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RESEARCH ARTICLE

A DESCRIPTIVE STUDY TO DETERMINE THE RELATIONSHIP BETWEEN HEALTH LITERACY LEVEL AND CATCHING COVID-19

Özgül ÖZKOÇ[1]
[1]Department of Health Management, Faculty of Applied Science, Altınbaş University, İstanbul, Turkiye
ozgul.ozkoc@altinbas.edu.tr, ORCID: 4007-5105-0001-0000

Zuhal ÇAYIRTEPE KILIÇ[2]
[2]Turkish Healthcare Quality and Accreditation Institute, Ankara, Turkiye
zuhalcayirtepe@gmail.com, ORCID: 9916-9507-0002-0000

İnci OKTAY[3]
[3]Department of Public Health, Faculty of Medical Science, Altınbaş University, İstanbul, Turkiye
inci.oktay@altinbas.edu.tr, ORCID: 4349-0617-0002-0000

Abstract

The purpose of this study is to determine whether there is a relationship between Health Literacy level and catching Covid 19 and whether there is a relationship between catching Covid-19 and sociodemographic characteristics. The Quantitative research method was used in this study. Surveys were collected from people aged 18 and over. with a convenience sampling method. The scale's internal consistency was measured with Cronbach's alpha test, the correlation between the overall scale and its subdimensions was analyzed with Pearson's Correlation Coefficient. The relationship between health literacy level and catching Covid-19; and demographic characteristics and catching Covid-19 were measured with a chi-square test. We found a statistically significant relationship between catching Covid-19 and general health literacy level and its two subdimensions (prevention of disease, health promotion). We couldn't find a statistically significant relationship between healthcare Health Literacy level and catching Covid-19. In addition, there are statistically significant differences in four sociodemographic groups (sex, age, education, marital status) in seeing Covid-19. Public health policymakers may prevent the spread of infectious and pandemic diseases by increasing the health literacy level of citizens. Decision-makers may prioritize their studies according to sociodemographic differences, especially older and low-educated people.

Keywords: Health Literacy, Covid 19, sociodemographic characteristics

1. INTRODUCTION

Health literacy is the primary determinant of a person's health and, the health literacy studies produce new recommendations and new information for health care providers (Alias, Jaafa, and Lokman, 2022). Health literacy defines by World Health Organization (WHO) as "The cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health". It is essential to prevent infectious desease. In March 2020, WHO announced Covid-19 as a pandemic desease and emphasized the importance of the public being well informed about the causes and ways of spreading to reduce transmission. During pandemic, people mostly get information through media and web browsing programs. According to a study, searching health issues using the Baidu index web browser in China increased significantly by comparison with the pre-pandemic period (Xu, Zhang, and Wang, 2020). Distinguishing of the right and wrong information is related to the individual's health literacy (HL) level. In global pandemic conditions, the concept of HL has gained importance to prevent disease development and promote health (Norman and Skinner, 2006). HL level plays a key role in the preparation of the system and individuals, in solving the real problems that develop with the pandemic, as well as evaluating online health information(Diviani et. al., 2015), (Paakari and Okan, 2020). However, community-based researches indicate that European, North American, and Asian societies have great difficulty in interpreting health-related information (Committee on Health Literacy, 2004), (Duong et. al., 2017). Similarly, in the study with eight countries, 50% of adults were inadequate and problematic health literacy levels in terms of accessing, understanding and applying health promotion and protection information (Sorensen, 2013). Okan and others researched coronavirus related health literacy in Germany. They found 50.1% of the participants are being insufficient or problematic (Okan et. al., 2020).

Individuals with a limited HL level have worse health status and are less likely to use preventive care and are more likely to be hospitalized, and have poor outcomes (Committee on Health Literacy, 2004), (Schillinger et. al., 2002). European Centre for Disease Prevention and Control (ECDC) Report, emphasized that HL plays an important role in the consequences of infectious diseases (European Centre for Disease Prevention and Control, 2012). Failure to comply with protective behavior is associated with low HL (Castro-Sanchez et. al., 2016). In addition, people with low HL levels are less likely to adopt protective behaviors such as immunization and are less likely to be vaccinated, and lack understanding of medical labels and instructions for drugs such as antibiotics. Also, people with low HL were found to be more likely to misuse drugs than adults comparing with high HL levels (Castro-Sanchez et. al., 2016), (Bennett et. al., 2009).

2. MATERIAL AND METHODS

We obtained approval from University Clinical Ethics Committee (Ethical Number:2022/111 Date; January 20, 2022) This study was conducted according to the Declaration of Helsinki.

We collected data with convenient sampling method form people aged 18 years and above, between February 01, 2022, and February 15, 2022. We used an online self-administered survey as a data collection

tool. European Health Literacy Scale Question-16 (HLS-EU-Q16), developed by Europan Health Literacy Consortium was used in the study.

Participants rated their health literacy difficulty for each item on 4-point Likert scales (1; very difficult, 2; difficult, 3; easy, and 4; very easy). The Health Literacy index was standardized to unified metrics from 0 to 50 using the formula; Index = (Mean -1) * (50/3) "Mean is the mean of all participating items for each individual; 1 is the minimum possible value of the mean (leading to a minimum value of the index of 0); 3 is the range of the mean, and 50 is the chosen maximum value of the new metric" (Nguyen et. al., 2020).

Index score ranges from 0 to 50 and classified as; 0-25 points inadequate level; >25-33 points problematic level; >33-42 points sufficient level; >42-50 points excellent level (Sorensen, 2013).

We used the G-Power program to calculate the minimum sample size. We found 220 sample size for %95 confident level (d=0.05). We had 440 surveys back. However, we excluded 11 of them because of missing responses. Finally, we evaluated a total of n=429 surveys.

2.1. Statistical Analysis

Statistical analyses were performed using SPSS (Statistical Package of Social Science) program Version 28, (IBM SPSS Corp; NY, USA).

We used Cronbach's alpha coefficient test to determine the scale's internal consistency, bivariate method with Pearson Correlation two tails to calculate a correlation between the overall health literacy scale and its subdimensions., chi-square test to understand the relationship between health literacy level and catching Covid-19 and, difference in sociodemographic characteristics, We considered it statistically significant at p<0,05 level.

3. FINDINGS

3.1. Validity and Reliability of Scale

The validity of the scale in Turkey was tested by Emiral et al.[15] They found the fit index of scale as x^2/d=2.19, RMSEA=0.08, SRMR=0.07, CFI=0.84, GFI=0.87, AGFI=0.82. Cronbach's alpha coefficient was found very high as 0,918.

3. 2. Mean Scores of Participants' HL Level

HL has three subdimensions. Healthcare, Prevention of Desease and Health Promotion. The mean scores of 429 participants' health literacy level found for;

    i.   Health Care HL is 33,51 (at sufficient level),
   ii.   Prevention of Disease HL is 31,61 (at problematic level),
  iii.   Health Promotion HL is 34,71 (at sufficient level), and
  iv.   Overall HL is 33,22 (at sufficient level).

The results of frequency analysis show us 12,6% of participants have inadequate, 36,1% of them have problematic, 38% of them have sufficient and, 13,3 %of them have excellent HL level.

3. 3. Correlations Between the Overall Health Literacy Score and the Its Subscales

According to Pearson correlation results; the correlation between the overall health literacy scale and subscales found as high positive (r > 0.883), correlation between health care and prevention of disease found as moderate positive(r=0.626), the correlation between health care and health promotion also found as moderate positive (r=0.567), and the correlation between prevention of disease, and health promotion found as high positive (r=0.705) The correlation found with a very high statistical significance (p < 0.0001).

Correlation is interpreted as; 0,00-0,25 negligible, 0,26-0,49 low positive/negative; 0,50-0,70 moderate positive/negative; 0,70-0,90 high positive/negative; 0,90-1 very high positive/negative (Mukaka, 2012).

3. 4. Relationship Between Health Literacy Level and Catching Covid-19

Tablo 1: The Relationship Between Healthcare HL Level and Catching Covid-19 and Pearson Chi-Square-Significance.

			Healthcare HL				
			Inadequate	Problematic	Sufficient	Excellent	Total
Have you been caught in Covid-19 in the pandemic process?	Yes	Count	17	13	34	9	73
		Expected Count	11,2	18,0	30,8	12,9	73,0
		% within Have you been caught in Covid-19 in the pandemic process?	23,3%	17,8%	46,6%	12,3%	100,0%
	No	Count	49	93	147	67	356
		Expected Count	54,8	88,0	150,2	63,1	356,0
		% within Have you been caught in Covid-19 in the pandemic process?	13,8%	26,1%	41,3%	18,8%	100,0%
Chi-Square Tests			Value	df	Asymp. Sig. (2-sided)		
		Pearson Chi-Square	7,108	3	0,069		

We have seen that 214 of 356 (60,1%) of participants who have not caught Covid-19 have Sufficient and Excellent Healthcare HL level. However, we couldn't find statisticall significant difference between Healthcare HL level and catching Covid-19 (p= 0,069).

Tablo 2: The Relationship Between Prevention of Desease HL Level and Catching Covid-19 and Pearson Chi-Square-Significance.

			Prevention of Disease HL				Total
			Inadequate	Problematic	Sufficient	Excellent	
Have you been caught in Covid-19 in the pandemic process?	Yes	Count	19	13	36	5	73
		Expected Count	15,1	19,9	27,6	10,4	73,0
		% Within Have you been caught in Covid-19 in the pandemic process?	26,0%	17,8%	49,3%	6,8%	100,0%
	No	Count	70	104	126	56	356
		Expected Count	73,9	97,1	134,4	50,6	356,0
		% Within Have you been caught in Covid-19 in the pandemic process?	19,7%	29,2%	35,4%	15,7%	100,0%
Chi-Square Tests			Value	df	Asymp. Sig. (2-sided)		
		Pearson Chi-Square	10,542	3	**0,014**		

Table 2 indicates that 182 of 356 (51,1%) of particapants who have not caught Covid-19 have Sufficient and Excellent Prevention of Desease HL level. There is a statistically significant relationship between Prevention of Disease HL level and catching Covid-19 (p= 0,014).

Tablo 3: The Relationship Between Health Promotion HL Level and Catching Covid-19 and Pearson Chi-Square-Significance.

			Health Promotion HL				
			inadequate	Problematic	Sufficient	Excellent	Total
Have you been caught in Covid-19 in the pandemic process?	Yes	Count	21	2	36	14	73
		Expected Count	12,1	7,7	38,5	14,8	73,0
		% within Have you been caught in Covid-19 in the pandemic process?	28,8%	2,7%	49,3%	19,2%	100,0%
	No	Count	50	43	190	73	356
		Expected Count	58,9	37,3	187,5	72,2	356,0
		% within Have you been caught in Covid-19 in the pandemic process?	14,0%	12,1%	53,4%	20,5%	100,0%
Chi-Square Tests			Value	df	Asymp. Sig. (2-sided)		
		Pearson Chi-Square	13,212	3	**0,004**		

Table 3 indicates that 263 of 356 (73,9%) of participants who have not caught Covid-19 have Sufficient and Excellent Health Promotion HL level. There is a statistically significant relationship between Health Promotion HL level and catching Covid-19 (p= 0,004).

Tablo 4: The Relationship Between Overall HL Score and Catching Covid-19 and Pearson Chi-Square-

			Overall HL				Total
			Inadequate	Problematic	Sufficient	Excellent	
Have you been caught in Covid-19 in the pandemic process?	Yes	Count	13	23	34	3	73
		Expected Count	9,2	26,4	27,7	9,7	73,0
		% within Have you been caught in Covid-19 in the pandemic process?	17,8%	31,5%	46,6%	4,1%	100,0%
	No	Count	41	132	129	54	356
		Expected Count	44,8	128,6	135,3	47,3	356,0
		% within Have you been caught in Covid-19 in the pandemic process?	11,5%	37,1%	36,2%	15,2%	100,0%
Chi-Square Tests			Value	df	Asymp. Sig. (2-sided)		
		Pearson Chi-Square	9,706	3	**0,021**		

Table 4 indicates that 183 of 356 (51,4%) of particapants who have not caught Covid-19 have Sufficient and Excellent Overall HL level. There is a statistically significant relationship between Overall HL level and catching Covid-19. (p= 0,021).

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3. 5. The Relationship Between Sociodemographic Group and Catching Covid-19

N:429	Sociodemographic Characteristic	N	Catching Covid-19	(Proportion in covid case; n=73)	Catching Covid-19 (Within Group)	P Value
Sex (Chi-Square)	Female	295	35	47,9%	11,9%	0.000
	Male	134	38	52,1%	28,4%	
Age	18-33	236	33	45,2%	14%	0.047
	34-49	146	27	37%	18,5%	
	50-65	41	10	13,7%	24,2%	
	65 and above	6	3	4,1%	50%	
Education	**Primary School**	36	15	20,8%	41,7%	0.000
	High Scholl	77	16	22,2%	20,8%	
	Graduate	262	33	45,48%	12,6%	
	Master/Phd	52	8	11%	15,3%	
Marital Status	Married	182	41	56,2%	22,5%	0.007
	Single	247	32	43,8%	13%	

Table 5 show that majority of participants were female; 18-33 age group; graduate educational level and single. Most of them working in public and private sector and earning betveen 2501-7500 TL.

We found a statistically significant difference between females and males (p=0,000). Male cathching Covid-19 more than female. 52,1% of 73 Covid-19 cases were male and 28,4% of 134 male participants caught Covid-19.

There is a statistically significant difference between the age groups (p=0,047). 50% of the "65 and above age group" and 24,2% of the "50-65 of age group" have caught Covid-19.

The Differences in the educational group are significant at the p=0,000 level. People at the primary school level more caught in Covid-19 than higher education levels.

There is a significant difference between marital status (p=0.007). The proportion of Covid-19 cases in married participants found more than single.
There are no significant differences between occupational groups (p=0,401) and monthly income (p=0,117).

4. DISCUSSION AND CONCLUSION

In this study, firstly, we measured participants' HL levels without looking at whether they were caught in Covid-19 or not. We found participants' overall HL (33,2268), Healthcare HL (33,51) Health promotion HL (34,71) are at a sufficient level from the lower limit (>33-42 point is accepted as sufficient). Prevention of disease HL (31,61) is at the problematic level (>25-33 points is accepted as problematic). Frequency analyses show that 48.7% of people have inadequate or problematic; 51,3% have sufficient and excellent HL levels. Low HL level is a problem in many countries. According to the comparative results in 8 European Countries, more than 50% of people in Austria (56.4%), Bulgaria (62.1%), and Spain (58.3%) have inadequate or problematic levels of HL. In addition, more than 40% of people in Germany (46.3%), Greece (44.8%), Ireland (40%), and Poland (44.6%) have inadequate or problematic levels of HL. Only the Netherlands has a high level of HL with a rate of 28.7% (HLS-EU, 2012).

Previous researchers indicate that HL level is related to preventing infections. People with low HL levels do not adopt the behaviors preventing the infectious disease (Castro-Sanchez et. al., 2016). These people are less likely to adopt protective behaviors such as immunization also; they have a poor understanding of medical labels and instructions such as antibiotics and are more likely to misuse medicines than people with higher HL levels (Castro-Sanchez et. al., 2016), (Bennett et. al., 2009). Also, people with low health literacy had a poorer understanding of COVID-19 symptoms, were less able to identify preventive behaviors, and experienced more difficulty finding information and understanding government messaging about COVID-19 than people with adequate health literacy (McCaffery et. al., 2020). According to Abel and McQueen, although critical health literacy argues that individuals put into context the information available and evaluate that against their fundamental values, in the case of an urgent pandemic, concerted action is also essential.[19] In line with the previous research findings, we found a statistically significant relationship between the overall HL level and being caught Covid-19.

We also researched the relationship between sociodemographic features and catching Covid-19. We found a statistically significant difference between gender (p=0,00), age (p=0,047), education (p=0,000), marital status (p=0,013) groups. However, we couldn't see a statistically significant difference in the occupational and income groups.

In gender group, men being caught in Covid-19 more than women. This can be related to the difference between the health literacy level of men and women. Some previous studies found men have fewer HL levels than women (Emiral et. al., 2018), (Cho et. al., 2008). In the research related to adopting the proper practices about the COVID-19, behaviors such as staying at home, wearing masks outside, and washing hands were researched, and found women were more adopted this behavior than men (Şirin et. al., 2020).

Looking at the age group, we found that 50-65 and 65 and above were proportionately more caught in Covid-19 than other groups. These results may be affected by older adults' health behavior and HL level

because some studies show that HL levels decrease with age (McCaffery et. al., 2020). In the study done in the US, 29% of older people reported in fair or poor health status, and 27% to 39% of them reported not utilizing three recommended preventive health care services.[13] However, in another study done Türkiye, older respondents found better at Covid-19 preventive practices.[21] In addition, some studies related to HL couldn't find a statistically significant difference between age groups (Okan et. al., 2020), (Emiral et. al., 2018).

Reviewing educational groups, we have seen that low-educated people (primary school degree) have been caught in Covid-19 more than graduates. Low educated people less adopted the correct practices (handwashing and mask-wearing) about COVID-19 than other groups (Şirin et. al., 2020). Most studies related to HL found a significant difference between primary school and graduate levels (Emiral et. al., 2018).

The present study found that married people have been caught in Covid-19 more than singles. It may not be related to the HL level. Because some studies found statistically significant differences between single and married people in terms of HL (Liu et. al., 2015), (Joveini et. al., 2019); other studies could not (Maricic, Curujiva, and Stepovic, 2020). In addition, one study found that single people have more HL levels (Joveini et. al., 2019) and another found that married people have (Liu et. al., 2015). Catching Covid-19 may be related to the infectious nature of Covid-19. Living with more people increases the risk of being Covid-19.

We couldn't find the statistically significant difference between monthly income groups and occupational groups regarding catching Covid-19. Studies researching HL levels also didn't find a significant difference between income group (Okan et. al., 2020), (Emiral et. al., 2018), (Maricic, Curujiva, and Stepovic, 2020). Some previous studies found a difference between occupational groups related to HL (Liu et. al., 2015), other studies could not (Maricic, Curujiva, and Stepovic, 2020).

Because we couldn't encounter a study researching the relationship between Covid-19 and sociodemographic characteristics, comparing the findings is limited to HL studies.
The limitation of this study is limited to the participants of the survey, and we only wanted to show relationship HL level and catch Covid-19.

According to these results, HL level is related to catching Covid-19. As mentioned above, previous studies mostly supported the current study. Therefore, Public health policymakers may give more importance to the HL to decrease the spread of infectious diseases. While making these efforts, older people and people with low educational levels may have prioritized. Thus, possible pandemic disease and its adverse effects on the public can be limited in the future.

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