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Original Research Article

General population perceptions and attitudes toward COVID-19 booster vaccinations and the mask mandate as we approach the end of 2022: a pan India online survey

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ABSTRACT

Background: The Coronavirus disease 2019 (COVID-19) exploded into a global pandemic, killing over 6.5 million people and forever changing the world. While many developed countries are well into their vaccination campaigns, India outperformed global expectations by providing over 2 billion doses to its citizens and assisting other countries worldwide. Following the emergence of various covid variants, it is critical to comprehend the willingness of Indians to receive additional doses of the newer generation of covid vaccination, as well as the fatigue associated with maintaining the most essential covid appropriate behaviour, masking. This study aimed to determine general public attitudes and perceptions of the COVID-19 vaccine in India.

Method: A pan-India cross-sectional analysis was conducted at RUHS college of medical sciences, Jaipur, between October 20, 2022, and December 15, 2022. Through web-based links, a self-administered and semi-structured questionnaire was used to collect data.

Results: Of the total responses received (n=391), 55.6% were males, and 43.8% were females. 63.2% have received two doses of the vaccine, while 33.8% have received three doses. 50.9% of respondents were willing to take the fourth dose of the vaccine, 20.5% were utterly unwilling, and 28.6% were undecided. 10.7% of our respondents were utterly reluctant to wear masks, whereas 26.6% always did.

Conclusions: Based on the findings, vaccination acceptance in India remains high with 50.9% of applicants willing to take the fourth dose. Furthermore, the pandemic has resulted in the incorporation of face masks into our lifestyles, with the majority of people using a face mask in at least one setting.

Keywords: COVID-19, Vaccine, Survey, India, Hesitancy

INTRODUCTION

More than 6.5 million people have died due to the pandemic, and vaccines have proven to be critical in saving the world from more catastrophic consequences.¹ The general public and healthcare professionals have expressed reluctance to accept COVID-19 vaccines in

many countries worldwide. Concerns about vaccine safety, skepticism about the speed with which vaccines were developed, potential side effects, beliefs in conspiracy theories, and pre-existing health conditions are all reasons why vaccines are rejected or delayed in both populations.²⁻⁴ With most people experiencing covid fatigue three years after the pandemic, the world still grapples with the

challenge of an ever-evolving COVID virus. With newer variants posing new challenges as older vaccines lose efficacy, determining public willingness for additional vaccine booster shots is critical.

METHODS

A pan-India cross-sectional analysis was conducted at RUHS college of medical sciences, Jaipur, between October 20, 2022, and December 15, 2022. Through web-based links, a self-administered and semi-structured questionnaire was used to collect data from the general population in India. The obtained data was analysed using the Microsoft Excel toolpak. This study was carried out with ethical approval and participants' consent (Table 1).

Table 1: Consent statement.

Consent statement	Response
All information provided by you (survey participants) will be kept strictly confidential, and submitted data will not be shared with anyone. The information provided will be published in the form of a research study, poster presentations, academic articles, and so on. Please confirm that you understand, appreciate, and can reason through all of the information provided to you regarding the questionnaires and the objectives of this study, and that you consent to the use of the above information for the purpose of the study.	Yes/no

The independent variables in this study included socio-demographic variables (age, Gender, marital status, educational level, educational background, religion), medical history (chronic medical disease and previous COVID-19 infection), knowledge of the COVID-19 vaccine, and the perception of COVID-19 vaccine.⁵ The questionnaire was pre-tested on 5% of the participants to ensure its quality (Table 2). These findings were then used to make the necessary changes. Based on the pre-test results, a discussion was held between the investigators and the data collectors, and some changes were made as a result. The data collectors conducted a one-day training on the tool and data collection procedure. The supervisors and the principal investigator checked the data on a daily basis for completeness, accuracy, clarity, and consistency. Any errors, ambiguities, or incompleteness were addressed.

Sample Size was calculated based on the following formula (for infinite population) using sample size formula as mentioned below;⁶

$$S = Z^2 \times P \times (1 - P) / M^2$$

Where; S=sample size for infinite population, Z=Z score, P=population proportion (assumed as 50% or 0.5),

M=margin of error, given: Z=1.960, P=0.5, M=0.05 (Have taken confidence level as 95% and margin of error as 5%). Thus, the sample size was calculated to be 384.16.

Table 2: Questions asked through the survey.

Question number	Questions
1	Please specify our gender.
2	What is your name?
3	What is your date of birth?
4	Have you taken the COVID vaccine?
5	In which Indian city do you reside?
6	Which Covid vaccine did you get?
7	How many Covid vaccine doses have you received?
8	Do you have any co-morbidities?
9	Did you experience any of the following vaccine associated side effects?
10	Are you willing to take the fourth dose if the government recommends it?
11	How willing are you to use a mask in public places (ex: parks, restaurants, train, flights etc.)?

RESULTS

Of the total responses received (n=391), 55.6% were males, and 43.8% were females (Figure 1) 81.3% of the respondents have received the Covishield/AstraZeneca vaccine, while 16.4% have received COVAXIN.

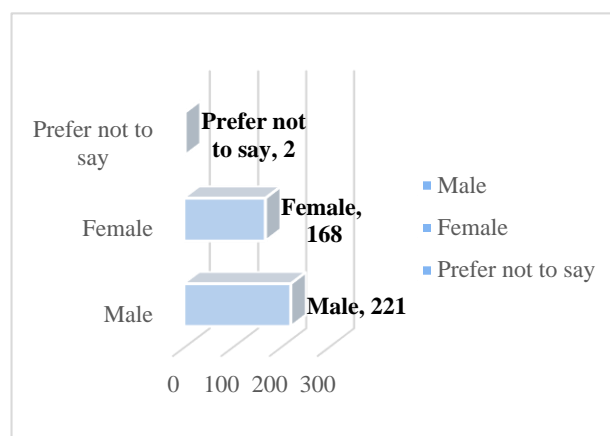


Figure 1: Gender data from the survey.

63.2% have received two doses of the vaccine, while 33.8% have received three doses (Figure 2-3). 50.9% of respondents were willing to take the fourth dose of the vaccine, 20.5% were utterly unwilling, and 28.6% were undecided. We also conducted a study to look for changes in masking behaviour and discovered that most people use masks in at least one situation. Masking behaviour was graded on a 1-5 scale, with one being completely unwilling, three being unequivocal, and five being completely willing. 10.7% of our respondents were utterly

reluctant to wear masks, whereas 26.6% always did (Figure 4).

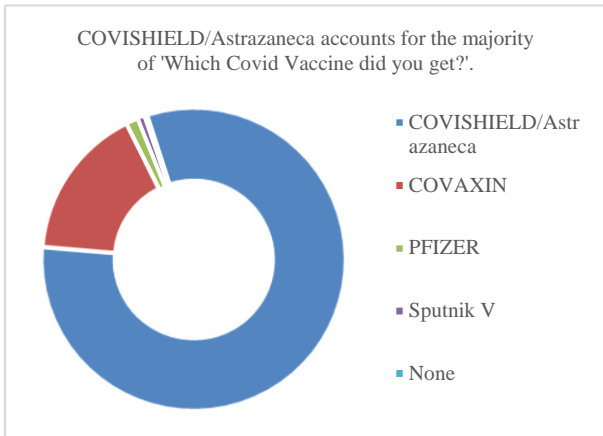


Figure 2: Vaccine data from the survey.

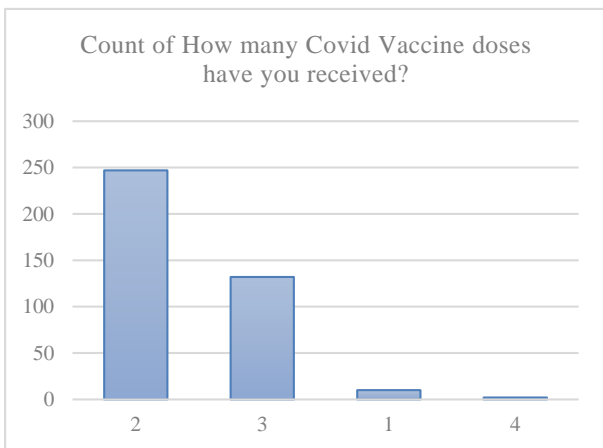


Figure 3: Number of doses data from the survey.

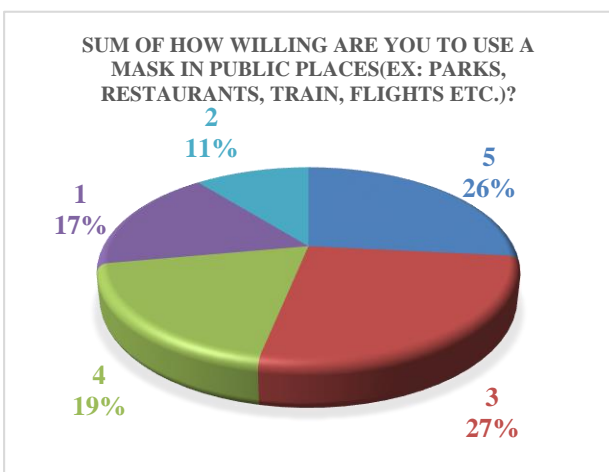


Figure 4: Masking behaviour pattern data from the survey.

The majority of our survey participants responded in affirmation when asked if they would be willing to take a

fourth dose (the second precaution dose) if the government approved it, implying that vaccination acceptance remains high in India (Figure 5).

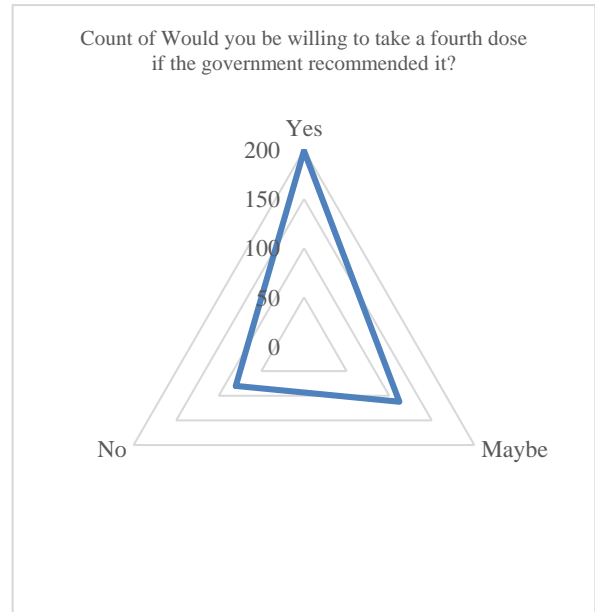


Figure 5: Fourth dose vaccine acceptance radar chart.

We looked at the most common post-vaccination side effects and discovered that the vast majority of people did not experience any. According to the side effect profile, the second largest group reported a spectrum of fatigue, tiredness, pain at the injection site, and muscle pain/soreness. Fever was the single most common side effect (Figure 6). Diabetes was the most commonly reported co-morbidity, closely followed by hypertension (Table 3). We distributed the survey forms as widely as possible to receive responses from all parts of the country. The chart below depicts data from city-wise responses (Figure 7).

Table 3: Co-morbidities data from the survey.

Do you have any comorbidities?	Count of do you have any comorbidities?
None	332
Diabetes	18
Hypertension	16
Asthma/bronchitis/COPD (other chronic respiratory disorders)	10
Obesity	10
PCOD	1
Asthma	1
Pulmonary embolism	1
Migraine	1
Chronic Kidney Disease	1
Grand Total	391

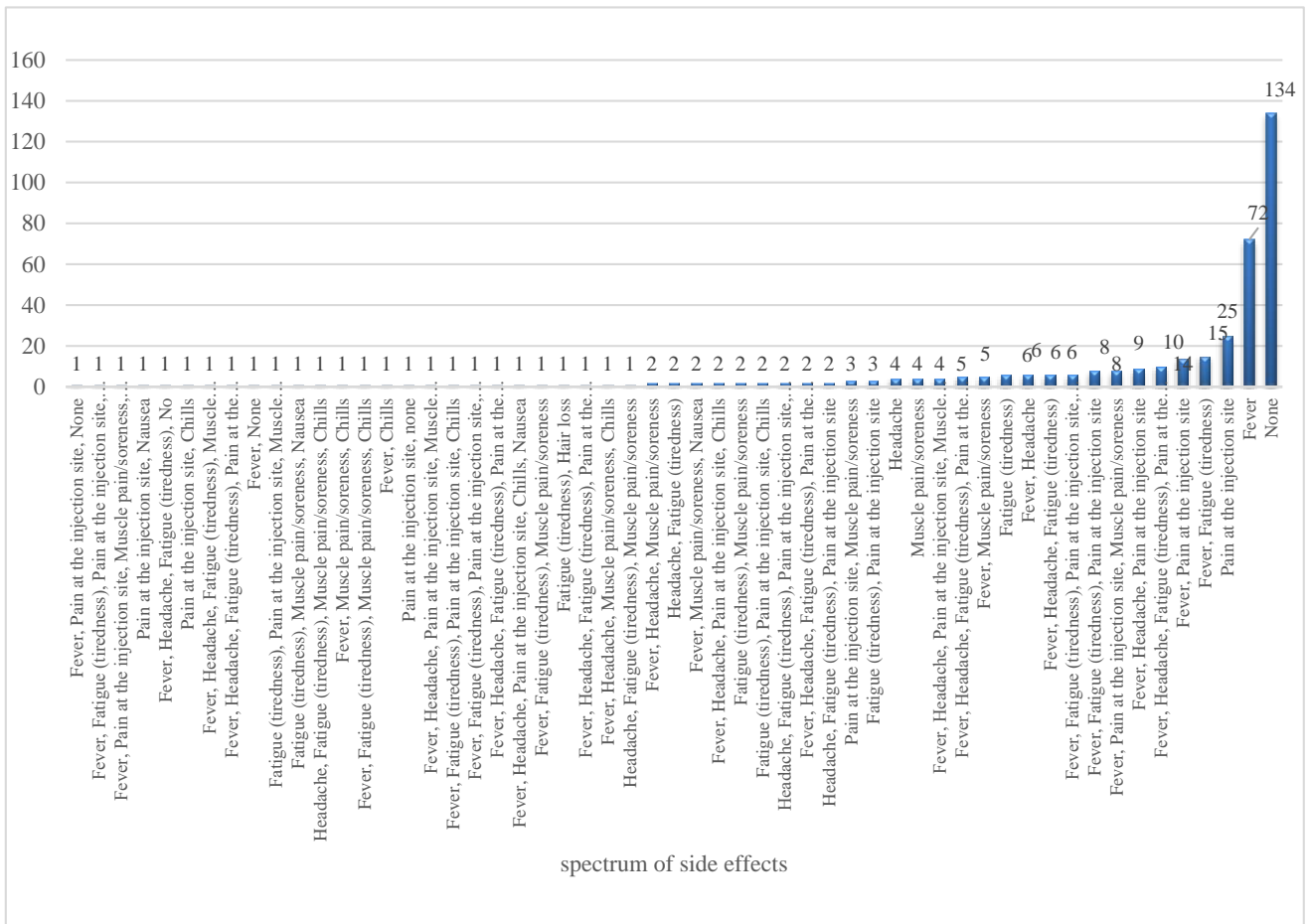


Figure 6: Spectrum of side effects post vaccination.

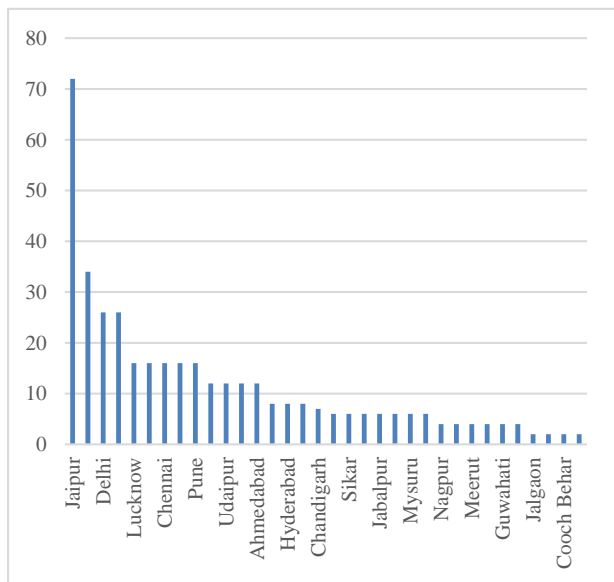


Figure 7: City-wise responses data.

DISCUSSION

SARS-CoV-2 causes pneumonia through viral replication and direct tissue damage. The infected host undergoes a

modified immunological response characterised by cytokine recruitment, resulting in a classic "cytokine storm" within the host.⁷ The ability of SARS-CoV-2 to induce COVID-19 within the host and the rapid spread of the infection around the world validated the WHO's decision to declare COVID-19 a pandemic. With the emergence of the COVID-19 pandemic, numerous research laboratories around the world focused on the rapid development of vaccines to achieve herd immunity and reduce global medical and societal harm. Vaccination programs have been implemented in several countries to combat this pandemic, primarily by Pfizer, AstraZeneca, and Moderna. On the other hand, vaccine-hesitant and vaccine-resistant groups are proving to be significant setbacks in these government-mediated vaccination strategies.⁸ There is significant distrust amongst healthcare professionals too regarding the vaccination, adding to vaccine hesitancy.⁹

Previous research has demonstrated the significance of societal disagreements and anti-vaccine groups, primarily associated with vaccine hesitancy or resistance. Respondents who thought COVID-19 was an exaggerated disease and those who disagreed with their government's approach to combating COVID-19 make up a sizeable proportion of vaccine-hesitant or resistant cases. These people are more likely to spread false information about

vaccinations' risks and side effects to the potential respondents.¹⁰ Previous research, conducted in 2021 by Umakant et al found that 59% of Indians were willing to receive COVID vaccination, whereas our study found a decline in acceptance at 50.9%.¹¹ A study conducted by Chandani et al found 37% vaccine hesitancy in the Indian population, and another study conducted by Choudhary et al in 2021 found hesitancy rates ranging from 29-39%.^{12,13} Both of these studies support our findings and confirm that strong vaccine acceptance is still prevalent as we approach 2023. Despite the decline, vaccination acceptance remains largely positive, resulting in a robust response in India in the fight against COVID-19, despite COVID fatigue disseminating throughout the world.^{14,15}

Limitations

While the majority of Indians would accept the vaccine, given the country's large population, even a small percentage of hesitant individuals would result in millions of unvaccinated people. Furthermore, the dataset obtained reflects responses primarily from large cities, and with a sizeable rural population in India, perceptions may still differ among the latter, influencing the overall national perception in either direction.

CONCLUSION

Based on the findings, vaccination acceptance in India remains high with more than 50.9% of applicants willing to take the fourth dose. However, the vast majority of our respondents have yet to take a third dose, which necessitates an effort to get these people to take the already available third/precaution dose in the wake of new covid variants. Furthermore, the pandemic has resulted in the incorporation of face masks into our lifestyles, with the majority of people using a face mask in at least one setting.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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