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Misconceptions, Hesitancy and Efficacy of COVID-19 Vaccination in Dental Surgeons Working in A Teaching Dental Hospital, Peshawar

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KEYWORDS

COVID-19, pandemic, dentistry, misconceptions, vaccine hesitancy

ABSTRACT

The objective of this study was to assess misconceptions, hesitancy and efficacy of COVID-19 Vaccine among Faculty, House Officers (HO) and Postgraduates (PG) dental trainees towards the novel COVID-19 vaccine and to assess the association between COVID-19 vaccine acceptance and conspiracy beliefs. A cross sectional study was conducted on 150 participants from Sardar Begum Dental hospital, Peshawar, Khyber Pakhtunkhwa. A self-administered questionnaire was developed with questions related to perception of participants regarding misconceptions, safety, hesitancy and efficacy of COVID-19 Vaccination. The questionnaire comprised of 26 closed-ended questions. Data was analyzed using SPSS statistical package 26.0. More than half of the participants (87.3%) reported to be tested positive for COVID-19 at some point. Majority of participants (87.3%) reported that they were vaccinated and 86.7% reported that they had post-vaccination reactions such as pain in arm, fever and body aches. A notable number of participants that were part of the study believed in the misconceptions related to the COVID-19 vaccine. This study concluded that despite widespread vaccination awareness campaigns, significant number of dental surgeons believed in misconceptions regarding COVID-19 vaccination that may pose a significant challenge to Pakistan's COVID-19 immunization program.

INTRODUCTION

Vaccinations are one of the most essential public health interventions for preventing the spread of hazardous diseases and the harm they inflict [1]. Despite of significant data available that vaccines are safe [2], vaccine skepticism is on the rise [3]. Rumors and conspiracy theories have been highlighted as factors that contribute to vaccine reluctance [4]. Vaccination uptake has always been influenced by negative allegations regarding vaccine effectiveness [5]. False allegations that vaccines include infertility agents or can transmit infectious pathogens like the human immunodeficiency virus may cause people to refuse vaccinations (HIV) [5,6]. Rumors often cast suspicion on government and non-government authorities' health policies and actions, as well as international health organizations such as the World Health Organization (WHO) [7]. It depends on individual knowledge about health literacy and risk perceptions of whether or not they believe the misinformation. People may be influenced to share and convey vaccination misinformation and conspiracy theories if they are constantly exposed to social media and the online anti-vaccine movement [8,9].

As a result of the COVID-19 outbreak, many people have been confined to their houses. As a result of their reliance on social media for news and social connection, people are more prone to accept and spread misinformation [10]. Online health information is frequently reinforced by rumors and conspiracy theories that aren't always based on scientific evidence [11]. Users who seek health information on the internet face the risk of being exposed to false information that could endanger public health [12]. People who were exposed to vaccine-related information on social media were

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more likely to be misguided and vaccine-hesitant, according to a 2020 study [13]. The Royal Society for Public Health conducted a separate research of 2000 persons in the United Kingdom (UK) and discovered that two-fifths of the participants were exposed to negative vaccination messaging on social media platforms [14]. Fears, suspicions, and misinformation about vaccines are regularly expressed on social media before they are identified by traditional monitoring systems such as event-based surveillance [15]. As a result, monitoring this media data has been highlighted as one of the most effective strategies for tracking misinformation in real time, as well as a potential strategy to dispel misunderstanding and improve vaccine acceptability.

Vaccine hesitancy continues to be a significant concern for Pakistan, amid different conspiracy theories. Such theories are primarily to blame for the country's failure to eradicate polio. Some of the main issues hindering the anti-polio effort in the country are religious prohibitions ("infidel vaccine") and misinformation about the existence of active virus in vaccines [16]. Unfortunately, in Pakistan, a conspiracy theory about the COVID-19 vaccine is currently circulating. An ex-foreign minister of Pakistan proposed a similar hypothesis, accusing the United State of developing the virus in the United Kingdom and then transferring it to China for global dissemination [19]. These theories are widely discussed on social media in the Pakistani community. Such conspiracy theories may sow seeds of resistance against planned COVID-19 immunization initiatives in the country, where vaccine apprehension is a major obstacle to prevent vaccine-preventable diseases.

Although much of the data is available related to vaccine hesitancy on medical students and general population but no such data is available specifically for the dental surgeons. Being front line healthcare workers, they're more prone to contacting the disease due to the nature of their work.

The purpose of this study was to assess the attitude of dentists towards misconceptions, vaccine hesitancy and acceptance of a novel COVID-19 vaccine. The data collected will aid in the identification of potential concerns that need to be addressed in order to ensure adequate vaccine uptake among this group, as well as the development of educational programmes and the use of other platforms to teach skills in providing vaccine recommendations and counselling vaccine-hesitant individuals.

MATERIALS AND METHODS

A cross sectional descriptive study was conducted on 150 dental Surgeons (67 House Officers, 61 Postgraduates and 22 faculty). The time period of this study was from was July 2021 to September 2021. A convenient sampling technique was used. All the surgeons (HO's, PG's and Faculty) who were present at the time of data collection were included in the study. A self-administered questionnaire was developed to assess the misconceptions, hesitancy and efficacy of COVID-19 vaccine among dental surgeons working in a dental teaching hospital, Peshawar. The questionnaire comprised of 26 close-ended questions. An informed consent was taken from the participants prior to data collection. A pilot study was carried out on 10% of the population. Descriptive and inferential analysis were applied on the recorded data. SPSS version 26.0 was used for data analysis. Ethical approval was obtained from Ethical committee of the Gandhara University.

RESULTS

A total number of 150 participants from a teaching dental hospital in Peshawar participated in this study. The demographic data of the participants is shown in Table 1.

Table 1 Demographic variables of participants of the study

Variables		n (%)
Gender	Male	85 (56.7 %)
	Female	65 (43.3 %)
Marital Status	Unmarried	99 (66.0 %)
	Married	51 (34.0 %)
Designation	House Officers	67 (44.7 %)
	Postgraduate Trainees	61 (40.7 %)
	Faculty	22 (14.7 %)

A significant number of participants in our study believed in the misconceptions regarding COVID-19 vaccine. Slightly more than half (66%) believed the vaccine has severe side effects and around 41% believed they already had contracted the coronavirus and did not need to receive the vaccination, while 48% believed they could stop wearing their masks after receiving the vaccination. Some of the dental trainees also believed in myths regarding COVID-19 Vaccine such as it may alter their DNA (30.7%), can cause infertility in

men/women (33.3%), includes a tracking device (12%) and made of ingredients which are prohibited in the religion (14%) (Table 2).

Regarding vaccine hesitancy, 42% of the population did not receive the vaccine voluntarily, around 51% were afraid while receiving the vaccine and 74.7% of the participants were concerned about the negative/side effects of the vaccine (Table 2).

It was also observed that 55.3% of the study participants were not sure about the effectiveness of vaccine and 39.3% reported of being unsure that taking COVID-19 vaccine would help contain the pandemic (Table 2).

Table 2 Perceptions of participants regarding myths, efficacy and hesitancy regarding COVID-19 Vaccination

	Questions	Yes	No
1)	Have you ever tested positive for COVID-19?	52 %	48%
2)	Are you vaccinated or not?	87.3 %	12.7 %
3)	Did you take the vaccine voluntarily?	58 %	42 %
4)	Were you worried/ Did you feel fear when you were vaccinated?	50.7 %	49.3 %
5)	Have there been any post-vaccination reactions?	86.7 %	13.3 %
6)	Are you concerned about the negative effects of the vaccine?	74.7 %	25.3 %
7)	To what extent would you consider each of these factors in your decision of whether to get the Coronavirus vaccine?		
	a) I am concerned about the effect of the Coronavirus on me and my family	58.7 %	
	b) It feels like the only way for life to get back to normal	27.3 %	
	c) I want to reduce my anxiety about this virus	14 %	
8)	How do you rate the effectiveness of vaccine you have received?		
	a) Effective	38.7 %	
	b) Ineffective	6 %	
	c) I don't know	55.3 %	
9)	Do you agree that taking the vaccine will help to contain the pandemic?		
	a) I Agree	51.3 %	
	b) I Disagree	9.3 %	
	c) I don't know	39.3 %	
10)	The COVID-19 vaccine is unsafe because it was developed too quickly	37.3 %	62.7 %
11)	Do you think you can contract corona due to vaccine?	80.7 %	19.3 %
12)	The COVID-19 vaccine may alter my DNA	30.7 %	69.3 %
13)	The COVID-19 vaccine includes a tracking device	12 %	88 %
14)	The COVID-19 vaccine has severe side effects	66 %	34 %
15)	The COVID-19 vaccine causes infertility in women/men	33.3 %	66.7 %
16)	I've already had COVID-19, so I don't need to receive the vaccine	40.7 %	59.3 %
17)	I'm not at risk for severe complications of COVID-19 so I don't need the vaccine	38.7 %	61.3 %
18)	The vaccine is made from ingredients which are prohibited in Islam	14 %	86 %
19)	Getting the COVID-19 vaccine means I can stop wearing my mask	48 %	52 %

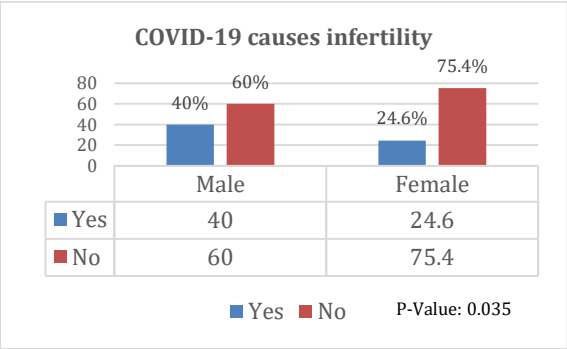

Figure 1 Association between gender and perception of participants regarding COVID-19 vaccine causing infertility

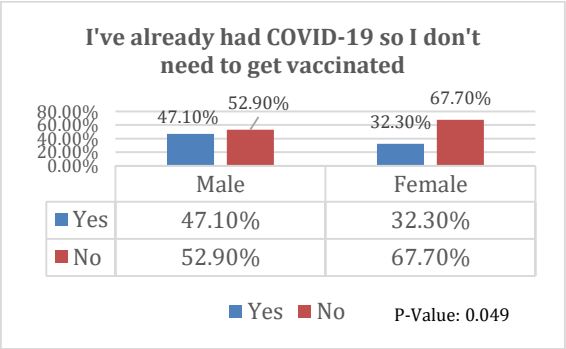

Figure 2 Association between gender and perception of participants to get vaccinated

Cross-tabulation between gender and perception of participants regarding COVID-19 vaccine causing infertility as well as perception of participants to get vaccinated came out to be statistically significant (Figures 1 and 2).

DISCUSSION

According to our study (n=150), 74.7% of the participants were hesitant of receiving the vaccine while 86.7% of the participants reported post-vaccination reactions. A research was conducted in the Czech Republic, reported that 93.1% of healthcare workers experienced at least one side effect after receiving the COVID-19 vaccine [17]. In another study conducted on 412 healthcare professionals, (215) 55% reported COVID-19 vaccine produces severe allergic reactions [18].

In our research, some of the reasons for vaccine hesitancy were reported to be the fear of negative effects of vaccine (74.7 %) and short development time of vaccine (37%). A similar study was conducted on Healthcare workers of Greece who refused vaccination for COVID-19, the primary reasons given were fear of adverse effects (93%) and the perception that vaccine development time for COVID-19 was short (96%) [19]. In a cross-sectional study conducted in Poland, 32.1% of doctors were concerned about long-term side effects following COVID-19 vaccination [20]. According to a national survey of Pakistan's general population, 28.4% of respondents were concerned about the safety of the COVID-19 vaccination and feared it could be harmful because it was developed in such a short time [21].

Around 58.7 % of the participants in our study were concerned about the effect of the Coronavirus on themselves and their family and considered it a major factor in getting vaccinated. According to a study conducted on healthcare workers in France, 88.4% of those surveyed were concerned about infecting themselves or their families and were willing to get vaccinated [22].

In our study, 55.3% of the participants reported that they were unsure about the efficacy of vaccine and 39.3 % in doubt if taking the vaccine will help to contain the pandemic. A scoping review on 35 articles was undertaken to consolidate scientific evidence on COVID-19 vaccine hesitancy in healthcare workers (HCWs), and the majority (> 75%) of the studies showed safety, efficacy, and side effects to be the top three significant causes for COVID-19 vaccine hesitancy among HCWs [23]. In a research conducted in Poland, 50% of the doctors said they had no opinion on the vaccine's efficacy [24]. According to a study conducted in Malta, women were more inclined than men to engage in preventative behaviors, but they were less convinced that the COVID-19 vaccine will preserve the health of those who receive it and help contain the pandemic. Men were more likely than women to value medical professionals' recommendations on the effectiveness of the COVID-19 vaccination and were willing to take the vaccine [25].

Around 12% of our study population believed that COVID-19 vaccine contains a tracking device, 33.3% reported that it causes infertility and 14% believed that it is made of ingredients which are prohibited in Islam. The results were similar to a National Survey conducted in Pakistan which reported that (9.3%) thought the COVID-19 vaccine had 5G-nanochips to control people. The vaccine can induce infertility, according to 12.0 %, and the COVID-19 vaccine is designed to harm Muslims, according to 13.1% [22].

According to our study, 40% of the men 24.6% women believed that COVID-19 vaccine causes infertility, whereas according to a cross-sectional study conducted in Poland, women exhibited higher concern about the vaccine's impact on fertility than males (5.9% vs. 9.6%) [26].

Limitation

This study was conducted on dentists working in one major teaching dental hospital in Peshawar, Pakistan, thus the results cannot be generalized to other hospitals and cities of Pakistan.

Recommendations

Immunization efforts against COVID-19 pandemic cannot be successful unless health care providers are taken into confidence. Government and Non-government organizations should carry out targeted programs in hospitals to alleviate fears and misconceptions related to vaccination. Prominent religious scholars should be taken on board and should carry out public messages through mass media campaigns.

CONCLUSIONS

This study concluded that a considerable number of participants not only believed in conspiracy theories but also had negative attitude regarding immunization against COVID-19. These misconceptions and negative attitudes may represent a significant challenge to Pakistan's approaching COVID-19 immunization program.

DECLARATION OF INTEREST .

None declared.

REFERENCES

1. Orenstein WA., Ahmed R. Simply put: Vaccination saves lives. Proceedings of the National Academy of Sciences of the United States of America. 2017;114(16), 4031–4033.
2. Harris KM, Maurer J, Kellermann AL. Influenza vaccine—safe, effective, and mistrusted. NEJM. 2010; 2;363(23):2183–5.
3. Hornsey MJ, Harris EA, Fielding KS. The psychological roots of anti-vaccination attitudes: A 24-nation investigation. Health Psychol. 2018;37(4), 307–315.
4. Freeman D, Loe BS, Chadwick A, Vaccari C, Waite F, Rosebrock L, Jenner L, Petit A, Lewandowsky S, Vanderslott S, Innocenti S, Larkin M, Giubilini A, Yu L-M, McShane H, Pollard AJ, Lambe S. COVID-19 vaccine hesitancy in the UK: the Oxford coronavirus explanations, attitudes, and narratives survey (Oceans) II. Psychol Med. 2020;1–15.
5. Aylward RB, Heymann, DL. Can we capitalize on the virtues of vaccines? Insights from the polio eradication initiative. Am J Public Health. 2005;95(5), 773–777.
6. Jegede AS, What led to the Nigerian boycott of the polio vaccination campaign? PLoS Med. 2007;4(3), e73.
7. https://www.who.int/news-room/feature-stories/detail/immunizing-the-public-against-misinformation. (Accessed on 25th September, 2021)
8. Donzelli G, Palomba G, Federigi I, Aquino F, Cioni L, Verani M, Carducci A, Lopalco P. Misinformation on vaccination: A quantitative analysis of YouTube videos. Hum Vaccin Immunother. 2018;14(7), 1654–1659.
9. Wiyeh, A. B., Cooper, S., Jaca, A., Mavundza, E., Ndwandwe, D., & Wiysonge, C. S. Social media and HPV vaccination: Unsolicited public comments on a Facebook post by the Western Cape Department of Health provide insights into determinants of vaccine hesitancy in South Africa. Vaccine. 2019;37(43), 6317–6323.
10. Gorman, S., & Gorman, J. Denying to the Grave: Why We Ignore the Facts That Will Save Us. Oxford University Press. 2016.
11. Lavorgna L, De Stefano M, Sparaco M. Moccia M, Abbadessa G, Montella P, Buonanno D, Esposito S, Clerico M, Cenci C, Trojsi F, Lanzillo R, Rosa L, Morra VB, Ippolito D, Maniscalco G, Bisecco A, Tedeschi G, Bonavita S. Fake news, influencers and health-related professional participation on the Web: A pilot study on a social-network of people with Multiple Sclerosis. Mult Scler Relat Disord. 2018;25, 175–178.
12. Waszak PM, Kasprzycka-Waszak W, Kubanek A. The spread of medical fake news in social media— The pilot quantitative study. HPT. 2018;7(2).
13. Stecula DA, Kuru, O, Hall Jamieson K. How trust in experts and media use affect acceptance of common anti-vaccination claims. HKS Misinformation Review. 2020; https://doi.org/10.37016/mr-2020-007
14. How do we respond to the challenge of vaccine misinformation? PPH. 2019;139(6), 280–282.
15. Fernández-Luque L, Bau T. Health and social media: perfect storm of information. J Healthc Inform Res. 2015;21(2), 67–73.
16. Ali M, Ahmad N, Khan H, Ali S, Akbar F, Hussain Z. Polio vaccination controversy in Pakistan. Lancet. 2019;394(10202), 915–916.
17. Riad A, Pokorná A, Attia S, Klugarová J, Koščík M, Klugar M. Prevalence of COVID-19 vaccine side effects among healthcare workers in the Czech Republic. J Clin Med. 2021, 10(7), 1428.
18. Kumar L, Naik Z, Panwar A, Sridhar M, Keluskar V. Knowledge, Attitude, and Practice among the Healthcare Professionals regarding the myths on COVID-19 vaccination-Demystified. medRxiv. 2021.
19. Papagiannis D, Rachiotis G, Malli F, Papathanasiou IV, Kotsiou O, Fradelos EC, Giannakopoulos K, Gourgoulianis KI. Acceptability of COVID-19 vaccination among Greek health professionals. Vaccines (Basel). 2021 Feb 28;9(3):200. doi: 10.3390/vaccines9030200.
20. Szmyd B, Karuga FF, Bartoszek A, Staniecka K, Siwecka N, Bartoszek A, Błaszczyk M, Radek M. Attitude and behaviors towards SARS-CoV-2 vaccination among healthcare workers: A cross-sectional study from Poland. Vaccines (Basel). 2021;9(3). https://doi.org/10.3390/vaccines9030218

21. Arshad MS, Hussain I, Mahmood T, Hayat K, Majeed A, Imran I, Saeed H, Iqbal MO, Uzair M, Rehman AU, Ashraf W, Usman A, Syed SK, Akbar M, Chaudhry MO, Ramzan B, Islam M, Saleem MU, Shakeel W, Rasool MF. A national survey to assess the COVID-19 vaccine-related conspiracy beliefs, acceptability, preference, and willingness to pay among the general population of Pakistan. Vaccines (Basel). 2021 Jul 1;9(7):720.
22. Gagneux-Brunon A, Detoc M, Bruel S, Tardy B, Rozaire O, Frappe P, Botelho-Nevers E. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross-sectional survey. J Hosp Infect. 2021;108, 168–173.
23. Biswas N, Mustapha T, Khubchandani J, Price JH. The nature and extent of COVID-19 vaccination hesitancy in healthcare workers. J Community Health. 2021; https://doi.org/10.1007/s10900-021-00984-3
24. Zdziarski K, Landowski M, Zabielska P, Karakiewicz B. Subjective feelings of polish doctors after receiving the COVID-19 vaccine. Int. J Environ Res Public Health. 2021;18(12), 6291.
25. Cordina M, Lauri MA, Lauri J. Attitudes towards COVID-19 vaccination, vaccine hesitancy and intention to take the vaccine. Pharm Pract (Granada). 2021 Jan-Mar;19(1):2317
26. Rzymski P, Zeyland J, Poniedziałek B, Małecka I, Wysocki J. The perception and attitudes toward COVID-19 vaccines: A cross-sectional study in Poland. Vaccines (Basel). 2021 Apr 14;9(4):382.

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