A CROSS-SECTIONAL STUDY ON ACCEPTANCE AND POST-VACCINATION SYMPTOMS OF COVID-19 VACCINATION IN INDIA

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ABSTRACT

Objectives: The fastidious development of the COVID-19 vaccine is a vital achievement for the country and early data suggest that it is both safe and efficacious, however, the acceptance of the COVID-19 vaccine is still a major concern as it depends on the individual decision and sociodemographic characteristics. The main objective of our study is to assess the vaccine acceptance among Indians and study about post-vaccination symptoms to identify potential concerns to be addressed to ensure vaccine safety.

Methods: An online cross-sectional study was conducted using Google Forms over a period of 1 week on the general population. Data were collected which included the questions regarding participant demographics, vaccination details, and their health status. Microsoft Excel was used for recording and analyzing the collected data.

Results: Out of 1016 respondents, 52% were male and 47.6% were female. Most of the respondents perfectly accept the vaccine, 35.5% are neutral and 5.9% are unacceptable toward vaccination. Post the vaccination of both doses, the occurrence of fever and chills is more common in the case of the first dose, whereas rashes are more common in the second dose, muscle pain and joint pain are common in both doses.

Conclusion: This community-based project on acceptance and post-vaccination symptoms of vaccination among Indians reveals that the majority of participants showed a positive acceptance rate toward the vaccination but most of them are worried about the risk of side effects. In regard to post-vaccination symptoms, mild fever and chills are the most common side effect in the case of the first dose of vaccination, whereas muscle/joint pain was seen commonly in both the first and second doses of vaccination.

Keywords: COVID-19, Vaccination, Post-vaccination symptoms, Acceptance.

INTRODUCTION

The COVID-19 pandemic is often considered a worldwide unifier, where all the countries worldwide are challenged with the spread of coronavirus. A universal campaign for the early diagnosis, prevention, and management of the COVID-19 disease was organized by the World Health Organization [1].

India is operating on a target to produce the cheapest vaccine against COVID-19. India also harbors over 1.3 billion people and lots of cannot afford a costly vaccine. The Prime Minister of India has recently encouraged scientists to develop the vaccine for COVID-19 [2]. The indigenous vaccine's emergency authorization had resulted in the heated debate over the hurried nod by the Indian Government [3].

In India, CoviShield manufactured by the Serum Institute of India and Covaxin manufactured by Bharat Biotech Limited are the two vaccines that have been granted emergency use authorization by the Central Drugs Standard Control Organization (CDSCO). In the initial launching phase of the vaccination program, the beneficiaries were advised to receive two doses at a minimum time gap of 28 days [4].

A safe and effective vaccine if it becomes available, the government must be ready to secure good access and distribution of the vaccine where it includes sufficient health system capacity, and also strategies to improve trust and acceptance of the society toward the vaccine [5] on January 16, 2021, the vaccination program was started by India against the SARS-CoV-2. The drive prioritizes health care and frontline workers and then those over the age of 50 or suffering from certain medical conditions [6].

The fastidious development of the COVID-19 vaccine is a vital achievement for the country and early data suggest that it is both safe and efficacious, however, the acceptance of the COVID-19 vaccine is still a major concern as it depends on the individual decision and sociodemographic characteristics. The main objective of our study is to assess the vaccine acceptance among Indians and study post-vaccination symptoms in which this information helps to identify potential concerns to be addressed to ensure vaccine safety.

METHODS

Study design
This was a prospective observational cross-sectional study.

Study period
The study period was for 1 week.

Study population
An 18-year-old and older people who are willing to fill the online form were included in the study. People who are not willing to fill the form and those who filled the forms incompletely were excluded from the study.

Data instrument
Data were collected using Google Forms which includes the questions regarding participant demographics, vaccination details, and their health status.

Sample size
Sample size was calculated using the sample size calculator that shows 866 or more measurements/surveys are needed to have a confidence

level of 99.999% that the real value is within ±5% of the measured/surveyed value.

Statistical analysis

Microsoft Excel was used for recording and analyzing the data of recruited subjects. Descriptive statistical analyses were used to calculate the average and standard deviation.

RESULTS

In this study, respondents were recruited through online Google Forms using social media platforms such as WhatsApp, Telegram, and LinkedIn. In total 1035 respondents, only 1016 respondents' provided consent to participate in the study but 19 respondents did not give consent so finally, we included the 1016 respondents for our study to make the results. In total 1016 respondents, 52% are male and 47.6% are female; this shows that almost equal representation of either gender was registered which is supported by the study conducted by Arumuganair [4].

Table 1 shows that majority of respondents were in the age group of 18–27, and most of them are undergraduates, these results were

Table 1: Demographic details of the study population

Variables	Value in Number	Value in %
Gender		
Males	528	52
Females	484	47.6
Prefer not to say	4	0.4
Age distribution		
18–27	641	63.1
28–37	160	15.7
38–47	76	7.5
48–57>67	95	9.4
Educational qualification	44	4.3
Primary education	8	0.8
Secondary education	72	7.09
Undergraduate	490	48.23
Postgraduate	441	43.41
Uneducated	5	0.49
Occupation		
Health care worker	118	11.6
Professor/teacher	48	4.7
Housewife	88	8.7
Student	518	51
Business	96	9.4
Agriculturist	16	1.6
Others	132	13
State		
Karnataka	416	40.9
Andhra Pradesh	111	10.9
West Bengal	84	8.3
Telangana	68	6.6
Tamil Nadu	43	4.2
Gujarat	41	4
Kerala	46	4.5
Others	207	20.3
Residential area		
Urban	734	72.2
Rural	282	27.8
Comorbidity conditions		
Hypertension	40	3.8
Diabetes	26	2.5
Pulmonary diseases	12	1.1
Hyperlipidemia	16	1.5
Renal disease	05	0.5
Others	21	2.02
None	896	88.1

supported by the study conducted by Arumuganair (4). More than half of the respondents were students, followed by 11.6% are health care workers, 9.4% are freelancers, and 8.7% are householders, respectively. The participation was primarily documented from 26 states with maximum representation from 40.9% from Karnataka, 10.9% from Andhra Pradesh, 8.3% from West Bengal, 6.6% from Telangana, 4.2% from Tamil Nadu, and rest from remaining states. Majority of the participants are from urban area these results were supported by the study conducted by Arumuganair [4] and comorbidity conditions show that 88.1% of respondents do not have any health problem.

Assessment of vaccine acceptancy

Acceptance toward vaccination in Fig. 1 shows that most of the respondents in our study were perfectly acceptable toward vaccination, 35.5% are neutral and 5.9% were perfectly unacceptable toward the vaccination. As we have collected the reason for not accepting the vaccine who have selected the options neutral and perfectly unacceptable, in total 421 respondents, nearly half of the respondents 42.7% are worried about the risk of side effects, and 19.7% are doubted the efficacy of the vaccine, and 16.3% of respondents feel that physiological immunity is better than vaccination.

Fig. 2 shows that, in total 1016 respondents, more than half of the respondents that are 62.8% have not taken the vaccine, 29.2% of respondents have taken the CoviShield, and 8% of respondents have taken the Covaxin. Month-wise vaccination details show that most of the respondents took their first dose during the March and most of the respondents took their second dose during April.

Fig. 3 describes the occurrence of post-vaccination symptoms with the first dose and second dose, this shows that fever and chills are more common in the case of the first dose when compared to the second dose, whereas rashes are more common in the second dose when compared to the first dose, muscle pain and joint pain are common in both the doses, and in this study, we have not observed the symptoms of nausea and vomiting in case of the second dose.

Effect of demographic variables on vaccine acceptancy

Table 2 gives information regarding the extent of demographic variables on vaccine acceptance of respondents. It shows that the majority of the females and males are perfectly acceptable with the vaccine and more than half of the respondents in all age groups were perfectly acceptable
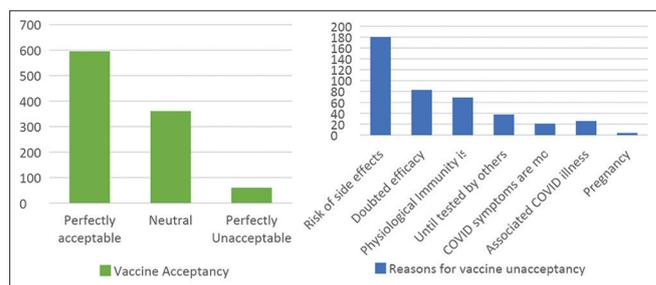

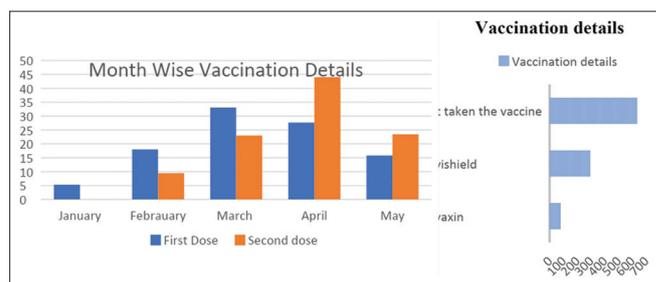**Fig. 1: Vaccine acceptancy and reasons for vaccine unacceptance**

Fig. 2: Vaccination details

Table 2: Extent of demographic variables on vaccine acceptancy

| Variables	Perfectly acceptable (n) (%)	Neutral (n) (%)	Perfectly unacceptable (n) (%)
Gender (n)			
Male (528)	323 (61.17)	171 (32.38)	34 (6.43)
Female (484)	270 (55.7)	188 (38.8)	26 (5.4)
Age (n)			
18–27 (641)	339 (52.8)	263 (41)	39 (6.1)
28–37 (160)	102 (63.7)	47 (29.3)	11 (6.87)
38–47 (76)	51 (67.1)	20 (26.3)	5 (6.57)
47–57 (95)	69 (72.6)	21 (22.1)	5 (5.26)
>60 (44)	34 (77.27)	10 (22.7)	00 (00)
Education qualifications (n)			
Primary education (8)	6 (75)	1 (12.5)	1 (12.5)
Secondary education (72)	34 (47.2)	39 (40.2)	9 (12.5)
Undergraduate (490)	269 (54.9)	199 (40.6)	22 (4.5)
Postgraduate (441)	284 (64.4)	129 (29.3)	28 (6.3)
Uneducated (5)	2 (40)	3 (60)	00 (00)
Occupation (n)			
Health care worker/ doctor (118)	67 (56.8)	39 (33)	12 (10.2)
Professor/teacher (48)	32 (66.6)	13 (17.1)	3 (6.25)
Business (96)	62 (63.3)	29 (30.2)	5 (5.2)
Housewife (88)	56 (63.6)	27 (30.7)	5 (5.7)
Agriculturist (16)	11 (68.8)	4 (25)	1 (6.25)
Student (518)	261 (50.4)	218 (42.1)	39 (7.52)
Others (132)	83 (63)	35 (26.5)	14 (10.6)
Residential area (n)			
Urban (734)	458 (62.4)	243 (33.1)	33 (4.5)
Rural (282)	137 (48.9)	118 (41.8)	27 (9.6)
State (n)			
Karnataka (416)	234 (56.2)	154 (37.02)	28 (6.7)
Andhra Pradesh (111)	48 (43.2)	54 (48.6)	9 (8.1)
West Bengal (84)	48 (57.1)	31 (37)	5 (6)
Telangana (68)	44 (54.7)	22 (32.3)	2 (3)
Tamil Nadu (43)	17 (40)	22 (51.1)	4 (9.3)
Gujarat (41)	31 (75.6)	7 (17.07)	3 (7.3)
Kerala (46)	21 (45.6)	23 (50)	2 (4.3)
Others (207)	152 (73.4)	48 (23.2)	7 (3.4)
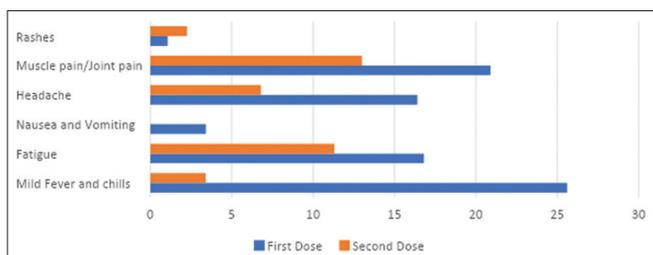
Fig. 3: The post-vaccination symptoms
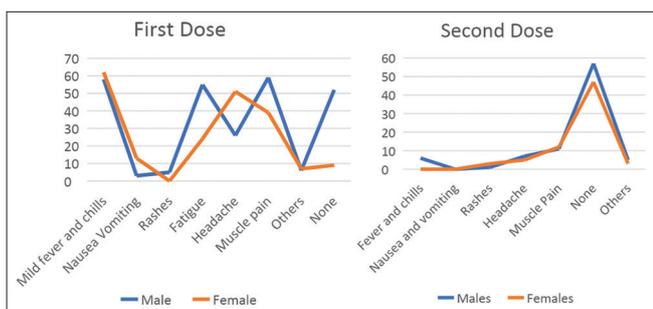
Fig. 4: Demographics variables on post-vaccination symptoms

toward the vaccine. Participants under the category of undergraduates and postgraduates has showed more than 50% acceptability rate

towards vaccine. Acceptance of vaccines is more in the urban region than in the rural region. Comparative to the other states acceptancy of vaccines is less in Tamil Nadu and Kerala.

Fig. 4 describes the extent of gender on post-vaccination symptoms; the results show that females are more prone to the post-vaccination symptoms than males. Fatigue and muscle pain were very common in the case of males whereas fever, chills, and headache most commonly occur in the case of females in case of the first dose. Overall results say that post-vaccination symptoms are majorly seen in the case of first does when compared to the second dose.

CONCLUSION

This community-based project on acceptance and post-vaccination symptoms of vaccination among Indians reveal that the majority of participants showed a positive acceptance rate toward the vaccination but most of them are worried about the risk of side effects. Most of the respondents have vaccinated majorly during the months of March and April. In regard to post-vaccination symptoms, mild fever and chills are the most common side effect in the case of the first dose of vaccination, whereas muscle/joint pain was seen commonly in both the first and second doses of vaccination. Acceptance toward vaccination determines the awareness, perception, and concern of the general public toward the vaccine and health-care system. Post-vaccination symptoms provide a comprehensive look toward the efficacy and the potential obstacle toward the vaccine. This study will help to educate the public, dispel misinformation, and reduce vaccine hesitancy. Furthermore, studies need to be conducted with a greater number of participants to provide more reliable results.

AUTHORS' CONTRIBUTIONS

All the authors have contributed equally.

CONFLICTS OF INTEREST

Declared none.

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