

ORIGINAL ARTICLE

Fear – Shifting from the Virus to the Vaccine

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ABSTRACT

Objective: To determine the reasons for hesitancy against the COVID-19 vaccine in the Rawalpindi/Islamabad region of Pakistan.

Study Design: Cross-sectional study.

Place and Duration of Study: The study was conducted at the Department of Microbiology, Army Medical College, Rawalpindi, Pakistan, from 1st June 2021 to 1st July 2021.

Materials and Methods: A questionnaire of socio-demographic variables and factors leading to vaccination hesitancy was administered to the participants after obtaining informed consent. Data were analyzed by using SPSS version 27.0.

Results: Out of total of 1067 participants, 41 % declined vaccination. The main reason for refusal of the vaccine was fear of death 25.6% followed by fear of infertility 16.5%. Social media also played a major role in leading to vaccine hesitancy as 46.3 % of the study population expressed distrust in vaccines because of social media influence, followed by 44.5% having concerns about the safety and efficacy of vaccines.

Conclusion: The vaccine acceptance rate was sub-optimal among participants. As almost 41 % of the participants were hesitant. The success of any vaccination program largely depends on the public willingness to accept the vaccine therefore policy makers and stake holders should try to address the apprehensions of the general public.

Keywords: Covid-19 Vaccine, SARS-CoV-2, Vaccine Hesitancy.

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Introduction

Probably never in the history of medicine have things moved so fast until a viral disease is reported from Wuhan, China, in November 2019, and then in the next four months see its designation as the COVID-19, followed by the release of a complete genomic sequence of virus and its declaration as pandemic by World Health Organization(WHO) by March 2020.¹ By the time, the causative agent was known to the world and its mode of transmission understood, COVID was shrouded in myths and fear. This time fear

spread fast because of easy access to social media.² This virus was new, and we started to grow with it. People were scared of death from the virus, as there was neither a vaccine nor specific antiviral drugs available.³ Applying knowledge gained from Influenza, measures like physical distancing, wearing a face mask, hand hygiene and avoiding a handshake were adopted. International travel was restricted and lockdowns imposed, disrupting almost everything related to human life and relations.⁴ Then we saw a speedy development and approval of several vaccines based on different technologies in record time, leading to the largest ever vaccination campaign. People were relieved when the vaccine rollout began, and they were available.^{5,6} Pakistan, a lower middle-income country with a population estimated to be more than 200-220 million⁷ received Sinopharm vaccine from China, which was manufactured in the most conventional way by attenuating the virus.⁷ Initially, like

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elsewhere, in the world priority groups were identified as vaccine recipients. As the supply increased, the Government of Pakistan linked it to National Database Registration Authority (NADRA) which did a very efficient job. People had just to send a SMS message to receive in return the date and venue of their vaccination. Despite this much, a significant proportion chose to decline vaccination. After the vaccine became freely available, the surprising thing was that fear of the virus shifted to fear of death due to the vaccine leading to vaccine hesitancy.⁸

The main objective of the study was to determine various factors responsible for vaccine hesitancy. Vaccine hesitancy is a time of vulnerability and opportunity. This study was done to collect real-time data to help investigate and characterise temporal and regional features of hesitancy, behavioral manifestations and their effects on COVID vaccine uptake and to determine the drivers responsible for vaccine hesitancy.

Acceptance can be achieved by education of the masses, effective social media campaigns and public service messages. Fears regarding vaccine safety can be removed by engaging in communication with the public regarding the safety and efficacy of the vaccine and providing correct information to the masses about the vaccine. Awareness should be created among the masses to overcome this challenge.⁹

Materials and Methods

This cross-sectional study carried out at the Department of Microbiology of Army Medical College, Rawalpindi, Pakistan from 1st June 2021 to 1st July 2021 after obtaining approval from ethics review board.

A self-administered questionnaire was designed, consisting of socio-demographic characteristic, subjective personal risk perception, past exposure to SARS CoV-2, concern about the relation to religious beliefs, the effect of social media, and concern about safety, efficacy, and perceived side effects of Covid-19 vaccine. It was circulated to all study participants. The participants included 1067 members of the general population above 18 years of age of the Rawalpindi/Islamabad region who had free access to the Covid-19 vaccine. Non-probability convenience sampling technique was used.

Informed consent was obtained from all study participants, and confidentiality of data was ensured at all times. Participants were allowed to withdraw from a study at any time. Incomplete forms were excluded from the study.

To determine reasons for vaccine hesitancy, we analyzed the data by using Statistical Package for Social Sciences (SPSS) version 26 (IBM, Armonk, NY, USA.) For demographic characteristics, descriptive statistics i.e. frequencies and percentage, were calculated, and for categorical variables, the mean and standard deviation was calculated. A p value of less than 0.05 was taken as significant.

Results

A total of 1067 participants were included in our study. Out of which 440 (41%) refused the vaccine. The vaccine was refused by 321 (72.3%) females and 119 (27%) males. Majority of participants 208 (47.3%) who refused the vaccine belonged to age group 26-40 years, followed by 125 (28.4%) who were from 18-25 years age group, 91 (20.7%) from 41-60 years age group and 16 (3.6%) were above 60 as shown in table 1.

Table 1: Frequency of participants who refused vaccine on the basis of age

Age groups	Frequency of Participants who Refused Vaccine
18-25	125 (28.4%)
26-40	208 (47.3%)
41-60	91 (20.7%)
Above 60	16 (3.6%)

Educational and socioeconomic status had little to no effect on vaccine hesitancy in our study. Around 42% of participants had undergraduate level education, 40.2 % had master's level education, 14% had secondary level education, 1% has primary level education and 2.7% had received no formal education. 53% of participants had full-time jobs, 31.7% were unemployed and 15.3% had part-time jobs.

Around 25.5% participants refused vaccine on perceived belief that it may lead to death followed by 15.7% who had concerns that it may lead to infertility. Another 15.2 % rejected vaccine because they lacked the motivation to go to vaccination centres. Almost 13 % gave a reason that COVID vaccination lowers immunity. 11.8 % had concerns that the vaccine can cause SARS-CoV-2 infection. Fear of blood clotting was the reason given by 8.2%

of study population for refusing vaccine. 5% refused the vaccine because it was not the one they preferred, as shown in fig 1.

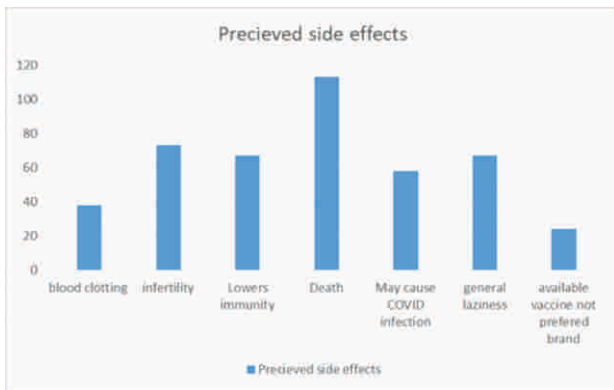


Fig 1: Factors causing COVID-19 vaccine hesitancy

Almost half of participants 49.3% refused vaccines because they had moderate level of concerns about safety of vaccine. 20.2% showed a significant level of concern about safety. Around 17 % showed slight concern and 13.2 % were not concerned at all about the safety of vaccine. Around 14 % refused the vaccine because of religious concerns. More than half around 50.5 percent expressed distrust in vaccine safety because of social media influence. Around 70 percent has a fear of post vaccination effects which played a part in rejection of the vaccine as shown in fig 2.

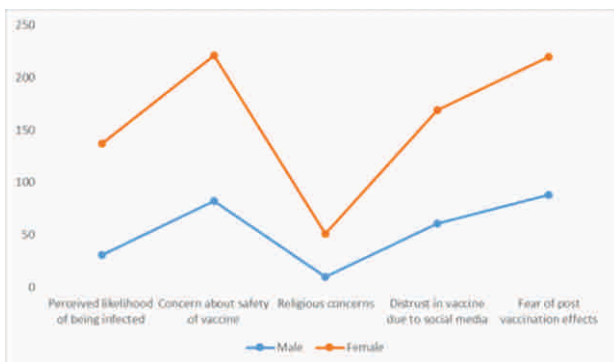


Fig 2: Concerns regarding COVID-19 vaccine according to gender

Vaccine Hesitancy – Prelude to Disaster

Discussion

Vaccine hesitancy is ages old occurrence as vaccine development even though it has grave consequences on global health leading to epidemics of infectious diseases.¹⁰ Vaccine against SARS-CoV-2 was developed at an unprecedented pace overcoming all the hurdles but now the main

challenge is vaccine acceptance, especially in countries like Pakistan.¹¹

The main aim of the Government of Pakistan was to achieve herd immunity against SARS-CoV-2 and to vaccinate as many people as possible. In this regard, the government of Pakistan did a remarkable job in providing free-of-cost vaccine to people of Pakistan in spite of logistic and economic hurdles. Even after all these measures, approximately only around 25 per cent population has been vaccinated.¹²

The success of any vaccination programme depend on the acceptance of vaccine by the general population. In the long run the development of vaccines against SARS-CoV-2 and their free universal access is of utmost importance to end the pandemic. However, the attainment of this goal relies on people's acceptability of COVID vaccine what if people do not get immunized?. This question is valid as public distrust and hesitancy against vaccinations are on the rise globally and particularly against COVID vaccine.^{13,14} In order to achieve herd immunity it is estimated that around 70% of the immune population is required.¹⁵

Acceptance rate was around 60 per cent in our study. Other studies conducted in South Asia showed high acceptability of vaccines. Studies from Malaysia, Indonesia and China, showed an acceptance rate of around 90%.^{16,17,18} Kuwait (23.6%), Jordan (28.4%), and Italy (53.7) showed less acceptability of COVID vaccine whereas France (58.9%) showed comparable results to our study, although in the rest of southeast Asia COVID vaccine acceptance rate was high.¹⁹ Fear of post effects of SARS-CoV-2 vaccination is the most likely reason for vaccine refusal. In our study, seventy percent of population refused the vaccine because of fear of side effects vaccine.

Unlike in the past, this pandemic was accompanied by an infodemic. Social media led to the dissemination of misinformation and an overload of information about vaccine side effects which played a major role in vaccine hesitancy. In our study, almost half of the study population i.e. 50.5% expressed distrust in the vaccine because of social media influence. They believed conspiracy theories. Betsch et al. and Nan et al. have shown that social media negatively effects vaccine uptake and develops distrust.^{20,21} Use of social media lead to vaccine hesitancy and belief in conspiracy theories, as

demonstrated by N Puri.² Pakistan is a country greatly motivated by religious views even though the COVID vaccine was declared safe by all major clerics of the country still around 14 per cent of study participants expressed religious concern as a reason for vaccine hesitancy. Our results were in contrast to a study conducted by G- Andrade in Venezuela, where 28 per cent population refused the vaccine because of religious concerns.²² Religious leaders should motivate general population to get vaccination against COVID as varying religious views can hamper vaccination process.

Vaccine safety was one of the major concern in our study as 69.5 percent people expressed significant to moderate concern about safety of COVID vaccine, which was an important factor for refusing vaccine. Although all recent studies demonstrate that COVID vaccines are safe but policy makers, government and doctors should come together and raise awareness about benefits of COVID vaccine.^{23,24} Steps should be taken to educate the masses about benefits, and safety of the vaccine, and to increase compliance, as vaccination is the only way to end this pandemic.

Conclusion

At this point when the world is suffering from pandemic fatigue and new variants are frequently emerging vaccine is the only means to combat infection. Excess of misinformation regarding vaccines and less acceptance rate pose a threat to overcoming the COVID-19 pandemic. Vaccine acceptance rate is sub-optimal globally. It is a public health crisis that will cause grave consequences, so it must be dealt with efficiently and effectively. All stakeholders will have to come together to gain the trust of general population.

Limitations

The main limitation of our study is that it is based on self-reported reasons for refusing vaccines at one point in time. So further studies should be done on a large scale to find reasons for vaccine hesitancy.

REFERENCES

- Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Bio Medica: Atenei Parmensis*. 2020; 91: 157-60. doi: 10.23750/abm.v91i1.9397.
- Puri N, Coomes EA, Haghbayan H, Gunaratne K. Social media and vaccine hesitancy: new updates for the era of COVID-19 and globalized infectious diseases. *Human vaccines & immunotherapeutics*. 2020; 16: 2586–93. doi: 10.1080/21645515.2020.1780846.
- Machingaidze S, Wiysonge CS. Understanding COVID-19 vaccine hesitancy. *Nature Medicine*. 2021; 27: 1338–9. doi: 10.1038/s41591-021-01459-7.
- Weiss M, Schwarzenberg A, Nelson R, Sutter KM, Sutherland MD. Global economic effects of COVID-19. Congress Research Service. 2020; [Internet] [cited 2021 Jul 1] Available from: <https://crsreports.congress.gov/product/pdf/R/R46270/62>
- Mathieu E, Ritchie H, Ortiz-Ospina E, Roser M, Hasell J, Appel C, et al. A global database of COVID-19 vaccinations. *Nature human behaviour*. 2021; 5: 947–53. doi: 10.1038/s41562-021-01122-8.
- Li Q, Lu H. Latest updates on COVID-19 vaccines. *BioScience Trends*. 2020; 14: 463–6. doi: 10.5582/bst.2020.03445.
- McAteer J, Yildirim I, Chahroudi A. The VACCINES Act: deciphering vaccine hesitancy in the time of COVID-19. *Clinical Infectious Diseases*. 2020; 71: 703–5. doi: 10.1093/cid/ciaa433.
- Lee TH, Chen AH. Last-mile logistics of Covid vaccination—the role of health care organizations. *New England Journal of Medicine*. 2021; 384: 685–7. doi: 10.1056/NEJMp2100574.
- İkişik H, Sezerol MA, Taşçı Y, Maral I. COVID-19 Vaccine Hesitancy: A Community-Based Research in Turkey. *International Journal of Clinical Practice*. 2021; 75: e14336. doi: 10.1111/ijcp.14336.
- Benecke O, DeYoung SE. Anti-vaccine decision-making and measles resurgence in the United States. *Global pediatric health* 2019; 6: 2333794X19862949. doi: 10.1177/2333794X19862949
- Sharma O, Sultan AA, Ding H, Triggler CR. A Review of the Progress and Challenges of Developing a Vaccine for COVID-19. *Frontiers in immunology*. 2020; 11: 2413.
- National Command Operation Center [Internet]. [cited 2021 Jul 31]. Available from: <https://ncoc.gov.pk/>
- Shetty P. Experts concerned about vaccination backlash. *The Lancet*. 2010; 375: 970–1. doi: 10.1016/s0140-6736(10)60421-7.
- Ward JK, Peretti-Watel P, Bocquier A, Seror V, Verger P. Vaccine hesitancy and coercion: all eyes on France. *Nature immunology*. 2019; 20: 1257–9. doi: 10.1038/s41590-019-0488-9.
- Billah MA, Miah MM, Khan MN. Reproductive number of coronavirus: A systematic review and meta-analysis based on global level evidence. *PLoS One*. 2020; 15: e0242128. doi: 10.1371/journal.pone.0242128.
- Wang J, Jing R, Lai X, Zhang H, Lyu Y, Knoll MD, et al. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. *Vaccines*. 2020; 8: 482. doi: 10.3390/vaccines8030482.
- Wong LP, Alias H, Wong PF, Lee HY, AbuBakar S. The use of the health belief model to assess predictors of intent to receive the COVID-19 vaccine and willingness to pay. *Human vaccines & immunotherapeutics*. 2020; 16: 2204–14. doi: 10.1080/21645515.2020.1790279.
- Harapan H, Wagner AL, Yufika A, Winardi W, Anwar S, Gan AK, et al. Acceptance of a COVID-19 vaccine in Southeast Asia: a cross-sectional study in Indonesia. *Frontiers in public*

- health. 2020; 8: 381. doi: 10.3389/fpubh.2020.00381.
19. Sallam M. COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates. *Vaccines*. 2021; 9: 160. doi: 10.3390/vaccines9020160
 20. Betsch C, Renkewitz F, Betsch T, Ulshöfer C. The influence of vaccine-critical websites on perceiving vaccination risks. *Journal of health psychology*. 2010; 15: 446–55. doi: 10.1177/1359105309353647.
 21. Nan X, Madden K. HPV vaccine information in the blogosphere: how positive and negative blogs influence vaccine-related risk perceptions, attitudes, and behavioral intentions. *Health communication*. 2012; 27: 829–36. doi: 10.1080/10410236.2012.661348.
 22. Andrade G. Predictive demographic factors of Covid-19 vaccine hesitancy in Venezuela: A cross-sectional study. *Vacunas*. 2022; 23: 22-5. doi: 10.1016/j.vacun.2021.07.009.
 23. Corey L, Mascola JR, Fauci AS, Collins FS. A strategic approach to COVID-19 vaccine R&D. *Science*. 2020; 368: 948–50. doi: 10.1126/science.abc5312.
 24. Dean NE, Gsell PS, Brookmeyer R, De Gruttola V, Donnelly CA, Halloran ME, et al. Design of vaccine efficacy trials during public health emergencies. *Science translational medicine*. 2019; 11: eaat0360. doi: 10.1126/scitranslmed.aat0360.
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