Knowledge, attitudes and behaviours of health workers working in family health centres towards COVID-19 vaccines

Aile sağlığı merkezlerinde görev yapan sağlık çalışanlarının COVID-19 aşılarına karşı bilgi, tutum ve davranışları

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doi.org/10.35232/estudamhsd.1825409

ESTUDAM Public Health Journal. 2026;11(1):67-75

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***Geliş Tarihi / Received:** 20.11.2025*

***Kabul Tarihi / Accepted:** 28.01.2026*

Abstract

The novelty of the COVID-19 pandemic and the rapid development of new vaccines have contributed to vaccine-related hesitancy in society. This study aimed to examine the knowledge, attitudes, and behaviours of healthcare professionals working in family health centres towards COVID-19 vaccines. The population of this cross-sectional study consisted of 408 health workers working in family health centres in Malatya. No sample calculation was conducted. The study attempted to reach the whole population and was completed with 292 people who agreed to participate. The questionnaire used included sociodemographic characteristics, questions about COVID-19 and COVID-19 vaccines and the COVID-19 Fear Scale. Chi-square test and post hoc chi-square test were used in statistical analyses. Of the participants, 97.3% had received the COVID-19 vaccine, and 47.9% stated that they were hesitant about the vaccine. The hesitancy level of those who did not recommend the COVID-19 vaccine was significantly higher ($p<0.05$). The hesitancy level of those who disagreed with the idea of "*I do not trust*" vaccine-producing companies was significantly lower than those who agreed and were undecided ($p<0.05$). Almost all the healthcare workers participating in the research received the COVID-19 vaccine, and almost half of them stated that they were hesitant about vaccines. Healthcare workers should be provided with training that explains vaccine development and safety processes, along with transparent and accessible information that addresses hesitancy about side effects based on scientific evidence.

Keywords: COVID-19, vaccine, hesitancy

Özet

COVID-19 pandemisinin yeni olması ve yeni aşıların hızlı bir şekilde geliştirilmesi, toplumda aşıya yönelik tereddütlerin ortaya çıkmasına katkıda bulunmuştur. Bu çalışmanın amacı, aile sağlığı merkezlerinde görev yapan sağlık çalışanlarının COVID-19 aşılarına ilişkin bilgi, tutum ve davranışlarını incelemektir. Çalışmanın evrenini Malatya'da aile sağlığı merkezlerinde çalışan 408 sağlık çalışanı oluşturmuştur. Örneklem hesabı yapılmamış, çalışmada evrenin tamamına ulaşılması hedeflenmiş ve katılmayı kabul eden 292 kişi ile çalışma tamamlanmıştır. Kullanılan anket formu; sosyodemografik özellikler, COVID-19 ve COVID-19 aşılarına ilişkin sorular ile COVID-19 Korku Ölçeği'nden oluşmaktadır. İstatistiksel analizlerde Ki-kare testi ve gruplar arasında anlamlılığı belirlemek için de post hoc ki-kare testi kullanılmıştır. Katılımcıların %97,3'ü COVID-19 aşısını yaptırmış olup, %47,9'u aşı konusunda tereddüt yaşadığını belirtmiştir. COVID-19 aşısını önermeyenlerin aşı tereddüt düzeyi anlamlı olarak daha yüksek bulunmuştur ($p<0,05$). Aşı üreten firmalara güvenmediği görüşüne katılmayanların aşı tereddüt düzeyi, bu görüşe katılanlar ve kararsız olanlara göre anlamlı düzeyde daha düşük saptanmıştır ($p<0,05$). Araştırmaya katılan sağlık çalışanlarının neredeyse tamamı COVİD-19 aşısını yaptırmış olmasına rağmen, yaklaşık yarısı aşı konusunda tereddüt yaşadığını ifade etmiştir. Sağlık çalışanlarına, aşı geliştirme ve güvenlik süreçlerini açıklayan; yan etkilere ilişkin tereddütleri bilimsel kanıtlara dayalı olarak ele alan, şeffaf ve erişilebilir bilgiler içeren eğitimler verilmelidir.

Anahtar Kelimeler: COVID-19, aşı, endişe

This study was presented as an oral poster at the 17th European Public Health Conference 2024, held in Lisbon, Portugal, between 12–15 November 2024

Introduction

Novel Coronavirus Disease (COVID-19) emerged in late 2019 and rapidly spread globally, prompting the World Health Organization to declare it a pandemic in March 2020 (1,2). In Turkey, studies on COVID-19 started on 10 January 2020, and the first COVID-19 case was seen on 11 March 2020 (3). In the face of the current COVID-19 pandemic, scientists from all over the world came together to rapidly develop a vaccine for COVID-19 (4). The fact that the pandemic was new, as were the vaccines produced for COVID-19 that started to be administered, has been associated with vaccine hesitancy in society. The WHO has declared vaccine hesitancy to be one of the 10 biggest obstacles to general health (5). Vaccine hesitancy is defined as "*delay in acceptance or rejection of vaccine despite the availability of vaccination services*" (6). The attitude of healthcare professionals toward vaccination is a decisive factor in preventing infections and establishing a behavioral model that enhances individual vaccine compliance. (7). Studies in France, Canada, and Turkey found that 19-38% of healthcare workers were undecided about COVID-19 vaccination (8-10). The acceptance of vaccines, which are one of the most important public health practices and whose importance has increased even more with the emergence of the pandemic, and the elimination of hesitancy about vaccines are crucial in ensuring community immunity. The importance of the behaviour of healthcare professionals, who play an important role in society towards vaccines increases at this point. The aim of this study was to examine the knowledge, attitudes and behaviours of primary healthcare workers in Malatya regarding COVID-19 vaccines.

Material and Method

Study design and sampling

This study, which was conducted between February and April 2022, is a descriptive, cross-sectional study. The population of the study consisted of 216 family physicians and 192 assistant health personnel (408 people in total) working in family health centres serving in the Battalgazi and Yeşilyurt districts of Malatya Province. No sample calculation was conducted and the study tried to reach the entire population; the study was completed with 292 participants who agreed to take part, resulting in a participation rate of 71.6%.

Data collection

The questionnaire used in this study consists of three parts. The first part includes the sociodemographic characteristics of healthcare workers (10 questions). The second part consists of questions about COVID-19 and COVID-19 vaccines (38 questions). The final part includes the COVID-19 Fear Scale (7 questions). The dependent variables of our study were the question of whether there was hesitancy about COVID-19 vaccines (yes/no) and the total score obtained from the COVID-19 Fear Scale.

Ethical considerations

For this research written permission was obtained from the Malatya Provincial Health Directorate and the İnönü University Scientific Research and Publication Ethics Committee approved it (2021/2445).

Statistical analysis

TThe statistical analysis of the data was performed using SPSS version 22.0 software. Descriptive statistics were presented as numbers and percentages. The normality of quantitative variables was assessed using the Kolmogorov–Smirnov test, and the data were found

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Nasıl Atıf Yaparım / How to Cite:
Boz G, Özer A. Knowledge, attitudes and behaviours of health workers working in family health centres towards COVID-19 vaccines. ESTUDAM Public Health Journal. 2026;11(1):67-75

not to be normally distributed ($p<0.05$). The chi-square test was used for the analysis of qualitative variables, and post hoc chi-square tests were applied when necessary. A p value of <0.05 was considered statistically significant.

COVID-19 Fear Scale

This scale was developed by Ahorsu et al. (2020) to measure people's COVID-19-induced fear levels (11). It was translated into Turkish by Nefise et al. in 2020, and validity and reliability were assessed. The scale has a single-factor structure and consists of seven items on a five-point Likert type (1=Strongly disagree; 5=Strongly agree). There are no reverse-coded items. The internal consistency of the scale was found to be 0.82 and the test-retest reliability was 0.72. A high score obtained from the scale indicates a high level of fear of COVID-19 (12). In this study, the internal consistency of the scale among primary healthcare workers in Malatya was assessed using Cronbach's alpha and found to be 0.88, indicating good reliability. This suggests that the scale items were highly consistent in measuring COVID-19-related fear within this sample.

Results

The distribution of the sociodemographic characteristics of the participants is given in Table 1. Accordingly, the age range of the healthcare workers was 18–67 years, and the median age was 40 years. Of the participants, 67.7% were female, 41.8% were physicians and 58.2% were allied health personnel (midwives, nurses or health officers).

Table 1: Distribution of sociodemographic characteristics of participants

Sociodemographic characteristics	n	%
Age groups		
Under 35 years old	92	31.5
35-44 years	97	33.2
45 years and older	103	35.3
Gender		
Male	103	35.3
Female	189	64.7
Profession		
Doctor	122	41.8
Auxiliary health personnel	170	58.2
Education status		
High school graduate	32	11.0
University/Master's Graduate	260	89.0
Marital status		
Married	242	82.9
Single	43	14.7
Other	7	2.4
Years of service in the profession		
10 years and less	92	31.5
11-20 years	103	35.3
21 years and over	97	33.2
Chronic disease status		
Yes	76	26.0
No	216	74.0

Of the research group, 83.6% took part in the diagnosis, treatment or follow-up of COVID-19 patients during the pandemic, 47.3% had COVID-19, 97.3% had COVID-19 vaccinations and 47.9% stated that they were hesitant about COVID-19 vaccines.

Table 2 shows a comparison of hesitancy about COVID-19 vaccines according to the sociodemographic characteristics of the healthcare workers participating in the study. When vaccine hesitancy was examined by age groups, it was found that the hesitancy level of healthcare workers aged 45 and over was lower than that of other age groups (p<0.001). In terms of occupation, the level of hesitancy regarding COVID-19 vaccines was higher among allied health personnel compared to physicians (p<0.001). Regarding years of professional experience, the level of hesitancy about vaccines among those with 10 years or less of work experience was higher than in the other groups (p=0.005).

Table 2: Comparison of participants' hesitancy about COVID-19 vaccines according to sociodemographic characteristics

Sociodemographic characteristics	COVID-19 Vaccine Hesitancy				p
	Yes		No		
	n	%	n	%	
Age					
Under 35 years old	53	57.6	39	42.4	**<0.001**
35-44 years	53	54.6	44	45.4	
45 years and older	34	33.0	69	67.0	
Gender					
Male	45	43.7	58	56.3	0.283
Female	95	50.3	94	49.7	
Profession					
Doctor	44	36.1	78	63.9	**<0.001**
Auxiliary health personnel	96	56.5	74	43.5	
Education status					
High school graduate	18	56.3	14	43.8	0.319
University/Master's Graduate	122	46.9	138	53.1	
Marital status					
Married	114	47.1	128	52.9	0.357
Single	24	55.8	19	44.2	
Other	2	28.6	5	71.4	
Years of service in the profession					
10 years and less	56	60.9	36	39.1	**0.005**
11-20 years	48	46.6	55	53.4	
21 years and over	36	37.1	61	62.9	
Chronic disease status					
Yes	28	36.8	48	63.2	**0.024**
No	112	51.9	104	48.1	

The comparison of participants' hesitancy about COVID-19 vaccines according to various variables is shown in Table 3. The level of hesitancy about COVID-19 vaccines was higher among participants who preferred to 'wait and see' others receive a new vaccine compared to those who did not (p=0.009). The level of hesitancy about vaccination was higher among participants who did not believe that COVID-19 vaccine refusal would endanger public health or who remained undecided, compared to those who believed it would pose a threat (p<0.001).

When examining the participants' hesitancy status based on their views on COVID-19 vaccine effectiveness, it was found that the hesitancy level of those who were undecided was significantly higher than that of the other groups (p<0.001). Regarding whether a family's decision not to vaccinate affects the participant's own vaccination status, those who answered "*yes*" or remained "*undecided*" had higher levels of hesitancy compared to those who answered "*no*" (p<0.001).

Table 3: Comparison of participants' hesitancy about COVID-19 vaccines according to various variables

Variables	COVID-19 Vaccine Hesitancy				p
	Yes		No		
	n	%	n	%	
COVID-19 transmission status					
Yes	72	52.2	66	47.8	0.171
No	68	44.2	86	55.8	
COVID-19 vaccination status					
Yes	134	47.2	150	52.8	0.159
No	6	75.0	2	25.0	
Waiting when a new vaccine is available or wanting to see others getting it					
Yes	109	52.9	97	47.1	**0.009**
No	31	36.0	55	64.0	
Thinking that COVID-19 vaccine refusal would jeopardise public health					
Yes	79	37.8	130	62.2	**<0.001**
No	15	68.2	7	31.8	
Undecided	46	75.4	15	24.6	
COVID-19 vaccine recommendation status					
Yes	106	41.9	147	58.1	**<0.001**
No	34	87.2	5	12.8	
Thinking that COVID-19 vaccines are effective					
Yes	88	39.5	135	60.5	**<0.001**
No	5	62.5	3	37.5	
Undecided	47	77.0	14	23.0	
Does your family's decision not to vaccinate affect your vaccination status?					
Yes	21	72.4	8	27.6	**<0.001**
No	107	43.1	141	56.9	
Undecided	12	80.0	3	20.0	
Does your friends' decision not to get vaccinated affect your decision to get vaccinated?					
Yes	11	68.8	5	31.3	**0.007**
No	114	44.5	142	55.5	
Undecided	15	75.0	5	25.0	

Comparison of Vaccine Hesitancy According to Participants' Misinformation and Beliefs Regarding COVID-19 Vaccines is shown in Table 4. The hesitancy status of those who disagreed with the statements "*I do not trust the companies that produce COVID-19 vaccines*", "*There are no studies proving the safety of COVID-19 vaccines*", "*COVID-19 vaccines are not beneficial*" and "*There is no need for booster doses of COVID-19 vaccines*" was lower than those who agreed and were undecided (p<0.001). On the opinion that "*mRNA vaccines change human DNA*", the hesitancy level of the undecided respondents was higher than the respondents who disagreed (p=0.002). Participants who agreed that "*COVID-19 vaccines have more side effects*" were more likely to be hesitant about the vaccines compared to those who disagreed or were undecided (p<0.001). The hesitancy level of those who disagreed that COVID-19 vaccines passed through clinical trials quickly and were put on the market was significantly lower than those who agreed and were undecided (p<0.001). Participants who agreed that "*COVID-19 vaccines led to a lack of trust in health policies and the pharmaceutical industry*" had higher levels of hesitancy compared to those who disagreed; the differences between the groups were statistically significant (p<0.001).

Table 4: Comparison of vaccine hesitancy according to participants' misinformation and beliefs regarding COVID-19 vaccines

Variables	COVID-19 Vaccine Hesitancy (Yes/No)				
	Yes		No		p
	n	%	n	%	
I do not trust the companies that produce COVID-19 vaccines					
I agree	31	68.9	14	31.1	**<0.001**
Disagree	41	29.1	100	70.9	
Undecided	68	64.2	38	35.8	
There are no studies proving the safety of COVID-19 vaccines					
I agree	35	72.9	13	27.1	**<0.001**
Disagree	56	32.7	115	67.3	
Undecided	49	67.1	24	32.9	
COVID-19 vaccines have no benefit					
I agree	7	87.5	1	12.5	**<0.001**
Disagree	94	40.0	141	60	
Undecided	39	79.6	10	20.4	
COVID-19 vaccines do not need booster doses					
I agree	15	62.5	9	37.5	**<0.001**
Disagree	78	37.7	129	62.3	
Undecided	47	77.0	14	23.0	
COVID-19 vaccines cause stroke					
I agree	7	58.3	5	41.7	**<0.001**
Disagree	68	36.6	118	63.4	
Undecided	65	69.1	29	30.9	
mRNA vaccines modify human DNA					
I agree	9	60.0	6	40.0	**0.002**
Disagree	89	41.8	124	58.2	
Undecided	42	65.6	22	34.4	

COVID-19 vaccines cause very common myocarditis					
I agree	33	75.0	11	25.0	**<0.001**
Disagree	51	33.8	100	66.2	
Undecided	56	57.7	41	42.3	
COVID-19 vaccines cause toxic effects on the human body					
I agree	27	87.1	4	12.9	**<0.001**
Disagree	63	34.6	119	65.4	
Undecided	50	63.3	29	36.7	
COVID-19 vaccines have many side effects					
I agree	42	79.2	11	20.8	**<0.001**
Disagree	50	31.3	110	68.8	
Undecided	48	60.8	31	39.2	
COVID-19 vaccines have been fast-tracked through clinical trials and launched on the market					
I agree	83	58.0	60	42.0	**<0.001**
Disagree	21	25.9	60	74.1	
Undecided	36	52.9	32	47.1	
COVID-19 vaccines have led to a lack of trust in health policies and the pharmaceutical industry					
I agree	70	66.7	35	33.3	**<0.001**
Disagree	29	27.1	78	72.9	
Undecided	41	51.2	39	48.8	

Participants' Fear of COVID-19 Scale Scores

The lowest score of the healthcare workers who participated in the study from the COVID-19 Fear Scale was 7.00, the highest score was 35.00 and the median total fear score from the scale was 15.00.

Discussion

Demographic Factors and Clinical Risk Perception

In our study, healthcare workers with 10 years or less of work experience exhibited significantly higher vaccine hesitancy levels than more experienced groups. Literature presents varying results; while some studies found younger HCWs more willing to be vaccinated, others reported higher hesitancy in those with fewer years of service (13, 14). Professional tenure is often inherently linked to clinical experience; thus, the higher anxiety observed in participants with fewer years of service might stem from a relative lack of long-term professional exposure. When examining the literature, these divergent results could be attributed to the timing of the studies relative to vaccination rollouts and varying COVID-19 incidence rates across different countries. Interestingly, participants without chronic diseases showed significantly higher anxiety levels. Given that individuals with chronic conditions are at higher risk for severe COVID-19 outcomes, they likely perceive the vaccine as a vital protective measure, a finding consistent with other international studies (8, 15). It is plausible that individuals with chronic illnesses have a heightened awareness of their vulnerability, leading to a better understanding of the vaccine's importance. Consequently, providing these groups with transparent, evidence-based, and up-to-date scientific information may effectively mitigate such hesitancy.

Uncertainty and the "Wait-and-See" Approach

In our research group, the anxiety level of those who wanted to wait for a new vaccine or see others receive it was significantly higher. This "*wait-and-see*" attitude can be attributed to the inherent uncertainty regarding newly developed vaccines, rapid approval processes, and fears of unforeseen side effects. The correlation between healthcare professional's reluctance to recommend

the vaccine and their own anxiety levels suggests that their personal hesitancy directly impact public confidence. Addressing misinformation among healthcare professionals is therefore crucial for achieving broader community immunity.

Among the healthcare professionals who participated in the study, the hesitancy level of those who did not recommend COVID-19 vaccines was significantly higher. When we consider the reason for not recommending it to other people as the person's own hesitancy about the vaccine, we can think that it will affect the rate of vaccination in society through the useful information they will provide to health workers about the vaccine, the status of having these vaccines to their relatives and the lack of fear about vaccine safety.

Vaccine Safety, Effectiveness, and Trust in Information

In our study, healthcare workers who disagreed with statements such as "*I do not trust the companies that produce COVID-19 vaccines*", "*better immunity is achieved by undergoing COVID-19*", "*COVID-19 vaccines are useless*", and "*there are no studies proving the safety of COVID-19 vaccines*" had significantly lower hesitancy compared to those who agreed or remained undecided. These findings are consistent with research conducted in Greece, China, Italy, Lebanon, and Palestine (16-24). In these studies, the primary drivers of vaccine hesitancy included fear of side effects, doubts about efficacy, the rapid pace of vaccine development, and a perceived lack of information (16, 18, 20, 22, 24). Similar to our results, the novelty of the disease and the accelerated approval processes for vaccines likely contributed to increased safety hesitancy among healthcare professionals.

Limitations

This study was conducted exclusively in family health centers located in the two central districts (Battalgazi and Yeşilyurt) of Malatya province. Consequently, this may limit the generalizability of the findings to all primary healthcare workers across Türkiye.

Conclusions

The attitudes and behaviours of healthcare professionals, who are expected to be role models in society on an important issue, such as vaccination, were examined in this study.

The findings of this study highlight the urgent need for targeted interventions to address vaccine hesitancy among healthcare workers. Practical implications include:

Targeted Training: Implementing specialized educational programs, particularly for allied health personnel and less experienced staff, to clarify vaccine development processes and safety profiles.

Transparent Communication: Establishing clear and accessible information channels that address side-effect hesitancy with up-to-date scientific evidence.

Policy Interventions: Developing institutional support systems and peer-to-peer communication strategies where experienced healthcare professionals can act as role models to build trust in vaccination policies.

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