

Appropriateness of Covid-19 vaccine and misconceptions among Pakistani population: a web-based national survey



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Abstract

Background: Uncertainty about any kind of medication will be a potential threat. Hesitancy regarding vaccination is a danger to overall global public health. Since it's the first-time global efforts were made to develop a vaccine against the pandemic of COVID-19. So, this is unknown its acceptance in the community. Getting information regarding the key determinants that influence and potential myths about the vaccine might help full to develop strategies that can help improve the vaccination programs globally. This study aimed to assess the prevalence of the acceptance of the COVID-19 vaccine, its determinants, and myths about the vaccine among people in Pakistan.

Methods: A descriptive web-based based study was done, using snowball sampling, bilingual, and a self-administered close-ended questionnaire was sent to participants through google forms on social media platforms and email.

Results: A total of 463 participants from all over Pakistan showed the minimum level of secondary education. The occupational status of the participants showed that (45.1%) were currently employed. Vaccination and their perception can be influenced by educational/socioeconomic statuses, participants were also asked about factors they considered to be the most influential in terms of encouraging and discouraging. Fear of getting an infection was the most encouraging factor (39.1%) for people to get vaccinated, whereas adverse effects via social and digital media were the most demotivating factor (36.5%). Participants were asked the reasons for their reluctance; most were afraid of an allergic reaction to the vaccine. The various myths and misconceptions associated with the Covid vaccine showed by logistic regression analysis for factors that were potentially associated with the intake of covid vaccination.

Conclusion: Addressing educational/sociodemographic factors relating to the COVID-19 vaccination might help encourage the uptake of the vaccination program globally which also tackles future pandemics.

Keywords: Coronavirus, COVID-19 vaccine, vaccine myths, Pakistan

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Introduction

An illness of severe acute respiratory syndrome known as Covid-19 is caused by a novel coronavirus known as SARS-CoV-2(1), it has been infecting more than 6.6 million people worldwide. The coronavirus outbreak was declared a public health emergency of international concern (PHEIC) by the World Health Organization on January 30, 2020, and then declared a pandemic by WHO on March 11, 2020 (2) Pakistan has been plagued with several pandemics, including polio, Tuberculosis (TB), and the ongoing COVID-19 outbreak(3). According to reports, it was first reported from Karachi on February 26, 2020, with Pakistan's population estimated at 229,759,163 based on the world meter exaggeration of united nations data. Recurrently the virus is endemic in various areas of the county. At present, there have been about 1,257,188 new COVID-19 cases reported in Pakistan. There have also been 28,087 deaths in the country(4).

There are numerous reasons for the panic sparked by Covid-19. No one has immunity to the virus, with its newness. It's highly contagious, and since its relatively new, scientists aren't entirely sure how it will behave, since there is very little precedent to study. In any case, it is clear that the virus affects many organs of the body and has resulted in the loss of many lives around the world³. Therefore, the vaccine is considered the most awaited intervention, so hundreds of global R&D institutions are engaged at extraordinary speed to develop the vaccine⁽⁵⁾. However, the public reaction toward COVID-19 vaccine uptake will be challenging. Several studies have shown different factors for the acceptance of vaccines whenever a new thing is introduced to the market⁽⁶⁾. These included the product's efficacy and safety, potential adverse effects on health, myths, and misconceptions about vaccination, trust issues for the health care system, knowledge gap, and misinformation about vaccines

among the people on vaccination-preventable diseases(7). Hesitancy in the usage of a new drug could put public health at risk in responding to the current crisis.

In past pandemics like Polio, in Pakistan when the vaccination was announced, the acceptance rate varied between 0.5% to 15% (8), and in pandemics like H1N1 influenza in the United States, where the acceptance rate was described to be 64% . Swine flu (influenza A H1N1v) vaccination in the United Kingdom reported 56.1%(9). A study was done on the population of Hong Kong, for receiving the A/H7N9 vaccine during its outbreak in 2014(10)and reported 50.5% acceptance. In Beijing, China, only 49.5% of the participants were only willing for the acceptance influenza A(H7N9) vaccine(11).

In a recent admonition to Pakistani health workers, it is said the county’s residents are undoubtedly reluctant to get Covid-19 shots. (12)Some even cite conspiracy theories that are often shared via social media groups. Conspiracy theories and rumors may contribute to vaccine hesitancy by fostering distrust(13). In real-time tracking of COVID-19 vaccine misinformation and leveraging social media to disseminate the truth could be beneficial for public safety.

As misinformation has caused even front-line workers fear to be get vaccinated, the public’s unwillingness to get vaccinated cannot be a surprise. Medical professionals, as well as Pakistani citizens, have long entertained doubts about vaccines. For decades now, Polio has embarrassed the country worldwide. A similar response to the world’s worst pandemic, at least in recent times, would mean failing to protect oneself(14).

It is crucial to acknowledge and eradicate the myths and misconceptions about Covid-19 vaccination in Pakistan, which have been prevalent among different socio-demographic groups. This study provides insight into the demographics of those reluctant to perceive vaccination as ‘helping’. This will help us to better understand where our focus should be for such people about education and ensuring a stable socio-economic status to allow for a new normal.

Methodology

This cross-sectional survey was done by using the Survey Monkey platform, in this survey snowball sampling strategy was performed (nonprobability sampling technique where existing study subjects recruit future subjects from among their acquaintances) Study participants were enlisted across Pakistan, including major cities (Karachi, Hyderabad, Lahore, Multan, Islamabad, Quetta, Peshawar) and also other small cities. Initially, survey links were shared on social media (WhatsApp, Instagram, Facebook, Twitter,) and through emails as well. The participants were requested to roll out the survey form. On receiving by clicking the link, it will auto direct to the informed consent page after this. After this survey form will open. The survey was auto-generated to be stopped when it reaches 500 invitees.

The questionnaire was developed in bilingual (Urdu and English). Section: 1 was on demographic, socioeconomic status, and educational status. Section: 2 was

based on knowledge and perception towards COVID -19, and willingness to accept the COVID-19 vaccine. Whereas, section 3 probed about the reasons for their reluctance. All of the responses were recorded on a Likert scale. The validity of the questionnaire was assessed (Cronbach’s $\alpha=0.80$). The inter examiner reliability was evaluated kappa score (0.74)

The study was approved by the ethical and review committee of The Foundation University, Islamabad having an ethical review number (1528-33). Participants were asked to participate if they voluntarily participate, they were also allowed to skip any question if not comfortable answering.

Data analysis: Descriptive analysis was done to generate and summarized tables for all the variables.

All data analysis was performed using STATA 13.0. A two-tailed p-value <0.05 was considered statistically significant.

Results

A total of 463 participants (completion rate 82%) provided informed consent and returned the survey as shown in figure:1, the demographic features of the participants show that participants were selected from multiple and inclusive age groups with the majority (63.5%) being adults from the age group of 20-35 years as shown in table 1. The study included participants from all over Pakistan, with the highest number of participants (288) from Sindh. All participants had a minimum level of secondary education. The occupational status of the participants showed that 209 participants (45.1%) were currently employed in jobs while the remaining 136 (29.4%) were students and 47 (10.2%) were businesspersons.

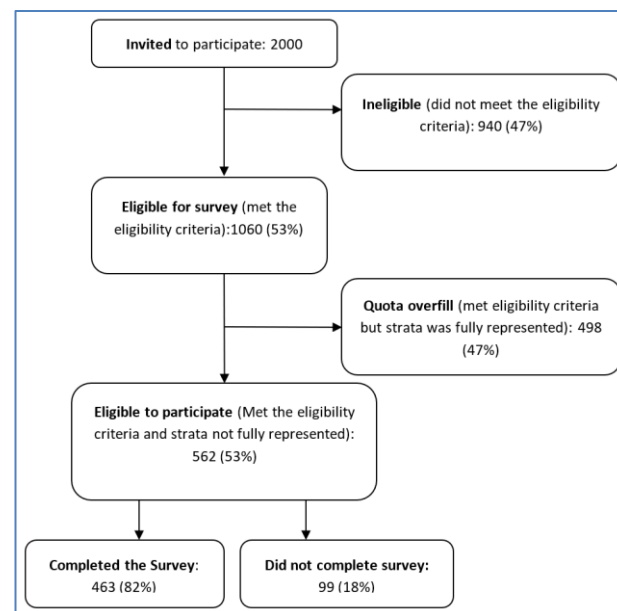


Figure 1: Selection of participants

Covid-19 vaccinations and perception of vaccination can be influenced by different perception educational statuses are shown in table no:2, participants were also asked about factors they considered being the most influential in terms of both encouraging and discouraging to

get them vaccinated, as shown in table no:3. Fear of getting infected by coronavirus was the most encouraging factor (39.1%) for people to get vaccinated, whereas adverse effects via social and digital media were the most demotivating factor (36.5%) for getting vaccinated. The participants who were reluctant to get vaccinated were asked the reasons for their reluctance. Out of the common myths, people were most afraid of developing an allergic reaction to the vaccine. Fig 2 shows the various myths and misconceptions associated with the Covid vaccine. Table 3 shows Logistic regression analysis for factors that were potentially associated with intake of covid vaccination.

Table 1: Socio-demographic characteristic of the study population (N=463)

Age	Number of Participants	Percentage (%)
20-35	294	63.5
36-55	124	26.8
56 and above	45	9.7
GENDER		
Female	321	69.3
Male	142	30.7
RESIDENTIAL PROVINCE		
Sindh	288	62.2
Punjab	87	18.8
Baluchistan	54	11.7
Khyber Pakhtunkhwa	34	7.3
EDUCATIONAL STATUS		
Matriculation/O-Levels	22	4.7
Intermediate/A-Levels	55	11.9
Undergraduate	250	54
Postgraduate	136	29.4
OCCUPATION		
Job	209	45.1
Students	136	29.4
Business	47	10.2
Unemployed	39	8.4
Other (not specified)	32	6.9

Table 2: Covid- 19 vaccinations and their perception on vaccination.

QUESTION	YES	NO
Have you previously suffered from covid-19 infection?	78.8%	21.2%
Have you received the covid-19 vaccine?	55.2%	44.8%
Have you received a vaccination other than that of covid-19?	74.7%	25.3%
Do you think the covid-19 vaccine is effective enough to fight coronavirus?	64.8%	35.2%
Do you think the level of education plays a role in spreading awareness regarding the covid-19 vaccination?	91.6%	8.4%

Table 3: Covid- 19 vaccinations and their perception on vaccination.

Factors	Encouraging	Discouraging
Social and digital media	19.6	36.5
Family, friends, and co-workers	33.4	30.4
Fear of side effects/ getting infected	39.1	29.6
Other (not specified)	7.9	3.5

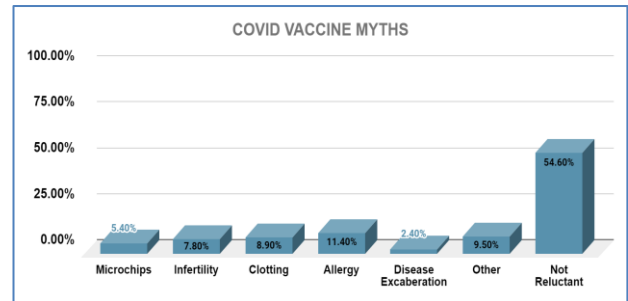


Figure 2: Covid-19

Table 4: Logistic Regression analysis for socio-demographic prediction of intent to uptake Coronavirus Vaccine among respondents in Pakistan (N=992)

Variables	"Intended to uptake Coronavirus vaccine."			
	OR [95% CI]	p-value	OR [95% CI]	p-value
Age				
18-25	0.12 [0.25-1.12]	0.042	0.34 [0.2561.12]	0.123
26-35	0.96 [0.69-1.32]	0.803	0.87 [0.381.56]	0.612
36-45	0.86 [0.60-1.25]	0.453	0.95 [0.481.44]	0.216
above 45	2.04 [1.00-4.15]	0.049	2.15 [1.083.21]	0.032
Gender				
Male	0.87 [0.66-0.99]	0.024	0.89 [0.60-1.00]	0.131
Female	0.73 [0.55-0.96]	0.029	0.80 [0.58-1.10]	0.181
Residential Province				
Sindh	1.23 [0.65-1.45]	0.654	0.51 [1.25-1.45]	0.869
Punjab	0.94 [0.66-1.33]	0.733	0.96 [0.66-1.40]	0.350
Baluchistan	1.21 [0.79-1.85]	0.378	1.23 [0.79-1.92]	0.055
Khyber	1.35 [0.96-1.90]	0.076	1.41 [0.99-2.00]	0.040
Pakhtunkhwa	1.48 [1.04-1.98]	0.055	1.54 [1.12-2.10]	
Highest Education				
Matriculation/O-Levels	1.14 [0.71-1.83]	0.572	1.06 [0.63-1.78]	0.801
Intermediate/A-Levels	1.11 [0.75-1.62]	0.593	1.17 [0.78-1.76]	0.438
Undergraduate	1.38 [0.87-0.16]	0.161	1.48 [0.99-2.23]	0.054
Postgraduate	1.42 [0.92-0.08]	0.099	1.62 [1.02-2.42]	0.015
Occupation				
Student	0.01 [0.60-1.45]	0.012	0.12 [0.45-1.23]	0.012
Job	1.01 [0.70-1.46]	0.939	1.10 [0.73-1.66]	0.634
Business	1.39 [1.04-1.85]	0.024	1.47 [0.97-2.23]	0.063
Unemployed	1.52 [1.46-1.98]	0.020	1.58 [1.14-2.48]	0.052
Other	1.60 [1.54-2.10]	0.014	1.67 [1.22-2.64]	0.045

Discussion

Vaccines, which are chemical substances that activate our immune system without disposing us of disease(15). Vaccines have been used since the 21st century and are considered an outstanding intervention in the field of healthcare prevention(16). However, its acceptancy is varied with social class, educational level, and human(17). The present study was a community-based trial to assess the myths that hinder the acceptance of the covid vaccine in Pakistan. The constant circulation of myths and rumors on social media and factors like media influence, poverty, and lack of education among the population lead the people to become more reluctant towards getting their vaccine shots.

The current study involved individuals from Sindh, Punjab, Baluchistan, and KPK.

Out of the 463 respondents, 294(63.5%) were young adults, 124(26.8%) were middle-aged, and 9.7% constituted the older population. The results indicated that people aged 15-35 years accepted the vaccine more readily due to better educational awareness as compared to their counterparts(10). Proportion of the older population was hesitant to get vaccinated because of the lack of awareness and educational barriers(18). Further studies have showed older people follow traditional values and culture refraining them from getting vaccination shots(19, 20).

In the current study majority (62.2%) of participants belonged from Sindh. It was observed that respondents of KPK had the poor response rate. It is assumed that participants from KPK were skeptical for getting vaccination. The government of Pakistan improved the acceptability of vaccine by awareness campaigns and media coverage. A recent study by Khan et al., showed that the administration of vaccines can be enhanced by mass campaigning but it requires the strengthening of health care systems, enhanced political assurance, and raising awareness program among the masses(21).

The present study demonstrated that 55.2% of the public received the vaccine and 44.8% did not. Decent acceptability of vaccine among participant indicates governments radical steps in encouraging the public, mass media campaigns, better access to immunization services, easily available of vaccine and improved health care structure(22). When inquired about the effectiveness of covid19 vaccine to which 64.8% agreed, whereas, 35.2% disapproved. The result indicates that, education plays a definite role in creating awareness regarding the vaccine. The lack of motivation of the vaccinators is directly linked to low social economic status and trust deficit in the service structure (23).

Still, very limited studies have been done to explore the willingness to the uptake of COVID-19 vaccine in the current crisis, the results of this study were in agreement with some of the studies conducted in the United States and China(24). In this present research, it was determined that 54.6% of the population was willing to get vaccinated, these results were same as the other studies conducted in different countries of the world, like in Saudi Arabia, which concluded that only 64.7% of their population were willing to get vaccinated(25), a similar study in China reported that 72.5% of the population intent to take COVID-19 vaccination(26),

parallel results were seen in study conducted in the United states of America which reported 80% of vaccine acceptance(27).

The most common myths and misconceptions creating doubt regarding the vaccine included that majority (11.4%) of people being afraid of having an allergic reaction, 8.9% were afraid of suffering a clotting reaction, 7.9% had the misconception of developing infertility, 2.4% were afraid of exacerbation of existing co-morbid and 5.4% were frightened of being injected with microchips. Alike research done in the United Arab Emirates, that reported regarding the safety of vaccination (17%), side effects (35%), factors in vaccine hesitancy(28).

Limitations: This study has limitation; that, individual responses were collected by using web-based resources, instead of a direct interview. That might be leading to potential bias concerning their response. A research process performed qualitatively would have given better results and should be recommended in future studies.

Despite these limitations, this study was done with a good representative population size.

Conclusion

The results of the current study represent a lack of education and socioeconomic status for understanding of the risk is the reason for vaccine acceptance in Pakistani population.

Recommendation:

Government should introduce health educational seminars and preventive programs, among various sociodemographic and aged groups, which should increase the COVID-19 vaccine uptake and some behavioral changes for the betterment of overall well begin.

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