RESEARCH ARTICLE

COVID-19 VACCINE HESITANCY AND ITS RELATED FACTORS AMONG GENERAL POPULATION OF ISLAMABAD, PAKISTAN

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ABSTRACT

Objective: *To determine the proportion of individuals hesitant to COVID-19 vaccination amongst general population in Pakistan.*

Design: *Descriptive Cross-sectional study.*

Place and duration: *Islamabad from September 2021 to September 2022*

Materials and Methods: *The study was conducted on 97 participants recruited by convenient sampling. Data were collected from market and malls of Islamabad while excluding health care professionals and auxiliaries through interviews using self-developed questionnaires.*

Results: *The data were compiled by using SPSS Version 23.0. The study revealed certain peculiar trends, where out of 97 respondents, individuals aged more than 28 years in undergraduate or postgraduate education programs proved more hesitant to vaccination. Most common reason was fear of side effects (61.7%). However, a decrease in hesitancy rate from initial hesitant 54.6% to still hesitant 22.68% was observed among certain individuals. Most and least common vaccines received were Sinovac 33% and AstraZeneca 2.1% respectively.*

Conclusion: *It is inferred that there is a decline in hesitancy towards COVID-19 vaccination from initial days till date. But still remarkable number of participants are reluctant to get vaccination mostly due to fear of its side effects. With awareness program and focused strategy this can be further reduced; leading to eradication of misconceptions and enhanced vaccine compliance.*

Keywords: *COVID-19, Vaccine Hesitancy, General population*

INTRODUCTION

The first human case of COVID-19 was caused by the novel coronavirus, subsequently named SARS-CoV-2 which was first reported by officials in Wuhan City, China, in December 2019 and was declared a pandemic on 11 March 2020 by WHO.[1,2] The pandemic has left a global impact socioeconomically and by landing a severe burden on the healthcare system.[3] It has also rendered a negative psychological impact on the people and strategies should be sought to control it.[4]

Different factors have played role in vaccine hesitancy like poor education, lesser income, safety, confusing messages, mistrust in the medical industry, low confidence in the COVID-19 vaccine and the health service response during the pandemic, worse perception of government measures, perception of the information provided as inconsistent and contradictory.[5]

Moreover, these hesitancy rates can be attributed to different conspiracy theories like fear of it being more harmful than safer, a cause of infertility, chips being inserted, social media platforms as the main source of misinformation. Respondents who depended on medical doctors, scientists and scientific journals were the least likely to harbor conspiracy beliefs.[6]

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Other pulling factors included respondents reporting higher levels of trust in information from government sources and employer requirement. [7] A more acceptance rate was also present in health care workers. [8]

A study done in Cameroon showed vaccine hesitancy of 84.6% [9] while it is 56%, 35% and 31% in Portugal, Ireland and UK respectively.[10, 11] Study conducted in Australia showed 29% with low levels of hesitancy and 7% had high level of hesitancy. [12]

Despite the availability of safe and effective vaccines, the refusal to get vaccination leads to recurrent outbreaks of vaccine-preventable diseases. In order to achieve the common goals of eradicating certain infectious diseases and to protect individual health, it is pertinent to understand the fundamentals of vaccine hesitancy. The 5C model describes five relevant psychological antecedents of vaccination: confidence, risk perceptions, constraints, calculation (extent of information search), and collective responsibility (willingness to protect the community). Structural changes to reduce practical barriers are important to improve vaccine compliance. [5]

The present study were conducted to observe hesitancy proportions, key misconceptions regarding vaccination against COVID-19 in Pakistan and the factors responsible for the inclination towards vaccination. It will help the authorities of a country with scanty resources, like Pakistan, in developing and adopting a focused strategy to eliminate the misconception, thereby enhancing the vaccination compliance markedly

METHODOLOGY

This descriptive cross-sectional study was done on a sample size of 97 which was calculated by WHO sample size software keeping confidence interval 95%, absolute precision 0.1 and 50% prevalence to get maximum appropriate response. Approval from IRB Fazaia Medical College was taken before initiation of study. Data were collected after approval from the adult population of Islamabad who were present in public places like central markets or malls. Health care workers like doctors, nursing staff, doctors of physiotherapy, doctors of pharmacy and medical students were excluded from this study. Duration of study was one year from September 2021 - September 2022. A self-developed questionnaire was used to collect the relevant information. Validity of questionnaire was assessed by applying content validity ratio. The questionnaire comprised of permission from individuals, socio-demographic characteristics and questions pertinent to vaccine hesitancy. Participants were recruited using non-probability convenient sampling and after taking informed consent, the participants were interviewed by pre-trained researcher themselves in National language of Pakistan that is Urdu. They were briefed about their right to withdraw whenever they like and regarding confidentiality and anonymity of their personal information. Data compilation and analysis was done by using the SPSS version 23.0. Percentages mean and standard deviation were computed for certain variables in descriptive statistics. Cross tabulation was done and chi square test was applied to assess its statistical significance.

RESULTS

Out of 97 respondents, 53.6% (n=52) were males with a majority age group being less than or equal to 27 years (n=72). A large number of participants 69% (n=67) were educated till graduation or post-graduation.

Further data analysis revealed that 89.7 % (n=87) were vaccinated and rest were not. Among those who were vaccinated, only 15.5% (n=15) were fully vaccinated with booster dose, while 78.1% (n=68) received 2 doses of vaccines and only 4.5% (n=4) received single dose. Out of all those who received booster, the most common reason was to work abroad 6.2 % (n=6) and to boost immunity 6.2 % (n=6).

Respondents who got sick by COVID-19, 10.3% (n=10) got covid before getting vaccination and 9.3% got COVID after being completely vaccinated (n=9). After receiving 1st dose of vaccination, 6.2% (n=6) of the population got COVID. A single case was seen where the person contracted covid before getting vaccination and also had covid after getting fully vaccinated (n=1). A majority of 73.1 % of respondents (n=71) never got sick by COVID.

Most common vaccine received was Sinovac 33 % (n=32) followed by Sinopharm 19.6 % (n=19). Least common vaccination received was from AstraZeneca 2.1 % (n=2).

In this study, individuals who were hesitant to get vaccination when the vaccine was first introduced were labeled as initial hesitant and those who didn't change their mind and were hesitant up till date were labeled as still hesitant

Out of 97 respondents, 54.6 % (n=53) were initially hesitant. Further question revealed that 22.68 % (n=22) of the 92 respondents were still hesitant. However, majority of them (72.16%) were not found to be still hesitant (n=70) (Figure 1)

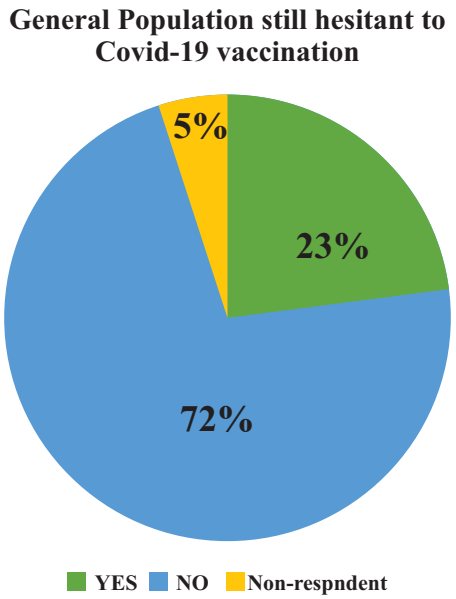

Figure 1: General population still hesitant to COVID-19 vaccination

Table I shows the pulling factors of COVID-19 vaccination as depicted by study participants, who were allowed to pick more than one pulling factor in a close ended question having multiple options. Out of the 88 who responded to this question, only one was unvaccinated.

Most common pulling factor for receiving vaccine was to protect the loved ones from contracting the virus (35.2 %) followed by pre-requisites to get back to work (30.68 %) and encouragement by a friend or a family member (26.1 %).

Table II shows proportion of participants who were given multiple options and were allowed to pick more than one pushing factor to receive vaccination.

Most common pushing factor to receive vaccination was that people (61.7%) were scared of the side effects (n=29) and 29.7 % of the people were worried that vaccine is not properly tested and made in a short span of time (n=14).

Table I: Pulling factors to receive covid-19 vaccination.

Pulling Factors	Frequency (n) 88	Percentages (%)
Protection of loved ones from contracting the virus	31	35.2%
Pre-requisite to get back to work.	27	30.68%
Encouraged by a friend or a family member.	23	26.1%
Media awareness that cleared misconceptions	19	21.59%
Others	12	13.6%
Free availability	11	12.5%
Media encouragement to get covid - 19 vaccination	11	12.5%
If I catch a virus, vaccination will reduce its severity	07	7.95%
Someone I know died of corona	07	7.9%
I have to travel abroad	03	3.40%

Table II: Pushing factors for COVID-19 vaccination in those who are still hesitant to it.

Pushing factors in those who are still hesitant	Frequency (n) 47	Percentages %
Scared of side effects	29	61.70%
Worried that vaccine is not properly tested and made hurriedly	14	29.7%
Vaccine might be ineffective to prevent me from contracting the virus.	07	14.89%
It can cause infertility.	06	12.76%
Impact of corona is highly exaggerated	6	12.76%
Vaccine made in Europe and America is safer than Chinese vaccine available in our region	04	8.5%
Receiver of vaccine dies within 2 years	03	6.38%
Corona virus does not exist	03	6.3%
In disguise of corona vaccination nano chips are being inserted	03	6.38%
I have a health condition so cannot receive vaccination	02	4.25%
Other	02	4.25%

Cross tabulation (Table III) of socio-demographic characteristics with initial hesitancy towards vaccination showed significantly high hesitancy among females (68.9%) than males (42.3 %) (p=0.014).

Population aged ≥ 28 years were more hesitant towards vaccination (72 % n=35) as compared to people of age ≤ 27 (48.6 % n=18). However, chi square showed no statistically significant difference in this regard. Similarly, people doing graduation and masters had high hesitancy rate but remained statistically insignificant.

Table III: Cross-tabulation of socio-demographic characteristics with initial hesitancy towards covid-19 vaccination

	Initial hesitancy			***p*-value**
Gender	**Yes N (%)**	**No N (%)**	**Total N (%)**	
Female	31(68.9%)	14(31.1%)	45(100%)	0.014*
Male	22(42.3%)	30(57.7%)	52(100%)	
Age	**Yes**	**No**	**Total**	
≤27 yrs	35(48.6%)	37(51.4%)	72(100%)	0.062
≥28 yrs	18(72%)	07(28%)	25(100%)	
Education	**Yes**	**No**	**Total**	
Matric	04(50%)	04(50%)	8(100%)	0.563
F. A	04(50%)	04(50%)	8(100%)	
FSC	06(42.9%)	08(57.1%)	14(100%)	
B. A	11(47.8%)	12(52.2%)	23(100%)	
BSC/BBA	10(62.5%)	06(37.5%)	16(100%)	
MSC/MA	14(73.7%)	05(26.3%)	19(100%)	
ENGINEERING	04(50%)	04(50%)	8(100%)	
MBA	0(%)	01(100%)	1(100%)	

DISCUSSION

COVID-19 pandemic had put a lot of strain on health services globally, initially the lack of vaccine led towards practicing of non-pharmacological measures like social distancing, wearing of mask and hand hygiene.[3] In any communicable disease, vaccination is the best primary prevention needed. Likewise for prevention of SARS-CoV-2 scientist worked vigorously to make an effective vaccine.[1] COVID-19 pandemic, a state of apprehensions and anxiety, provided a suitable environment for conspiracies to emerge regarding safety of newly constituted vaccine thereby impeding the control of virus spread and establishment of herd immunity.[6,7]

Surveys held in Portugal and Africa showed more than 50% of respondents being hesitant to COVID-19 vaccine.[8,9] Respondents in this particular study bearing no significant exception to this trend, showed a hesitancy rate of 54.6 %. However, studies conducted in Ireland, United Kingdom and Australia showed a hesitancy rate of less than 50% which may depict difference of vaccine hesitancy in developing and developed countries.[10,11]

With regards to the gender discrepancy towards hesitancy to COVID-19 vaccination, a survey in UK showed that females were predominantly hesitant [12, 13], which poses similarity to this research with greater hesitancy rates of 68.9% in females. Research in Bangladesh shows vaccine hesitancy was more in age groups older than 18 years and amongst low literacy populace.[14] A similar trend is seen in this study where population groups over 28 years exhibited higher hesitancy to COVID-19 vaccination. A study on Iraqi population showed 61.1% willingness to receive COVID-19 booster dose similar to a study held in Pakistan which showed high acceptance rates. However, in this study there were only 15.5 % people who had actually received a booster dose. This is indicative that willingness to get booster dose is not necessarily followed by actually receiving a booster shot.[15]

Many misconceptions and conspiracy theories that lead to vaccine hesitancy in Europe and Middle East[5,13] were also the main reason of hesitancy in this study where the top most were unbeknown side effects and hasty formulation. Many reasons played role in individuals getting vaccinated as shown in the study held in China and UK which showed high acceptance rate if vaccine were to be recommended by friends and family and provided free of charge.[16] In this particular study the top contributory (pulling) factor to get vaccinated was protection of loved ones from acquiring COVID-19 infection.

Limitations

Since this study is being held on a specific population of Pakistan with convenient sampling, it cannot be generalized to whole population and further large-scale studies are needed to confirm findings.

CONCLUSION

It is inferred that there is a decline in hesitancy towards covid-19 vaccination from initial days till date. But still remarkable number of participants are reluctant to get vaccination mostly due to fear of its side effects. With awareness program and focused strategy this can be further reduced; leading to eradication of misconceptions and enhanced vaccine compliance.

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Conflict of Interest: None

Ethical statement: The purpose and procedure of research was fully explained and a written informed consent was taken from all the individuals who participated in the study. Anonymity and confidentiality of the participants was ensured. Moreover, the research was ethically approved by IRB Fazaia Medical College.

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Authors' Contributions:
Dr Faria helped to write down the article and give it a shape with references.

Dr Sumiaya helped to gather data and analyze it.

Dr Ayesha helped to write the discussion and conclusion of the article.

Dr Arshia acted as a supervisor and guiding through everything.

Dr Talha and Madam Javeria helped to collect data and proof read the entire article.

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