The Relationship Between Personal Protection Behaviors and Fear Levels of Healthcare Professionals Who Had Covid-19 Vaccine

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ABSTRACT

It is known that the use of personal protective equipment is effective in preventing the spread of COVID-19. The purpose of this study is to reveal the relationship between personal protection behaviors and fear levels of healthcare professionals who are vaccinated against COVID-19. This descriptive and correlational study was carried out between February and April 2021 using an online questionnaire with 103 healthcare professionals who were actively involved in the COVID-19 pandemic period in a hospital in Istanbul. The data were obtained using a "Participant Information Form" consisting of 19 items and the "Fear of COVID-19 Scale". The mean Fear of COVID-19 Scale score of the participants was 17.82±6.29 (min=7, max=33), and they had a moderate fear of COVID-19. No relationship was found between the use of gloves, masks, and disposable gowns by the participants before they had been vaccinated and their levels of fear of COVID-19. It was demonstrated that the vaccine had no effect on fear of COVID-19 and personal protective behaviors.

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INTRODUCTION

The COVID-19 pandemic has created political, economic, and psychosocial effects all over the world, as well as many unknowns (Cascella et al., 2020). The high transmission potential of the disease, rapid increase in the number of infected people, high mortality rates, lack of knowledge about virus protection methods, and lack of an effective treatment affected the social lives and mental health of individuals adversely and created an atmosphere of fear (Ahorsu et al., 2020). Additionally, often unevidenced information that is easily accessible via the internet increased negative emotional reactions in society. It was reported that there were suicide attempts due to the anxiety experienced, and one person died in Bangladesh (Mamun, 2020).

It is known that measures are taken to reduce the psychological and physiological impact of the pandemic all over the world, including Turkey (Cascella et al., 2020). Accordingly, infection control algorithms for the care of patients diagnosed with COVID-19 were developed and put into practice to protect healthcare professionals, who are the highest-risk group in terms of transmission, and prevent the spread of the virus (Ornell et al., 2020). It is known that these algorithms include procedures related to wearing personal protective equipment, hand hygiene, cleaning the patient's room, patient and posthumous care (Celik et al., 2020). As another protection factor, vaccine studies gained momentum, and due to the pandemic, phase III studies were completed within months, and vaccines that are reliable, have good immunogenicity, and have high efficacy in preventing COVID-19 infection were produced and started to be applied by giving priority to healthcare professionals with emergency use authorization. Nevertheless, studies on how effective vaccines that are approved for usage will be in preventing infection are going on (Kaya, 2021).

The World Health Organization (WHO) continues to warn that the vaccine may not be sufficient to protect against the virus causing COVID-19 (SARS-CoV-2), and the usage of protective equipment is vital (WHO, 2021). It was reported that if the vaccine prompts health workers and society to ease their protective behavior, new waves of infections may emerge as vaccines may become less effective against future variants of the virus (Mahase, 2021). In this context, the post-vaccine protective equipment usage status of healthcare professionals who take an active role in the protection and preservation of public health is seen as an important data source. It is foreseen that a safer work environment can be created by using these data in the warnings and regulations to be made in the hospital environment.

METHODS

In this study, it was aimed to reveal the relationship between personal protection behaviors and fear levels of healthcare professionals vaccinated against COVID-19 who care for patients diagnosed with COVID-19.

The study was carried out between February and April 2021 in a foundation university (non-profit private university in Turkey) hospital operating on the European side of Istanbul in Turkey.

The population of the study consisted of 155 hospital employees, 49 doctors, 77 nurses, 14 patient care personnel, and 15 cleaning staff working in the aforementioned hospital and actively involved in the care of patients diagnosed with COVID-19. Within the scope of the study, it was aimed to reach the entire population without sampling, and data were obtained from 130 participants. Because of missing information in 27 of the collected data forms, 103 forms were deemed suitable for analysis (Coskun et al., 2017).

The "Google Forms" system was used as a data collection tool in the study, and the data were collected online.

In the first stage of the study, 19 questions consisting of statements about the sociodemographic characteristics of the participants and statements about the pandemic period were included. In the second part of the study, the Fear of COVID-19 Scale, which was developed by Ahorsu et al. (2020) and adapted into Turkish by Satici et al. (2020), was used. All 7 items of the scale are collected under one dimension and scored positively, and there is no inversely scored item. The Fear of COVID-19 Scale is a 5-point Likert-type scale in which each item is scored in the range of 1-5 (1- Strongly disagree…5-Strongly agree). The lowest and highest scores in the scale are 7 and 35, and a higher score indicates that a higher level of fear of COVID-19.

In the analysis of the obtained data, the SPSS 25.0 package program was used. The Kolmogorov-Smirnov test results of the data are given in Table 1. According to these results, it was concluded that the data did not show normal distribution. In the analysis of the data, in addition to non-parametric analyses, descriptive statistical methods (mean, standard deviation, frequency, percentage), Spearman's Correlation, Mann-Whitney U (MWU), and Kruskal-Wallis H (KWH) tests were used. The results were evaluated within a 95% confidence interval.

Table 1. Normality Test Results for Variables

Variables	Kolmogorov-Smirnov		
	Statistic	**df**	**p**
Before Vaccination			
Gloves	.328	103	.000
Surgical Mask	.324	103	.000
N95/FFP2 Mask	.283	103	.000
Face Shields or Goggles/Safety Goggles	.264	103	.000
Disposable Gowns/Overalls	.290	103	.000
After Vaccination			
Gloves	.290	103	.000
Surgical Mask	.338	103	.000
N95/FFP2 Mask	.260	103	.000
Face Shields or Goggles/Safety Goggles	.242	103	.000
Disposable Gowns/Overalls	.259	103	.000
Fear of COVID-19 Scale	.071	103	.200

Validity and Reliability Analysis

In the study, first, the Cronbach's Alpha internal consistency coefficient was used to test the reliability of the data obtained from 103 healthcare professionals who filled out the "Fear of COVID-19 Scale". This coefficient takes values between 0 and 1 (Karagöz, 2014). The Cronbach's Alpha value of the scale was found to be 0.865, and the scale was found to be reliable for the analyses in this study. Confirmatory factor analysis (CFA) was performed to analyze the validity of the scale.

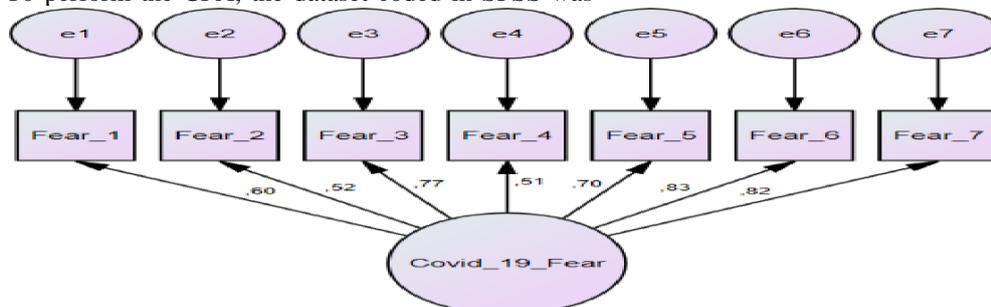CFA was used to examine the model fit of the scale. To perform the CFA, the dataset coded in SPSS was transferred to the AMOS 20 program. The goodness-of-fit indices of the prepared model were examined. As a result of the analysis, it was determined that the data set had the desired fit values as shown in Figure 1. Accordingly, the fit indices for the Fear of COVID-19 Fear Scale were determined as Chi-squared= 25.523, Degrees of Freedom (df=6, p=0.000), χ^2/df=4.69, Root Mean Square Error of Approximation (RMSEA)=0.019, Comparative Fit Index (CFI)=0.952, and Goodness of Fit Index (GFI)=0.940. As a result, these fit indices revealed that the model had an acceptable fit (Karagöz, 2016).

Figure 1. Confirmatory Factor Analysis Output of the Model for the Fear of COVID-19 Scale

Hypothesis

H_1: There is a statistically significant relationship between the personal protection behaviors of healthcare professionals who have been vaccinated against COVID-19 and their COVID-19 fear levels.

H_0: There is no statistically significant relationship between the personal protection behaviors of healthcare professionals who have been vaccinated against COVID-19 and their COVID-19 fear levels.

Ethical Aspect of the Study

Ethics committee approval (11) and necessary permissions from the institution where the research would be conducted were obtained for this study. The informed consent form was included in the first part of the online data collection form, the participants were informed about the study, and their consent was obtained.

Limitations

The results of this study are limited to the statements of the healthcare professionals working in the hospital

affiliated to the foundation university where the study was conducted and the period of data collection.

RESULTS

Table 2 shows the descriptive results regarding the participants. While 79 (76.7%) of the participants were women, 54 (52.4%) were single, 63 (61.2%) were nurses, 55 (55.4%) worked in the service, 62 (60.2%) had no children, 73 (70.9%) had no chronic disease, and 61 (59.2%) had medium economic status. The mean age of the participants was 29.

Table 2. Demographic Characteristics of Participants (n=103)

		N	%
Gender	Female	79	76.7
	Male	24	23.3
Marital Status	Married	49	47.6
	Single	54	52.4
Profession	Doctor	30	29.1
	Nurse	63	61.2
	Other Healthcare Staff	10	9.7
Work Area	Intensive care	48	46.6
	Work in the clinic	55	53.4
Status of Having a Child	Has children	41	39.8
	Has no children	62	60.2
Chronic Disease Status	Has a chronic disease	30	29.1
	Has no chronic disease	73	70.9

Among the factors affecting the participants' decisions to get vaccinated, the expression "Belief in the necessity of the vaccine" had the highest effect as 41.7%, while the expression "Not believing that the vaccine would be protective" had the lowest effect as 6.8%.

According to the results of the analyses on the protective equipment usage of the participants before and after vaccination, after vaccination, the usage rate of surgical masks increased by 0.07 points, the usage rate of N95/FFP2 masks increased by 0.04 points, the usage rate of face shields or goggles/safety goggles decreased by 0.05 points, while there was no significant change in the usage of gloves and disposable gowns/overalls (Table 3).

Table 3. Mean Scores of Usage of Protective Equipment Before and After Vaccination

Equipment	Before Vaccination		After Vaccination	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Glove	3.96	.121	3.99	.123
Surgical Mask	4.02	.105	4.09	.106
N95/FFP2 Mask	3.92	.117	3.96	.123
Face Shields or Goggles/Safety Goggles	3.75	.127	3.70	.139
Disposable Gowns/Overalls	3.86	.124	3.84	.139

As seen in Table 4, the mean Fear of COVID-19 Scale score of the participants was 17.82±6.29 (min=7, max=33), and they had a moderate level of fear of COVID-19.

Table 4. Fear of COVID-19 Scale Scores

	$\bar{X}$±S.D.	Min-Max
Fear of COVID-19	17.82±6.29	7-33

Table 5 presents the usage frequencies of protective equipment among the participants before and after their vaccination against COVID-19 according to the results of the correlation analysis that was conducted to examine whether there was a relationship between the Fear of COVID-19 Scale scores of the participants and their usage of protective equipment.

Table 5. The Relationship between Fear of COVID-19 and Usage of Protective Equipment before and after Vaccination

Equipment	COVID-19 Fear Scale			
	Before Vaccination		After Vaccination	
	r	p	r	p
Glove	0.188	.057	0.190	.054
Surgical Mask	0.191	.053	0.193	.051
N95/FFP2 Mask	0.189	.056	0.105	.289
Face Shields or Goggles/Safety Goggles	0.186	.056	0.094	.347
Disposable Gowns/Overalls	**0.221**	**.025**	0.102	.306

According to the results of the analysis, the vaccination statuses of the participants did not have a significant effect on their levels of fear of COVID-19 or their use of protective equipment. In light of these findings, the H0 hypothesis was not rejected.

Table 6 shows the results of the comparison of the COVID-19 fears of the participants based on their sociodemographic data. Mann-Whitney U (MWU) test was conducted to compare two groups, while Kruskal-Wallis H (KWH) analysis was applied in more than two groups. According to the results of these analyses, statistically significant differences were found in the COVID-19 fear levels of the participants based on their gender (p=0.000) and economic status (p=0.035). It was seen that the female participants had a higher median COVID-19 fear score than the male participants, whereas the participants with a medium level of income had a higher median score than those with low income.

Table 6. Analysis of Differences in COVID-19 Fear Scores Based on Sociodemographical Characteristics of Participants

COVID-19 Fear		N	Median	MWU / KWH	p
Gender	Female	79	57.80	490.000	**0.000**
	Male	24	32.92		
Marital Status	Married	49	51.56	1301.500	0.887
	Single	54	52.40		
Profession	Doctor	30	50.32	1.582	0.453
	Nurse	63	54.37		
	Other Health Staff	10	42.15		
Work Area	Intensive care	48	52.75	1284.000	0.812
	Work in the clinic	55	51.35		
Status of Having a Child	Has children	41	50.94	1227.500	0.769
	Has no children	62	52.70		
Chronic Disease Status	Has a chronic disease	30	49.07	1007.000	0.522
	Has no chronic disease	73	53.21		
Economic Status	Low	29	40.14	6.718	**0.035**
	Medium	61	57.57		
	High	13	52.31		

No statistically significant relationship was found between the Fear of COVID-19 Scale scores of the participants and their marital status, work area, status of having children, chronic disease status, or occupation (p>0.05).

DISCUSSION

The existence vaccine hesitancy is a globally known phenomenon. The recommendations of health professionals on vaccination are expressed as one of the strongest factors affecting the decision-making process of society (Koruk et al., 2014). As a result of a systematic review of studies investigating vaccine-related factors, it was revealed that physicians have a more positive attitude towards vaccines than nurses (Bish et al., 2011). On the other hand, in a study conducted in Malta within the scope of influenza vaccination, the positive attitude rates of nurses were found to be higher than those of physicians (Fournet et al., 2018). In this study it was seen that the nurses had a higher mean Fear of COVID-19 Scale score than the

doctors and other healthcare professionals, while the participants who reported their economic status as medium had a higher mean score than those with low income. It has been emphasized in the literature that increasing age and income level raise the acceptance of COVID-19 vaccination (Yoda & Katsuyama, 2021; Reiter et al., 2020; Lazarus et al., 2020; Zhang et al., 2021).

In this study, which was carried out among healthcare professionals who were vaccinated, considering the factors affecting the participants' decisions to be vaccinated, it could be concluded that healthcare professionals were vaccinated because they believed in the necessity of the vaccine, but they were unsure about its protective efficacy. A study conducted on COVID-19 vaccines showed that healthcare professionals think the vaccine is safe (Kurtulmus & Can, 2021). In a study that was carried out to determine the views of healthcare professionals working in a university hospital on the COVID-19 vaccine, 74.9% of the participants stated their thought that the COVID-19 vaccine would have an effect on reducing the incidence of the disease (Kurtulmus & Can, 2021). The results of this study supported the results of similar studies in the literature (Daly & Robinson, 2020; Dodd et al., 2020).

Healthcare professionals are at high risk in their workplace due to their exposure to the hospital environment or biological samples during patient care. In this context, they are expected to worry about getting infected and infecting their family members. Studies conducted during the pandemic period showed that nurses have more anxiety and depression than doctors (Zhang et al., 2020; Spoorth et al., 2020). In this study, it was seen that the fear of COVID-19 in the participants was moderate. It is seen in the literature that in the COVID-19 pandemic, healthcare professionals are negatively affected not only by the unknowns about the virus and the disease but also by anxiety, burnout, fear, depression, job satisfaction, and relevant factors accompanying uncontrollable situations. In a study conducted in Pakistan, it was revealed that doctors, female doctors, and those in the older age group with severe fear of COVID-19 had significantly higher workplace panic anxiety and workplace avoidance behavior (Malik et al., 2021). In a study conducted in China, it was reported that more than 85% of the healthcare professionals who participated in the survey were afraid of being infected with the virus, and 89.7% of them followed the right practices regarding COVID-19 (Coelho et al., 2020).

In a study that aimed to reveal the knowledge, attitudes, and behaviors of healthcare professionals working at the Ege University Medical Faculty Hospital about COVID-19 and prevention measures, it was found that the protective behaviors of women and older professionals were more positive (Ahmet & Mandıracıoğlu). It was determined that the knowledge, attitude, and behavior scores of the healthcare professionals participating in the study about COVID-19 were related to their gender. As in similar studies in the literature, women were found to have more positive behaviors in our study (Tsiga-Ahmed et al., 2021; Yang et al., 2021). In a study that did not aim to determine the acceptability of the COVID-19 vaccine among healthcare professionals and the factors affecting their willingness to accept the vaccine, it was stated that, unlike this study, men were more willing to be vaccinated than women (Qattan et al., 2021; Nzaji et al., 2020; Wang et al., 2020; Detoc et al., 2020).

According to the information in the literature, the inadequate usage of protective equipment is a risk factor. In various studies conducted during the COVID-19 pandemic period, it was found that the inappropriate usage of PPE increased the probability of infection among healthcare professionals 2.8-fold, while the usage of appropriate PPE was found to be sufficient to prevent infection among healthcare professionals (Jaffe et al., 2020). In a qualitative study conducted to understand the fears and concerns of healthcare professionals about PPE, the authors identified the depletion of personal protective equipment as an important source of concern (Jaffe et al., 2020). Nonetheless, studies have revealed the necessity of continuing to comply with the usage of PPE, social distancing, and hygiene rules after vaccination, and it was stated that since the effectiveness of existing vaccines against new variants may be low, the easing of personal protective behaviors will negatively affect efforts to end the pandemic (Kwon et al., 2021; Mahase, 2021). On the other hand, it is known that in 2021, the Centers for Disease Control and Prevention (CDC) announced that fully vaccinated people do not need to follow mask and distancing rules in indoor meetings (CDC, 2021).

In line with the data obtained in this study, it was concluded that being vaccinated had no effect on the use of N95/FFP2 masks and disposable gowns/overalls. On the other hand, in a study conducted among university students in China, it was stated that students wore masks 22% less frequently in public and indoor environments after vaccination and reduced the frequency of their personal protective behaviors (Zhang et al., 2021).

CONCLUSION

In light of the findings, it may be stated that being vaccinated has no effect on fears of COVID-19 or the use of personal protective equipment. During the COVID-19 pandemic, it is necessary to provide personal protective equipment that is adequate, easily accessible, and suitable for the body structure of the employee, ongoing training on how to use these pieces of equipment and their effectiveness levels, as well as evaluations regarding the level of compliance of employees. In this context, it is of great importance to regulate working conditions in a way that ensures occupational health and safety. It may be recommended to provide psychological support to healthcare professionals in coping with fear and anxiety. Studies can be planned to evaluate potential pandemic fatigue by conducting the physiological and psychological follow-ups of healthcare professionals and families related to the subject.

REFERENCES

1. Dinç, A, & Mandıracıoğlu, A.(2021). Evaluation of knowledge, attitudes and behaviors of Ege University medical faculty hospital staff about covid-19 and protective measures. Aegean Journal of Medical Sciences, 4(2), 42-51. DOI: 10.33713/egetbd.929984

2. Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. *International journal of mental health and addiction*, 1-9. https://doi/10.1007/s11469-020-00270-8

3. Bish A, Yardley L, Nicoll A, Michie S. Factors associated with uptake of vaccination against pandemic influenza: A systematic review. Vaccine. 2011;29(38);6472-84.

4. Cascella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R. Features, Evaluation, and Treatment of Coronavirus (COVID-19). 2021 Sep 2. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 32150360.

5. Celik, S. S., Ozbas, A. A., Celik, B., Karahan, A., Bulut, H., Koc, G., ... & Ozlenen, C. O. (2020). The COVID-19 Pandemic: Turkish Nurses Association/COVID-19 Pandemic Process: Turkish Nurses Association. Journal of Education and Research in Nursing, KARE Publishing, İstanbul, Turkey.

6. Center of Disase and Prevention (CDC) (2021). Interim public health recommendations for fully vaccinated people. Available from: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html (2021), Accessed 1st Jul 2021 accessed

7. Coelho, C. M., Suttiwan, P., Arato, N., & Zsido, A. N. (2020). On the nature of fear and anxiety triggered by COVID-19. Frontiers in Psychology, 11, 3109. https://doi.org/10.3389/fpsyg.2020.581314

8. Daly, M., & Robinson, E. (2020). Willingness to vaccinate against COVID-19 in the US: Longitudinal evidence from a nationally representative sample of adults from April-October 2020. *medRxiv*.

9. Detoc, M., Bruel, S., Frappe, P., Tardy, B., Botelho-Nevers, E., & Gagneux-Brunon, A. (2020). Intention to participate in a COVID-19 vaccine clinical trial and to get vaccinated against COVID-19 in France during the pandemic. *Vaccine, 38*(45), 7002-7006. https://doi.org/10.1016/j.vaccine.2020.09.041

10. Dodd, R. H., Cvejic, E., Bonner, C., Pickles, K., McCaffery, K. J., Ayre, J., ... & Nickel, B. (2021). Willingness to vaccinate against COVID-19 in Australia. *The Lancet Infectious Diseases, 21*(3), 318-319. https://doi/10.1016/S1473-3099(20)30559-4

11. Fournet, N., Mollema, L., Ruijs, W. L., Harmsen, I. A., Keck, F., Durand, J. Y., ... & van Steenbergen, J. E. (2018). Under-vaccinated groups in Europe and their beliefs, attitudes and reasons for non-vaccination; two systematic reviews. *BMC public health*, *18*(1), 1-17. https://doi/10.1186/s12889-018-5103-8

12. Jaffe, E., Strugo, R., Bin, E., Blustein, O., Rosenblat, I., Alpert, E. A., & Sonkin, R. (2020). The role of emergency medical services in containing COVID-19. *The American journal of emergency medicine*, *38*(7), 1526-1527. https://doi/10.1016/j.ajem.2020.04.023

13. Karagöz, Y. (2016). *SPSS 23 ve AMOS 23 Uygulamalı İstatistiksel Analizler.* Nobel Akademik Yayıncılık.

14. Kaya, O. (2021). Covid19 vaccines. *Med J SDU*, (Special issue-1),31-35. https://doi/10.17343/sdutfd.9050593

15. Koruk, I., Tekin Koruk, S., Tuncer, K., Demir, C., Kara, B., & Seyhanoglu, A. S. (2014). The immunization level of healthcare workers against occupational infectious diseases in Şanlıurfa. *Klimik*, *27*(2), 48-56. https://doi/10.5152/kd.2014.13

16. Kurtuluş, Ş., & Can, R. (2021). What Do Health Care Professionals Think About Covid-19 Vaccine Applications: A University Example. *Harran Üniversitesi Tıp Fakültesi Dergisi*, *18*(1), 29-34. https://doi.org/10.35440/hutfd.908043

17. Kwon, S., Joshi, A. D., Lo, C. H., Drew, D. A., Nguyen, L. H., Guo, C. G., ... & Chan, A. T. (2021). Association of social distancing and face mask use with risk of COVID-19. *Nature Communications*, *12*(1), 1-10. https://doi/10.1101/2020.11.11.20229500

18. Lazarus, J. V., Ratzan, S. C., Palayew, A., Gostin, L. O., Larson, H. J., Rabin, K., ... & El-Mohandes, A. (2021). A global survey of potential acceptance of a COVID-19 vaccine. *Nature medicine*, *27*(2), 225-228. https://doi/10.1038/s41591-020-1124-9

19. Mahase, E. (2021). Delta variant: What is happening with transmission, hospital admissions, and restrictions?. *BMJ (Clinical Research ed.)*, *373*, n1513-n1513. https://doi/10.1136/bmj.n1513.

20. Malik, S., Ullah, I., Irfan, M., Ahorsu, D. K., Lin, C. Y., Pakpour, A. H., ... & Minhas, R. (2021). Fear of COVID-19 and workplace phobia among Pakistani doctors: A survey study. *BMC Public Health*, *21*(1), 1-9. https://doi.org/10.1186/s12889-021-10873-y

21. Mamun, M. A., & Griffiths, M. D. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. Asian

journal of psychiatry, 51, 102073. https://doi/10.1016/j.ajp.2020.102073.

22. Nzaji, M. K., Ngombe, L. K., Mwamba, G. N., Ndala, D. B. B., Miema, J. M., Lungoyo, C. L., ... & Musenga, E. M. (2020). Acceptability of vaccination against COVID-19 among healthcare workers in the Democratic Republic of the Congo. *Pragmatic and observational research*, *11*, 103-109. https://doi/10.2147/POR.S271096

23. Ornell F, Schuch JB, Sordi AO, Kessler FH (2020) "Pandemic fear" and COVID-19: Mental health burden and strategies. Braz J Psychiatry 42: 232-235. https://doi/10.1590/1516-4446-2020-0008.

24. Qattan, A., Alshareef, N., Alsharqi, O., Al Rahahleh, N., Chirwa, G. C., & Al-Hanawi, M. K. (2021). Acceptability of a COVID-19 vaccine among healthcare workers in the Kingdom of Saudi Arabia. Frontiers in Medicine, 8, 83. https://doi.org/10.3389/fmed.2021.644300

25. Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. *Vaccine*, *38*(42), 6500-6507. https://doi.org/10.1016/j.vaccine.2020.08.043

26. Satici, B., Gocet-Tekin, E., Deniz, M. E., & Satici, S. A. (2020). Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *International Journal of Mental Health and Addiction*, 1-9. https://doi.org/10.1007/s11469-020-00294-0

27. Tsiga-Ahmed, F. I., Amole, T. G., Musa, B. M., Nalado, A. M., Agoyi, O. B., Galadanci, H. S., & Salihu, H. M. (2021). COVID 19: Evaluating the Knowledge, Attitude and Preventive Practices of Healthcare Workers in Northern Nigeria. *International Journal of MCH & AIDS*, 88-97. https://doi/10.21106/ijma.418. 33

28. Wang, J., Jing, R., Lai, X., Zhang, H., Lyu, Y., Knoll, M. D., & Fang, H. (2020). Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. *Vaccines*, *8*(3), 482. DOI: 10.3390/vaccines8030482.

29. World Health Organizaston (2021). COVID-19 advice for the public: Getting vaccinated. Available at https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice

30. Yang, K., Liu, H., Ma, L., Wang, S., Tian, Y., Zhang, F., ... & Jiang, X. (2021). Knowledge, attitude and practice of residents in the prevention and control of COVID-19: An online questionnaire survey. *Journal of advanced nursing*, *77*(4), 1839-1855. https://doi/10.1111/jan.14718.

31. Yoda, T., & Katsuyama, H. (2021). Willingness to receive COVID-19 vaccination in Japan. *Vaccines*, *9*(1), 48. https://doi.org/10.3390/vaccines9010048

32. Zhang, N., Liu, X., Jin, T., Zhao, P., Miao, D., Lei, H., ... & Li, Y. (2021). Weakening personal protective behavior by Chinese university students after COVID-19 vaccination. *Building and Environment*, 108367-108367. https://doi.org/10.1016/j.buildenv.2021.108367

33. Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., ... & Wang, H. X. (2020). Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychotherapy and psychosomatics*, *89*(4), 242-250. https://doi/10.1111/jan.14718

Baykara Mat, S.T., Baştarcan.C., Aydın, O.A., Çalışkan, K. (2022). The Relationship Between Personal Protection Behaviors and Fear Levels of Healthcare Professionals Who Had Covid-19 Vaccine. Journal of Internatianal Health Sciences and Management,8(16):1-8.

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