

# ASSESSMENT OF KNOWLEDGE, ATTITUDE & PERCEPTION TOWARDS COVID-19 VACCINE AMONG THE RURAL AND URBAN POPULATION OF NAVI MUMBAI: AN ALARMING SCENARIO

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**SINHA; Akatya Vidushi<sup>1</sup>, MANKAR; Dr.Madhavi<sup>2</sup>**

## RESUMO

**Authors: Akatya Sinha<sup>1</sup>, Madhavi Mankar<sup>2</sup>**

**Community Medicine, MGM Medical College, Navi Mumbai, India**

### Summary:

**Introduction:** The launch of the COVID-19 vaccine has been an accelerated program, with the vaccine going to market merely nine months after the discovery of the virus. Vaccine hesitancy may become an important challenge in the immunization campaign against COVID-19 and thus it is important to understand the current views of the population to bust various myths and impart correct information where necessary. Hence, this study was done to assess community knowledge, attitudes, and perceptions about COVID-19 vaccinations in order to address all barriers to vaccine acceptance in the community. **Methodology:** A cross-sectional comparative study was conducted between the urban and rural populations with the help of pre-designed and pre-structured questionnaires. Data were collected from 205 subjects from the urban population with the help of google form and 242 subjects from the rural population through an interview. **Results:** 97.1% of the urban population were aware of the Arogya Setu app of which 80% were using it while 87.6% of the rural population were not aware of the Arogya Setu app. 60.3% of the rural population had the perception that the Covid-19 vaccine can be eradicated without the vaccine whereas 77.1% of the urban population had the opposite perception. **Discussion:** Most of the urban population had good knowledge about the Covid 19 vaccine with a positive attitude of accepting the vaccine as the most important preventive measure of prevention and control of the Covid 19 pandemic as compared to the rural population.

### Introduction :

Coronavirus disease (COVID-19) is a deadly disease that continues to affect many countries in the world. This is caused by the new coronavirus strain SARS-CoV-2 which has become a serious public health concern worldwide<sup>(1)</sup>. The World Health Organization (WHO) declared the COVID-19 outbreak as a pandemic on 11 March 2020<sup>(2)</sup>. Millions of lives are saved every year as vaccines help in training and preparing the body's natural defenses - The immune system helps to recognize and fight the virus in question and also the bacteria they target. And thus, a safe and effective vaccine for Coronavirus disease 2019 (COVID-19), has been on the wish list of healthcare agencies across the globe<sup>(3)</sup>. The most effective strategy to protect the population from COVID-19, since SARS-CoV-2 is a highly contagious virus and affects populations widely and globally is the administration of a COVID-19 Vaccine. The launch of the COVID-19 vaccine in India has been an accelerated program, with the vaccine going to market merely nine months after the discovery of the virus. While some early data suggest the safety and efficacy of the approved vaccines, long-term efficacy and any long-term side effects are largely unknown<sup>(4)</sup>. The knowledge and acceptability of the newly launched vaccine is an extremely important parameter to be studied since the vaccine coverage rate among the population is essential for a successful immunization program. Understandably, the acceptance of the new vaccine remains uncertain by both healthcare experts and the public at large. In addition, with a strong anti-vaccine movement, multiple pseudo-scientific conspiracy theories have flooded the media reports. It is for these

<sup>1</sup> MGM Medical College , akatyasinha@gmail.com

<sup>2</sup> MGM Medical College , madhumankar@gmail.com

reasons that vaccine hesitancy may become an important challenge in the immunization campaign against COVID- 19 <sup>(5)</sup> and thus it is important to understand the current views of the population to bust various myths and impart correct information where necessary. In order to implement the most effective vaccination strategy in India and achieve a compliance rate of 100%, this study is done to assess community knowledge, attitudes, and perceptions about COVID-19 vaccinations in order to help the government and policymakers to address all barriers to vaccine distribution and administration.

### **Methodology:**

Study design: A cross-sectional comparative study

Study population: Urban and rural population of Navi Mumbai

Inclusion & exclusion criteria :

- Inclusion criteria :

1. Voluntary participation

2. Subjects above the age of 18 years

3. Indian citizen

4. Good internet access

- Exclusion criteria :

1. Mentally unstable and debilitated individuals above 18 years.

Sample size :

The sample size was calculated using the following equation: With reference available on this topic, Prevalence (P) is taken as 40%. Therefore , Q= (100-P=60%) , Confidence interval of the study =95% , therefore Z=1.96, at the level of significance , L=5% , therefore formula of sample size estimation is :

$$\begin{aligned} N &= Z(2) PQ/L(2) \\ &= 1.96 \times 1.96 \times 40 \times 60 / 5 \times 5 \\ &= 368.7 = 369 \end{aligned}$$

Therefore, total sample size need to study is = N (N x 10%) (considering 10% as non-response rate)  
= 369 + 36

$$= 405$$

Study duration: April 2021 - June 2021 (3 Months)

**Ethical considerations** - Permission from the Institutional Ethics Committee is obtained before conducting the study. All information regarding the study subject is kept confidential.

### **Data collection :**

1. Urban population: A semi-structured and self-reported questionnaire containing informed consent was designed and incorporated into Google Forms and circulated among the urban population.
2. Rural population: An interview was taken by the research investigator using a semi-structured and pre-designed questionnaire.

**Tools for Data collection:** All participants in the study were administered a semi-structured and self-reported questionnaire, after informed consent. The study participants were offered the questionnaire in one of three languages: English, Hindi, and Marathi. The questionnaire had questions designed to elicit the following information: demographic details, information related to knowledge, attitudes, and perception regarding COVID- 19. SPSS Statistical package was used for data entry & analysis. Percentage and Chi-square are used to find an association between knowledge & socio-demographic characteristics of participants of the study.

## **Results:**

### **Socio-demographic profile of study subjects:**

A total of 242 subjects from rural areas and 205 subjects from urban areas were enrolled for the study. On average 50 % to 53% males & 47% to 50% females are formed of the study group from urban & rural areas. The literacy was seen to be higher in the urban population with 69.7% graduates of which 42.9% were professionally qualified. The rural population showed 29.7% illiteracy where half of the population (51.2%) were shop owners by profession.

### **Knowledge about Covid 19 vaccine among study population in urban & rural areas:**

94.2% of the urban population were aware that the Covid-19 vaccine was available in India as 36.1% reported hearing it through the mode of mass media. On the contrary, 62.8% of the rural population did not know about the covid-19 vaccine. Out of the 36.7% who were aware of the vaccine, the source of information was through family & friends (22.8%) & Mass Media (13.2%). While 85.4% of the urban population reported knowing the effectiveness of the vaccine, 76.9% of the rural population did not know at all. A significantly high number of (71.3%) rural population reported that people with strong immune systems would not get infected. 97.1% of the urban population were aware of the Arogya Setu app of which only 80% were using while 87.6% of the rural population were not aware of the Arogya Setu app. Out of the 12.4% of the rural population aware of the app, only 10.4% were using it. A lack of knowledge of the procedure to register was also reported in the rural population where only 0.9% knew the process while 86.3% did not know.

### **The attitude of study Participants about Covid Vaccine in Urban & Rural areas:**

Where 67.8% of the urban population believed the vaccine is safe, 70.2% of the rural populations were not sure. The rural population showed a higher percentage of "Not sure" in many sections pertaining to the essentiality and safety of the vaccine. The urban population reported a positive attitude towards getting vaccinated even if they had the COVID-19 disease as 64.9% reported a "Yes". Both the groups reported of the vaccine having side effects as the urban population suggested of only 2.7% and rural being, 49.6%. The most common side effects suggested by both groups were fever, headache, and local injection site tenderness. A positive attitude was seen in both the groups in terms of following and maintaining appropriate precautions.

### **Perception regarding Covid 19 Vaccine in study participants of Urban & Rural areas:**

<sup>1</sup> MGM Medical College , akatyasinha@gmail.com  
<sup>2</sup> MGM Medical College , madhumankar@gmail.com

60.3% of the rural population had the perception that the covid-19 disease can be eradicated without the vaccine whereas 77.1% of the urban population had the opposite perception. Both the groups strongly reported that the vaccine should be free of cost. Only 18.5% of the urban population were not willing to take the vaccine while 81.5% were willing to take the vaccine. In the rural population, 53.3% of people were not willing to take the vaccine. The reason for not taking the vaccine in both groups was common in that they did not know the outcome of the vaccine and were scared of the side effects. A choice of the vaccine was the Covishield vaccine for both the groups as more than 75% of both the populations reported choosing Covishield over Covaxin.

### **Discussion :**

In order to halt the ongoing pandemic, the COVID-19 vaccine is considered to be an ideal solution to the problem. The COVID-19 Pandemic has witnessed several healthcare agencies adopting unprecedented infection prevention and control measures and fast-tracking the vaccine approvals to control the spread of the disease. The latter is the primary key to stop the escalating rise of COVID-19 and is the strategy of the hour. In India, vaccine hesitancy remains a critical situation since its launch. The knowledge, attitudes, and perception (KAP) of the COVID-19 vaccine between the rural and urban population is critical to understand with regards to the epidemiological dynamics of disease prevention control, adaptation & success of the vaccination program.

In our study, 97 % of the urban population & 36.7 % of the rural population were aware of the Covid 19 vaccine & its availability in India. The sources of information in urban areas were mostly mass media (36.1%), social media (23.4%), and Internet (16.1%) respectively, whereas in rural area source of information were friends & relatives (22.8%) and Mass Media (13.2%). In contrast to our study, a study conducted in West India <sup>(4)</sup> found that more than half of the participants belong to the age group of 40 to 60 yrs, housewife, unemployed, white collar & blue-collar workers were unaware about Covid 19 vaccine & source of information were Radio and news channel (40.96%), social media (43.16%) and friends and Family (51%)<sup>(6)</sup>. This may be due to that our study was conducted during mid-2021. From Jan 2020, the Indian Government has invested extensive efforts & interventions to disseminate the knowledge of Covid 19 prevention & control through mass media with the involvement of all voluntary health workers, NSS & NGOs. Our study revealed that the knowledge regarding Covid vaccine in terms of its effectiveness (4.5%), its side effects (11.2%), allergic reaction (7.0%), the essentiality of vaccine for prevention of Covid 19 disease (40.5%), and willingness to take vaccine (46.7%) was low in a rural area as compared to urban area. In an urban area, the knowledge was comparatively good about Covid vaccine's effectiveness (85.4%), its side effects (57.1%), allergic reaction (23.9), the essentiality of vaccine for prevention of Covid 19 disease (79%), and willingness to take vaccine (81.5%). The difference is statistically significant, this means that even after one and a half year of Covid 19 pandemic, still in rural areas information about Covid 19 prevention and control measures are not adequately reached and there is need of more focused community-based interventions like "My family my responsibility", Corona free village Campaign with involvement & participation of Community people for preventive measures of Covid 19 disease.

In our study, 97.1% of the urban population were aware of the Aarogya Setu app and 80% of the population were practically using it whereas, only 12.4% of the rural population were aware of the Aarogya Setu app & 10% of the rural population were using it. A similar result was found in a study conducted in Kerala<sup>(7)</sup>, 97.6% of medical students and technology university students were aware of the Aarogya Setu app and 10.3 % of students downloaded the app. Overall 82% of the rural& urban population of Kerala were aware of the Aarogya Setu app and only 22 % had downloaded it & only 9% population found it effective<sup>(8)</sup>.

In our study, the urban population had a positive attitude about Covid vaccines safety (67.8%), its essentiality to mankind (79.0%), willing to take the vaccine even if after Covid 19 infection (53.2%) and maintaining Social distance to prevent Covid 19 infection (97.0%) which was significantly different than Rural Population ( $p < 0.05$ ). A similar result was revealed in a cross-sectional web-based survey conducted on adults across India, there is an overall positive attitude of people

<sup>1</sup> MGM Medical College , akatyasinha@gmail.com  
<sup>2</sup> MGM Medical College , madhumankar@gmail.com

towards the vaccine, as the majority of them are willing to take vaccine (83.6%) and in contrast to our study, the overall level of knowledge was low as almost half of the participant did not know about the Covid 19 vaccine <sup>(6,4)</sup>.

Most of the urban (81.5%) population in our study, were willing to take the Covid vaccine as compared to the rural (46.7%) population. The reason for not taking the Covid vaccine was the outcome of the vaccine was not clear (57.9 % in urban areas, 69.9% in rural areas), and fear about side effects of the vaccine (26.4 % in urban areas, 0.4% in rural areas). 46.9% of the urban population reported that the Covid vaccine should be given to a person above 45 yrs and or with comorbidity as a priority basis. Most all the study participants (urban & rural areas) felt that Covid 19 vaccine should be available free of cost to all populations. A similar result was reported by Sharun et al via an online self-administer questionnaire and nearly 85% were planning to get the COVID-19 vaccine once it is available for use in the market<sup>(9)</sup>. The most important reason for vaccine hesitancy was seen to be fear of side effects. In a survey by the IPSOS, authors found that the rate of vaccine acceptance was 87% among the Indian population <sup>(10,11)</sup> and most cross-sectional studies across the globe have revealed similar responses.

#### Conclusion:

As our study was the snapshot assessment of Knowledge, attitude, and perception of urban & rural population about the Covid 19 vaccine, most of the urban population had good knowledge about Covid 19 vaccine with a positive attitude of accepting vaccine as the most important preventive measures of Covid 19 pandemic prevention and control as compared to the rural population. More multicentric studies should be conducted throughout India to assess the association between the Sociodemographic profile and Covid 19 vaccine uptake.

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**PALAVRAS-CHAVE:** Covid 19 Vaccine, Urban Population, Rural Population, Vaccine hesitancy, Knowledge, Attitude, Perception