

# Study of Covid-19 Vaccine Hesitancy in Mumbai.

**Prof Yaseera Tausif Nevrekar <sup>1</sup>**  
**Assistant Professor, Dept Comp Sci,**  
**Maharashtra College of Arts, Science and Commerce.**

## Abstract

The COVID-19 pandemic continues to ravage the world, with India Particularly Mumbai being highly affected. A vaccine provides the best and permanent solution to controlling the pandemic. With COVID-19 vaccines being approved for use in different parts of the globe, the scale and complexity of their acceptance will be unprecedented. Vaccine must be accepted and used by a large majority of the population to put an end to this pandemic. Vaccine hesitancy has been defined by the World Health Organization as “the delay in the acceptance or refusal to vaccinate despite the availability of vaccine services.” It went on to say that “vaccine hesitancy is a complex, context- specific phenomenon that varies in time, places, and in regard to specific vaccines.” Succi 2018. The reason for hesitancy must be identified and mitigated by public institutions to help advance access to safe and effective COVID-19 vaccines by the population. Mumbai continued to bear the maximum brunt of the second wave of the COVID-19 pandemic while Delhi maintained the second spot in the list of worst-affected cities. However, the total number of daily infections in Mumbai far beats any other state or union territory. Despite the Brihanmumbai Municipal Corporation’s (BMC) move to increase vaccination centres across the city from ten – when the nationwide mass immunization programme kicked off on January 16 – to 91 at present, inoculation has failed to gain the expected momentum. Therefore, this study aimed to investigate the acceptability of COVID-19 vaccines and its predictors in addition to the attitudes towards these vaccines among public in Mumbai specially. This study did a survey through google form during the period of March - April 2021, where data was collected from more than 200 individuals across Mumbai to determine potential acceptance rates and factors influencing acceptance of a COVID-19 vaccine. The findings reflect inadequate knowledge and negative attitudes towards COVID-19 vaccine among the general population in Mumbai. In order to improve knowledge, immediate health education programs need to be initiated before further mass vaccination schedule.

**Keywords:** COVID-19, pandemic, outbreak, vaccine hesitancy, knowledge, attitude, acceptance.

## INTRODUCTION

Corona viruses are a large family of viruses which may cause illness in humans. In humans, several corona viruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered corona virus causes corona virus disease COVID-19. COVID-19 is the infectious disease caused by the most recently discovered corona virus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. The global reaction to the threat has generally increased the

perception of the severity of the illness and the threat it poses to the peoples. However, there is a widespread lack of clarity on specifics related to the illness.

The most common symptoms of COVID-19 are fever, tiredness, and dry cough. Some patients may have aches and pains, nasal congestion, runny nose, sore throat or diarrhea. These symptoms are usually mild and begin gradually. Some people become infected but don't develop any symptoms and don't feel unwell. Most people (about 80%) recover from the disease without needing special treatment. The World Health Organization (WHO) declared the outbreak of a new coronavirus SARS-CoV-2 (COVID-19) a pandemic on 11 March 2020. Since then, the pandemic continues to rage, and morbidity and mortality rates continue to climb globally. Vaccines are a key strategy to stop the escalation of the COVID19 pandemic. A vaccine for COVID-19 should be viewed as a global public good. For this reason, public institutions should identify and address any potential gaps and barriers, such as hesitancy in taking vaccine by general public. To support public institutions in times of crisis, this research paper identifies potential reasons related to the hesitancy in taking of a COVID-19 vaccine and how these reasons may be mitigated.

A survey was done in Mumbai as Mumbai maintained its top position in the list of worst-affected cities in the country by reporting 9,327 new coronavirus cases and 50 deaths, taking the total number of cases in the city to 5,10,225 as of April 10,2021. This survey was conducted using a semi-structured and self-reported questionnaire containing informed consent along with four sections (i.e., socio-demographics, knowledge, attitudes, and perceptions).

The BMC has started vaccination booths at private hospitals to boost the vaccination drive, but only 34.57 per cent beneficiaries have been vaccinated till date. According to the data, 1,046 of the 3,025 targeted beneficiaries have turned up in the month of February. Officials said there are many reasons for which fewer numbers have opted to take vaccines at private hospitals, which includes reluctance, as per their time and most of them considering to take later as it is in their hospitals. However, health experts said the private hospitals had insisted on starting a drive at their hospitals for the comfort of their healthcare workers (HCWs) and frontline workers (FLWs) but the turnout of the beneficiaries are very less. They urged the BMC to look into the matter and find out the reason for the low turnout. Suresh Kakani, Additional Municipal Commissioner, said there is no exact reason for the low turnout of HCWs for the vaccination drive as most of them are taking vaccine shots depending on the work schedule, while only some of them are reluctant. "There are HCWs who are still reluctant or hesitant in taking COVID vaccine as they have misconceptions related to vaccines and they feel it causes severe side effects. We are expecting numbers of HCWs for the first dose will increase in future. However we are getting good responses for the second dose," he said. Medical experts have largely cited a lack of awareness and scepticism about the vaccines for low turnout, in addition to the inability of senior citizens to reach vaccination centres that are located far away from their homes. With the spurt in Covid-19 cases during the ongoing second wave, doctors are advising the elderly suffering from comorbidities to avoid crowded vaccination centres since they are highly vulnerable to contract the infection, owing to their compromised immunity levels.

## **OBJECTIVE OF THE RESEARCH PAPER**

The objectives of this study were to evaluate the acceptance of the COVID-19 vaccines and examine the factors associated with the acceptance in Mumbai.

## **METHOD**

In between March 26 to April 10, 2021, we conducted a web-based survey among the general population of Mumbai coinciding with the implementation of COVID-19 vaccinations programs in Mumbai. The multivariate logistic regression was used to identify the factors that influence the acceptance of the COVID-19 vaccination.

Thus, rather than being a hypothetical study of knowledge, attitudes and perceptions, my study aimed to capture real-world evidence to inform policy makers and practitioners in Mumbai in terms of how best to implement our vaccination program. A semi-structured questionnaire was designed and incorporated into the Google survey tool (Google Forms) and a shareable link was generated and disseminated publicly on various social media outlets (e.g., Facebook, WhatsApp, etc.). Likewise, the link was also shared personally to the contact lists of the researcher. For data collection, I used online approaches (as opposed to face-to-face data collection) because of maintaining spatial distancing and proper precaution during the pandemic. The respondent provided informed consent via e-survey. Of the total respondent 62.3% were male and 37.7 % were female.

## **MEASURES**

A semi-structured and self-reported questionnaire containing informed consent along with four sections (i.e., socio-demographics, knowledge, attitudes, and perceptions) was utilized during data collection. Some questions related to socio-demographics were asked during the survey including age, sex, marital status, educational level, occupation etc. In addition, another “yes/no” question was asked about their previous history of taking all the recommended vaccines (i.e., Have you received all the necessary vaccines in your lifetime?). To assess the level of knowledge, attitudes, and perceptions of the respondents, a total of 22 items structured questions were asked.

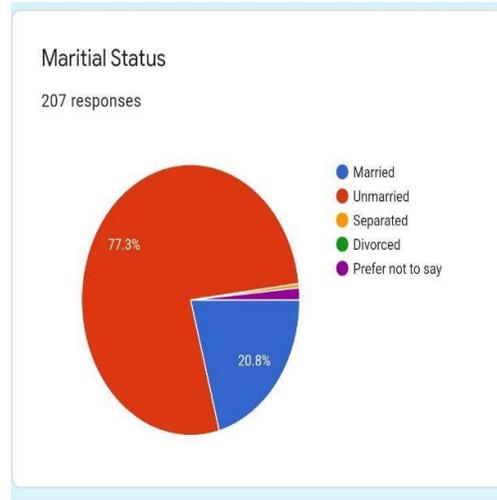
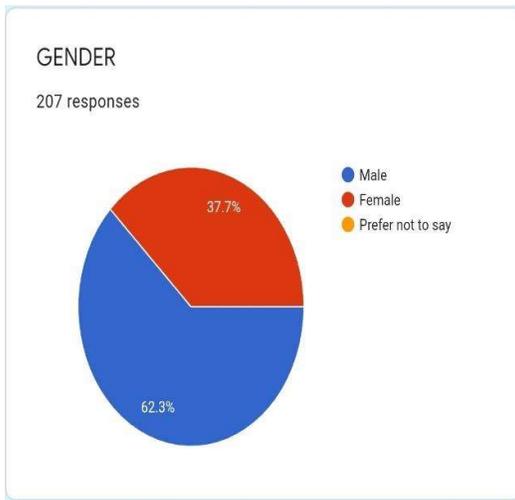
## **ETHICAL CONSIDERATION**

All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration) and also with the ethical guidelines of the general research ethics. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and analyzed.

## **RESULT**

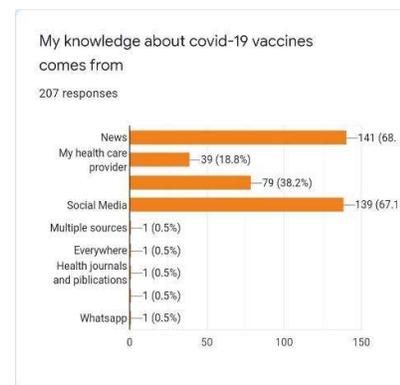
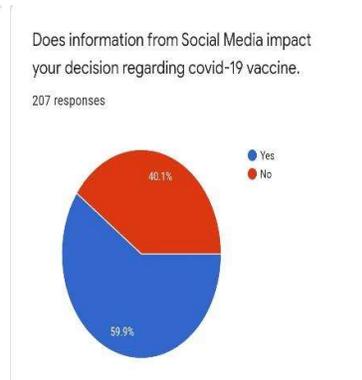
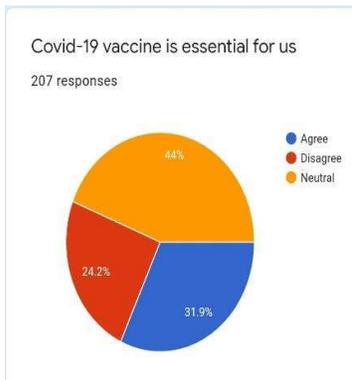
### **1. General profile of participants**

The total respondent were 207 out of which 62.3 % were males and 37.7% were females out of which 77.3% were unmarried and 47.3 % had Bachelor’s Degree Education level.



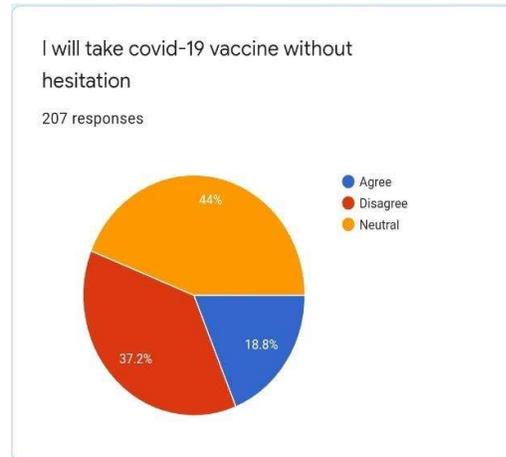
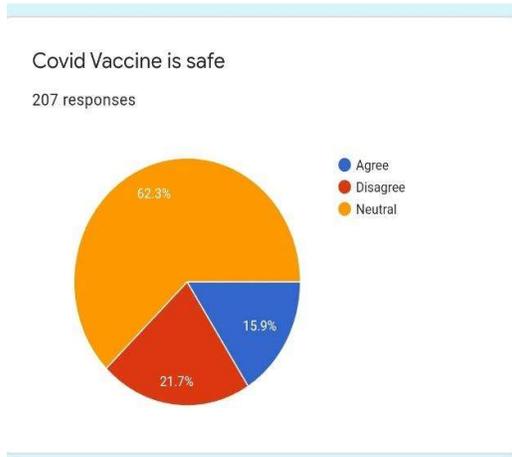
### 2. Knowledge about the COVID-19 vaccine

Participants' source of knowledge about the COVID-19 vaccine, which is mainly from mass media, social media and friends and family. Information from social media impact decision with regards to vaccine. 75.8 % think if everyone in society maintains the preventive measures than the pandemic can be eradicated without vaccination. 31.9 % participants thinks that vaccine is essential for us



### 3. Attitudes towards the COVID-19 vaccine

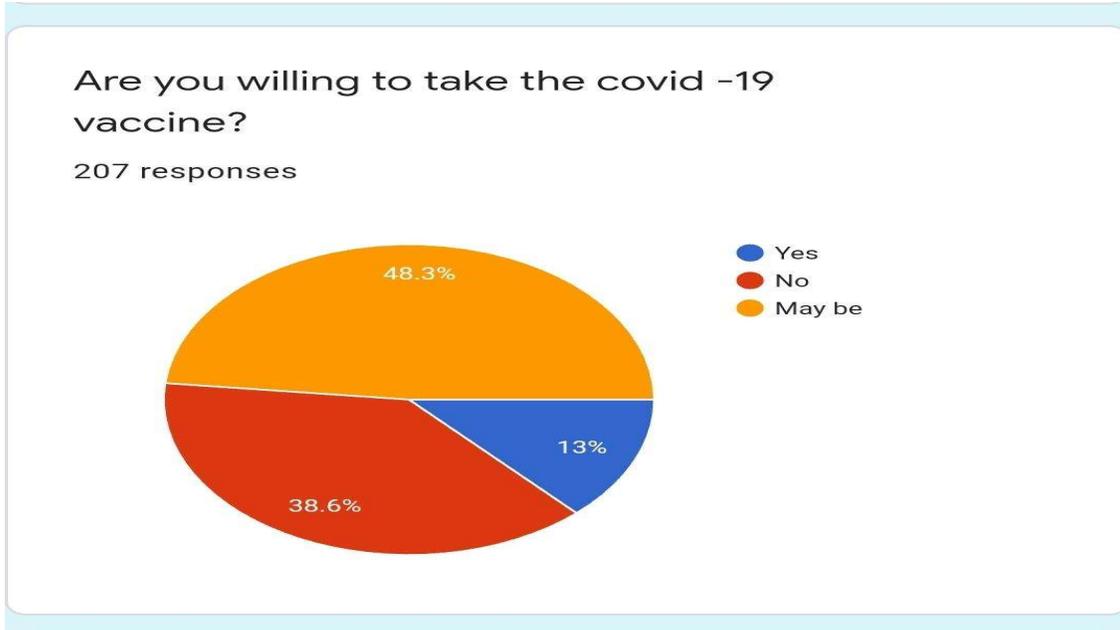
Particular interest is that only 15.9 % of participants regard the current COVID-19 vaccine in Mumbai as safe, almost 18.8 % would have the vaccine without hesitation and 27.5 % would encourage family or friends to have the vaccination. 53.6% are not sure about the efficiency of COVID-19 Vaccination available. Therefore, public health work is required to positively impact on attitudes to the COVID-19 vaccination.



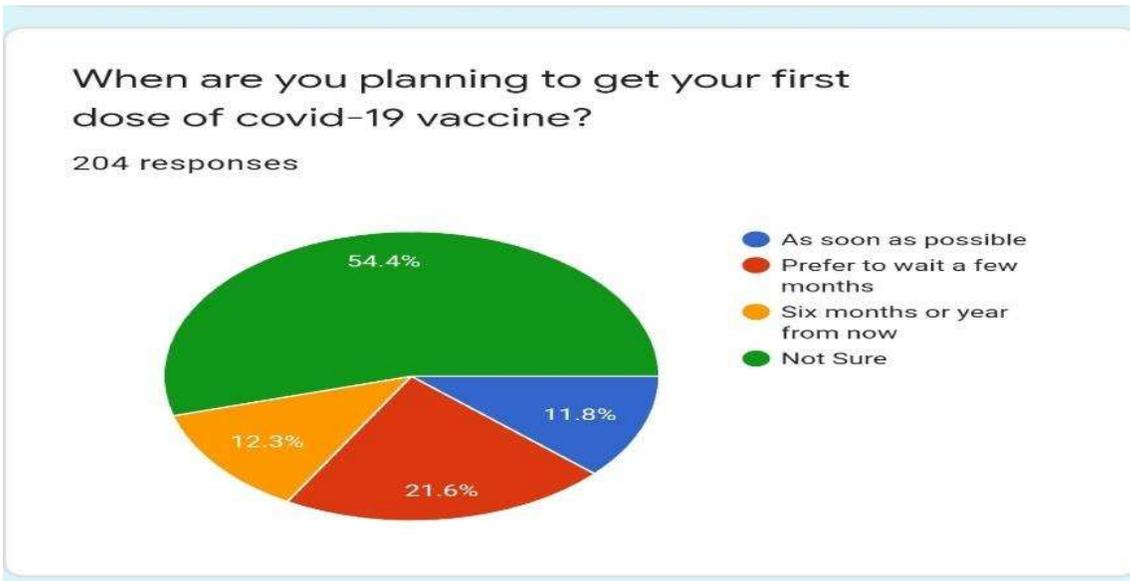
#### 4. Perceptions towards the COVID-19 vaccine

13 % of the respondents were willing to accept/take the COVID-19 vaccine. Among the accepted group, only 11.18 % showed the willingness to take the COVID-19 vaccine immediately, while 21.6 % prefer to wait a few months and 12.3% would delay the vaccination until they are confirmed about the vaccine's efficacy and safety or COVID-19 become deadlier in Mumbai. The results showed age, gender, level of education, income, perceived risk of being infected with COVID-19 in the future, perceived severity of infection, having previous

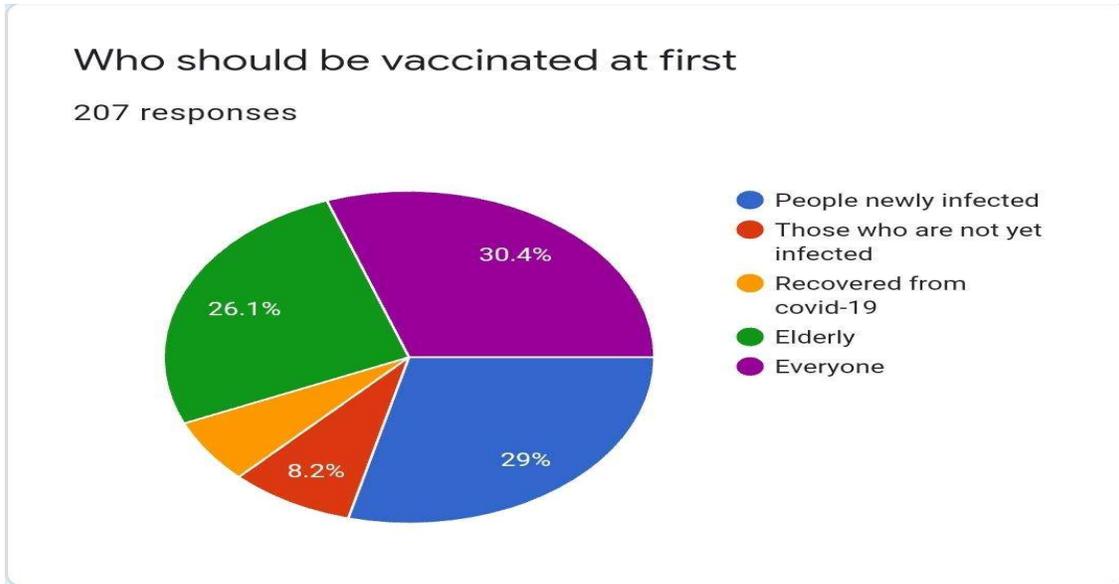
vaccination experience after age 18, having higher knowledge about COVID-19 and vaccination were significantly associated with the acceptance of COVID-19 vaccines.



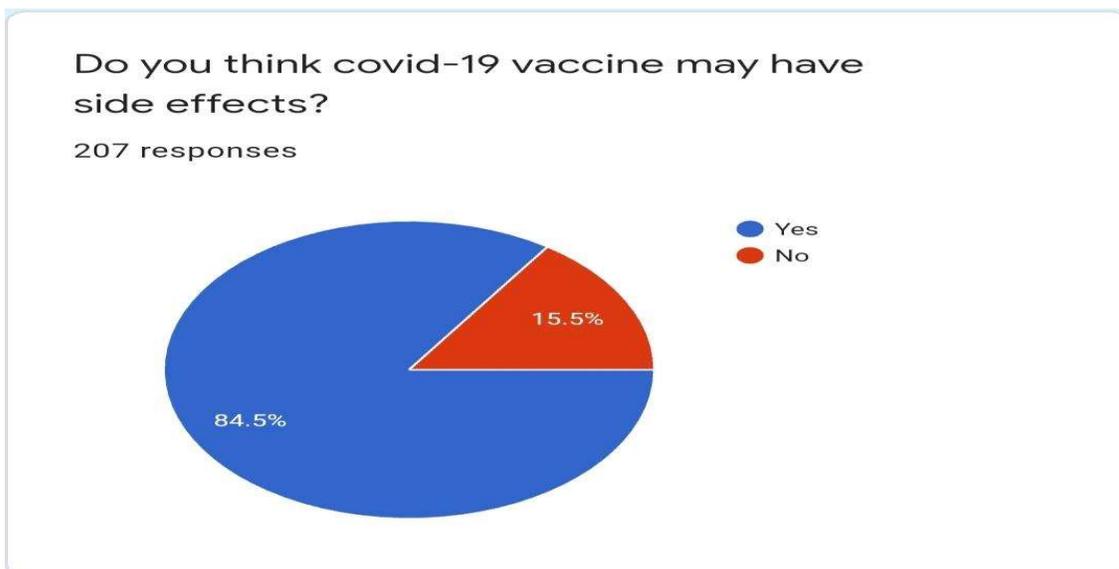
Also the survey reveals of potential COVID-19 vaccine acceptance shows that 54.4 % of their study population were confused about the COVID-19 vaccinations and remained unsure about whether they would have the vaccination.



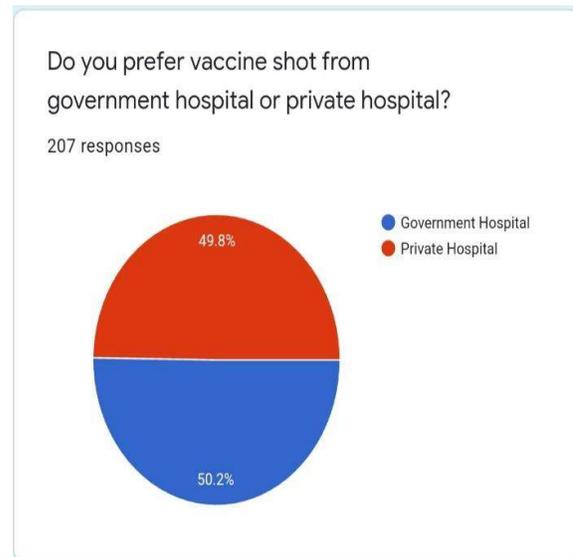
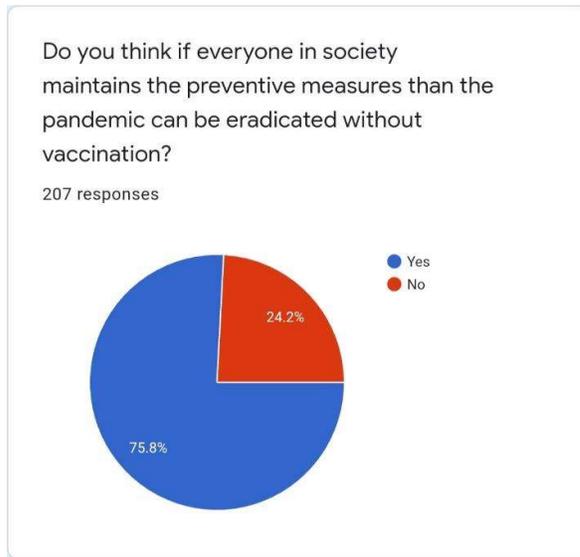
Our study found that over quarter (30.4 %) of the participants thought that everyone should get COVID-19 vaccine in Mumbai. Furthermore, 29% participants thought people newly infected should get the vaccine first.



In our study, 84.5 % of participants assumed that the recently discovered COVID-19 vaccine (the vaccine currently being used in Mumbai) could have some side-effect.



In addition, 75.8% participants believed that if everyone in the society maintains the preventive measures, the COVID-19 pandemic can be eradicated without vaccination and about more than half (50.2 %) responded would prefer the vaccine provided free of charge by the government.



## DISCUSSIONS

In order to halt the ongoing pandemic, the COVID-19 vaccine has been framed as the ideal solution. Although there are numerous vaccination services in Mumbai with BKC Jumbo vaccination Centre, the complete newness of the COVID-19 vaccination roll-out poses questions about the distribution and acceptance of vaccines in this country. It also poses questions about the general population’s knowledge, attitudes and perceptions towards the COVID-19 vaccine and vaccination rollout. This paper presents findings from a novel study conducted to assess the knowledge, attitudes and perceptions towards COVID-19 vaccinations in Mumbai.

The findings reflect a large number of socio-demographic factors influencing knowledge, attitudes and perceptions towards COVID-19 vaccinations and therefore our findings will be crucial in developing COVID-19 vaccination related awareness and health education programs. The knowledge regarding COVID-19 vaccinations was low among more than half of the population.

In this study, knowledge was significantly associated with education and previous vaccine uptake experience. Also attitudes were significantly associated with only sex and earlier vaccine administration experience. Importantly, the majority of participants showed negative attitude towards COVID-19 vaccine. Knowledge regarding COVID-19 vaccinations was not significant in terms of participants’ sex. These discrepancies of knowledge found in our study on COVID-19 vaccinations are possibly due to limited government exposures to information or publicity on COVID-19 vaccinations since the vaccine rollout started.

## LIMITATIONS

There are certain limitations that should be addressed in the interpretation of the findings from this study. Firstly, the study was cross-sectional. In this respect, a longitudinal study is important. Secondly, the study used an online self-reporting method that may be exposed to social acceptability and memory biases. However, the survey was performed during to the mass vaccination period in Mumbai, and its findings may vary after the vaccination program has been implemented completely. Nevertheless, this is the first study of community perceptions about COVID-19 vaccinations in Mumbai and will be crucial for health policy makers and planners who are aiming to vaccinate the highest proportion of the population possible in order to mitigate the impacts of the pandemic

## CONCLUSION

The research reported a high prevalence of COVID-19 vaccine refusal and hesitancy in Mumbai. To diminish the vaccine hesitancy and increase the uptake, the policymakers need to design a well-researched immunization strategy to remove the vaccination barriers. To improve vaccine acceptance among people, false rumors and misconceptions about the COVID-19 vaccines must be dispelled (especially on the internet) and people must be exposed to the actual scientific facts.

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