COVID-19 vaccine		
Yes	148	48.7
No	156	51.3
Sufficiency of epidemic measures		
Yes	81	26.6
No	223	73.4

Table 2
Mean scores related to the fear of COVID-19 and health literacy level of the older adults

Scales	Mean (SD)	Min	Max
The fear of COVID-19	20.39 (6.61)	7.00	35.00
Health literacy scale	92.71 (22.68)	25.00	125.00
Subgroups			
Access/obtain information	17.91 (6.03)	5.00	25.00
Understand information	24.26 (7.42)	7.00	35.00
Process/appraise information	30.49 (7.95)	8.00	40.00
Apply/use information	20.04 (4.61)	5.00	25.00

SD: Standart Deviation, Min: Minimum, Max: Maximum

Table 3
Predictors of the fear of COVID-19

Variables	Simple model			Multiple model		
	B (95% CI for B)	β	p	B (95% CI for B)	β	p
Age (Ref: 65-74 years)	0.61 (1.39-2.61)	0.035	0.549			
Gender (Ref: Male)	2.65 (1.15-4.14)	0.296	0.001	2.14 (0.65-3.62)	0.159	0.005
Marital status (Ref: Married)	0.42 (1.30-2.14)	0.028	0.631			
Education level (Ref: High school and over)	0.96 (1.07-2.99)	0.053	0.354			
Income (Ref: More than expense)	0.67 (2.58-3.92)	0.023	0.687			
Having chronic disease (Ref: No)	2.42 (0.87-3.97)	0.174	0.002	2.27 (0.74-3.78)	0.163	0.004
Regular medicine use (Ref: No)	2.53 (0.89-4.19)	0.170	0.003			
Smoking (Ref: Yes)	0.95 (0.99-2.89)	0.055	0.337			
Sufficiency of epidemic measures (Ref: Yes)	2.54 (0.86-4.21)	0.170	0.003	2.38 (0.74-4.01)	0.159	0.005
Having vaccine (Ref: No)	1.55 (0.6-3.03)	0.117	0.041			
Health literacy scale	-0.34 (-0.7-0.1)	-0.117	0.042			

Ref: Referans, B: Unstandardized coefficient, β: Standardized coefficient, CI: Confidence Interval

were included in multiple linear regression analysis (Table 4). Independent variables found statistically significant (education level, age, regular medicine use) in the model explained approximately 2% of the variance for health literacy (Adjusted R^2 = 0.16, F = 20.131, $p < 0.001$). Health literacy level was higher in those with higher education level (β = 0.243), in the age group of 65-74 (β = 0.182), and those who use medicine regularly (β = 0.151).

Discussion

The COVID-19 pandemic, which has affected the world, has caused fear, especially in older adults because it is not fully understood by society and affects older adults and those with chronic diseases more than younger people.[4,12,34] In the present study, the fear of COVID-19 of older adults was at a moderate level. There is no cut-off score of the fear of COVID-19 scale and the highest score that can be obtained from the scale is 40. This result indicates that older adults are fearful due to the COVID-19 pandemic. Similarly, several studies in the literature[9,13,30] found that the COVID-19 related fear of older adults was moderate. It was thought that the level of fear in older adults increased due to the continuation of the COVID-19 pandemic period, the increase in the number of cases in some periods, lack of knowledge about the prognosis and treatment of the disease, and the continuation of the restrictions for older adults. Unlike this study, Gokseven et al.[29] reported that the mean score of the fear of COVID-19 scale was lower (16.0). This difference may be due to the time period of the study. Although the study of Gokseven et al.[29] was carried out in the summer period when the number of cases decreased, the data of the current study were collected in April and May of 2021, when the number of cases were rapidly increasing. In this period when the present study conducted, according to Ministry of Health data, the number of daily cases in Turkey was approximately 40-60,000 in April and decreased to about 25-30,000 in May. During this period, the number of deaths also increased.[11] Therefore, curfews, travel bans, and quarantines for older adults were restarted across the country. In the same period, priority was given to older adults in vaccination and the rate of two-dose vaccination was 8-10% in April, which increased to 15% in May.[35]

The rapid development of COVID-19 into a pandemic has called for people to acquire and apply health information and adapt their behavior at a fast pace.[33] It is important to have adequate possibility to access, analyse, and apply health information during the COVID-19 pandemic to protect the health of the community.[36] Since older adults constitute a risk group for COVID-19, the health literacy level has become important during this pandemic. In the present study, health literacy of older adults can be evaluated as slightly above the moderate level. In other studies conducted before the pandemic, health literacy levels of older adults were determined to be moderate or good.[27,28,37] Unlike these studies, several studies found that most of the older adults had inadequate or limited health literacy level.[23-25] It is thought that the difference between results of studies may be due to the fact that some of them were conducted in different cultures or regions, and that some of them used different measurement tools. The importance of health literacy, healthy behaviors, protecting themselves, and improving health has been better understood during the pandemic period. The fact that the health literacy levels of older adults were found to be slightly better in the present study could be caused by the pandemic period. It is thought that older adults who are more at risk want to access more information about the epidemic and prevention measures to protect themselves from the COVID-19.

Adequate health literacy levels help older adults to search and understand the correct information about the pandemic, as well as to

Table 4
Predictors of the health literacy

Variables	Simple model			Multiple model		
	B (95% CI for B)	β	p	B (95% CI for B)	β	p
Age (Ref: 75 and over)	15.18 (8.53-21.82)	0.250	<0.001	11.02 (4.52-17.52)	0.182	0.001
Gender (Ref: Female)	1.07 (4.17-6.31)	0.023	0.688			
Marital status (Ref: Married)	3.07 (2.84-8.98)	0.059	0.308			
Education level (Ref: Less than high school)	19.88 (13.28-26.48)	0.323	<0.001	14.96 (8.06-21.86)	0.243	< 0.001
Income (Ref: Less than expense)	8.65 (2.46-19.77)	0.088	0.127			
Having chronic disease (Ref: Yes)	12.07 (6.85-17.29)	0.253	<0.001			
Regular medicine use (Ref: Yes)	14.74 (9.21-20.27)	0.289	<0.001	7.67 (1.84-12.56)	0.151	0.010
Smoking (Ref: Yes)	3.75 (-2.90-10.40)	0.064	0.268			
Sufficiency of epidemic measures (Ref: Yes)	2.18 (-3.60-7.99)	0.043	0.456			
Having vaccine (Ref: Yes)	10.35 (5.36-15.34)	0.228	<0.001			
The fear of COVID-19 scale	-0.40 (-079-0.015)	-0.117	0.042			

Ref: Referans, B: Unstandardized coefficient, β: Standardized coefficient, CI: Confidence Interval

protect them from fear caused by false information.[22] In this study, a weak and negative relationship was found between the fear of COVID-19 and health literacy in older adults. Also, univariate linear regression analysis revealed a significant association between these parameters. Although there is a weak relationship between fear and health literacy, this relationship is thought to be worth examining because there is no study examining health literacy and the fear of COVID-19 level of older adults in the literature. A study conducted in a different age group found that individuals with a high level of health literacy could be protected from the fear of COVID-19.[36] Many written materials and news about COVID-19 that are inaccurate, do not reflect the truth, misinform people, and increase fear are available on social media and various websites.[38] A high level of health literacy enables the person to obtain the accurate information about health from the accurate sources, to better understand the causes of the existing disease, and perform the precautions to be taken.[33] In the present study, it was considered that the good health literacy level of older adults can reduce the fear caused by insufficient information.

The present study highlighted that some characteristics of older adults were significant determinants of the fear of COVID-19 (gender, having chronic disease, and sufficiency of epidemic measures). Older adults who were women, who had chronic diseases, and who stated that epidemic measures were insufficient were more likely to be fearful of COVID-19. In the study of Gokseven et al.[29] gender was found as a predictor and the fear of COVID-19 scores were statistically higher in older women. In contrast, Yadav et al.[30] found that gender was not a significant predictor of the fear in the older adults. Although the relationship between gender and the fear of COVID-19 has not been fully clarified, many studies indicate that women experience the fear of COVID-19 more than men.[29,34,39] It is thought that the fear of older adults may be increased since those with chronic diseases are more susceptible to the COVID-19 and inadequate epidemic measures could increase the risk of contracting the disease.

The present study found that education level, age, and regular medicine use were significantly associated with health literacy in the regression analysis. That is, health literacy level of older adults was increased as their education level increased, and their age decreased in the current study. Similarly, several studies found that education level[28,40,41] and age[37,40] were associated with health literacy level in older adults. Health literacy can help to protect people's health and improve their quality of life during the COVID-19 pandemic.[36] Therefore, health literacy should be seen as an essential tool to mitigate and contain the current pandemic and potential future ones. It is thought that the sociodemographic characteristics such as age, education level of older adults should be considered to plan initiatives to increase their health literacy levels.

The limitations of this study were the collection of data from older adults who utilized five family health centers selected in a certain region, the participation of only older adults who volunteered to participate in the study, the collection of data in the sensitive time period of the global COVID-19 pandemic, and the collection of data from some participants online due to the risk of infection. Older adults were not asked if they had previously had COVID-19. Failure to determine exact causal relationships with the cross-sectional design was another limitation of the study. Older adults' use of the internet, social media, eHealth literacy, etc. would have provided meaningful information as well as primary resources of COVID-19 related information (media, family, care providers, friends. . .).

Implications for practice

Older adults are the more vulnerable ring of the society, who get sick more easily, and recover later. It is important to increase the health literacy levels of the older adults due to the increase in the older adults and the high incidence of chronic diseases. Nurses and other healthcare professionals working in family health centers providing preventive health services can evaluate the health literacy level of older adults by using appropriate health literacy scales in their healthcare. Nurses especially have a critical role to enhance health literacy levels of older adults. Nurses can assess how older people want health information and pursue their ideas for improving health literacy. Nurses can improve effective communication and internet use skills of older adults, develop health education materials, prepare messages and videos, and increase education opportunities. Moreover, nurses can encourage older adults to enhance their lifelong learning behaviors (e.g., watching health-related television programs, reading websites) to improve health literacy.

Nurses assess the effect of COVID-19 pandemic on the mental health of older adults and develop interventions to prevent negative consequences. Individual and universal efforts to improve the health literacy level may also contribute significantly to the prevention and control of COVID-19, thus reducing the fear of COVID-19. In the future, prospective cohort studies could be planned to investigate the association between health literacy and fear levels in older adults.

Conclusion

The current study concluded that health literacy of older adults was at a slightly above moderate level and the fear of COVID-19 was at a moderate level. There was a weak negative relationship found between health literacy level and the fear of COVID-19. Nevertheless, it was determined that while age, education level, and regular drug use predicted the health literacy level; gender, presence of chronic disease, and inadequate epidemic measures taken during the pandemic process affected the fear of COVID-19. It is recommended to implement strategies (improving skills of using information technology and internet use, developing health education materials, effective communication skills etc.) to increase the health literacy level of older adults. Also, psychosocial support should be provided to older adults to reduce the fear level.

Declaration of Competing Interest

The authors report no actual or potential conflict of interest.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Wang C, Pan R, Wan X, 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;17:1729. https://doi.org/10.3390/ijerph17051729.
2. Zhu H, Wei L, Niu P. The novel coronavirus outbreak in Wuhan, China. *Glob Health Res Policy*. 2020;5:1–3. https://doi.org/10.1186/s41256-020-00135-6.
3. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Eng J Med*. 2020;382:1199–1207. https://doi.org/10.1056/NEJMoa2001316. 2020.
4. Işık AT. COVID-19 in older adults: Topics to keep in mind. J Geriatric Sci. 2020;3:1–2.
5. Gülbahar M, Gök Metin Z. Older Adults in COVID-19 Pandemic and Nursing Care. *J Educ Res Nurs*. 2021;18:49–53. https://doi.org/10.5152/jern.2021.98360.
6. Liu K, Chen Y, Lin R, et al. Clinical features of COVID-19 in elderly patients: A comparison with young and middle-aged patients. *J Infect*. 2020;80:e14–e18. https://doi.org/10.1016/j.jinf.2020.03.005.
7. United Nations Department of Economic and Social Affairs, Population Division. World Population Ageing 2020 Highlights: Living arrangements of older persons (ST/ESA/SER.A/451). https://www.un.org/development/desa/pd/Accessed 15 October 2021.
8. Turkish Statistical Institute. Elderly Statistics, 2020. https://data.tuik.gov.tr/Bulten/Index?p=Elderly-Statistics-2020-37227 Accessed 15 October 2021.

9. Savci C, Cil Akinci A, Yildirim Usenmez S, et al. The effects of fear of COVID-19, loneliness, and resilience on the quality of life in older adults living in a nursing home. *Geriatr Nurs*. 2021;42:1422–1428. https://doi.org/10.1016/j.gerinurse.2021.09.012.
10. Kocakoç N, Baybaş BK, Akçiçek SF. Restrictions Applied in SARS-CoV-2 Pandemic and Communication with Elderly People in the World and Turkey. *Turkiye Klinikleri SARS-CoV-2 Pandemic and Aging*. 2020:58–64.
11. Ministry of Health. T.R. Ministry of Health COVID-19 Information Platform. https://covid19.saglik.gov.tr/TR-66935/genel-koronavirus-tablosu.html Accessed 15 October 2021.
12. Altın Z. Older adults in COVID-19 outbreak. *Tepecik Eğit Hast Derg*. 2020;30:49–57. https://doi.org/10.5222/terh.2020.93723.
13. Mistry SK, Ali AM, Akther F, Yadav UN, Harris MF. Exploring fear of COVID-19 and its correlates among older adults in Bangladesh. *Glob Health*. 2021;17:1–9. https://doi.org/10.1186/s12992-021-00698-0.
14. Ahorsu DK, Lin CY, Imani V, et al. The fear of COVID-19 scale: development and initial validation. *Int J Ment Health Addiction*. 2020:1–9. https://doi.org/10.1007/s11469-020-00270-8.
15. Lin CY. Social reaction toward the 2019 novel coronavirus (COVID-19). *Soc Health Behav*. 2020;3:1–2. https://doi.org/10.4103/SHB.SHB_11_20.
16. Aydın AF. Disinformation in social media in post-truth period: The COVID-19 (new coronavirus) pandem process. *Asya Studies*. 2020;4:76–90. https://doi.org/10.31455/asya.740420.
17. Kırık AM, Özkoçak V. Social media and new coronavirus (COVID-19) pandemic in the context of the new world order. *SOBİDER*. 2020;45:133–154. https://doi.org/10.29228/SOBIDER.43146.
18. Zarocostas J. How to fight an infodemic. *Lancet*. 2020;395:676. https://doi.org/10.1016/S0140-6736(20)30461-X.
19. Cangussú LR, Barros IRPD, Botelho Filho CADL, et al. COVID-19 and health literacy: the yell of a silent epidemic amidst the pandemic. *Rev Assoc Méd Bras*. 2020;66:31–33. https://doi.org/10.1590/1806-9282.66.S2.31.
20. Çopurlar KC, Kartal M. What is health literacy? How to Measure It? Why is it important? *TJFMPC*. 2016;10:42–47. https://doi.org/10.5455/tjfmpc.193796.
21. Nutbeam D, Lloyd JE. Understanding and responding to health literacy as a social determinant of health. *Annu Rev Public Health*. 2021;42:159–173. https://doi.org/10.1146/annurev-publhealth-090419-102529.
22. MM Abdel-Latif. The enigma of health literacy and COVID-19 pandemic. *Public Health*. 2020;185:95–96. https://doi.org/10.1016/j.puhe.2020.06.030.
23. Sorensen K, Pelikan JM, Röthlin F, et al. Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). *Eur J Public Health*. 2015;25:1053–1058. https://doi.org/10.1093/eurpub/ckv043.
24. Agarwal G, Habing K, Pirrie M, et al. Assessing health literacy among older adults living in subsidized housing: a cross-sectional study. *Can J Public Health*. 2018;109:401–409. https://doi.org/10.17269/s41997-018-0048-3.
25. Liu Y, Wang Y, Liang F, et al. The health literacy status and influencing factors of older population in Xinjiang. *Iran J Public Health*. 2015;44:913–919.
26. Ministry of Health, General Directorate of Health Promotion. Turkey Health Literacy Level and Related Factors Survey. Ankara: Ministry of Health Publication No: 1103; Ozyurt printing. 2018.
27. Aras Z, Temel Bayik A. Evaluation of validity and reliability of the Turkish version of health literacy scale. *Florence Nightingale J Nurs.*. 2017;25:85–94. https://doi.org/10.17672/fnhd.94626.
28. Baysal HY, Yildiz M. Determining of health literacy level in elderly: An example of Eastern Turkey. Middle Black Sea J Health Science. 2021;7:7–14. https://doi.org/10.19127/mbsjohs.784674.
29. Gokseven Y, Ozturk GZ, Karadeniz E, et al. The Fear of COVID-19 infection in older people. *J Geriatr Psych Neur*. 2021. https://doi.org/10.1177/08919887211002651.
30. Yadav UN, Yadav OP, Singh DR, et al. Perceived fear of COVID-19 and its associated factors among Nepalese older adults in eastern Nepal: A cross-sectional study. *PLoS One*. 2021;16: e0254825. https://doi.org/10.1371/journal.pone.0254825.
31. Ladikli N, Bahadır E, Yumuşak FN, et al. The reliability and validity of Turkish version of fear of COVID-19 scale. *INJOSS*. 2020;3:71–80.
32. Sorensen K, Van den Broucke S, Pelikan JM, et al. Measuring health literacy in populations: illuminating the design and development process of the European Health Literacy Survey Questionnaire (HLS-EU-Q). *BMC Public Health*. 2013;13:1–10. https://doi.org/10.1186/1471-2458-13-948.
33. Paakkari L, Okan O. COVID-19: Health literacy is an underestimated problem. *Lancet Public Health*. 2020;5:e249–e250. https://doi.org/10.1016/S2468-2667(20)30086-4.
34. Nguyen HC, Nguyen MH, Do BN, et al. People with suspected COVID-19 symptoms were more likely depressed and had lower health-related quality of life: The potential benefit of health literacy. *J Clin Med*. 2020;9:965. https://doi.org/10.3390/jcm9040965.
35. Our World in Data. Coronavirus (COVID-19) Vaccinations. https://ourworldindata.org/covid-vaccinations?country=~TUR Accessed 15 October 2021.
36. Nguyen HC, Nguyen MH, Do BN, et al. Fear of COVID-19 scale—associations of its scores with health literacy and health-related behaviors among medical students. *Int J Environ Res Public Health*. 2020;17:4164. https://doi.org/10.3390/ijerph17114164.
37. Van Hoa H, Giang HT, Vu PT, et al. Factors associated with health literacy among the elderly people in Vietnam. *BioMed Res Int*. 2020. https://doi.org/10.1155/2020/3490635. Article ID 3490635.
38. Akyüz SS. Misinformation outbreak: Fake news circulation in Turkey during COVID-19 pandemic. J Akdeniz Univ. 2020;34:422–444. https://doi.org/10.31123/akil.779920.
39. Broche-Pérez Y, Fernández-Fleites Z, Jiménez-Puig E, et al. Gender and fear of COVID-19 in a Cuban population sample. *Int J Ment Health Addiction*. 2020:1–9. https://doi.org/10.1007/s11469-020-00343-8.
40. Cimen Z, Temel AB. Investigation of health literacy, perception of health and related factors in elderly patients with chronic illness. J Ege Univ Nurs Faculty. 2017;33:105–127.
41. Yigitbas C, Genç F. Health literacy in elderly people: A quantitative research example from the Eastern Black Sea Region of Turkey. *Turk J Public Health*. 2021;19:41–54. https://doi.org/10.20518/tjph.700390.