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COVID-19 vaccine literacy in Çankırı province

Çankırı ili COVID-19 Aşı okuryazarlığı

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ABSTRACT

Objective: COVID-19 vaccines are at the forefront of the most important protective factors in the fight against the epidemic, but there are different attitudes towards the vaccine. Vaccine literacy indicates the capacity of individuals to obtain, process and understand basic health information and services to make sound health decisions about vaccines. This study aimed to evaluate the vaccination literacy level of Çankırı province and to determine the factors affecting vaccination literacy.

Methods: The research is a cross-sectional type research. The population of the research consists of individuals aged 18 and over who are registered to the family health center located in Çankırı province and all districts. In this study, a questionnaire was used as a data collection tool. The survey consists of two parts. In the first part, there are 12 questions, including socio-demographic characteristics. In the second part, there is the COVID-19 vaccine literacy scale. Research data was collected between 01.12.2021 and 31.01.2022. The determined sample was allocated in the research was used in proportion to the district population and 400

ÖZET

Amaç: Salgınla mücadelede en önemli koruyucu faktörlerin başında COVID-19 aşıları gelmekte, ancak aşıya karşı farklı tutumlar görülmektedir. Aşı okuryazarlığı, kişilerin aşılar hakkındaki doğru kararları vermek için temel sağlık bilgileri ve hizmetlerini elde etme, işleme ve anlama kapasitesini göstermektedir. Bu araştırmada, Çankırı ilinde yaşayanların COVID-19 aşı okuryazarlık düzeyinin değerlendirilmesi ve aşı okuryazarlığına etki eden faktörlerin belirlenmesi amaçlanmıştır.

Yöntem: Çalışma kesitsel tipte bir araştırmadır. Araştırmanın evreni, Çankırı ili merkez ve çevre ilçelerde yer alan aile sağlığı merkezlerine (ASM) kayıtlı 18 yaş ve üzeri bireyler oluşturmuştur. Araştırmada veri toplama aracı olarak anket kullanılmıştır. Anket iki bölüm olarak hazırlanmıştır. Birinci bölümde sosyo-demografik özellikleri içeren 12 soru, ikinci bölümde ise COVID-19 aşısı okuryazarlık ölçeği yer almıştır. Araştırma verileri 01.12.2021 - 31.01.2022 tarihleri arasında toplanmıştır. Araştırmada hesaplanan örneklem büyüklüğü ilçe nüfuslarına oranlanarak kullanılmış ve 400 kişiye ulaşılmıştır. Veriler SPSS 25.0 paket programında analiz

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people were reached. The data were analyzed in the SPSS 25.0 package program.

Results: COVID vaccine literacy level in Çankırı province was determined as medium level (2.80±0.53). In the study, when the COVID-19 vaccine status and the COVID-19 vaccine literacy levels were examined, the literacy level was found to be higher in the individuals who were vaccinated Although the COVID-19 vaccine literacy levels are lower in districts with a high elderly population, no statistically significant difference was observed and in accordance with the literature, it was found to be lower in the older age group than in other groups. In the study, when the COVID-19 vaccine status and the COVID-19 vaccine literacy levels were examined, the literacy level was found to be higher in the individuals who were vaccinated and showed similar results with other studies.

Conclusion: Vaccination, one of the most important methods of combating infectious diseases and is necessary for public health. Vaccination has increasingly become more important for protection against COVID-19, which has emerged as an important health problem in recent years. Within the scope of the fight against pandemics, the vaccination literacy level should be increased, especially in elderly individuals aged 65 and over, and it is evaluated that disease rates and deaths will be reduced by increasing vaccination rates.

Key Words: Vaccine literacy, Covid-19, health

edilmiştir.

Bulgular: Çankırı ili COVID-19 aşı okuryazarlık düzeyi 2,80±0,53 ile orta düzeyde olduğu görülmüştür. COVID-19 aşısı olma durumu ile COVID-19 aşı okuryazarlığı düzeyleri incelendiğinde aşı olan bireylerde okuryazarlık düzeyi daha yüksek olarak saptanmıştır. En yüksek COVID-19 aşı okuryazarlık düzeyi Çankırı Merkez ilçede bulunmuştur. 60 yaş ve üstü bireylerde COVID-19 aşı okuryazarlık düzeyi anlamlı olarak diğer gruplara göre daha düşük bulunmuştur. Yaşlı nüfusun fazla bulunduğu ilçelerde COVID-19 aşı okuryazarlık düzeyleri daha düşük olmakla birlikte istatistiksel olarak anlamlı bir farklılık görülmemiştir ve literatür ile uyumlu olarak ileri yaş grubunda, diğer gruplara göre daha düşük saptanmıştır. Çalışmada, COVID-19 aşısı olma durumu ile COVID-19 aşı okuryazarlığı düzeyleri birlikte değerlendirildiğinde aşı olan bireylerde okuryazarlık düzeyi daha yüksek olarak saptanmıştır.

Sonuç: Enfeksiyon hastalıklarının önlenmesi ve ortadan kaldırılması için en önemli mücadele yöntemlerinden biri olan aşı, toplum sağlığı için gereklilik taşımaktadır. Son yıllarda önemli bir sağlık sorunu olarak ortaya çıkan COVID-19'dan korunma için de aşı önemini giderek artırmıştır. Gelecekte yaşanabilecek pandemilerle mücadelede özellikle 65 yaş ve üzeri yaşlı bireylerde aşı okuryazarlık düzeyi artırılmalı ve aşılanma oranları yükseltilerek hastalanma oranlarının ve ölümlerin azaltılacağı değerlendirilmiştir.

Anahtar Kelimeler: Aşı okuryazarlığı, COVID-19, sağlık

INTRODUCTION

After the first cases were reported in December 2019 in Wuhan, Hubei Province, China, on January 7, 2020, the new type of coronavirus disease (COVID-19), as defined by World Health Organization (WHO), was first seen in Türkiye on March 11, 2020. The first case in Çankırı was seen in a patient originating from abroad on March 22, 2020, and the first death was on April 12, 2020. Within the scope of combating COVID-19 in Çankırı, the Operations Center and Filiation Center were first established under the Provincial Health Directorate, and then the detailed filiation of COVID-19 positive cases

was carried out, which was aimed at preventing the increase in cases with follow-up. From past to present, the medical world frequently encounters the latest health-threatening pandemics under the name of COVID-19. Learning the characteristics of epidemic diseases, finding the necessary protection methods against them, and exploring vaccine and treatment options in order to end the disease are the most important steps in the fight against the epidemic. Immunization is one of the most effective methods of combating epidemic diseases. Although COVID-19 vaccine studies in Türkiye are not effective at the desired level, significant progress has been made in immunization over the past few decades.

Although it is known that immunization studies started in the 1700s during the Ottoman Empire, a Rabies Treatment Institution was established under the name of Daûl-Kelp and Bacteriology Operating Room in the clinic of the professor Alexander Zoeros Pasha in 1887. This center became the first rabies treatment center with the feature of being the first in its region. Diphtheria serum was also successfully produced in the center (1). Refik Saydam Hygiene Institution was established in 1928 in order to carry out social protection works for public health. This establishment has also started to work on vaccine and serum production. In 1936, 17 different types of vaccines were started to be produced at the Hygiene Institute; vaccines for typhoid, dysentery, plague, cholera, meningococcus, brucellosis, pertussis, BCG, diphtheria, tetanus, rabies, smallpox. Rabies serum began to be produced in 1937 and scorpion serum in 1942. For the first time, powdered smallpox vaccine was produced in 1965, and powdered BCG vaccine was started in 1983. In 1961, the "Socialization of Health Services Law" numbered 224 was enacted, and vaccination studies became widespread. The Extended Immunization Program has been implemented by the Ministry of Health since 1981. With the vaccination campaigns initiated, the vaccination rates, which were at the level of 25-35% until 1985, increased to 92%. Hepatitis B vaccine in 1998, *Hemophilus influenza* type B (Hib) in 2006, conjugated pneumococcal vaccine (KPA) in 2008, and most recently hepatitis A and varicella vaccines in 2013 were added to the National Vaccination Schedule. Smallpox vaccine has been abolished in our country since 1980, and the last polio case was seen in November 1996. WHO in June 2002; Türkiye and the European region were declared as "Polio-Free Zone" (2).

Infectious diseases are less common in adult age groups, especially when compared to children. However, due to reasons such as the fact that individuals who could not be vaccinated in childhood become more susceptible to diseases in adulthood, that some vaccines do not have a lifetime protection from the disease (e.g. tetanus, diphtheria, whooping cough), and that they are more likely to encounter many vaccine-preventable diseases in work and social life. Continuation of vaccination services, especially in old age, is very important for public health. The frequent displacement of people in the world due to various reasons, the fact that 214 million people live as immigrants around the world, and this figure reaches 405 million in 2050, according to estimates, bring great risks in terms of the spread of infectious diseases. Collective travel organization, (cross organizations, etc.) and vaccination of the population exposed to migration have emerged as an important health service need. Many studies have shown that only 10-20% of the targeted groups in adults can be vaccinated. Adult vaccination is not seen as an important part of social preventive health services due to the burden of immunization on the country's economy. In a rapidly changing world, there is a need for an immunization program that will cover not only children but also all life periods of people (3). Adult immunization levels, including developed western countries, cannot reach the desired target levels. Between 2006 and 2015, WHO and the United Nations Children's Fund (UNICEF) developed the "Global Immunization Vision and Strategy" program. In this program, topics such as the coverage and integration of immunization for all ages, the introduction of

new vaccines and technologies, the importance and realization of global vaccination were included (4). Adult vaccine studies are cost-effective studies because they play an important role in both the prevention of infectious diseases and the control of comorbid diseases (5).

There are various types of literacy in the field of health due to the fact that health literacy has a very comprehensive definition. One of them is vaccine literacy. Vaccine literacy has been defined as the degree to which one has the capacity to obtain, apply, and understand basic health information and services in order to make appropriate health decisions about vaccines (6). In addition, vaccine literacy does not only mean having knowledge about vaccines; it also includes the transformation of vaccines into a system that can be expressed in more detail (7).

Vaccination practice, which is one of the most effective methods of protection from the disease during the pandemic process, and the infodemic, which is one of the difficulties that cause this process to not be effective at the expected level, increase the importance of COVID-19 vaccine literacy and show the contribution of the COVID-19 vaccine literacy level to the pandemic management.

The aim of the research is to evaluate the COVID-19 vaccine literacy level of Çankırı province, determine the factors affecting COVID-19 vaccine literacy, and show the COVID-19 vaccine literacy level, demographic characteristics, and vaccine attitudes.

MATERIAL and METHOD

Population and sample

The universe of the research consists of individuals registered in the Family Health Center (FHC) located in Çankırı province, the central district, and all districts. In the study, the sample size and the number of universes are known, the sample size calculation method is based on the sample calculation method, and the formula "n=N*p*q*Z2/ [(N-1)*d2)] + (p*q*Z2)" was used and the sample size was calculated. The number was found to be 384.

The determined sample number was allocated according to the FHC populations in the center and districts, the total number of samples was taken as 400 (Table 1).

Data collection and analysis

In this study, a questionnaire was used as a data collection tool. The survey consists of two parts. In the first part, there are 12 questions, including socio-demographic characteristics. In the second part, there is the COVID-19 vaccine literacy scale.

COVID-19 Vaccine Literacy Scale: It was developed by Ishikawa et al. (8) to assess health literacy in people with chronic diseases and adapted as the COVID-19 vaccine literacy scale by Biasio et al. (9). Durmus et al. (10) Turkish validity and reliability study of the scale was carried out, and the scale's validity and reliability were found to be appropriate. The scale consists of two dimensions and 12 statements. In the study, between 01.12.2021 and 31.01.2022, all FHCs in Çankırı were visited, and individuals aged 18 and over who came to the FHC were randomly selected, and a face-to-face questionnaire was applied by obtaining informed consent from the volunteers who agreed to participate in the study.

In the study, data were recorded and analyzed with the Statistical Package for Social Science (SPSS) 25.0 statistical program. It was accepted that the data was normally distributed because the kurtosis and skewness values were between -2.0 and +2.0. Validity and reliability analyzes were performed in the evaluation of the data, and numbers, percentages, arithmetic mean and standard deviation values were used in descriptive statistical methods. Pearson Chi-Square Analysis was used for the relationship between categorical variables, independent samples t test was used to show the difference between two independent samples, analysis of variance (ANOVA) was used to compare the means of more than two independent samples, and pearson correlation analysis was used as correlation analysis.

The study was approved by the Çankırı Karatekin University, Health Science Research Ethics Committee (Date: 09.11.2021 and Number: 3). Prior to the study, informed consent form was also provided at the beginning of the questionnaire for each participant.

Table 1. Sample distribution according to family health centers

City / County	Family Health Center	Total Population	Number of Samples
Çankırı	Taşmescit	21.401	50
	Cumhuriyet	26.520	62
	Aksu	7.375	17
	Dr. Refik Saydam	9.854	23
	Zübeyde Hanım	18.363	43
	Esentepe	3.025	7
	Emir Karatekin	2.549	6
	Karataş	5.985	14
Yapraklı	Yapraklı	2.357	6
	Yüklü	3.431	8
Atkaracalar		2.476	6
Bayramören		1.618	4
Çerkeş		13.805	33
Eldıvan		3.733	9
Ilgaz		12.150	29
Kızılırmak		7.189	17
Korgun		3.846	9
Kurşunlu		7.181	17
Orta		7.698	18
Şabanözü		9.280	22
	Total	169.836	400

RESULTS

Socio-demographic characteristics of the samples were summarized in Table 2. 43.5% of the people participating in the study were male; 56.5% of them were women. 125 people (31.2%) between the ages of 18 and 30; 163 people (40.8%) between the ages of 31 and 40; and 112 (28%) over the age of 40. 304 participants were married (76.0%), and 96 participants were single (24.0%).

When the educational status is examined, the most undergraduate graduates (43.5%) are high school graduates (25.0%), followed by associate degree graduates (14.5%) and graduate or doctorate graduates (6.8%). While there are 213 people (53.3%) working in the public sector, 83 people (20.8%) are not working. Although their places of residence are proportional to their family medicine population, 222 people (55.5%) participated from Çankırı central district (Table 2).

Table 2. Socio-demographic characteristics of the participants

Features		N	%
Gender	Male	174	43.5
	Female	226	56.5
Age	18-30	125	31.2
	31-43	163	40.8
	+44	112	28.0
Marital Status	Married	304	76.0
	Single	96	24.0
Educational Status	Primary school	18	4.5
	Secondary school	23	5.8
	High school	100	25.0
	Associate degree	58	14.5
	University	174	43.5
	Master's / PhD	27	6.8
Working Statıs	Public	213	53.3
	Special	56	14.0
	Own working place	22	5.5
	Student	26	6.5
	Unemployed	83	20.8
City / District	Centrum	222	55.5
	Ilgaz	29	7.2
	Çerkeş	33	8.3
	Kurşunlu	17	4.3
	Atkaracalar	6	1.5
	Bayramören	4	1.0
	Orta	18	4.5
	Şabanözü	22	5.5
	Kızılırmak	17	4.3
	Korgun	9	2.3
	Eldivan	9	2.3
	Yapraklı	14	3.5

In terms of the health histories of the participants, it was seen that 28.7% of them smoked, 14.8% of them had at least 1 chronic disease and used regular medication, and the most common chronic disease was hypertension (5.8%). It was determined that those who had COVID-19 disease were 30.8% and those who had the COVID-19 vaccine were 88.0%. According to the COVID-19 vaccine type, it was observed that the most doses of mRNA vaccine (34.8%) were administered by those in the heterologous vaccination group who received 2 doses of inactivated and 1 dose of mRNA and 2 doses of inactive and 2 doses of mRNA (Table 3).

Table 3. The health characteristics of the participants

Features		N	%
Cigarette	Smoker	115	28.7
	Non-Smoker	285	71.3
Regular Medication	Uses	59	14.8
	Not using	341	85.3
Presence of chronic disease	Hypertension	23	5.8
	Diabetes Mellitus	11	2.8
	Hypothyrodism	10	2.5
	FMF	4	1.0
	Ankylosing spondylitis	4	1.0
	Asthma	4	1.0
	Gout	1	0.3
	Pemphigus Vulgaris	1	0.3
	Myastina Gravis	1	0.3
Get a Covid-19	Yes	123	30.8
	No	277	69.3
Covid-19 Vaccine	Done	352	88.0
	Not done	48	12.0
Covid-19 Vaccine Type	I'm not vaccinated	48	12.0
	2 doses of inactivated vaccine	42	10.5
	3 doses of inactivated vaccine	44	11.0
	1 dose of mRNA vaccine	10	2.5
	2 doses of mRNA vaccine	139	34.8
	3 doses of mRNA vaccine	11	2.8
	2 doses of inactivated and 1 dose of mRNA vaccine	54	13.5
	2 doses of inactivated and 2 doses of mRNA vaccine	52	13.0

When a total of 48 people (12%) who did not receive the COVID-19 vaccine were examined, the most marked reasons for not getting vaccinated were "I don't believe in the effect of the vaccine" (33,1%), "I am afraid of the side effects" (31,3%), and "I am waiting for the Turkish vaccine" (18,8%) (Table 4).

When COVID-19 vaccine literacy levels were examined according to sociodemographic characteristics, no statistically significant difference was found between vaccine literacy levels according to gender, marital status, drug use, chronic disease, or COVID-19 history. In addition, a statistically significant difference was found between the COVID-19 vaccination history and vaccine literacy and vaccine literacy subgroups, and COVID-19 vaccine literacy was found to be higher in those who were vaccinated. When cigarette smoking and COVID-19 vaccine literacy levels were examined, although they were lower in smokers, no significant difference was found (Table 5).

When the education levels, vaccination literacy levels, and subgroup skills are examined, it is observed that functional skills increase as the education level increases, and the functional skills of primary school graduates are statistically significantly lower than all other groups (p=0.0001) (Post Hoc Hochberg's GT2).

Table 4. Reasons for not being vaccinated against COVID-19

Reasons For Not Being Vaccinated	N	%
I do not believe in the effect of the vaccine	16	33.3
I'm afraid of the side effects	15	31.3
I'm waiting for the Turkish vaccine	9	18.8
I am pregnant / breastfeeding	7	14.6
I want natural immunity	1	2.1
TOTAL	48	100.0

Table 5. Vaccine literacy levels according to the socio-demographic characteristics of the participants

			Functional Skills			Communication Skills			Vaccine Literacy		
		N	Mean	St d	p	Mean	St d	p	Mean	St d	p
Gender	Female	226	2.74	0.73	0.498	2.86	0.68	0.678	2.79	0.51	0.809
	Male	174	2.79	0.84		2.83	0.64		2.81	0.56	
Marital Status	Married	304	2.78	0.79	0.314	2.84	0.66	0.937	2.81	0.54	0.498
	Single	96	2.69	0.73		2.85	0.63		2.77	0.51	
Smoking	Yes	115	2.64	0.71	0.052	2.82	0.68	0.645	2.73	0.53	0.087
	No	285	2.81	0.79		2.85	0.65		2.83	0.53	
Drug Use	Yes	59	2.73	0.89	0.788	2.81	0.70	0.695	2.77	0.67	0.664
	No	341	2.76	0.75		2.85	0.65		2.80	0.51	
History of passing Covid-19	Yes	123	2.77	0.78	0.785	2.78	0.62	0.241	2.78	0.49	0.602
	No	277	2.75	0.77		2.87	0.67		2.81	0.55	
Covid-19 vaccine status	Yes	352	2.79	0.77	0.024	2.87	0.65	0.013*	2.83	0.53	0.002
	No	48	2.51	0.77		2.61	0.65		2.56	0.55	

When the communicative skills subgroup was examined, it was found that as the education level of the groups increased, this skill level also increased, and the communicative skill levels of the individuals with primary and secondary education were found to be statistically significantly lower than the other groups (p=0.0001) (Post Hoc Hochberg's GT2). Considering the relationship between vaccination literacy and education level, it was determined that individuals with primary school education had a statistically significantly lower vaccination literacy level than all other groups, and at the same time, undergraduate and graduate education levels were statistically significantly higher than individuals with primary, secondary, high school, and associate degree education levels. It was determined that the level of COVID-19 vaccine literacy increased as the education level increased (p=0.0001) (Post Hoc Hochberg's GT2) (Table 6).

When the functional skills and communicative skills are compared, the group that has the highest subgroup score, which forms the subgroups of COVID-19 vaccine literacy with their working status, is followed by people working in the public sector,

those working in the private sector, those with their own workplaces, students, and the unemployed. When the subgroups were compared among themselves, the functional skills, communicative skills, and COVID-19 vaccine literacy levels of the public working group were found to be statistically significantly higher than those of the non-working group (p=0.001) (Post Hoc Hochberg's GT2).

Table 6. Vaccine literacy levels of the participants according to their educational, working status and generations

			Functional Skills			Communication Skills			Vaccine Literacy		
		N	Mean	St d	p	Mean	St d	p	Mean	St d	p
Education Status	Primary School	18	1.73*	0.58	<0.001	2.06**	0.12	<0.001	1.90***	0.48	<0.001
	Secondary School	23	2.51	0.65		2.32**	0.72		2.41	0.46	
	High School	100	2.64	0.72		2.57	0.64		2.61	0.47	
	Associate Degree	58	2.68	0.66		2.95	0.48		2.81	0.39	
	University	174	2.93	0.76		3.05	0.58		2.99***	0.47	
	Master's/PhD	27	3.12	0.79		3.25	0.48		3.18***	0.43	
Working Status	Public	213	2.92*	0.74	<0.001	2.96**	0.61	<0.001	2.94***	0.49	<0.001
	Special	56	2.70	0.76		2.83	0.57		2.77	0.50	
	Own Working	22	2.60	0.83		2.78	0.71		2.69	0.60	
	Student	26	2.57	0.61		2.89	0.50		2.73	0.44	
	Unemployed	83	2.47*	0.80		2.54**	0.76		2.51***	0.57	
Generations	Generation Z	27	2.46	0.67	0.02	2.62	0.72	0.01	2.54	0.53	<0.001
	Generation Y	271	2.83*	0.76		2.89**	0.64		2.86***	0.48	
	Generation X	81	2.73	0.74		2.87**	0.65		2.80	0.55	
	Baby Boom	21	2.27	0.98		2.36	0.68		2.32	0.76	

When vaccination literacy levels and subgroups are investigated according to generations, in the functional skills subgroup, the Y generation has the highest score with 2.83 points, while the baby boom generation constitutes the lowest score group with 2.27 points. When subgroups were compared among themselves, the Y generation was found to be statistically significantly higher than both the BP generation and the Z generation (p<0.05) (Post Hoc Gabriel).

Considering the subgroups of communicative skills, the Y generation had the highest score (2,89), while a statistically significant difference was found between X-BP and Y-BP (p=0.01) (Post Hoc Gabriel).

When the total scores of COVID-19 vaccine literacy levels are analysed by generation, the Y generation scores 2.86; Generation X scores 2.80; Generation Z scores 2.54; and the BP generation scores 2.32 points. Y generation was found to be statistically significantly higher than Z generation and BP generation (p = 0.023; p = 0.020) (Post Hoc Gabriel).

When the correlation analysis between vaccination literacy level and its sub-dimensions was examined, a significant positive correlation was found between vaccination literacy level and both functional and communicative skills (p<0.01). There was also a statistically significant positive correlation between functional and communicative skills, which are both sub-dimensions (p<0.05). At the same time, a statistically significant negative correlation was found between age and functional skills (p<0.05). While there was no significant correlation between communicative skills and age, a statistically significant negative correlation was found between general COVID-19 vaccine literacy and age (p<0.05) (Table 6).

When the COVID-19 vaccine literacy level and subgroup skills are examined according to Çankırı districts, the central district scores the highest score in functional skills scoring, while the Korgun district receives the lowest score. While central district has the highest score in communicative skills, the lowest score is seen in Eldivan district. When the COVID-19 vaccine literacy level is analysed by district, the highest literacy level is seen in the central district, the second rank is in the Sabanözü district, and the lowest literacy level is found in the Eldivan district. No statistically significant difference was found between the districts, both in subgroups and in the COVID-19 vaccine literacy level (Table 7).

Table 7. Covid-19 vaccine literacy levels by district

			Functional Skills			Communication Skills			Vaccine Literacy		
		N	Mean	St. d	p	Mean	St. d	p	Mean	St. d	p
District	Merkez	222	2.87	0.75	0.061	2.98	0.61	0.061	2.93	0.49	0.073
	Ilgaz	29	2.64	0.79		2.63	0.78		2.64	0.64	
	Çerkeş	33	2.74	0.69		2.73	0.81		2.73	0.53	
	Kurşunlu	17	2.58	0.82		2.80	0.49		2.69	0.45	
	Atkaracalar	6	2.70	0.62		2.81	0.62		2.76	0.46	
	Bayramören	4	2.56	0.23		2.43	0.84		2.50	0.51	
	Orta	18	2.62	0.77		2.63	0.50		2.63	0.50	
	Şabanözü	22	2.72	0.64		2.81	0.53		2.77	0.37	
	Kızılırmak	17	2.79	0.91		2.70	0.78		2.75	0.57	
	Korgun	9	2.23	0.51		2.79	0.36		2.46	0.30	
	Eldivan	9	2.27	0.98		2.21	0.55		2.22	0.62	
	Yapraklı	14	2.41	0.98		2.44	0.70		2.42	0.79	

DISCUSSION

The findings of this study, which was conducted to show the COVID-19 vaccine literacy level in Çankırı province and to determine the factors affecting the vaccine literacy level, were discussed together with the studies in the relevant literature.

In this study, no significant difference was found between gender and COVID-19 vaccine literacy levels. Although there are no detailed studies on COVID-19 vaccine literacy in the literature, there are many studies on health literacy. In some studies conducted with university students, health literacy levels were found to be higher in women than in men, and this was found to be statistically significant (11,12). At the same time, there are many studies in the literature showing that there is no significant difference between health literacy and gender (13,14). In this study, no significant difference was found between gender and COVID-19 vaccine literacy levels. It is thought that the reason for such different results in the studies is that the populations in which the studies are conducted are different, and the socio-demographic and cultural characteristics vary according to the sample studied.

Although there are not enough studies in the literature comparing COVID-19 vaccine literacy and marital status, there are various studies on health literacy levels. In addition to studies in which singles have higher health literacy levels than married people (15,16), there are studies in which married people have higher health literacy levels than singles

(17). In this study, although the COVID-19 vaccine literacy levels of married people were higher than those of singles, no statistically significant difference was found. There are different results in many studies in the literature. It can be thought that it may have originated from different age and sociocultural groups.

Considering the chronic disease status, regular drug use, and COVID-19 vaccine literacy levels in our study, there was no statistically significant difference, although the COVID-19 vaccine literacy levels were lower in patients using regular medication. In the literature, there are studies in which health literacy levels decrease as the number of chronic diseases increases (18). At the same time, in another study conducted with patients using regular hypertension drugs, no significant difference was found between health literacy level and regular drug use (19). The most important reason for the different results in the literature has been evaluated as the difference in chronic diseases and the variability of age groups.

When smoking and COVID-19 vaccine literacy levels are examined, COVID-19 vaccine literacy levels and sub-skill groups were found to be lower in smokers, but no statistically significant difference was found. In many studies in the literature, no significant difference was found between smoking and health literacy levels (20-22). Smoking: It is thought that many factors such as age, gender, economic situation, and smoking cessation policies in countries affect it. For this reason, studies with different results are found in the literature.

In this study, when the COVID-19 vaccine status and COVID-19 vaccine literacy levels were examined, the literacy level was found to be higher in individuals who were vaccinated. In Durmus et al. (10), the communicative skills subgroup and vaccine literacy levels of those who have knowledge about the COVID-19 vaccine were found to be higher, which supports this study. Individuals with a high vaccination literacy level show sensitivity to issues that will affect the course of many epidemics, such as prevention of diseases, reduction of transmission, and vaccination applications. They also conduct research on the COVID-19 vaccine, and these studies affect vaccine preferences.

The highest vaccination literacy level is seen in postgraduate and doctoral graduates; it has been determined that the lowest is among primary school graduates. It is seen that as education levels increase, COVID-19 vaccine literacy levels and subgroup skills increase. Similar to this study, in other studies in the literature, COVID-19 vaccine literacy levels increase as the level of education increases (9,10). It is obvious that the processes of accessing, understanding, evaluating, and applying information are based on certain education and training.

In our study, the highest vaccination literacy level was seen in people working in the public sector, but the lowest vaccination literacy level was found in the non-working population. Although there is no study on this subject in the literature, a weak positive correlation was found between social status and health literacy levels in the European Health Literacy Survey (23). Considering that social status is in a close relationship with income, education level, and welfare level, the fact that COVID-19 vaccine literacy levels are lower in the non-working group can be explained by this situation.

The vaccine literacy level in Çankırı province is 2.80±0.53; functional level is 2.760.77; and the communication level was determined at 2.84±0.66. Scoring is made between 1-4 on the scale; the vaccine literacy level increases as it approaches 4, below 2.5 is considered limited, and the COVID-19 vaccine literacy level in ankiri province is determined as medium level. When the districts are examined, Korgun, Yaprakli, and Eldivan districts have a score below 2.50. According to TUIK 2021 data, Çankırı is the 5th province with the highest rate of elderly population (16.9%) and also the 5th province (32.1%) with the highest rate of single-person elderly households (24). At the same time, the common features of these districts are that they have the highest proportion of elderly people. Based on these

data, although COVID-19 vaccine literacy levels are lower in districts with a high elderly population, no statistically significant difference was observed.

In this study, vaccination literacy levels were examined according to generations, and the Y generation (born in 1981-1996) was found to be the age group with the highest vaccination literacy levels (2.83) and subgroups. The Y generation is followed by the X generation (born in 1965-1980) (2,73), followed by the Z generation (born 1997-2012), and the BP generation (born 1946-1964). In this study, the Y generation was statistically found to be significantly higher than the Z generation and the BP generation. Looking at the health literacy levels according to the age variable in the literature, it was seen that the highest age group was 28-37 years old, and the health literacy levels decreased as the age increased (13,25,26). It is thought that regression in cognitive functions with ageing may cause problems in accessing information, understanding and evaluating information, and then using it, negatively affecting the level of literacy. However, unlike other studies, it is thought that the low level of COVID-19 vaccine literacy, especially in the Z generation (18-25 years old), is due to the different priorities of the young people in this age period and their lack of interest in the field of health.

As a result, it is the vaccines that ensure the formation of social immunity in the fight against the COVID-19 pandemic, which affects our country and the whole world. In order to prevent COVID-19, which affects individuals aged 65 and over more, and to reduce the effect of the virus in case of transmission, vaccination and vaccination programmes should be better explained, and society should be better informed.

ETHICS COMMITTEE APPROVAL

* The study was approved by the Çankırı Karatekin University, Health Science Research Ethics Committee (Date: 09.11.2021 and Number: 3).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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