Perception Analysis on COVID-19 Vaccination : An Online Cross-Sectional Study

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Abstract

Human society is vulnerable to COVID-19, and it has made daily life imbalanced in terms of the economy, mental health of people, and mortality. Indians are currently facing the brunt of the second wave of the COVID-19 pandemic. The Indian government is taking all the necessary actions to defeat COVID-19. More than 130 million Indians will need to be vaccinated soon to defeat COVID-19. At present, all people aged 18 years or above can register for the vaccination and book a slot as per their convenience. The current study aimed to examine people's attitudes toward Corona vaccination and identify the motivating factors for registering and the reasons for not registering for the vaccination. The study was a primary cross-sectional study conducted in the Delhi-NCR region. The data collected through the structured questionnaire was analyzed through chi-square and descriptive statistics. The study found gender and age as the significant factors for registering for getting the vaccination. On the other hand, educational level and residential area were found to be the non-significant factors. The study determined the motivational factors and the reasons for registering or not registering for the vaccination.

Keywords : **COVID-19, COVID-vaccine, COVID vaccination perception**

JEL Classification Codes : I21, I23, O3

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COVID-19 infected 114 countries worldwide, and the WHO declared it a pandemic on March 11, 2020 (World Health Organization, 2020). Human society is vulnerable to COVID-19, and it has made daily life imbalanced in terms of the economy, mental health of people, and mortality. In India, the first case was reported on January 27, 2020, in Kerala. At that time, no one was very concerned about the consequences of this virus. The perceptions of the majority of Indians were very casual at the start of this first wave. On March 22, 2020, the government declared a Janta curfew (lockdown) to prevent the spread of this virus. On June 10, 2020, it was discovered that the Indian recovery rate was higher than the active cases for the first time (Thiagarajan, 2021).

COVID-19 has had a significant impact on the Indian economy after the government imposed a lockdown as well as on the morbidity and mortality of the people. After considering the virus a worldwide threat, the government started raising funds and implementing strategic plans. Regardless of travel-related limitations, social distancing, and important precautionary measures to control the outbreak, India has seen a spike in COVID-19 counts.

During the first wave of the pandemic, people's perception of the COVID-19 outbreak was not negative, but the maximum number of cases reported in the first wave was 97,894 per day on September 17, 2020. People were

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waiting for the vaccine during the first wave of the pandemic. The first wave of the pandemic took 108 days to increase the Covid cases from 8,000 on June 2, 2020 to 97,000 on September 17, 2020. However, the second wave took only 63 days for the cases to increase from 8,000 patients on February 2, 2021 to 103,558 patients on April 5, 2021.

Understanding why people are hesitant to complete the COVID-19 immunization is critical because it can help health officials increase antibody awareness and prevent and limit the spread of the disease. There is a pressing need for a more cutting-edge and nuanced comprehension of vaccine-related perspectives and the elements impacting individual goals of taking up the COVID-19 vaccines. Vaccinations for children are also urgently needed because the pandemic has disrupted students' studies, though teachers have used virtual classes to overcome the situation so that learning does not halt (Arora & Srinivasan, 2020).

The planning and execution of the vaccination process by the Indian government has played a vital role in this outbreak as 130 million Indian population will have to be vaccinated soon to defeat COVID-19. The Central government and the State governments are framing policies and guidelines during the second wave to get people vaccinated. People are registering for the COVID-19 vaccination on the Cowin.gov.in portal and other social media platforms.

In this study, the main focus is to ascertain the perception of people towards vaccination against COVID-19. The factors involved in this study are the motivation factors for taking the vaccine, challenges faced during the vaccination process, and the psychological perception of the Indian people towards the COVID-19 vaccine. Thus, the study will help the government know the people's perception of COVID-19 vaccines and why people are interested in taking the vaccine, and why not? What are the challenges people face so that the government can accordingly prepare policy related to the vaccination?

Literature Review

Several research papers and articles were reviewed related to the perception of people living in India towards the COVID-19 vaccination.

Bhartiya et al. (2021) examined the perception, knowledge, and attitude of people living in West India to vaccine acceptance. The authors observed that immunization adequacy might be expanded once additional vaccine health and viability data is available in public areas, ideally from a trusted and verified source. This study was carried out in the urban areas of Mumbai, and the total respondents were 1,342 in a cross-sectional study. The majority of the people were in favor of the potential acceptance of the vaccine.

Jain et al. (2021) concluded in their research survey on the perception, knowledge, and preparedness for the Corona vaccine in India that the viability of immunization can play an important role in making commoners aware of the counteraction to these pandemic circumstances. In the study, 1,003 individuals took part in an online mindfulness review. They found that most respondents did not have sufficient knowledge about antibodies, yet they had adequate information about the prudent home solutions for the COVID-19 illness.

Sharun et al. (2020) reported in their study of COVID-19 acceptance of vaccination in terms of beliefs and barriers. Among the 351 members, 55% accepted that the COVID-19 inoculation would give them protection from the virus, while just 46.2% accepted that it would be successful. Most people (86.3%) intended to get the COVID-19 immunization, though 13.7% conceded reluctance. Regardless, only 65.8% of those polled said they would get immunized as soon as the antibody became available. This investigation also focused on immunization outcomes, such as the side effects of antibody recognition. Besides, the degree of antibody acknowledgment could be expanded to the populace if extra examinations could affirm the security and viability of accessible immunization applicants.

Karlsson et al. (2021) studied three different sample respondents : parents of children, people living in an area

far away from the vaccination centers, and social media users on Facebook. The study found people's perception was that COVID-19 is a threatening disease compared to flu and measles. Moreover, people who believed that COVID-19 is a severe disease were also desperate to take the vaccine.

Praveen et al. (2021) explored a text analytics study using machine learning techniques for evaluating the perception of Indian people towards the Coronavirus vaccine. They reported that 47% of web-based media posts talking about antibodies were in an unbiased tone, and almost 17% of the web-based media posts talking about the COVID-19 antibody were in a negative tone. Dread of wellbeing and hypersensitive responses towards the antibody are the two unmistakable issues that worry Indian residents concerning the COVID-19 vaccine. They concluded that only 35% of Indians had a positive attitude toward the vaccines, while the rest were afraid of them.

Mir et al. (2021) demonstrated that perceived benefits, accepted practices, and trust – all corresponded to individuals' attitudes toward COVID-19 inoculations. Interestingly, hazard discernment and social media openness were inconsequential on individuals' mentalities towards COVID-19 inoculations. Trust and individuals' mentalities towards the COVID-19 immunization were fundamentally connected with their goals of taking up the COVID-19 immunizations. In reality, individuals' intentions to receive the COVID-19 vaccinations were influenced by their access to online media.

Islam et al. (2021) studied the determination of perception, knowledge, and concern of Indian people living in New Delhi about the Coronavirus vaccine. They found that 79.5% of the people were interested in taking the vaccine, 8.8% were not interested in taking the vaccine, and 11.7% were in a state of confusion.

Kumari et al. (2021) used qualitative tools in the form of focus group discussions to identify the perception and awareness about the vaccine. They discovered that the level of knowledge did not correlate with a positive outlook toward the COVID-19 antibody in both hospital-based gatherings and gatherings where everyone had a mixed discernment. Trust in the perceived security of antibodies, free admittance to immunization (in case of medical services and first-line laborers), public obligation towards eradicating COVID-19, perceived limited/no danger of inoculation, access to solid sources of data on COVID-19 antibody, and simple accessibility were identified as drivers of the uplifting outlook among members toward antibody acknowledgment. Concerns that added to the negative perspectives identified with antibody aversion included a lower number of dynamic COVID-19 cases, a proclivity for common susceptibility, antibody deception, a lack of visible security, apprehension of having side effects, apprehension of flawed/counterfeit antibody, government schemes, and so on.

Garg et al. (2021) surveyed people living in Udaipur city with a sample size of 1,200 respondents, out of which 944 responses were received. They observed that the majority of the people believed in the acceptance of the COVID-19 vaccine. About 69.9% of the people believed that the vaccine was safe and reliable.

Chowdhury et al. (2021) went through an ongoing worldwide online study of Facebook members and investigated the spatio-temporal patterns in immunization reluctance. They concluded that around 45% of the surveyed population was ready to get vaccinated when it would be available to them, and this proportion would increase to 71%. Almost 29% of those polled had not decided whether to take the vaccine or not, 16% were probably not taking the vaccine, and only 12% had made a firm decision not to take the vaccine.

Gautam et al. (2020) reported that when the vaccine price was less than INR 500, almost all of the population taking part in the survey could afford it. They also concluded that the majority of the population, that is, 58% that participated in the online poll wanted to take the Indian vaccines, 19% were interested in foreign vaccines, and only a few respondents had prepared themselves to take any of the vaccines.

Petravić et al. (2021) conducted an online survey in Slovenia to understand people's attitudes towards the COVID-19 vaccination. The study found that higher intention to get vaccinated belonged to older people, men, healthcare students, and physicians.

Suresh et al. **(**2021) conducted an online survey during the first phase of the vaccination drive to know the

perception and motive of the people for Coronavirus vaccine acceptance ; 66% of the surveyed people found the vaccine to be safe and effective. There was a good correlation in many provinces between acceptance of the vaccine and knowledge and a negative correlation in some states. Despite the positive correlation between knowledge and acceptance, 30% represented hesitancy to take the vaccine.

Wang et al. (2020) conducted a cross-sectional survey in China regarding the acceptance of the COVID-19 vaccine by the general public ; 91.3% of respondents expressed that they would get vaccinated when the vaccine was available to them. The study found that 52.2% of respondents wanted to get immunized as early as possible, while 47.8% said they would take the vaccination after analyzing the impact of the vaccine.

Dror et al. (2020) reported that healthcare workers and the people of Israel directly associated with hospitals and other medical services were more interested in getting the vaccination whenever it comes to the market and available to them because they believed that the Coronavirus is a perilous disease.

From the above literature review, we can conclude that vaccination for COVID-19 has become a game-changer for the health sector and one of the major interventions in the 21st century. Despite the various benefits of vaccination, it also faces many issues. So, the study would explore the motivation for accepting the vaccine, reasons for not taking the vaccine, and factors affecting the acceptance of the vaccination.

Objectives of the Study

The following are the objectives of the study :

- To analyze the perception of people towards the COVID-19 vaccination.
- To determine the significant factors positively contributing to the acceptance of the COVID-19 vaccination.
- To determine the motivating factors behind registration for the vaccination.
- To know the reasons for not registering for vaccination by the people.

Research Methodology

Research Design

The present study is descriptive and cross-sectional research. The data were collected at a single point from April 1 – May 10, 2021.

Sample Design & Area

The convenient sampling method was used for data collection. The study considered the Delhi-NCR area for the collection of data.

Sources of Data

First-hand primary data based on interviews and survey with the help of a structured questionnaire has been used for the study. The data were collected from 324 respondents, out of which 12 responses were not appropriate, so we have not considered them. Finally, we considered only 312 responses in the study.

Questionnaire

A three-part questionnaire was developed to collect the data. The first part of the questionnaire consisted of basic questions regarding respondents' age, gender, qualifications, family income, etc. The second part of the questionnaire was for those respondents who had registered or taken the vaccination. The third part of the questionnaire was for those respondents who had not registered or taken the vaccination. To determine the reliability of the questionnaire, a reliability test was performed, and the value of Cronbach's alpha came out to be 0.854. A value above 0.7 is considered a good measure of reliability.

Assumption of the Study

The study is based on the assumption that vaccines are available.

Tools for Analysis

To analyze the data, various tests were performed by using SPSS version 22. To ascertain the relationship between registration for vaccination and gender, educational level, residential area, and age, the chi-square test has been performed as both the dependent and independent variables are categorical. Descriptive statistics have been used to learn about the motivations for registering for or receiving a vaccination and the reasons for not registering for the vaccination.

Data Analysis and Results

Profile of the Respondents

Table 1 depicts the profile of the respondents. The majority of the 312 respondents were postgraduates under 45

Table 1. ***Descriptive Analysis of the Respondents' Profile***

		N	Marginal Percentage
Registered for the Vaccine?	Yes	206	66.0
	No	106	34.0
	Total	**312**	**100**
Gender	Male	166	53.2
	Female	146	46.8
	Total	**312**	**100**
Educational Level	High School	4	1.3
	Intermediate	12	3.8
	Graduate	78	25.0
	Post Graduate	218	69.9
	Total	**312**	**100**
Occupation	Service	180	57.7
	Students	72	23.1
	Home Maker	28	9.0

	Retired	6	1.9
	Business	14	4.5
	Self Employed	12	3.8
	Total	**312**	**100**
Family Income (Annual)	Below 2.5 lakhs	60	19.2
	Between 2.5 – 5.0 lakhs	72	23.1
	Between 5 – 8 lakhs	68	21.8
	Above 8 lakhs	112	35.9
	Total	**312**	**100**
Residential Area	Urban	234	75.0
	Semi-Urban	60	19.2
	Rural	18	5.8
	Total	**312**	**100**
Age	Below 45 years	232	74.4
	45 years and above	80	25.6
	Total	**312**	**100**

years of age, residents of urban areas, and engaged in service. From Table 1, we can see that 66% of the respondents had registered for the vaccination ; 53% were male, and 47% were female respondents.

Reasons for Not Registering for the Vaccination

The study attempts to find the reasons why people were not registering for the vaccination. Based on telephonic

Table 2. ***Descriptive Statistics : Reasons for Not Registering for the Vaccination***

Response Options	*N*	Minimum	Maximum	Mean	Std. Deviation
Due to COVID, I will register after two months.	106	2	5	3.45	1.251
My immunity is too good.	106	1	5	3.24	1.083
Waiting for others' comments regarding the vaccine (from people who got vaccinated).	106	2	5	3.14	1.175
Due to COVID, antibodies are developed in my body.	106	1	5	2.64	1.368
I have observed that people, even after vaccination, are found to be COVID positive.	106	1	5	2.30	1.259
Vaccination can have side effects.	106	1	4	2.19	1.172
I don't believe that vaccines will prevent infection.	106	1	4	2.15	1.329
The registration process is very difficult.	106	1	5	2.02	1.146
My instinct is not allowing me.	106	1	4	1.90	1.211
Vaccination is not mandatory.	106	1	4	1.87	1.265
I don't believe in COVID.	106	1	5	1.64	1.071
I am not aware of the vaccination.	106	1	3	1.51	.928
Valid *N* (Listwise)	106				

interviews and previous research, we identified 11 possible reasons why people were not registering for the vaccination. Respondents were asked to rate them on a Likert scale of 1 to 5, from *very low* to *very high*. Table 2 depicts the descriptive statistics for the same.

According to Table 2, the most important reason for not registering for the vaccination is that people who were already infected by COVID-19 were waiting for the two-month period to get over to register for the vaccine. It leads to the inference that people wanted to sign up for the vaccination. The second most important reason for not registering for the vaccination is that people thought their immunity was good, and they did not need the vaccine. The third reason is that people were waiting for the feedback regarding the vaccine from people who had been inoculated, and after getting the feedback, they would register for the vaccination.

Motivation Behind Registration for the Vaccination

The study attempts to determine why people registered for the vaccination. Based on telephonic interviews and previous research, we identified seven possible reasons for registering for the vaccination. Respondents were asked to rate them on a Likert scale of 1 to 5, from *very low* to *very high*. Table 3 depicts the frequency and percentage of the responses in the sample considered.

According to Table 3, the motivation for registering for vaccination is to protect themselves and others from the risk of COVID-19, protect themselves from the increased risk of severe illness from COVID, and strengthen their immune system so that the risk of having COVID can be reduced. The responses received from 70 or more respondents are *high* and *very high* for the above options.

Table 3. ***Descriptive Analysis of Motivation Behind Registration for the Vaccination***

Response Option	To save ourselves from COVID-19		To get stress free		Mandatory at my workplace		To make the immune system strong		To protect my kids from the danger of COVID		Getting vaccinated may also protect people around us		Protect from an increased risk of severe illness from COVID	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Very Low	4	1.94	2	0.97	62	30.10	8	3.88	24	11.65	18	8.74	2	0.97
Low	4	1.94	16	7.77	34	16.50	6	2.91	16	7.77	22	10.68	6	2.91
Average	44	21.36	56	27.18	48	23.30	34	16.50	26	12.62	38	18.45	34	16.50
High	84	40.78	82	39.81	46	22.33	108	52.43	82	39.81	72	34.95	100	48.54
Very High	70	33.98	50	24.27	16	7.77	50	24.27	58	28.16	56	27.18	64	31.07
Total	**206**	**100**	**206**	**100**	**206**	**100**	**206**	**100**	**206**	**100**	**206**	**100**	**206**	**100**

Relationship Between Gender and Vaccination

To determine the relationship between gender and vaccination, the chi-square test has been used. Table 4 shows that 75% of the 166 male respondents registered for vaccination, while only 56% of the 146 female respondents registered for the same. It suggests that males were more likely to get vaccinated.

Table 4 shows that men were more likely than women to receive a vaccination. From the chi-square Table 5,

Table 4. ***Cross Tabulation Between Gender and Vaccination***

Have you registered for the vaccine?		Gender		
		Male	**Female**	**Total**
Yes	Count	124	82	206
	% within Gender	74.7%	56.2%	66.0%
	% of Total	39.7%	26.3%	66.0%
No	Count	42	64	106
	% within Gender	25.3%	43.8%	34.0%
	% of Total	13.5%	20.5%	34.0%
Total	Count	166	146	312
	% within Gender	100.0%	100.0%	100.0%
	% of Total	53.2%	46.8%	100.0%

Table 5. ***Chi-Square Test : Association Between Gender and Vaccination***

	Value	***df***	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	11.896	1	.001
Likelihood Ratio	11.940	1	.001
***N* of Valid Cases**	312		

we can interpret that there is a significant relationship between gender and vaccination as the significance level is 0.001.

Relationship Between Educational Level and Vaccination

A chi-square test has been used to determine the relationship between educational level and vaccination. From Table 6, we can see out of the total 206 respondents who had registered for the vaccination, approximately 66%

Table 6. ***Cross Tabulation Between Educational Level and Vaccination***

		Educational Level				
Have you registered for the vaccine?		**High School**	**Intermediate**	**Graduate**	**Post Graduate**	**Total**
Yes	Count	19	40	62	85	206
	% within Educational Level	65.5%	78.4%	64.6%	62.5%	66.0%
	% of Total	6.1%	12.8%	19.9%	27.2%	66.0%
No	Count	10	11	34	51	106
	% within Educational Level	34.5%	21.6%	35.4%	37.5%	34.0%
	% of Total	3.2%	3.5%	10.9%	16.3%	34.0%
Total	Count	29	51	96	136	312
	% within Educational Level	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	9.3%	16.3%	30.8%	43.6%	100.0%

Table 7. ***Chi-Square Test : Association Between Educational Level and Vaccination***

	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.345	3	.227
Likelihood Ratio	4.612	3	.203
***N* of Valid Cases**	312		

were educated up to high school, 78% were intermediate qualified, 65% were graduates, and 63% were postgraduates. It indicates that there is no impact of the educational level on the acceptance of vaccination. This shows that all people accepted the vaccination, whether educated up to high school, intermediate, undergraduates, or postgraduates.

From the chi-square Table 7, we can interpret that there is no significant relationship between educational level and vaccination as the significance level is 0.227.

Relationship Between Residential Area and Vaccination

To determine the relationship between residential areas and vaccination, the chi-square test has been used. From Table 8, we can see that out of the total 206 respondents who had registered, approximately 67% were from urban areas, 67% were from semi-urban areas, and 56% were from rural areas. It indicates that there is no difference between registering for the vaccine and residential area.

From Table 9, we can interpret that there is no significant relationship between residential areas and vaccination as the significance level is 0.627.

Table 8. ***Cross Tabulation Between Residential Area and Vaccination***

		Residential Area			
Have you registered for the vaccine?		**Urban**	**Semi-Urban**	**Rural**	**Total**
Yes	Count	156	40	10	206
	% within Residential Area	66.7%	66.7%	55.6%	66.0%
	% of Total	50.0%	12.8%	3.2%	66.0%
No	Count	78	20	8	106
	% within Residential Area	33.3%	33.3%	44.4%	34.0%
	% of Total	25.0%	6.4%	2.6%	34.0%
Total	Count	234	60	18	312
	% within Residential Area	100.0%	100.0%	100.0%	100.0%
	% of Total	75.0%	19.2%	5.8%	100.0%

Table 9. ***Chi-Square Test : Association Between Residential Area and Vaccination***

	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	.934	2	.627
Likelihood Ratio	.899	2	.638
***N* of Valid Cases**	312		

Table 10. ***Cross Tabulation Between Age and Vaccination***

Have you registered for the vaccine?		Age		
		Below 45 years	45 years and above	Total
Yes	Count	142	64	206
	% within Age	61.2%	80.0%	66.0%
	% of Total	45.5%	20.5%	66.0%
No	Count	90	16	106
	% within Age	38.8%	20.0%	34.0%
	% of Total	28.8%	5.1%	34.0%
Total	Count	232	80	312
	% within Age	100.0%	100.0%	100.0%
	% of Total	74.4%	25.6%	100.0%

Table 11. ***Chi-Square Test : Association Between Age and Vaccination***

	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.366	1	.002
Likelihood Ratio	9.970	1	.002
***N* of Valid Cases**	312		

Relationship Between Age and Vaccination

The chi-square test has been used to determine the relationship between age and vaccination. According to Table 10, only 61% of the 232 respondents under the age of 45 years had registered for vaccination, while 80% of the 80 respondents aged 45 years and above had registered for the same. It indicates that respondents at 45 years or more were more inclined to take the COVID-19 vaccination.

From Table 10, it is clear that respondents at the age of 45 years or more were more inclined towards taking the vaccination. From Table 11, we can interpret that there is a significant relationship between age and vaccination as the significance level is 0.002.

Findings and Suggestions

↳ It is observed that the majority of the respondents had registered for the vaccination, and those who had not registered showed their willingness to take the vaccination. Most of the respondents were self-motivated for the vaccination and were satisfied with the online registration process.

↳ The most common reason for not registering for vaccination was that respondents had COVID and were waiting for the two-month period recommended by experts to be completed, followed by people who believed their immunity was good and they did not need the vaccination.

↳ To save themselves from the risk of COVID, to protect themselves and others from the increased risk of severe illness from COVID, and to make their immune system strong so that the risk of having COVID can be reduced were found to be the most important motivation factors behind registering for the vaccination.

↳ Gender and age are observed to be the most important factors for registering for the vaccination. The study finds that men and people above 45 years of age were more inclined towards the vaccination. On the other hand, educational level and residence are found to be the non-significant factors.

↳ The study discovered that people, particularly those between the ages of 18 and 45, were facing difficulty in booking vaccination appointments. Those who took the jab suggested having some proper system at the vaccination centers to reduce the long queues and waiting time. There should be appropriate seating arrangements and drinking water availability at the vaccination centers.

↳ People are suggested to have patience and wait for their vaccination turn. To fight Coronavirus (COVID-19), people at vaccination centers must behave appropriately and take all necessary precautions, such as wearing masks, regular hand-sanitization, and maintaining social distancing.

↳ The government should also come up with vaccines for kids as most parents are worried about the same.

Implications

↳ The Indian government is involved in ramping up the production of vaccines for COVID-19. It is more focused on getting the vaccination process done in the coming months for the general public of India in order to avoid the third wave of the pandemic. The policy laid by the Government involves the vaccination development, its distribution, and finally, efficacy and trust of the vaccine. This study would help the government create awareness for vaccination acceptance among the public.

↳ The study recommends that the government arrange the vaccination facility at workplaces to reduce crowding at vaccination centers, which will be safer. If possible, we recommend providing door to door COVID-19 vaccine facility.

Limitations of the Study and Scope for Future Research

The findings of the study are based on the responses received from the respondents. If the responses are biased, then the results will also not be correct. The sample size of the study was restricted to 312 respondents only. Further, the research was restricted to Delhi-NCR only and cannot be applied to a pan - India context. If studies are conducted on a pan-India basis, the results could be different.

Further studies can be conducted in other states to ascertain whether the findings are similar to the study or not. Studies can be conducted on the people who get vaccinated to know the after-effects of the vaccine. Further studies can be conducted on those who got vaccinated even though affected by COVID-19 to determine their perception regarding vaccination. Researchers can also explore the perception of the parents towards the vaccination of kids. Researchers can study whether medical, engineering, or educational professions have differences in vaccination acceptance.

Authors' Contribution

Dr. Amit Kumar Arora was responsible for conceiving the idea for this particular research study. He developed the core model design for this particular empirical study by consulting Sapna Yadav. Sapna Yadav collected the relevant research literature on this topic and generated concepts and codes relevant to this research design.

Dr. Arora developed the research methodology suitable for this particular study. He analyzed the data and interpreted the results with the use of SPSS 22.0 software. Dr. Arora and Ms. Yadav both contributed to the findings, suggestions, and limitations of this study.

Conflict of Interest

The authors certify that they have no affiliation with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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References

Arora, A. K., & Srinivasan, R. (2020). Impact of pandemic COVID-19 on the teaching-learning process : A study of higher education teachers. *Prabandhan: Indian Journal of Management, 13*(4), 43–56. https://doi.org/10.17010/pijom/2020/v13i4/151825

Bhartiya, S., Kumar, N., Singh, T., Murugan, S., Rajavel, S., & Wadhwani, M. (2021). Knowledge, attitude and practice towards COVID-19 vaccination acceptance in West India. *International Journal of Community Medicine and Public Health, 8*(3), 1170–1176. https://dx.doi.org/10.18203/2394-6040.ijcmph20210481

Chowdhury, S. R., Motheram, A., & Pramanik, S. (2021, April 14). *Covid-19 vaccine hesitancy : Trends across states, over time. Ideas for India for more evidence-based policy.* https://www.ideasforindia.in/topics/human-development/covid-19-vaccine-hesitancy-trends-across-states-over-time.html

Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrachi, M., Zigron, A., Srouji, S., & Sela, E. (2020). Vaccine hesitancy : The next challenge in the fight against COVID-19. *European Journal of Epidemiology, 35*(8), 775–779. https://doi.org/10.1007/s10654-020-00671-y

Garg, S., SRG, Tailor, S. K., & Yadav, A. C. (2021). Acceptance and attitude toward Covid-19 vaccination : A cross-sectional study from Udaipur District. *Medicine and Healthcare Reports, 2*(3), 1–6. https://www.scienceworldpublishing.org/science-world/articlepdf/mhr-2-120.pdf

Gautam, A., Dhara, B., Mukherjee, D., Mukhopadhyay, D., Ray, S., Ganguly, S. S., Chowdhury, A. D., Goswami, S., Dey, S., Basu, S., Banerjee, D., Chaterjee, S., Roy, I., & Mitra, A. K. (2020). A digital survey on the acceptance and affordability of COVID-19 vaccine among the people of West Bengal, India - A survey based study. *medRxiv.* https://doi.org/10.1101/2020.11.13.20229534

Islam, F., Agarwalla, R., Panda, M., Alvi, Y., Singh, V., Debroy, A., Ray, A., Vadnerkar, A., & Uttekar, S. (2021). Assessment of the knowledge, preferences and concern regarding the prospective COVID-19 vaccine among adults residing in New Delhi, India – A cross-sectional study. *medRxiv.* https://doi.org/10.1101/2021.01.23.21250164

Jain, V., Singh, S., Singh, V., Singh, S., & Jain, N. (2021). Knowledge, perception and preparedness towards Corona Virus vaccine amongst Indian residents : A cross-sectional survey. *Journal of Medical and Dental Science Research, 8*(3), 9 –17.

Karlsson, L. C., Soveri, A., Lewandowsky, S., Karlsson, L., Karlsson, H., Nolvi, S., Karukivi, M., Lindfelt, M., & Antfolk, J. (2021). Fearing the disease or the vaccine: The case of COVID-19. *Personality and Individual Differences, 172,* 110590. https://doi.org/10.1016/j.paid.2020.110590

Kumari, A., Ranjan, P., Chopra, S., Kaur, D., Kaur, T., Kalanidhi, K. B., Goel, A., Singh, A., Baitha, U., Prakash, B., & Vikram, N. K. (2021). What Indians think of the COVID-19 vaccine: A qualitative study comprising focus group discussions and thematic analysis. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 15*(3), 679 – 682. https://doi.org/10.1016/j.dsx.2021.03.021

Mir, H. H., Parveen, S., Mullick, N. H., & Nabi, S. (2021). Using structural equation modeling to predict Indian people's attitudes and intentions towards COVID-19 vaccination. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 15*(3), 1017 – 1022. https://doi.org/10.1016/j.dsx.2021.05.006

Petravić, L., Arh, R., Gabrovec, T., Jazbec, L., Rupčić, N., Starešinič, N., Zorman, L., Pretnar, A., Srakar, A., Zwitter, M., & Slavec, A. (2021). Factors affecting attitudes towards COVID-19 vaccination : An online survey in Slovenia. *Vaccines, 9*(3), 247. https://doi.org/10.3390/vaccines9030247

Praveen, S. V., Ittamalla, R., & Deepak, G. (2021). Analyzing the attitude of Indian citizens towards COVID-19 vaccine – A text analytics study. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 15*(2), 595–599. https://doi.org/10.1016/j.dsx.2021.02.031

Sharun, K., Faslu Rahman, C. K., Haritha, C. V., Jose, B., Tiwari, R., & Dhama, K. (2020). COVID-19 vaccine acceptance: Beliefs and barriers associated with vaccination among the general population in India. *Journal of Experimental Biology and Agricultural Sciences, 8(Special Issue 1)*, 210 – 218. https://doi.org/10.18006/2020.8

Suresh, A., Konwarh, R., Singh, A. P., & Tiwari, A. K. (2021, April 5). Public awareness and acceptance of COVID-19 vaccine : An online cross-sectional survey, conducted in the first phase of vaccination drive in India. *Research Square.* https://doi.org/10.21203/rs.3.rs-324238/v1

Thiagarajan, K. (2021). Covid-19: India is at the centre of global vaccine manufacturing, but opacity threatens public trust. *The BMJ,* 372: n196. https://doi.org/10.1136/bmj.n196

Wang, J., Jing, R., Lai, X., Zhang, H., Lyu, Y., Knoll, M. D., & Fang, H. (2020). Acceptance of COVID-19 vaccination during the COVID-19 pandemic in China. *Vaccines, 8*(3), 482. https://doi.org/10.3390/vaccines8030482

World Health Organization. (2020). *Rolling updates on Coronavirus disease (COVID-19).* https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen

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