

## Demographic Factors Associated with Acceptance of COVID-19 Vaccination: An Online Survey-Based Study from Hyderabad Sindh

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**ABSTRACT: Background:** COVID19 is a major threat to global health. World health organization has proposed use of vaccines against COVID19 to end the pandemic. Due to low literacy rate in many developing countries and disinformation, the population is reluctant for COVID19 vaccination. To explore the demographic factors associated

With acceptance of COVID19 vaccination, we set up an online cross-sectional study.

**Methods:** The online survey-based cross-sectional study was conducted to understand the demographic factors of residents of Hyderabad city associated with vaccine acceptance. The questionnaire was divided into sections to get sociodemographic characters and other information related with willingness of vaccination. This questionnaire was sent to 300 people from which 205 people participated. **Results:** The result showed that 28.8% of the participants were not sure to get vaccination of COVID-19, while 41.5% participants were willing to get vaccine if available; rest of the people (29.8%) were not willing be vaccinated at all. The main reason behind this denial was due to belief on conspiracies against COVID-19 vaccine. Many participants either denied (42%) for any disinformation or were not sure (12%) on this account. **Conclusion:** The study was based on demographic factors of residents of Hyderabad associated with acceptance of COVID-19 vaccine. Among the studied population only 41.5% showed willingness to get vaccinated which indicate the necessity to effectively educate the population about COVID-19 vaccines.

**Keywords:** SARS-COV-2, COVID-19, Vaccine Hesitancy, Pakistan.

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### INTRODUCTION

COVID-19 is an infectious disease caused by 'SARS-COV-2' which was first reported in Wuhan, China<sup>1</sup> and soon after that it was declared as pandemic that led to a race among pharmaceutical companies and research groups to develop vaccine. Currently, several research groups have developed vaccines and such vaccine has been authorized for emergency use. These vaccines include viral vector, inactivated whole virus, recombinant DNA, mRNA, protein and subunit vaccine<sup>2</sup>. Some vaccines have undergone all the trial phases and have been launched in different parts of world<sup>3</sup>. The Food and Drug Administration (FDA) issued Emergency Use Authorization (EUA) for BioNTech-Pfizer on 11<sup>th</sup> December 2020, and Moderna on 18<sup>th</sup> December 2020, and the Advisory Committee on Immunization practices issued Interim recommendation for BioNTech-Pfizer on 12<sup>th</sup> December 2020 and Moderna on 19<sup>th</sup> December 2020<sup>4</sup>; the other vaccines, Sinovac or CoronoVac vaccine by China, AstraZeneca by University of Oxford, followed the route<sup>5</sup>. The vaccines greatly reduced the burden of infections. However, the level of awareness is associated with vaccine success. Education and health educational profile of individuals greatly vary globally. The socio-demographic factors such as age, gender, income, religion, attitude and beliefs towards infection and vaccines and safety concerns also affect the rate of success of vaccination. The disinformation about the spread of COVID-19 was already



prevailing and with the success of vaccine development, it was spread more severely which caused decline in willingness for vaccination<sup>6</sup>. Several studies have shown that risk beliefs and anticipated regret about infectious disease correlate reliably with getting vaccinated<sup>7</sup>. Reduced confidence in vaccine effectiveness and concern about safety is correlated with reliably without getting vaccinated<sup>8</sup>. Pakistan has not risen from the failure of eradication of polio vaccine due to disinformation on account of alleged quality of vaccine and religious prohibition (Infidel vaccine)<sup>9 10</sup>. Number of studies have previously reported lack of trust, increased reliance on disinformation for the spread of polio<sup>11 12</sup>. This is largely feared that like polio vaccine, COVID-19 may also face the same fate. The objective of this study was to assess the demographic factors of residents of Hyderabad associated with acceptance of COVID-19 vaccine.

## METHODOLOGY

### Study setting and sampling

The survey was conducted in the month of January 2021- February 2021. The link was sent to study participants using the WhatsApp, Telegram, Facebook, Twitter and gmail. The online questionnaire was sent to 300 people. Among them, only 205 responded to the questionnaire. The response rate was 68.3%. The duplicated responses were detected and excluded using filter option of excel sheet. The objective of the study was to assess the behavior of residents of Hyderabad city towards the COVID19 vaccination therefore all the residents of outside Hyderabad also excluded from data analysis.

### Data Collection

Data was collected through pretested questionnaire, which was divided into two sections and were further divided into elements. Sociodemographic characteristics were taken, and all other information related with acceptance of vaccination was also taken from questionnaire.

### Data Analysis

We analyzed the responses of different questions of the data and checked the percentage of responses over the questions. The collected data from the questionnaire was entered in Microsoft Excel spreadsheet and checked for any possible errors in the data. The collected data was further analyzed in Statistical Package for Social Studies (SPSS) 18<sup>th</sup> version and the data was analyzed using the frequency in descriptive statistics.

## RESULTS

### Basic demographic characteristics of the study participants:

Table 1 shows the Basic demographic characteristics of the study participants. Eighty two percent of study participants were  $\leq 30$  years old and 36% of study participants were  $>30$  years old. Fifty six percent of study participants were female and 43% of study participants were male. Forty four percent of study participants belonged to rural areas and 56% of study participants belonged to urban areas. Twenty percent of study participants had education up to intermediate class, 56% of study participants had education up to graduation and 24% of study participants had education of postgraduation. Ten percent of study participants were categorized in low-income group (i.e., 17500/= PKR/Month), 85% in middle income (i.e.,  $\leq 100,000$  /= PKR/Month) and 6% of the study participants belonged to higher income group (i.e.,  $>100,000$  /= PKR/month).



**Table 1:** Basic Demographic Characteristics of study participants:

Factor	Frequency (%)
Age	
≤30	169 (82%)
>30	36 (18%)
Gender	
Female	115 (56%)
Male	89 (43%)
Marital Status	
Married	47 (23%)
Unmarried	158 (77%)
Living Area	
Rural	90 (44%)
Urban	115 (56%)
Education	
≤12	41 (20%)
>12	115 (56%)
>16	49 (24%)
Financial Status	
LSES	18 (10%)
MSES	174 (85%)
USES	13 (6%)

**Demographic factors associated with COVID19 vaccine acceptance:**

Table 2 shows the Demographic factors associated with COVID19 vaccine hesitance, refusal, or acceptance. Among the studied population the vaccine hesitance was found to be 29%, refusal, 30%, and acceptance 41%. The age wise distribution of data showed that compared with participants aged >30, vaccine acceptance frequency was higher in participants with age ≤30 years. The gender wise distribution of data showed that compared with female participants, the vaccine acceptance was higher in male group. Likewise, married participants were willing to get vaccine than unmarried participants. Evidently, education played pivotal role in vaccine acceptance by the population as participants with undergrad or higher degree showed consent to get vaccine. The participants with lower income threshold were less willing to get COVID-19 vaccine.

**Table 2.** Factors associated with COVID19 vaccine hesitancy, refusal, and acceptance.

Factor	Hesitant	Refusal	Acceptance	Chi P value
Age				
≤30	46	49	74	2.25
>30	13	12	11	0.32
Gender				
Female	33	37	45	0.58
Male	26	24	40	0.65
Marital Status				
Married	17	12	18	1.67
Unmarried	42	49	67	0.43
Education				
≤12	12	19	10	8.66
>12	34	30	51	0.07
>16	13	12	24	
Living Area				
Rural	26	27	37	0.80
Urban	33	34	48	0.99
Financial Status				
LSES	7	7	4	3.16
MSES	49	50	75	0.53
USES	3	4	6	



## Discussion

The COVID-19 pandemic has severely impacted physical and mental health of people. The continuous lockdowns, social distancing, no facilities at hospitals and fear of catching the infection has hampered the lives of people. The vaccination at mass level is the only solution to end this pandemic. Many vaccines have completed clinical trials with positive results and have been approved by several countries<sup>13</sup>. These vaccines have been developed in relatively shorter period and hence have raised serious concerns about the safety and efficacy issues. This research was designed to collect data from the citizens of Hyderabad, Sindh, Pakistan for their attitude towards COVID-19 vaccines. The acceptability ratio determined in this research is very low than the previous studies done in other countries such as in China, India, Saudi Arabia, and Bangladesh. The studies reported about willingness of 83.8%<sup>14</sup>, 79.5%<sup>15</sup> and 64.7%<sup>16</sup> in China, India and Saudi Arabia, respectively. The low level of acceptance of vaccine among participants of this study could be linked with the literacy rate, less access to reliable information and socioeconomic dynamics. Nonetheless, the awareness campaign by government and non-governmental organizations through electronic and social media can change the public perception regarding COVID-19 vaccines. Few studies have also suggested that people in other countries are willing to buy the COVID-19 vaccines<sup>18</sup> whereas in Pakistan majority accepted it if vaccine will be given free by the government. The financial condition of the Pakistani people has been severely impacted and hence it will not be advisable to proceed with the vaccination drive through private hospitals without governmental support.

## Conclusion

According to this study, we suggest to Government of Sindh to launch health education programs and distribute more accurate and effective information and advertising the efficacy, and safety from adverse effects of COVID-19 vaccine among citizens. Governments should take steps to assure the accurate knowledge and awareness towards the COVID-19 vaccination to overcome the hesitance of vaccine stimulated by disinformation on different news platforms.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

## HUMAN AND ANIMAL RIGHTS

Not applicable.

## CONSENT FOR PUBLICATION

Not applicable.

## AVAILABILITY OF DATA AND MATERIALS

None.

## FUNDING

None.

## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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