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Student Corner

COVID-19 Vaccine its Perception and Hesitancy among the General Adult Population in Pakistan

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Abstract

Objective: To determine the acceptability of COVID-19 vaccine among the general adult population in Pakistan and determine the causes of hesitancy regarding its administration.

Methods: An internet-based cross-sectional survey was designed and conducted by including adult population in Pakistan (n = 1044; aged ≥ 18 years). A detailed questionnaire in English language was circulated on social media platforms along with snowball sampling for diversity of results.

Results: Among the 1044 responses, 828 (79.3%) were willing to get COVID-19 vaccination once available and 20.7% rejected being vaccinated. Vaccine acceptance was more in the elderly and male gender (87.3%). Acceptance rate was also higher in highly educated people as compared to other population. The reason for rejecting vaccine in most people was lack of sufficient information (18.9%) and safety concerns (15.6%).

Conclusion: On an overall basis, 79.3% of the study partakers showed inclination towards getting vaccinated against COVID-19. An overall high acceptance rate was detected which favors a successful and effective nationwide vaccination program in Pakistan. As acceptance of the COVID-19 vaccine will prove to be of pivotal importance in the control of COVID-19 pandemic, aspects related to low vaccine acceptance must be instantly addressed by public health authorities.

Keywords: COVID-19, COVID-19 vaccine, vaccine acceptance, vaccine hesitancy.

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Introduction

In December of 2019, in Wuhan City of China, an epidemic of a new disease caused by SARS-CoV-2, was detected. Soon, WHO declared it a Public Health Emergency of International Concern (PHEIC). On February 11, 2020, novel coronavirus was officially named by WHO as Corona Virus Disease 2019 (COVID-19). On March 11th, 2020, COVID-19 was declared as a pandemic by WHO due to the frightening spread and severity of the infection.[1] SARS-CoV-2 infections express a range of illness that have a spectrum from asymptomatic, mild to severe, or even fatal.[2] Common clinical symptoms of COVID-19 include fever, shortness of breath, dry cough, fatigue, anosmia, pneumonia, and ageusia.[2,3]

Global efforts have been made to ensure the cessation of the disease in order to halt the spread of the COVID-19 pandemic. Some of the precautions included social distancing, the use of face masks, smart and comprehensive lockdowns, and school and corporate closures. While such measures helped flatten the epidemic curve, a new surge of disease frequency was reported as society and the economy resumed.[4,5] As of March 2021, COVID 19 affected 108 million people worldwide, killing 2.38 million[6] and Pakistan reported 560,000 cases and 12,218 deaths.[6,7] Therefore, in addition to social distance measures and PPE, vaccination against COVID-19 is urgently needed to control the transmission of disease in Pakistan.

Given the various conspiracy theories, reluctance to vaccinate remains an important issue for Pakistan. Countries like Pakistan that have failed to eradicate diseases like polio are examples primarily due to such theories. Among them, poor quality of vaccines, doubts about recommended doses, religious bans, and rumors of the existence of active viral agents in vaccines are some of the major claims that hinder national vaccination

campaigns. Clinically, vaccines are a promising strategy for improving health and life expectancy through the management and prevention of infectious diseases. Given the high morbidity and mortality associated with COVID-19, the development of a safe and effective COVID-19 vaccine is an important step in containing a pandemic. In Pakistan, healthcare professionals and citizens over the age of 60 are being prioritized in early COVID-19 vaccination program consisting of Chinese vaccines[8]. This is becoming mandatory around the world as these are considered high-risk groups.

However, false information and conspiracy theories about the COVID-19 vaccine due to lack of public awareness have had a major impact on Pakistan's awareness of vaccines, even among healthcare professionals (HCWs). Therefore, the hesitation of immunization described as "delaying the acceptance or rejection of vaccines despite the availability of immune services"[9] may hinder future COVID-19 immunization efforts. Little is currently known about the uptake of potential COVID-19 vaccines and their determinants, but such information is essential for planning vaccine uptake strategies before vaccines are available. Therefore, in order to better understand and inform health authorities, the current study assesses the acceptability of the potential COVID-19 vaccine and assesses the factors that influence its acceptability in the general adult population of Pakistan.

Methods

Study Design and Sampling

This cross-sectional study aims to determine the overall awareness of the COVID-19 vaccination program in Pakistan. An English survey was created on the Survey Heart Forms (FormsApp). Personal confidentiality was guaranteed and no identification information was collected during the investigation. Informed consent was obtained prior to the survey and all adults (aged 18+) were considered qualified to partake in the survey. The survey was distributed to the community via social media platforms such as Twitter, Instagram and WhatsApp. To recruit participants, we used the snowball sampling method, which is a non-probability sampling method that provides convenient samples. Participants were able to withdraw at any time during the investigation. Data were collected between March 15, 2021 and March 30, 2021.

Study Variables and Measures

Demographic data was provided at the beginning of the survey, which included age, ethnicity, gender, marital status, occupation type, occupational discipline, and education. As for demographic variables, age was grouped into five categories (18-25, 26 – 35, 36 – 45, 46 – 55, >55 years old); ethnicity was grouped as Punjabi, Sindhi, Balochi, Pashtun, or other; occupation type was divided into student, government employee, private employee, self-employed and unemployed. Professional field included medical and non-medical category. Levels of education were broken down into primary, secondary, matriculation, higher secondary, graduation, masters, doctorate and other.

Respondents were asked about their willingness to receive a potential COVID-19 vaccine once it becomes free and widely available. The answer choices were "yes" and "no". Overall acceptance of the COVID-19 vaccine was our primary outcome variable, divided into acceptance and rejection. In addition, participants could choose from pre-listed factors such as safety concerns, lack of sufficient information, suspicious efficacy, availability, costs, and personal beliefs that could play key role in their hesitancy towards potential COVID-19 vaccine.

Additionally, the study participants were also asked to specify whether they believe that COVID-19 vaccination program in Pakistan provides protection against the said disease and whether it is safe for use or not. Answer options included “Yes” and “No”. The participants were also asked about some controversial topics like; “Do you believe that there is some kind of political agenda or conspiracy behind the current COVID-19 vaccination program?” or “Do you think there is some kind of micro-chip inside the vaccine that can be used to control brains and behavior of the recipients?” or “Do you think COVID-19 is some kind of hoax or ploy against the Muslim world?” The answer options to all these questions included “Yes” and “No”. The study subjects were also asked about their willingness to get their children vaccinated and whether they can get COVID-19 infection even after getting vaccinated. Answer options included “Yes”, “No” and “Not Sure”. The participants were also asked if they would get vaccinated against SARS CoV-2 if their doctor recommends it and if they have to pay for it. Answers included “Yes” and “No”.

Statistical Analysis

Data was analyzed using the Social Science Statistics Package (SPSS) version 26 (IBM, Armonk, NY, USA) and applying the Pearson Chi-Square ($\chi 2$) test to determine the importance of the factors proposed in this study (acceptance and rejection of COVID 19 vaccine) across various categories of demographic variables. The level of statistical significance was set at $\alpha = 0.05$. A descriptive analysis was performed to calculate the frequency and proportion of categorical variables throughout the survey sample.

Results

Demographic Characteristics

A total of 1044 adults completed the survey questionnaire out of which 69% (n=720) were females and 31% (n=324) were males. A vast majority of participants was aged between 18-25 years (n=975; 93.4%) with 94.3% (n=985) being of Punjabi ethnicity. Most of the participants were students (n=957; 91.7%) and belonged to the medical field (n=714; 68.5%). A large number of participants reported having education equivalent to bachelor's degree (n=615; 58.9%) and 98.4% (n=990) were un-married.

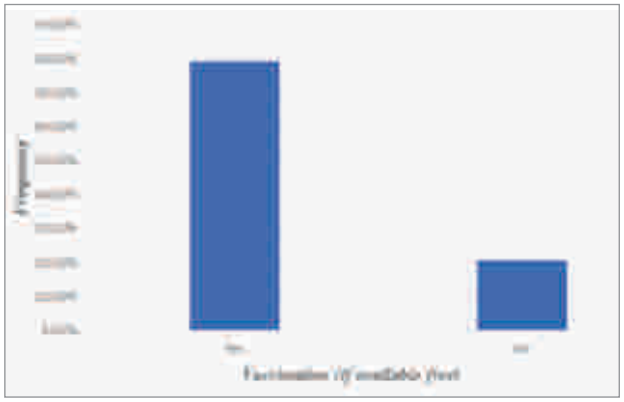

Figure 1: *General Trend of COVID-19 Vaccine Acceptance*

Vaccine Acceptance and Predictors

Figure 1 shows the acceptance of a potential COVID-19 vaccine in general if available for free; most people answered "Yes" (n=828; 79.3%). While only 58.6% (n=612) were willing to take vaccine if they have to pay for it. 70.9% (n=740) participants indicated that they would get the successive 2nd shot of the vaccine as the vaccination program being implemented in Pakistan by the Government uses Chinese Vaccine "Sinopharm" that consists of 2 shots 21 days apart.

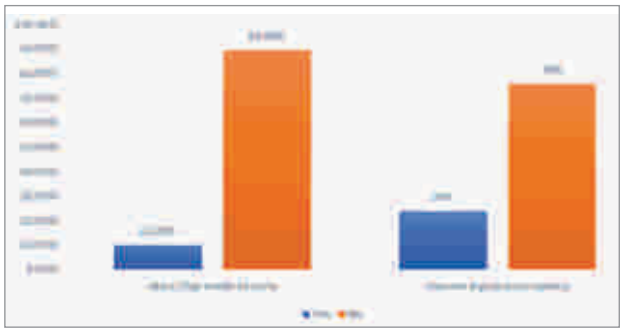

Figure 2: *Frequency of General Myths about COVID-19 Vaccine in Pakistan*

Vaccine Acceptance based on Respondent Demographics

There is a significant association between vaccine acceptance and the demographic characteristics of the survey participants. Male subjects were more likely to accept the COVID19 vaccination than female subjects (M= 87.3% versus F=75.7%). Surprisingly, the acceptance rate increased as the age group increased. Participants having age 35 years or above showed 100% willingness to accept vaccine while age group 26-35 years showed 91.8% acceptance. On the other hand, youth seemed to have some reservations with the percentage of acceptance being 78.3%. Single people were more likely to accept COVID-19 vaccine (79.5%) as compared to married (77.3%). Those participants who belonged to the medical field had high likelihood of getting vaccinated (85.3%) as compared to the non-medical field (66.4%). Vaccine acceptance percentage increased with higher education level. Participants having a doctorate degree (Ph.D.) had highest acceptance rate (87.5%) as compared to matriculation or lower (50%).

Factors associated with Hesitancy regarding COVID-19 Vaccine

In a country like Pakistan where literacy rate is low and public communication channels are not well-developed, there are certain factors that impose hindrance towards accepting a potential COVID-19 vaccine. Table 1 below refers to some of these factors that are related to reluctance regarding the vaccine administration. Ignoring the fact that vaccine is currently not available to all age groups, the study showed that lack of sufficient information about the vaccine was the main cause of reluctance among the masses (18.9%). People also thought that it might be too soon for getting vaccinated so they were waiting for the appropriate time (17%). The safety (15.6%) and efficacy (3.5%) concerns were also present among the population. On the other hand, a reasonable fraction of the participants (7.4%) thought that there is no need for vaccination. While 7.2% of the participants had already got vaccinated.

Table 1: *Main Factors Associated with COVID-19*

Vaccine Hesitancy in Pakistan		Gender		Total
		Female	Male	
Reasons for Not getting Vaccinated	Already vaccinated	24	51	75 (7.2%)
	Cost	29	4	33 (3.2%)
	Delaying until more info is available	131	66	197 (18.9%)
	Efficacy concern	28	9	37 (3.5%)
	No need for vaccine	61	16	77 (7.4%)
	Safety concern	142	21	163 (15.6%)
	Unavailability	168	80	248 (23.8%)
	Waiting for appropriate time	117	60	177 (17%)
	Waiting until others get tested	20	17	37 (3.5%)
Total		720	324	1044 (100%)

The participants were also asked if they think that COVID-19 vaccination system is a global conspiracy and there are some grim objectives behind this process. 24% of the participants actually believed that this is some kind of hoax being implemented on us by the international super-powers. Also, 10.2% of the study participants were of the opinion that there is some kind of micro-chip inside the vaccine to control our minds and actions (Figure 2).

Discussion

Although, COVID-19 pandemic is overwhelmingly widespread around the world, early implementation of preventative measures and government interventions have made Pakistan relatively free from the worst illnesses. In contrast to Pakistan's difficult history of fighting polio, due to vaccination resistance in many of its endemic areas.[10-12] The results of this study show that COVID-19 vaccination is a government-wide mass immunization effort which did not cause such public resistance as before.[13]

COVID-19 pandemic has spread overwhelmingly throughout the world but Pakistan has been relatively spared the worst of the disease due to early implementation of precautionary measures and intervention by the government. In contrast to Pakistan's difficult history in controlling Polio, due to vaccine reluctance in many of its endemic regions[10-12], the results of this study seem to indicate that COVID-19 vaccination did not elicit such hesitancy prior to mass vaccination efforts by the government.[13]

In this study, it was established that 79.3% of the total participants agreed on taking the vaccine. This percentage is higher owing to the fact that most of the people participating in this research were educated; mostly students doing their graduation and a major percentage of participants belonged to the medical field. Yet the acceptance ratio is far less than the ideal 100%. Results showed that people were hesitant about the vaccine administration if they had to pay for it. In a country where 24.3% of the population lives below the poverty line, such high prices can't be afforded by the majority. Also, people aren't confident enough in the efficacy of the vaccine to the extent that they would willingly pay for it. But people denying vaccine even if it's available free of cost is a serious alarm for the public health authorities, taking into consideration the given magnitude of the COVID-19 pandemic in Pakistan. The observed 79.3% acceptance rate, though satisfactory, still indicates that even desperate measures should be taken to spread awareness that vaccine is currently the only way out of the pandemic. The Government and health authorities should emphasize on the advertisement via different platforms to encourage the acceptance of vaccine. Moreover, it should be emphasized that the vaccine is fairly safe and free of side effects and can be administered to all groups of people. The vaccine currently being administered through vaccination program by the Pakistani Government is "Sinopharm" manufactured by China Pharmaceutical Group Co., Ltd. It is administered in 2 doses (0.5ml each) 21 days apart. People receive a verification certificate issued by NADRA (National Database and Registration Authority) after getting both doses.

The vaccine acceptance varies with several demographic factors like age, lifestyle changes, educational status and gender difference. Vaccine acceptance in Pakistan is much lower as compared to other countries like Malaysia (94.3%)[14], United States (~70%)[15,16], 80% in Denmark and 62% in France.[17] However, the acceptance rates are still higher than those reported in Poland (50%), Russia (55%)[18] and in Saudi citizens (64.7%).[19]

This study showed that several factors are associated with the vaccine hesitancy and overall contribute towards hinderance in its acceptance. Vaccine acceptance was more with increasing the age group. Some studies from other countries have shown the opposite response among different age groups i.e. the acceptance decreases by increasing age group. This can be explained by regional differences in population perception of vaccine benefits and side effects, and beliefs about vaccination that differ in different age groups. However, such variations due to demographic and social characteristics should be addressed to narrow down the vaccine rejection levels. Married persons are showing less willingness to get vaccinated; this can partially be explained by the myths and theories associated with vaccine causing impotence. Medical professionals' response was more positive as compared to non-medical related people. (85.3% vs 66.4%). But the main disturbing factors were the myths including conspiracy concerns in the population and the idea that vaccine is being administered to control their mind and body or to trace their location all the time through some kind or micro-chip. Also, considerable fraction of the general population in Pakistan is still of the opinion that there is no need for vaccine. Given the relatively low number of deaths and serious illnesses from COVID-19 in Pakistan, there is a sense of indifference to the virus even among the general public. There must be a positive policy change on part of the government that everything is done very transparently.

Other factors associated with vaccine hesitancy were lack of knowledge about the effectiveness and side effects of vaccine, concerns about the safety and efficacy of the vaccine. Some other determinants were unavailability of vaccine at vaccine centers, or participants were waiting for appropriate time to get vaccinated. Therefore, to increase the utilization of COVID-19 vaccine,

such factors should be addressed. Vaccine safety monitoring should be ensured at the national, regional, and global levels.

Limitations

Although the sample size of this survey was relatively large, the generalization of the results was hampered by the need for smart devices to complete the survey. Responding to the survey required a smartphone, laptop, or tablet with an internet connection, which made it a selection biased research. Moreover, at the time of conductance of this research, the vaccination process had just started in Pakistan, and the vaccination program is still under development and testing. The attitude of general public will change towards the vaccine acceptance slowly, as more information becomes available.

Conclusion

An overall optimistic response to vaccine acceptance is a promising sign of achieving nation-wide herd immunity. This study focused on reasons responsible for the rejection of COVID-19 vaccine among the remaining participants. This data can be helpful for public health authorities, to emphasize on the concerns of people regarding the vaccine side effects and other reservations of people. So that masses can be educated about the usefulness of vaccine, as this is a life saver at this point. To ensure that people are immunized against the COVID 19, constant availability of vaccine at government vaccinating centers is essential, in addition to transparent communication about the vaccine that will help build up public trust in vaccination process. Public health strategies should focus to increase acceptance rate of potential COVID-19 vaccines among older adults who are susceptible to complications from COVID-19.

Conflict of Interest: None

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