

**A study on perception and practice of people towards Covid-19 vaccination in Chamarajanagar**

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**Abstract**

**Background:** The COVID-19 pandemic is the largest public health crisis of our time that caused tremendous mortality and morbidity as well as significant economic loss worldwide. One of the major means of controlling the pandemic is the availability of an effective vaccine capable of halting the spread of the deadly virus. The evidence shows that the effectiveness of vaccination programs has been affected by vaccine hesitancy, which is prominently visible around the world in such a period when the effort towards reaching herd immunity has

been targeted to achieve through the vaccination coverage.

**Methods:** This research aimed to determine the attitudes and intentions towards the COVID 19 vaccine and detect negative attitudes and intentions predictors. We conducted this cross-sectional study in the urban field practice area of department of community medicine, Chamarajanagar Institute of Medical Sciences. The residents of study settings who are available at the time of interview and willing to provide informed assent & consent were included in the study, and administered face to face questionnaire.

**Results:** The present study enrolled 300 study participants from household survey, majority of the population belong to geriatric age group & 28% of participants declared themselves as illiterate. 7% of study population are not yet vaccinated and out of total vaccinees 82% have taken the precautionary dose. A total of 51% has prefer COVISHIELD as vaccine candidate and only 16% were infected with COVID-19 during the pandemic. The most common adverse events experienced post vaccination (combined for all doses) was local pain & tenderness. Interestingly 28% of total vaccinees had never experienced any side effects. Reasons for not taking the vaccine were decrease in Covid cases and afraid of side effects.

**Conclusion:** Our findings suggest that negative attitudes, mistrust, and conspiracy beliefs regarding the COVID-19 vaccine are still prevalent among the people in Chamarajanagar. Therefore, a vigorous behaviour change communication campaign involving community people should be formulated and implemented to eliminate negative public attitudes towards the vaccine.

**Keywords:** SARS-CoV-2, COVID-19, knowledge, attitude, practice, hesitancy

### Introduction

In December 2019, a novel severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) was identified to cause a new severe acute respiratory disease, corona virus disease 2019 (COVID-19)<sup>1</sup>. This (COVID-19) pandemic is the largest public health crisis of our time that caused tremendous mortality and morbidity as well as significant economic loss worldwide<sup>2</sup>.

SARS-CoV-2 is continuously evolving to produce various variants, which have been classified by WHO into variants of concern (VOCs), including Alpha, Beta, Gamma, Delta, and recently identified Omicron),

variants of interest (VOIs), including Lambda and Mu), or variants under monitoring (VUMs, including Kappa, Iota, and Eta)<sup>3</sup>.

Herd immunity is the goal of the effective response of the public health interventions to COVID-19 pandemic. It is described as acquired community immunity in a sufficiently large proportion of the population, which is estimated to be 67% for COVID-19<sup>4</sup>. Another one of the major means of controlling the pandemic is the availability of an effective vaccine capable of halting the spread of the deadly virus<sup>2</sup>. At present, different types of COVID-19 vaccine have been developed. Most frequently used vaccines are mRNA vaccine, viral vector-based vaccine, inactivated virus vaccine, and viral protein subunit vaccine<sup>5</sup>.

The evidence shows that the effectiveness of vaccination programs has been affected by vaccine hesitancy, where hesitancy has been defined as a “delay in acceptance or refusal of vaccination services<sup>6,7</sup>. Hesitancy regarding the Corona virus diseases 19 (COVID-19) vaccination is prominently visible around the world in such a period when the effort towards reaching herd immunity has been targeted to achieve through the vaccination coverage<sup>8,9</sup>.

The increasing rate of vaccine refusal or hesitancy is driven by diverse factors in different countries or community groups. A recently published report by Pew Research Centre stated that four in ten Americans will definitely or probably not take the vaccine and that 21% of American adults are “pretty certain” that they will not take the vaccine<sup>10</sup>.

Post COVID-19 complications, also titled as long COVID-19 or post-COVID-19 syndrome are defined as complications occurring or persisting for at least 3 months after an acute SARS-CoV-2 infection and are not

attributable to any other aetiology other than a SARS-CoV-2 infection<sup>11</sup>. Vaccination has been demonstrated to be effective in reducing the risk of severe COVID-19 infection and also, vaccination status is associated with a significantly reduced risk of becoming infected or re-infected with SARS CoV-2<sup>12</sup>.

India is one of the countries where in both 1<sup>st</sup> and 2<sup>nd</sup> waves COVID-19 was worst affecting the population, these terrible situations resulted in significant increase in vaccination drive where more than 2.2 billion doses of vaccine has been administered till date. Studies related to vaccine hesitancy & perception, especially COVID-19, are scanty in India, despite the growing necessity of understanding the people's vaccination-related behaviour. Few studies have been conducted in Bangladesh to assess the COVID-19 vaccine hesitancy, which has reported a vaccine hesitancy rate between 25.4% to 50%<sup>13</sup>.

There is a critical need for a more updated understanding of public attitudes towards COVID 19 vaccines and associated factors in the light of the COVID-19 pandemic to tailor appropriate public health messages or actions<sup>14</sup>. This research aimed to determine the prevalence of attitudes and intentions towards the COVID 19 vaccine and detect negative attitudes and intentions predictors.

Planned behaviour theory explains whether or not a person will adhere to a particular behaviour regarding COVID-19 vaccine, it is dependent on three major factors: the individual's attitudes toward vaccination in general and the COVID-19 vaccine in particular, the attitudes of 'significant others' toward the vaccine, and the perceived behavioral control, which refers to the perceived difficulty in doing the behaviour<sup>15</sup>.

### **Need for study**

The number of people taken pre-cautious dose of COVID-19 vaccine is less and many refused to take vaccine even during door-to-door vaccination. Thus, we conducted a survey regarding attitude of people towards COVID-19 vaccine, the level of vaccination coverage and relationship between COVID-19 Vaccination and COVID-19 cases in selected urban residents of Chamarajanagar.

### **Objectives**

1. To assess the knowledge and perceive the attitudes towards Covid-19 vaccination among urban residents of Chamarajanagar.
2. To measure the practice of Covid-19 vaccination among the study population.

### **Methodology**

#### **Study design**

Community based Cross-Sectional Study

#### **Study setting**

We conducted the study in the urban field practice area of department of community medicine, Chamarajanagar Institute of Medical Sciences.

#### **Study population**

The study was done among children more than 12 years, and adult population who are the residents of study settings and eligible for COVID-19 vaccination

#### **Duration of the Study**

The study was carried out for the period of 3 months, July to September 2022.

#### **Inclusion criteria**

The residents of study settings who are available at the time of interview and willing to provide informed assent & consent.

In addition to the criteria used in the face-to-face interview, reading, writing and internet use were used as the selection criteria for the online survey.

**Exclusion criteria**

The subjects who are under 12 years of age, pregnancy, breastfeeding, and the presence of any severe chronic illness were considered as the exclusion criteria.

**Sample size**

The applied formula calculated the sample size at 95% confidence interval (CI) with a 6% margin of error using our previous estimate of vaccine hesitancy of 35%<sup>16</sup>.

$$\sqrt{n} = \frac{1.96\sqrt{pq}}{l}$$

Here, n = needed sample size, p = % hypothesized vaccine hesitancy rate, q = (100-p) %, l = permissible error in the estimation of p

Thus, p = 35%, q = 65%, l = 0.06, then n = 242 ~ 300.

**Sampling method**

Our CIMS institute urban field practice area has 10 localities. 30 participants were selected randomly from each locality. Random numbers were generated with the help of computer software. Participants were administered a structured, pre-tested & internally validated questionnaire.

**Data Collection**

After approval on participation in the study, we administered face to face questionnaire to all the participants and entered their responses in Google Forms, Data collection software application in our respective mobile phones.

The questionnaire contains 24 questions that were divided into different sections, including a section about the participant’s demographic data and other sections that were designed to test the participant’s knowledge, attitude, and practice toward immunization.

**Statistical analysis**

The information collected regarding all the selected cases was recorded in MS excel. Continuous data was represented in terms of means and standard deviations. And the categorical data was represented in the form of frequencies and proportions. Statistical Software SPSS version 21 was used to analyse the data. Appropriate tests of significance were used based on the type of data. P-value of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

**Results**

The present study enrolled 300 study participants from household survey and the following results were observed.

Table 1: Distribution of study subjects according to socio-demographic details

Socio –demographic characteristics	Total participant (n=300)	
Age	12-17	5(1.7%)
	18-59	37(12.3%)
	>60	258(86%)
Sex	Male	164(55%)
	Female	136(45%)
Religion	Hindu	278(92.7%)
	Muslim	13(4.3%)
	Christian	9(3.0%)
Occupation	Clerical/shop/farm	29(9.7%)
	Professional	16(5.3%)
	Semi-professional	13(4.3%)
	Semi-skilled	41(13.7%)
	Home-makers	140(46.7%)
	Skilled	28(9.3%)
Education	Unskilled	33(11%)
	Graduate	50(16.7%)

	Illiterate	84(28.0%)
	Intermediate	65(21.7%)
	Professional degree	7(2.3%)
	School	94(31.3%)

In our study, majority of the population are belonging to geriatric age group and Hindu religion. A total of 45% of study participants are females and majority of them are homemakers.

A share of 28% of participants declared themselves as illiterate. As the vaccine is available for children aged between 12-17 years, less than 2% have enrolled into our study.

Table 2: Distribution of subjects according to Vaccination status

Vaccination Status	Categories	N (300)
Vaccination Status	Vaccinated	278(93%)
	Not Vaccinated	22(07%)
Awareness Regarding Precautionary Dose	Heard of the precautionary dose	182(60.7%)
	Not heard of the precautionary dose	118(39.3%)
Vaccination Status of Precautionary Dose (N=278)	Vaccinated	229(82.4%)
	Not/due for Vaccination	49(17.6%)

Our study reveals only 7% study population are not yet vaccinated which shows the positive attitude of study population towards the country's vaccination drive. More than 60% of total study population were aware about the precautionary dose of vaccine and 82% of total vaccinees have taken the precautionary dose.

Figure 1: Pie Chart showing distribution of participant according to Brand of Vaccine Received.

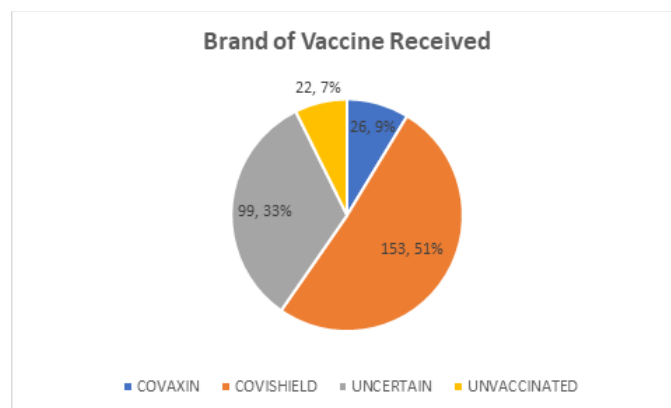
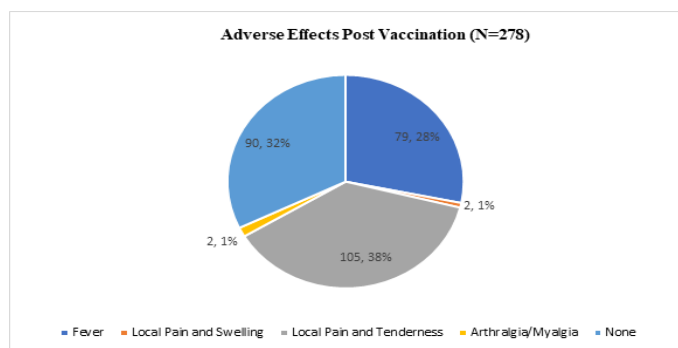


Table 3: Distribution of subjects according to COVID-19 infection

COVID-19 Infection	Categories	Total participant (n=300)
Individuals infected by COVID-19	During 1st wave	19(6.0%)
	During 2nd wave	24(8.0%)
	During 1st wave and during 2nd wave	2(0.3%)
	During 2nd wave and after 2nd wave	2(0.3%)
	After 2nd wave	1(0.3%)
	No	252(83.9%)
Individuals Affected by COVID-19 Post Vaccination	After 1st dose	24(8%)
	After 2nd dose	10(3.2%)
	No	266(88%)

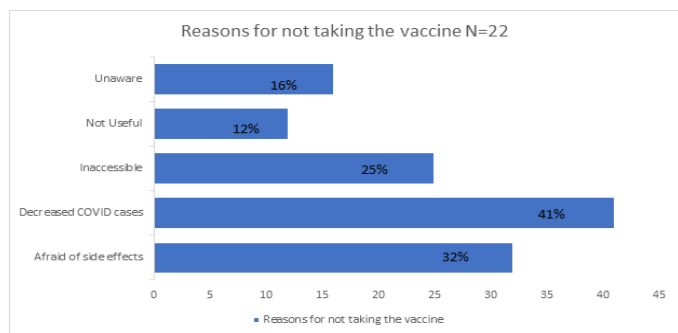
Out of total participant only 16% were infected with COVID-19 during the pandemic and half of them were infected during second wave, A total of 11% were infected post vaccination out of total participant. Among 48 infected individuals, 24 have been infected after receiving 1<sup>st</sup> dose of vaccine and only 10 have infected after 2<sup>nd</sup> dose.

Figure 2: Pie Chart showing distribution of participant according to adverse effects.



The most common adverse events experienced post vaccination (combined for all doses) was local pain & tenderness followed by fever, arthralgia and myalgia. Interestingly 28% of total vaccinees had never experienced any side effects.

Figure 3: Pie Chart showing distribution of participant according to reason for un-vaccinated.



**\*Multiple Responses**

Table 4: Association between attitude towards vaccination and vaccination Status of the precautionary dose

Variables		Have you been vaccinated with precautionary dose		p-value
		Yes	No	
Opinion regarding vaccination against COVID-19	Beneficial	58(27%)	157(73%)	**0.001
	Neutral	6(9.5%)	57(90.5%)	
	Not Beneficial	0(0%)	22(100%)	

\*\* Fisher's Exact Test

The inferential statistical analysis shows significant results between benefit of vaccination and precautionary dose taken with significant p-value.

**Discussion**

We have previously shown that 35% of the respondents considered themselves as vaccine hesitant, which is comparable to the WHO estimated prevalence of vaccine hesitancy<sup>17</sup>. However, the hypothesize was the significant impact of the existing COVID-19 pandemic might have changed the attitude of people towards vaccination. Thus, this study was done to assess the impact of the current COVID-19 pandemic on people's perception and attitude toward vaccination in general and COVID-19 vaccine in particular, among respondents from the study settings.

The current study found that the few of the study participants often have negative attitude towards COVID-19 vaccines which was the concern about unforeseen effects of the vaccine in the future, more than 7% of participants expressed a high level of worries about unforeseen consequences of the vaccine. Additionally, a Chinese study discovered that 48% of respondents delayed vaccination until vaccine safety was confirmed, indicating their concerns about vaccine safety<sup>18</sup>. The fast pace of vaccine production and some scientific and health professionals' scepticism can raise doubts about the COVID-19 vaccine<sup>19</sup>.

Attitudes toward the COVID-19 vaccine have been appeared to be one of the strongest predictors of vaccine hesitancy. In the current study, the comparatively low level of vaccine hesitancy could be explained by the fact that a minor chunk of participants had concerns about future unexpected side effects of the vaccine and doubts about vaccine benefit, in addition to the lack of information about available COVID-19 vaccines and



decreased COVID cases, which support the emergence of rumors and misleading information, creating negative attitudes, hesitancy, or even refusal of the vaccines.

A negative or anti-COVID-19 vaccination attitude is formed because of the low confidence in vaccine safety and vaccine benefits, concerns regarding potential side effects, and also the newness of the vaccine<sup>20</sup>. The finding of this current study is in line with other studies conducted in Bangladesh and other lower-middle-income countries, where it was shown that people having a more negative attitude towards the COVID-19 vaccines are less willing to receive the vaccine<sup>13</sup>.

Additionally, a study by Chou W-YS et.al describes vaccine side effects appeared to be a concerning factor for more than 66% of the respondents. This is a valid reason of concern that seems to be driven by vaccine misinformation, and it is important to address and respond to vaccine misinformation<sup>19</sup>. In the current study 72% of vaccinees have experienced any type of adverse events which is comparatively higher proportion among total vaccinated individuals.

The brand of vaccine received many of the vaccinees had received COVISHIELD vaccine which was the vaccine with foreign origin compare to indigenously developed vaccine of India COVAXIN. A study by Issanov et.al. in Kazakhstan explains Indian or Chinese produced vaccines were the least trusted vaccines, the bulk of the respondents stated that they will not take a locally produced one inside the Kazakhstan. The trust in German or American produced vaccines are likely because of the producers' sound scientific reputations, as well as their transparency through the development processes.

The overall knowledge and attitude related to covid-19 vaccine were inadequate among the study population

which may be due to the misinformation received through the forwarded social media messages and insufficient dissemination of IEC material from the concerned authority or lack of reaching those material into the target population.

### **Conclusion**

This study explored the prevalence and determinants of the COVID-19 vaccine hesitancy in the study population, which will help the policymakers develop tailored messages to combat the vaccine hesitancy among the people and increase its uptake.

Our findings suggest that negative attitudes, mistrust, and conspiracy beliefs regarding the COVID-19 vaccine are still prevalent among the people in Chamarajanagar. Therefore, a vigorous behaviour change communication campaign involving community people should be formulated and implemented to eliminate negative public attitudes towards the vaccine.

Besides, it is important to ensure and disseminate the proper knowledge regarding the COVID-19 vaccine and vaccination process which should be continuously circulated through effective mass media channels, e.g., internet, TV news, and social media.

Finally, the government should consider the community preference regarding vaccinees' through community need assessment approach to reduce vaccine hesitancy and increase voluntary uptake of the Covid-19 vaccine.

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