

Covid-19 Vaccine Hesitancy and Its Associated Factors among Health Care Workers of Islamabad



Ayesha Saghir¹, Sumiaya Kausar¹, Faraia Sohail¹, Arshia Bilal¹

Abstract

Background: Covid-19 has been declared a global pandemic by WHO. Health Care Workers (HCWs) being the front-line warriors have been most exposed to the SARS-CoV-2 virus. Vaccine hesitancy against Covid-19 has been seen among HCWs. The main aim of the research was to find the hesitancy rates of vaccine among HCWs and the pulling and pushing factors to get vaccinated.

Methods: A descriptive cross-sectional study was conducted on HCWs. Questionnaires on Google forms were sent to all participants through their WhatsApp number and data was analysed through SPSS version 23.0.

Results: Out of 81 HCWs selected, 51.9% (n=42) were initially hesitant when the vaccine was first introduced. The main pulling factor initially to get vaccinated was to shield loved ones, 38.75% (n=31) and 46.2% (n=37) of them received a booster dose of vaccine mainly due to employment requirements. Out of the total, 19.75% (n=16) are still hesitant even after vaccination and the most common pushing factors were fear of the side effects and inadequately tested vaccines.

Conclusion: Though the majority of the HCWs got vaccinated, vaccine hesitancy is still present among the HCWs and the major reason is uncertainty about the side effects it could cause in the long term.

Keywords: Covid-19; health care worker; vaccination; vaccine hesitancy

¹Pazaia Medical College, Islamabad, Pakistan

Correspondence:
Sumiaya Kausar
sumiayakausar@gmail.com

Introduction

In the past two decades, multiple viruses have emerged causing epidemics and imposing serious public health problems like severe acute respiratory syndrome (SARS-COV) from 2002 to 2003, H1N1 influenza in 2009, and Middle East respiratory syndrome Coronavirus in 2012. The SARS-COV-2, the virus causing Covid-19 infection has been declared a global pandemic by the WHO on 11 March 2020 affecting more than 223 countries. Countries seriously affected were the US, Brazil, and India and a total of 4 variants of the virus have been identified. Alpha variant, the first variant of concern in the UK identified in late December 2020, the beta variant was first time reported in South Africa, the gamma variant was reported in Brazil in early Jan 2021, and the delta variant was reported in India in Dec 2020. (1, 2).

A meta-analysis of Covid-19-related mortality was done among the general population in China, Italy, Spain, UK and New York exhibiting an overall mortality rate of >12.10% in individuals over 80 years of age and <1.1% in individual below 50 years of age, indicating an increase in mortality with increasing age group (3).

Infectious rate of Covid -19 was observed among health care workers (HCWs) of China, Italy, Spain, France and US, which was almost 15-18% indicating a negative impact on the effective running of the health care system. (4) While the HCWs made up the majority of patients suffering from Covid -19, the mortality seen among them was almost 0.3%, compared to others (2.3%). (5)

HCWs, being on priority to receive Covid-19 vaccination, can play an important and dominant role in vaccine promotion among the general population. Likewise, hesitancy among them will have an unfavorable impact on the immunization program. Worldwide vaccine hesitancy among HCWs was seen to be 22.5%, the reason was concerns regarding its safety, efficacy and side effects which is similar to what is observed in the general population (6). Within the US, direct medical providers showed a higher vaccine acceptance of 49% whereas only 8% did not plan to get vaccination (7).

A survey in an academic medical center in the USA showed 80% scientists and physicians were willing to get vaccination for sake of positive influencing factors like old age and for the safety of

close contacts and household members.(8) An online survey in US Michigan done on the medical students showed 23 % of students were unwilling to immediately get a vaccine shot after FDA approval. The main reasons behind this hesitancy was lack of trust on health authorities and probable side effects due to its rushed development (9) comparable to two studies in France which showed 25% and 28.4% vaccine hesitancy among HCWs, top two concerns were safety of vaccine that is made hurriedly and lack of trust on health authorities.(10, 11)

A cross-sectional study in 23 hospitals in Congo, Africa on health care workers showed reluctance rate of 72.3% mostly in females and indirect health care providers (Nurses and hospital staff other than doctors(12). A cross-sectional survey in seven provinces of Indonesia to estimate how hesitancy rates alters with vaccine effectiveness showed higher acceptance rates of 95% for effective vaccine by HCWs and those with higher risk of contracting the virus.(13)

An online study in Pakistan to see the acceptance rates of vaccine and factors influencing it, showed 70.25 % accepted vaccine while only 5.2 % rejected it, remaining 24.5 % deferred it to receive later. The reason of rejection in males were former Covid-19 infection, unknown effectiveness and side effects profile of a vaccine while females had religious concerns.(14)

Multiple spikes and persistence of Covid-19 infection in Pakistan demands an effective vaccination program. This study was carried out with an aim to initiate a contagious process of vaccination, first by enhancing vaccination of self-motivated HCWs leading to increased vaccination of general population thereafter. This may only be possible by identification of fearing factors for Covid-19 vaccination and advocacy of its prevention by health education. Thus, the main objective of the study was focused on HCWs of Islamabad to determine the proportion of hesitancy to Covid-19 vaccination among them and pulling and pushing factors for vaccination.

Methodology

A cross sectional descriptive study was done where data was collected from HCWs including doctors, nursing staff and technicians from different departments of PAF Hospital Islamabad, by non-probability convenience sampling. Sample size was calculated to be 81 using a formula ($z^2 \cdot p(1-p)/d^2$), where z the confidence interval is taken as 95%, population, p 0.30 and margin of error d is 0.1. A self-developed questionnaire in English was used, containing sections about consent, demographics, information regarding vaccination status, hesitancy and its pulling and pushing factors. In this research, a person said to be vaccine hesitant initially, if he is not vaccinated at all despite the availability of vaccine, OR was initially reluctant to get the vaccination when the vaccine was introduced while a person was said to be persistently hesitant if he is still reluctant on getting vaccinated OR unwillingly vaccinated due to certain unavoidable reasons. The pulling factors are factors that motivated an individual to get initial

dose of vaccine followed by its booster dose and the pushing factors are those which made individual hesitant to get the initial dose of vaccine. Data was collected by sharing a link of online questionnaire in Google forms through WhatsApp number with HCWs. The duration of the study was 8 months starting from December 2021 to July 2022. Data was compiled and analyzed using SPSS version 23.0 and presented in table and graphs. Chi-square test was applied to determine the association of vaccine hesitancy with various socio-demographic categories (e.g. gender, occupation). Alpha ≤ 0.05 was taken as significant.

Ethical Consideration:

Informed consent has been taken, where the anonymity of participants is ensured by giving them option to mention their name or not. Moreover, the research has been ethically approved by IRB Fazaia Medical College.

Results

Sample was collected from 81 HCWs working at PAF hospital Islamabad. The mean age of the sample was 25 ± 3.421 years. Other socio-demographic and vaccination information is shown in Table 1.

Table 1: Socio-demographic and vaccination status of the participants

Variables	Categories	Frequency (n)	Percentage %
Age in years	15-25	52	64.2
	26-35	29	35.8
Gender	Female	49	60.5
	Male	32	39.5
HCWs Domain	Doctor	39	48.1
	Medical student	13	16.0
	Medical Technician /Assistant	9	11.1
	Nurse	20	24.7
Did you receive Covid -19 vaccination?	Yes	80	98.8
	No	1	1.2
Vaccination status	Fully vaccinated	74	91.4
	Not fully vaccinated	7	8.6
Name of vaccine received	Sinopharm	53	65.4
	SinoVac	15	18.5
	Pfizer	8	9.9
	Moderna	1	1.2
	Sputnik	2	2.5
	Cansino	1	1.2
Don't know	1	1.2	

Out of 80 vaccinated HCWs, 46.2 % (n=37) had receive booster dose of Covid-19 vaccine.

Among all those who received a booster dose, 64.8% (n=24) of HCWs had received booster shot of Pfizer, and had mainly received owing to employer requirement 62.1 % (n=23)

While asking about whether they were hesitant about receiving the Covid-19 vaccine when it was first introduced, almost half of them 51.9% (n=42) replied that they were

initially hesitant. Persistent hesitancy to Covid-19 vaccine was assessed by asking that "Are they still hesitant and had doubts regarding vaccine?" Total 19.75 % (n=16) responded 'Yes' despite being vaccinated against Covid-19, while majority 80.25 % (n=65) responded 'No'. (Figure 1)

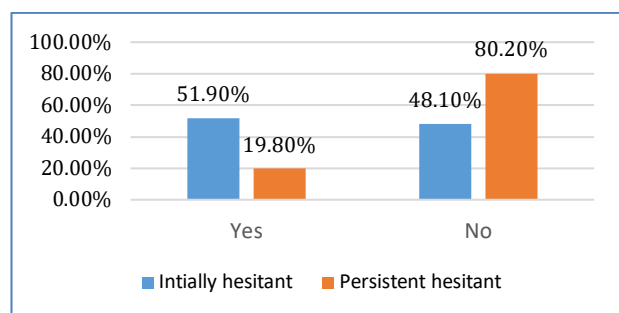


Figure 1: Initial and Persistent Covid-19 vaccine hesitancy among HCWs.

On asking about the pulling factors (allowed to choose multiple answers) for Covid-19 vaccination, majority 38.75% (n=31) of the HCWs were in favor to protect the loved ones from catching the virus, 27.5% (n=22) answered that vaccination would reduce the severity of Covid-19. (Table 2)

Table 2: Pulling factors to receive Covid-19 vaccine in HCWs

Pulling Factors	Frequency (n)	Percentages (%)
To protect the loved ones from catching the virus	31	38.75
If I catch a virus, vaccination will reduce its severity	22	27.50
Pre-requisite to get back to work.	20	25.0
Free availability	16	20.0
Encourage by a friend or a family member	15	18.75
No side effects seen in close friends and family	08	10.0
Media encouragement to get covid-19 vaccination	08	10.0
I have to travel abroad	04	5.0
Someone i know died of corona	02	2.5
Media awareness that clear misconceptions	02	2.5

Reasons of persistent hesitancy to Covid-19 vaccine were asked by those who were still hesitant and they were allowed to mention multiple reasons simultaneously. Most of them 87.5% (n=14) were afraid of side effects, 43.75 % (n=7) were worried that vaccines was not tested properly and was made in a hurry as shown in Table 3.

Table 3: Pushing factors for Covid-19 vaccination in HCWs.

Pushing factors	Frequency (n)	Percentages (%)
Scared of side effects	14	87.50
Worried that vaccine is not properly tested and made hurriedly.	07	43.75
Vaccine might be ineffective to prevent me from catching the virus	03	18.75
It can cause infertility	03	18.75
Corona virus don't exist	02	12.50
Impact of corona is highly exaggerated	02	12.50
Receiver of vaccine dies within 2 years	01	6.25
I have a condition so cannot receive vaccination	01	6.25
In disguise of corona vaccination chips are being inserted	0	
Vaccine made in Europe and America is safer than Chinese vaccine available in our region	0	

No statistically significant association was found when initial hesitancy to Covid-19 vaccination was cross tabulated with certain socio-demographic characteristics of HCWs (Table 4) as p-value was greater than 0.05 on chi-square test.

Table 4: Association of socio-demographic characteristics with initial hesitancy to Covid-19 vaccine

	Initial hesitancy			P-value
	Yes n(%)	No n(%)	Total n(%)	
Gender				
Female	25 (51)	24(49)	49(100)	0.853
Male	17(53.1)	15(46.9)	32(100)	
Age in years				
15-25	24(46.2)	28(53.8)	52(100)	0.169
26-35	18(62.1)	11(37.9)	29(100)	
Occupation				
Doctor	21(53.8)	18(46.2)	39(100)	0.958
Nurse	10(50)	10(50)	20(100)	
Medical student	7(53.8)	6(46.2)	13(100)	
Medical technicians/assistant	4(44.4)	5(55.6)	9(100)	

Discussion

A meta-analysis done on a pool of 35 studies of Covid-19 vaccine hesitancy in HCWs, showed hesitancy to be ranged from 4.3 to 72 % averages to 22% (6). In Pakistan after the initial introduction of vaccine, HCWs were prioritized to receive the vaccine (14).

Our research conducted showed similar pattern of hesitancy shown by previous researches on HCW and out of the 80 HCWs who received the vaccine 51.9% (n=42) HCWs were initially hesitant to receive the Covid-19 vaccine which was largely due to apprehensions regarding its side effects. The main reason behind vaccine hesitancy reported in other researches were uncertainty about the efficacy of vaccine, its side effects, a belief that Covid does not exist and other conspiracy theories (6, 15). In general, as in our research, female HCWs that is nurses and general practitioner were seen less likely to get vaccinated for Covid-19 also observed in the well-developed regions (11). In our research almost all HCWs were vaccinated against Covid-19, the reason could be the freely available vaccine, made compulsory by the government as per policy owing to multiple outbreaks.

Male HCWs, older age group and educated population with a doctorate degree, who have more knowledge about Covid-19 and would not like to transmit it to their family and friends, were seen more likely get vaccinated also HCWs taking care of Covid positive patients were more likely to get vaccinated than HCWs not taking care of Covid positive patient (6, 10-12, 15). The vaccine would also be more readily accepted in countries who had higher level of trust in their government and healthcare providers (13). A sharp contrast to the survey carried out in Pakistan where more female HCWs were vaccinated as compared to other developed countries (14). Our study showed majority of HCWs who got vaccinated wanted to protect their loved ones from getting infected with Covid or to reduce the severity of Covid symptoms in case they got infected, showing a similar pattern seen from the other surveys done.(13, 16)

Vaccine with greater efficacy would be preferred among HCWs and the general population as well. Multiple different types of vaccine production began like DNA based vaccine, live or attenuated vaccine (12). Most vaccine developed initially targeted the spike protein of virus to prevent its binding to the ACE-2 receptor but new mutant strains may lead to ineffectiveness of current vaccine. Different vaccines are seen to be effective against different variants and persistent research work will need to be carried repeatedly to determine the effectiveness of the current vaccines and development of new vaccines against emerging mutant strains of Covid (1). In present study, Sino Pharm and Sino Vac were the initial most commonly received vaccination dose against Covid-19. Out of the 80 HCWs who received the initial dose of Covid vaccine only 46.2% (n=37) went for booster dose of vaccine preferring Pfizer mostly followed by Sino pharm. The main reason for receiving a booster dose was employer requirement.

A survey carried out in Pakistan among HCWs who were the first one to receive Covid vaccination 70% accepted vaccination where as 24.5% showed hesitancy as they were waiting till more data would be available before proceeding to get themselves vaccinated (14) which is almost similar to persistent hesitancy rates 19.75 % (n=16) in vaccinated HCW of our research the main causes were concerns about the side effects of the vaccine 87.55 % (n=14) and 43.75% (n=7) thought it was made quickly without being tested properly.

Conclusion

Though the proportion of persistent hesitancy is lower than the initial hesitancy but still one fifth of HCWs are reluctant to be vaccinated mainly due to suspected side effects. The

majority of the HCWs got vaccination to protect their loved ones or due to workplace compulsion.

Recommendation

Vaccination is imperative for disease prevention and HCWs being on the front line needs to be well protected first before they can take care of general population. Strategy needed to be designed and executed to bring about a behavior change in HCWs regarding Covid-19 vaccination by health education. Well informed HCWs can be an influential source of motivation for general population in this regard. Such HCWs can best advocate vaccine promotion at national level and play their role in clarifying the pushing factors while promoting the pulling factors simultaneously.

Multi-institutional studies with probability sampling are required to confirm our finding before generalization.

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