

THE RELATIONSHIP BETWEEN COVID-19 PERCEIVED RISK AND ATTITUDES TOWARDS COVID-19 VACCINATION IN HEALTHCARE PROFESSIONALS: AN EXAMPLE OF EASTERN TURKEY

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SUMMARY

Background: This study aimed to examine the relationship between COVID-19 perceived risk and attitudes towards COVID-19 vaccination in healthcare professionals.

Subjects and methods: This cross-sectional descriptive study included a total of 580 healthcare professionals.

Results: The healthcare professionals' COVID-19 Perceived Risk Scale (CPRS) and Attitudes towards COVID-19 Vaccine Scale (ATV-COVID-19) mean scores were 31.36 ± 5.16 and 3.00 ± 0.61 , respectively. A statistically significant negative correlation was found between their CPRS and ATV-COVID-19 mean scores.

Conclusions: The healthcare professionals had a high COVID-19 perceived risk and moderately positive attitudes towards COVID-19 vaccine.

Key words: COVID-19 - attitudes towards vaccination - healthcare professionals - perceived risk

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INTRODUCTION

The novel coronavirus disease-2019 (COVID-19) has emerged in Wuhan City, Hubei Province of China, causing severe acute respiratory infections, and affected the entire world starting from China. After Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), COVID-19 has been declared by the World Health Organization (WHO) as the third pandemic caused by the coronavirus (Jiloha 2020). The most common symptoms of COVID-19 are fever, dry cough, and tiredness. Most (around 80%) of the people with COVID-19 symptoms recover without hospital treatment, about 15% become seriously ill and need oxygen, and 5% have health problems that can result in death (CDC 2020).

Prolongation of the pandemic, increased rate of infection, quarantine and isolation cause people to worry, become anxious and perceive themselves at risk for COVID-19. Especially as people with chronic diseases such as respiratory and cardiovascular diseases, and those in risky groups such as healthcare workers observe the increasing number of cases and deaths caused by the COVID-19 in both their own countries and across the world, they think that their risk of contracting COVID-19 is high (Jordan et al. 2020, Sakaoglu et al. 2020, WHO 2020).

Healthcare professionals are divided into low, medium, high and very high risk groups, depending on their contact with patients (Occupational Safety and

Health Administration 2021). Thanks to recent vaccination studies on COVID-19, which is tried to be treated with various methods and controlled by protective measures such as social distance, wearing a mask, and hand hygiene, several COVID-19 vaccines have been developed recently (WHO 2020).

Vaccination is one of the most successful public health interventions in history. Vaccines play an important role in preventing infectious diseases. Several diseases can be controlled thanks to vaccination (Kose et al. 2020). The WHO reports vaccine hesitancy in the top 10 among the conditions with negative consequences for global health (WHO 2020).

Studies continue rapidly to develop vaccines for COVID-19, which has a high transmission rate. Vaccination is more important for healthcare professionals who constitute a risk group of COVID-19 (Gadoth et al. 2020, Galanis et al. 2020, Kose et al. 2020). Perceived risk of diseases affects people's attitudes and acceptance of vaccines (Betsch et al. 2018, Thomson et al. 2016). Vaccine hesitancy prevents positive consequences of vaccination (Phadke et al. 2016). People have already started to hesitate about COVID-19 vaccines due to various speculations in publications and social media platforms (Biasio et al. 2020).

Informing people about attitudes and concerns towards COVID-19 vaccination is very important during the pandemic. The support of healthcare professionals in this regard will have a positive effect on people's concerns (Dodd et al. 2020).

However, in this process, it is necessary to identify and evaluate COVID-19 perceived risk of healthcare professionals in order to learn their attitudes towards COVID-19 vaccination and to maintain their psychological well-being. In line with this information, this study was conducted to examine the relationship between COVID-19 perceived risk and attitudes towards COVID-19 vaccine in healthcare professionals.

SUBJECTS AND METHODS

Study desing

This is a cross-sectional descriptive study.

Participants

Snowball sampling, one of the non-random sampling methods, was used in the study. The data collection forms, which were prepared using GoogleDocs program, were sent online (via email, WhatsApp, Facebook, Instagram) to healthcare professionals in Turkey between January 1-10, 2020, and they were asked to fill out and the forms and share them with other healthcare professionals. As a result, a total of 620 healthcare professionals received this online forms, and 580 (93% participation) of them who filled out the forms were included in the study. A power analysis was performed for the study by using GPower 3.1 program. Accordingly, an effect size of 0.274 was obtained with 95% power and 0.05 margin of error, suggesting that the data and sample size were sufficient to conduct the research (Sevgin & Çetin 2017).

Measurement tools

The data were collected using an introductory information form, the COVID-19 Perceived Risk Scale, and the Attitudes towards COVID-19 Vaccine Scale.

Introductory information form

The form was prepared by the researchers, and consisted of questions about the healthcare professionals' age, gender, education, occupation, work experience, income level, status of being exposed to COVID-19, perception of COVID-19, chronic illness, and if any, cohabitant with chronic disease.

COVID-19 perceived risk scale (CPRS)

This scale is used to assess individuals' COVID-19 perceived risks, and consist of eight items and two subscales, including cognitive (items 1,2,3,4) and emotional (items 5,6,7,8) dimensions (Yıldırım & Güler 2020). This is a 5-point Likert type scale, scoring from 1 (distant possibility) to 5 (high probability). Total scale score is obtained by summing all item scores.

Attitudes towards COVID-19 vaccine scale (ATV-COVID- 19)

This scale is used to measure individuals' attitudes towards COVID-19 vaccination. The scale consists of nine items and two subscales (positive attitudes and negative attitudes). This is a 5-point Likert type scale, scoring as "strongly disagree (1)", "disagree (2)", "undecided (3)", "agree (4)", "strongly agree (5)". A value between 1-5 is obtained by dividing total scale score, which is obtained by adding item scores in the subscales, by the number of items in the subscales. Higher scores on the positive attitude subscale indicates positive attitudes towards COVID-19 vaccine. Items in the negative attitude subscale are calculated after reversing, and higher scores in this subscale indicate lower negative attitudes towards COVID-19 vaccine (Geniş et al. 2020).

Data collection

The study was carried out online (via e-mail, WhatsApp, Facebook, Instagram) between January 1-10, 2021 by using the snowball sampling and the data collection forms prepared in GoogleDocs program. In snowball sampling, sampling process starts by reaching one individual subject providing information about just one other subject. The researcher tries to reach new subjects by asking the subjects previously reached to provide other referrals. The data collection phase is completed by the researcher as soon as the data is saturated and enough number of subjects are available for the sample (Yağar & Dökme 2018). A total of 620 healthcare professionals received the forms, and 7% of them did not agree to participate in the study. Therefore, the study was completed with 580 (rate of participation= 93%) healthcare professionals.

Data evaluation

In the study, descriptive statistics were presented in number, percentage, arithmetic mean and standard deviation. Pearson's correlation coefficient was used to examine the relationships between numerical variables. Statistical analyzes were performed using the SPSS 20 program, where the level of statistical significance was considered 0.05 (p-value).

Ethical considerations

Before conducting the study, an ethical approval was obtained from the Ethics Committee of a university (no: 2020/04). The healthcare professionals, who were included in the study, were explained the purpose and application method of the study and their consent was obtained online. This study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Those who agreed to participate in the study were included in the study and their personal identity information was kept confidential.

RESULTS

The mean age of the healthcare professionals was 31.03±6.99 years, 72.6% of them were female, 53.1% had bachelor's degrees, 42.6% were nurses, 27.4% had a working experience of 12 years and above, 87.1% did not have a chronic illness, 65.0% had no cohabitant with chronic disease, 72.2% did not contract COVID-19, and 58.8% perceived COVID-19 as being at constant risk (Table 1).

Table 1. Distribution of Healthcare Professionals by their Introductory Characteristics (n=580)

Variables	n	%
Gender		
Female	421	72.6
Male	159	27.4
Education		
High school	45	7.8
Associate degree	99	17.1
Undergraduate	308	53.1
Graduate	128	22.1
Occupation		
Doctor	83	14.3
Nurse	247	42.6
Midwife	92	15.9
Pharmacist	58	10.0
*Other	100	17.2
Work experience		
0-3 years	149	25.7
4-7 years	143	24.7
8-11 years	129	22.2
12 years and above	159	27.4
Chronic illness		
Yes	75	12.9
No	505	87.1
Cohabitant with chronic illness		
Yes	203	35.0
No	377	65.0
Being exposed to coronavirus		
Yes	161	27.8
No	419	72.2
Perception of COVID-19		
Terrifying	29	5.0
Worrying	136	23.4
Disaster	5	0.9
Being constantly at risk	341	58.8
Just a temporary situation	69	11.9
Mean age (Mean ±SD)	31.03 ±6.99	

*Dentist, Paramedic, Emergency medical technician, Radiology technician

The CPRS total mean score of the healthcare professionals was 31.36±5.16. Their mean scores on the cognitive and emotional subscales of the CPRS were 14.28±3.02 and 17.08±3.21, respectively. In addition, the ATV-COVID-19 total mean score of the healthcare

professionals was 3.00±0.61, and their mean scores on the positive and negative subscales of the ATV-COVID-19 were 2.96±0.92 and 3.03±0.60, respectively (Table 2).

In Table 3, a statistically significant negative correlation was found between the CPRS total and ATV-COVID-19 total and positive attitude subscale mean scores (Table 3).

DISCUSSION

Today, there are currently more than 200 vaccines at various stages of development for the COVID-19, which has been declared pandemic in March 2020. However, one of the most important issue about COVID-19 vaccines covers viral risks and people's attitudes towards the vaccines (Dodd et al. 2020). Therefore, the results of this study, which examines the relationship between healthcare professionals' COVID-19 perceived risk and attitudes towards COVID-19 vaccination, have been discussed in line with the relevant literature.

The present study found that healthcare professionals obtained high mean scores on both CPRS and its subscales, suggesting that they had high COVID-19 perceived risk. Wahed et al. examined the knowledge, attitudes and perceptions of healthcare workers about COVID-19 in Egypt, and found that they had high COVID-19 perceived risk (Wahed et al. 2020).

In their study covering 10 countries, Dryhust et al. found equally high levels of COVID-19 risk perception levels in the countries (Dryhust et al. 2020). Likewise, the present study found that risk perception was positively and significantly associated with preventive health behaviors such as washing hands, wearing a mask, and physical distance. Wise et al. have reported that COVID-19 perceived risk is significantly high in America (Wise et al. 2020). Polychronis et al. have also determined that healthcare workers have a high COVID-19 perceived risk (Polychronis et al. 2020). The present study have results similar to those in the literature. Healthcare workers' perception of COVID-19 risk is affected by both their mental health and exposure to this risk (Wahed et al. 2020, Yesilgul et al. 2018). Salopek-Žiha et al. reported that 67% of the hospital workers are worried, 11% depressed, 17% anxious, and 10% are stressed (Salopek-Žiha et al. 2020). The high COVID-19 perceived risk of healthcare professionals may be because they are in a higher risk group compared to other population groups under the negative impact of COVID-19 pandemic, there is an uncertainty about the mutation of coronavirus, causing further uncertainties, and they are concerned about transmitting the virus to their families.

In this study, the healthcare professionals had moderately positive attitudes towards COVID-19 vaccination. Reiter et al. examined the attitudes towards COVID-19 vaccines, and found that 69% of the participants had a positive opinion about the vaccines (Reiter et al. 2020).

Table 2. Distribution of the Healthcare Professionals' CPRS, ATV-COVID-19 and Subscales Mean Scores (n=580)

Scales	Item number	Min. Score	Max. Score	$\bar{X} \pm SD$
CPRS and subscales				
Cognitive Subscale	4	4	20	14.28±3.02
Emotional Subscale	4	4	20	17.08±3.21
Total	8	15	40	31.36±5.16
ATV-COVID and subscales				
Positive Attitude Subscale	4	1	5	2.96±0.92
Negative Attitude Subscale	5	1	5	3.03±0.60
Total	9	1	5	3.00±0.61

Table 3. Comparison of CPRS, ATV-COVID-19 and Subscales

		Positive Attitude Subscale	Negative Attitude Subscale	ATV-COVID-19 Total
CPRS Total	r	-0.083*	-0.049	-0.082*
	p	0.045	0.238	0.047
Cognitive Subscale	r	-0.072	-0.036	-0.067
	p	0.085	0.389	0.106
Emotional Subscale	r	-0.067	-0.045	-0.690
	p	0.108	0.278	0.096

Pearson's Correlation, *p<0.05

Gadoth et al. also examined the attitudes of healthcare workers towards COVID-19 vaccines, and found that the majority of them had a positive attitude towards the vaccines (Gadoth et al. 2020). Kwok et al. investigated the attitudes of nurses towards COVID-19 vaccination, and determined that 63% of them had a positive attitude towards the vaccination (Kwok et al. 2020). Köse et al. reported that 68.6% of the healthcare workers had a positive attitude towards COVID-19 vaccination (Köse et al. 2020). In a study conducted with healthcare professionals in Malta, only half of the participants had a positive opinion about COVID-19 vaccination (Grech et al. 2020). Similar to the present study, several studies have found high COVID-19 perceived risk in healthcare workers (Bhagavathula et al. 2020, Huynh et al. 2020, Maleki et al. 2020, Shi et al. 2020).

One study covering 19 countries has reported that 71.5% of the participants had a positive opinion about COVID-19 vaccination, where 88.6% of the Chinese participants, 72.7% of the Polish participants and 54.9% of the Russian participants had positive attitudes towards the vaccine (Lazarus et al. 2020). In the *Lancet Infectious Diseases*, according to data collected in Australia in April 2020, 86% of people surveyed (3741 of 4362) would be willing to vaccinate against COVID-19 if a vaccine became available (Dodd et al. 2020). One study conducted in England has determined that people's positive or negative beliefs and attitudes towards vaccination are effective in their vaccination intentions (Sherman et al. 2020).

In one study conducted with 20,000 adults from 27 countries between July and August 2020, 74% of the respondents would be willing to vaccinate against COVID-19 when available, where the countries with

highest Covid-19 vaccination intent are China (97%), Brazil (88%), Australia (88%) and India (87%) and those with lowest Covid-19 vaccination intent are Russia (54%), Poland (56%), Hungary (56%) and France (59%) (Dai 2020). When the studies conducted on both healthcare professionals and country populations are examined, our study has similar results with those in the literature. Considering that healthcare professionals' attitudes towards vaccines are an important determinant of their own vaccine purchases and their likelihood of recommending vaccines to their patients for the acceptability of vaccination against COVID-19 by the public, it is an expected result that healthcare professionals had positive attitudes towards COVID-19 vaccination in this study.

In this study, a significant negative correlation was found between the CPRS total, ATV-COVID-19 total and positive attitude subscale mean scores (Table 3). This result suggests that as the COVID-19 risk perception increases, the positive attitude towards COVID-19 vaccine decreases. Karlsson et al. found a statistically significant relationship between the COVID-19 perceived risk and attitudes towards COVID-19 vaccine (Karlsson et al. 2021). Sherman et al. have concluded that a higher COVID-19 perceived risk is associated with more positive beliefs and attitudes towards COVID-19 vaccination and increased intent for COVID-19 vaccination (Sherman et al. 2020). Studies have reported that healthcare professionals have positive attitudes towards COVID-19 vaccination, believe in high reliability of COVID-19 vaccines, and have high intention to be vaccinated against COVID-19 (Gagneux-Brunon et al. 2020, Kwok et al. 2020, Nzaji et al. 2020). Galanis et al. have found that stronger

vaccine confidence, positive attitude towards a COVID-19 vaccine, fear about COVID-19, individual perceived risk about COVID-19, and contact with suspected or confirmed COVID-19 patients are associated with increased healthcare workers' willingness to get vaccinated against COVID-19 (Galanis et al. 2020). Above-mentioned studies found a positive relationship between COVID-19 perceived risk and attitudes towards COVID-19 vaccines. The fact that we have different results from those in these studies may be because of the inadequacy of personal protective equipment of healthcare professionals, fear of transmitting the disease to their families, social stigma associated with the disease, heavy work load, higher possibility of transmission of the virus, uncertainties against a new disease, and increased vaccine variety.

Limitations

This study has some limitations. In the study, snap shot measurements were conducted cross-sectionally within specific dates, 7% of the healthcare professionals did not agree to participate in the study, and the healthcare professionals' COVID-19 perceived risk and attitudes towards COVID-19 vaccines were evaluated using only self-report scales.

CONCLUSIONS

In conclusion, healthcare professionals had a high COVID-19 perceived risk and moderately positive attitudes towards COVID-19 vaccination. As the COVID-19 perceived risk increased, the positive attitude towards the vaccine decreased. As the age increased, the positive attitude towards the vaccine also decreased and the perception of cognitive and emotional risks towards the virus reduced.

According to the results of the present study, healthcare professionals are at a high risk of COVID-19 infection and transmission. Health authorities must take relevant and necessary measures to minimize COVID-19 risks to healthcare workers. It may be recommended to adopt training strategies aimed at providing continuous support to healthcare professionals. Awareness of various COVID-19 vaccines can improve their perceptions and acceptances of COVID-19 vaccination. For this reason, health officials should provide reliable sources of COVID-19 vaccines, informing them to eliminate their vaccine hesitancy.

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Contribution of individual authors:

Tuğçe Sönmez, Süheyla Yaralı & Gülcan Bahçecioğlu Turan designed and supervised the study and was involved in data collection, the writing of the paper.

Gülcan Bahçecioğlu Turan contributed statistical analysis.

All authors approved the final version.

References

1. Betsch C, Schmid P, Heinemeier D, Korn L, Holtmann C & Böhm R: *Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. PloS one* 2018; 13: e0208601
2. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA & Bandari DK: *Novel coronavirus (COVID-19) knowledge and perceptions: a survey on healthcare workers. medRxiv* 2020
<https://doi.org/10.1101/2020.03.09.20033381>
3. Biasio LR, Bonaccorsi G, Lorini C & Pecorelli S: *Assessing COVID-19 vaccine literacy: a preliminary online survey. Human Vaccines & Immunotherapeutics* 2020; 1-9
4. CDC: *Coronavirus disease 2019 (COVID-19). February 11. Centers for Disease Control and Prevention. Retrieved 12 September 2020 from: https://www.cdc.gov/coronavirus/2019-nCoV/index.html*
5. Dai D: *Three in Four Adults Globally Say They'd Get a Vaccine for COVID-19 –But is This Enough?. World Economic Forum. Retrieved 12 September 2020 from: https://www.weforum.org/press/2020/08/three-in-four-adults-globally-say-they-d-get-a-vaccine-for-covid-19-but-is-this-enough/*
6. Dodd RH, Pickles K, Nickel B, Cvejic E, Ayre J, Batcup C, et al.: *Concerns and motivations about COVID-19 vaccination. The Lancet Infectious Diseases* 2020
[doi:https://doi.org/10.1016/S1473-3099\(20\)30926-9](https://doi.org/10.1016/S1473-3099(20)30926-9)
7. Dryhurst S, Schneider CR, Kerr J, Freeman AL, Recchia G, Van Der Bles AM, et al.: *Risk perceptions of COVID-19 around the world. Journal of Risk Research* 2020; 1-13
8. Gadoth A, Halbrook M, Martin-Blais R, Gray AN, Tobin NH, Ferbas KG, et al.: *Assessment of COVID-19 vaccine acceptance among healthcare workers in Los Angeles. medRxiv* 2020
[doi: https://doi.org/10.1101/2020.11.18.20234468](https://doi.org/10.1101/2020.11.18.20234468)
9. Gagneux-Brunon A, Detoc M, Bruel S, Tardy B, Rozaire O, Frappe P, et al.: *Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross sectional survey. Journal of Hospital Infection* 2020
[doi:https://doi.org/10.1016/j.jhin.2020.11.020](https://doi.org/10.1016/j.jhin.2020.11.020)
10. Galanis PA, Vraka I, Fragkou D, Bilali A & Kaitelidou D: *Intention of health care workers to accept COVID-19 vaccination and related factors: a systematic review and meta-analysis. medRxiv* 2020
[doi: https://doi.org/10.1101/2020.12.08.20246041](https://doi.org/10.1101/2020.12.08.20246041)
11. Geniş B, Gürhan N, Koç M, Geniş Ç, Şirin B, Çirakoğlu OC, et al.: *Development Of Perception And Attitude Scales Related With Covid-19 Pandemia. Pearson Journal of Social Sciences & Humanities* 2020
[doi:10.46872/pj.127](https://doi.org/10.46872/pj.127)

12. Grech V, Gauci C & Agius S: Vaccine hesitancy among Maltese healthcare workers toward influenza and novel COVID-19 vaccination. *Early human development* 2020; 105:213.
13. Huynh G, Nguyen TNH, Vo KN & Pham LA: Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. *Asian Pacific Journal of Tropical Medicine* 2020; 13: 260
14. Jiloha R: COVID-19 and mental health. *Epidemiology International (E-ISSN: 2455-7048)* 2020; 5: 7-9
15. Jordan RE, Adab P & Cheng K: Covid-19: risk factors for severe disease and death. *British Medical Journal* 2020; 368: m1198
16. Karlsson LC, Soveri A, Lewandowsky S, Karlsson L, Karlsson H, Nolvi S, et al.: Fearing the Disease or the Vaccine: The Case of COVID-19. *Personality and Individual Differences* 2021: 110590
17. Kose S, Mandiracioglu A, Sahin S, Kaynar T, Karbus O & Ozbel Y: Vaccine hesitancy of the COVID-19 by health care personnel. *International Journal of Clinical Practice* 2020; e13917
18. Kwok KO, Li KK, Wei WI, Tang KH, Wong SYS & Lee SS: Are we ready when COVID-19 vaccine is available? Study on nurses' vaccine hesitancy in Hong Kong. *medRxiv* 2020 DOI: 10.1101/2020.07.17.20156026
19. Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, et al.: A global survey of potential acceptance of a COVID-19 vaccine. *Nature medicine* 2020; 1-4
20. Maleki S, Najafi F, Farhadi K, Fakhri M, Hosseini F & Naderi M: Knowledge, Attitude and Behavior of Health Care Workers in the Prevention of COVID-19. *Research Square* 2020; 21: 201
21. Nzaji MK, Ngombe LK, Mwamba GN, Ndala DBB, Miema JM, Lungoyo CL, et al.: Acceptability of Vaccination Against COVID-19 Among Healthcare Workers in the Democratic Republic of the Congo. *Pragmatic and observational research* 2020; 11: 103
22. Occupational Safety and Health Administration. *Healthcare Workers and Employers*. Retrieved 12 January 2021 from <https://www.osha.gov/coronavirus/control-prevention/healthcare-workers>
23. Phadke VK, Bednarczyk RA, Salmon DA & Omer SB: Association between vaccine refusal and vaccine-preventable diseases in the United States: a review of measles and pertussis. *Jama* 2016; 315: 1149-1158
24. Polychronis G & Roupa Z: Health Workers' knowledge and perception regarding the risk of spread of COVID-19 during the pandemic: A systematic review. *Journal of public affairs* 2020; e2558.
25. Reiter PL, Pennell ML & Katz ML: Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? *Vaccine* 2020; 38: 6500-6507
26. Sakaoğlu HH, Orbatu D, Emiroğlu M & Çakır Ö: Spielberger State and Trait Anxiety Level in Healthcare Professionals During the Covid-19 Outbreak: A Case of Tepecik Hospital. *Tepecik Hastanesi Örneği. Tepecik Eğitim Araştırma Hastanesi Dergisi* 2020; 30:1-9
27. Salopek-Žiha D, Hlavati M, Gvozdanovic Z, Gašic M, Placento H, Jakic H, Klapan D & Šimic H: Differences in distress and coping with the covid-19 stressor in nurses and physicians. *Psychiatr Danub* 2020; 32:287-293
28. Sevgin H & Çetin B: Power Analysis in Educational Research and an Application. *YYU Journal Of Education Faculty* 2017; 14:1462-1480
29. Sherman SM, Smith LE, Sim J, Amlôt R, Cutts M, Dasch H, et al.: COVID-19 vaccination intention in the UK: results from the COVID-19 vaccination acceptability study (CoVAccS), a nationally representative cross-sectional survey. *Human Vaccines & Immunotherapeutics* 2020: 1-10
30. Shi Y, Wang J, Yang Y, Wang Z, Wang G, Hashimoto K, et al.: Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19. *Brain, Behavior, & Immunity-Health* 2020: 100064 DOI: <https://doi.org/10.1016/j.bbih.2020.100064>
31. Thomson A, Robinson K & Vallée-Tourangeau G: The 5As: A practical taxonomy for the determinants of vaccine uptake. *Vaccine* 2016; 34: 1018-1024
32. Wahed WYA, Hefzy EM, Ahmed MI & Hamed NS: Assessment of knowledge, attitudes, and perception of health care workers regarding COVID-19, a cross-sectional study from Egypt. *Journal of community health* 2020; 45: 1242-1251
33. Wise T, Zbozinek TD, Michelini G & Hagan CC: Changes in risk perception and protective behavior during the first week of the COVID-19 pandemic in the United States 2020. doi:<https://royalsocietypublishing.org/doi/10.1098/rsos.200742>
34. World Health Organization (WHO): Ten threats to global health in 2019. Retrieved 18 December 2020 from <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>
35. Yağar F & Dökme S: Planning of Qualitative Researches: Research Questions, Samples, Validity and Reliability. *Gazi Sağlık Bilimleri Dergisi* 2018; 3: 1-9
36. Yesilgul G, Cicek H, Avci M & Huseyniklioglu B: B. Nurses' knowledge levels and perceptions regarding occupational risks and hazards. *International Journal of Caring Sciences* 2018; 11: 1117-1124
37. Yıldırım M & Güler A: Factor analysis of the COVID-19 perceived risk scale: A preliminary study. *Death studies* 2020; 1-8

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