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Perception, Attitude and Intention towards COVID-19 Vaccination †

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Abstract: To overcome the situation due to the COVID-19 pandemic, vaccination became essential. So, it is important to understand the overall perception, attitude, and intention of the general population towards vaccination. This study aimed to investigate the combined effect of usefulness and trust on the attitude towards COVID-19 vaccination and to understand the perceptions of vaccinated and unvaccinated people towards vaccination. The self-administered questionnaire was used to collect the data. In the descriptive research design, Structural Equation Modeling was used to test the combined effect of usefulness and trust on attitudes towards COVID-19 vaccination and one-way ANOVA was used to test the difference in perceptions of vaccinated and unvaccinated people. Simple random sampling was used in this study. The questionnaire-based data were collected from 400 respondents in Haryana from 24 April 2021 to 13 May 2021. The results showed that more than 70% of the respondents were not vaccinated, around 16% received their one dose of a vaccine, and less than 15% received two doses of a vaccine. Usefulness and trust had an impact on the attitude towards vaccination. There was significant difference between those who did not receive any doses of a vaccine, i.e., either Covishield (viral vector vaccine) or Covaxin (inactivated viral vaccine), and those who received two doses of a vaccine. The results reveal that attitude is strengthened by a positive relationship between trust and usefulness. Even though there were a large number of people who were not vaccinated at the time of the survey, these people had a positive perception of the vaccine. Hence, they were most likely to get vaccinated in the future. It was also found that the vaccine history of the respondents played an important role in future vaccination intention. Awareness programs are important as people need to be well informed about the benefits of vaccination.

Keywords: COVID-19; pandemic; COVID-19 vaccine; hesitancy; vaccine refusal

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1. Introduction

COVID-19 (coronavirus disease 2019) was declared as a pandemic by the World Health Organization. It is caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). SARS-CoV-2 has affected almost 200 nations across the world, killing more than a million people since its discovery. The first COVID-19 case in India was reported on 27 January 2020 in Kerala. To tackle this situation, the COVID-19 vaccination drive in India began on 16 January 2021 and lasted until 15 July 2021. According to government reports (cowin.gov.in, accessed on 15 July 2021), 39,13,40,491 first and second doses have been administered. So, the deciding factor will be the rate at which India carries out its vaccination drive. In its report, the World Health Organization stated that vaccine hesitancy is one of the greatest threats to the global healthcare sector. The general behavior of the population with respect to the acceptance of vaccine varies with the geographical location, time, and beliefs of the society [1]. This research paper shall delve into an investigation of the combined effect of trust and usefulness on the attitude towards COVID-19 vaccination, the intention to get vaccinated, and the perception of people towards COVID-19 vaccines.

2. Literature Review

The World Health Organization has reported that one of the major threats to global health in recent times is the hesitancy towards vaccination; in order to slow down the growth of the epidemic curve, a large-scale vaccine coverage is needed. There are certain beliefs and barriers regarding vaccination among the general public. Vaccine coverage and its acceptance varies depending on the behavior of the people, geography, and time [1]. The hesitancy to receive a vaccine not only affects the individual but also the community as a whole and makes it challenging to curb the pandemic [2]. The main reasons for vaccine hesitancy were concerns about the vaccine use and a lack of trust in vaccines [1,3]. Other than trust in and the efficacy level of the vaccine, the other main reasons were that people were generally against vaccines, the vaccines were made available for a short duration, and some considered the vaccines useless [4]. Moreover, personal and social challenges hamper the acceptance of vaccines including the cost of vaccines, the educational and social statuses of the masses, the previous vaccine history, belief in the healthcare services available in the country, the attitude of the administration towards vaccination, and the severity of the disease [5]. Since the development of a new vaccine generally takes a long period of time with many clinical trials to make it safe for human consumption, the public's acceptance of a new vaccine for the ongoing pandemic after such a short interval of time made it challenging to immunize against COVID-19 as the people were hesitant about the safety and efficiency of the vaccines [6,7]. A global survey showed that if a vaccine is riskless, effective, and available in the market, 74.53% of the population will take interest in the vaccine. The 18–24 age group is less likely to take interest than other age groups [8].

The main concern of the people in India regarding the COVID-19 vaccines is the safety, efficacy, risk, and possible side effects of the vaccines [9]. The perception and beliefs of the public about the risks and benefits associated with vaccination hampers the acceptance of vaccination [10]. People with a low literacy level are hesitant to receive a COVID-19 vaccine due to the lack of health literacy, leading to low vaccine coverage rates [8,11]. Vaccine history, willingness to be vaccinated, and the perception of the people that COVID-19 is a serious problem faced by the world today are important factors that predict the attitude of people towards COVID-19 vaccines. The perception of risk of becoming infected is also one of the factors that affects the attitude of people towards the acceptance of vaccines. This review shows that it is important to study the impact of trust and usefulness on attitudes and on intention in the context of Indian society.

3. Research Framework

Based on the literature on trust, usefulness, attitude, and intention discussed above, we propose the research framework outlined in Figure 1.

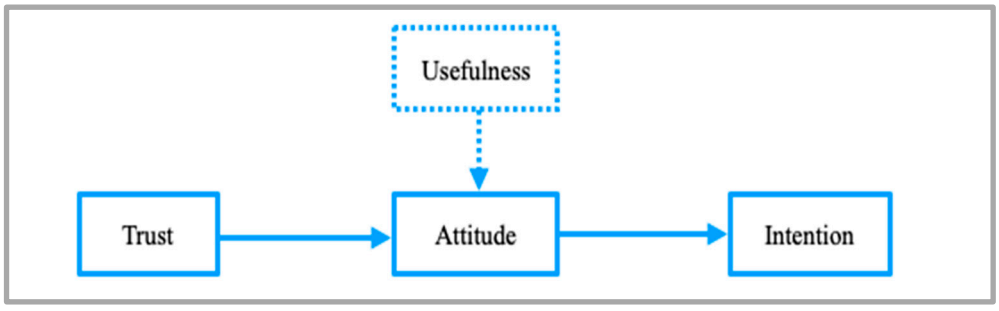

Figure 1. Research framework.

4. Research Methods

The data were collected from 400 respondents in Haryana. The responses were collected from 24 April 2021 to 13 May 2021. The target sample involved persons of all age groups. The sampling technique was simple random sampling. This technique was chosen

to obtain a fair idea about the population regarding vaccination rates. For the analyses, SPSS (version 23) and AMOS (version 24) software were used.

5. Results and Discussion

5.1. Demographic Data

The data suggest that 71% (284 out of 400) of respondents were not vaccinated at the time of the survey, 16.5% (66 out of 400) received one dose of a vaccine, and 12.5% (50 out of 400) received two doses of a vaccine. Approximately 52.5% were female (210 out of 400), nine respondents were below the age of 18, and one hundred and fifty-eight subjects were in the 18–25 age group. Further, 109 respondents were in the age group of 26–35 years, 47 were in the age group of 36–45 years, and 77 were in the age group of 45 and above. From the 400 respondents, 24 people were below the 10th standard, 47 had passed the 12th class, and 116 studied until graduation. A total of 199 subjects had completed a post graduate degree and 14 had other education. Approximately 50.25% (201 out of 400) of respondents were married. There were 109 people who made less than INR 2.5 lakhs, 98 earned INR 2.5–5 lakhs, 30.75% (123 out of 400) of people were in the INR 5–10 lakhs income group, and the rest of the respondents earned more than INR 10 lakhs. Approximately 79.75% (319 out of 400) of participants gave first preference to health workers in the vaccination priority categories followed by people who responded health workers with 11.75% (47 out of 400) and 5% that responded with students and teachers; the rest of the respondents had other preferences. Approximately 31.75% (127 out of 400) of people responded that they came to know about the vaccines via mass media, 24.75% responded with social media as their source, followed by people who responded with the internet (19.25%), 45 respondents who reported newspapers, and finally, 42 respondents came to know about it from family and friends.

5.2. Reliability of Latent Variables

The Kaiser–Meyer–Olkin measure of sample adequacy was 0.823 and validates the assumptions of the factor analysis. The four factors of trust, usefulness, intention, and attitude emerged with an eigen value > 1 and these factors explained 67.35 percent of the total variance. According to the threshold > 0.5 proposed by [12], all the items had loadings > 0.5. Further, the Cronbach's α coefficient shows the reliability of the constructs, with all the constructs exceeding the threshold value [13] of 0.7.

5.3. Structural Model

Using the proposed relationship in hypothesized model I, SEM was used to investigate the perception towards COVID-19 vaccine (see Figure 2). As shown in the fit indices mentioned in Figure 2, the fit indices for the measurement model and structural model validated the good performance of the models. Researchers have recommended thresholds for CMIN/DF, CFI, GFI, TLI, IFI, NFI, AGFI, RMSEA, and RMR [14–16]. Therefore, after checking the values of all the indices, the performances of the measurement model and structural model are satisfactory.

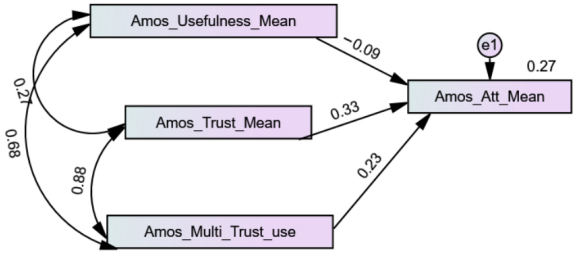

Figure 2. Empirical model (moderation analysis is discussed below) and its fit indices.

5.4. Moderation

Figure 2 presents the moderation regression results that showed that the effects of usefulness (β = −0.956, p = 0.000) and trust (β = 0.33, p = 0.000) on attitude were significant. The interaction term of these variables (use × trust) was also positive and significant (β = 0.23, p = 0.000), implying that attitude is strengthened by the positive relationship between usefulness and trust.

The statistical test one-way ANOVA was used to analyze the difference in perception between vaccinated and non-vaccinated people towards the COVID-19 vaccine. The hypothesis posits that there is a significant difference in the perceptions of vaccinated and non-vaccinated people towards the vaccine. There were three categories, namely Group 1, first dose of vaccine only; Group 2, two doses; and Group 3, not vaccinated. The results (refer to Table 1) show that there were significant differences in the perceptions of vaccinated and non-vaccinated people at the 5% level of significance (F = 7.998, p = 0.000). The Levene's test statistic (see Table 1) showed equal variances (p = 0.119). So, to check the individual differences, Tukey's post hoc test was used. The results reveal that there were no significant differences between the respondents who received the first dose of a vaccine (mean = 3.9628 and S.D. = 0.33714) and those who received two doses of a vaccine (mean = 4.0764 and S.D. = 0.41329). Surprisingly, the results showed that the respondents who got vaccinated once and those who did not get vaccinated at all had no significant differences. However, there was a significant difference between those who did not receive any dose of a vaccine (mean = 3.8415 and S.D. = 0.43097) and those who received two doses (mean = 4.0764 and S.D. = 0.41329). However, the mean scores of the groups confirmed that people have a positive perception of the vaccine, i.e., mean (yes, two doses) > mean (first dose only) > mean (no). This suggests that even though there are larger number of people who did not get vaccinated, they are likely to get vaccinated in the future.

Table 1. One-way ANOVA results (higher perception scores = positive outlook towards vaccination) and post hoc results.

			Test of Homogeneity of Variances		ANOVA	
Vaccination Experience	**Mean**	**Std. Deviation**	**Levene Statistic**	**Sig.**	**F**	**Sig.**
Yes (First dose)	3.9628	0.33714	2.140	0.119	7.998	0.000
Yes (Two doses)	4.0764	0.41329				
No	3.8415	0.43097				

	Post Hoc Results (Group Differences)			
Vaccination Experience	**Mean Difference**	**Sig.**	**95% confidence level**	
			Lower Bound	Upper Bound
Yes (First dose)–Yes (Two doses)	−0.11355	0.311	−0.2965	0.0694
Yes (Two doses)–No	0.23481 *	0.001	0.0851	0.3845
Yes (First dose)–No	−0.12126	0.083	−0.2546	0.0121

* The mean difference is significant at 0.05 level.

This can be validated from the opinion of the respondents regarding the choice to receive a COVID-19 vaccine. Out of 275 respondents who were of the opinion that everyone should get vaccinated, 74.54% (205 out of 275) did not receive the vaccine at the time of the survey. Out of the 25 people who were not vaccinated, 32% (8 out of 25) of them believed that the vaccines should be given to newly recovered people. From 53 respondents who answered that people who are infected with COVID-19 should be vaccinated, 56.60% (30 out of 53) were not vaccinated at that moment. Finally, those who were not vaccinated (87.23%, 41 out of 47) believed that people who were not infected should get vaccinated. The strong belief of 205 respondents indicates that even those who did not opt for vaccination are likely to get vaccinated in the near future. Furthermore, when respondents were asked about their lifetime vaccine history, the data revealed that 82.5% (330 out of 400) of respondents have taken all the necessary vaccines in their lifetime. Out of those who answered yes when

they were asked about their vaccine history, 67.27% (222 out of 330) were those who were not vaccinated for COVID-19 when they were surveyed. It was stressed that vaccine history plays an important role in determining the intention to get vaccinated. If respondents had a positive outlook towards vaccines, this helped in building confidence and leads to more vaccinations.

6. Conclusions and Implications

The pandemic has visibly disrupted the balance of the world economy. To overcome this, governments have started various vaccination programs. The role of usefulness and trust in determining the attitude towards COVID-19 vaccine is essential. The results reveal that usefulness and trust together can induce a positive attitude towards the vaccines and hence, the intention to get vaccinated. Furthermore, it was observed that even those who did not get vaccinated had a positive perception of the vaccine which indicates that they will get vaccinated in the near future. Vaccine history plays an important role too. Those who had received all necessary vaccines in the past were more likely to receive this vaccine too. This indicates that awareness regarding vaccination is high enough in the general public. But, to increase the vaccination coverage rate to 100%, awareness programs should be implemented. As the most popular medium is mass media, the government should utilize this platform for awareness purposes. This study provides a knowledge base for policymakers to improve communication and confidence building in relation to COVID-19 vaccines and vaccination. This study proposes that promoting a sense of community and addressing the potential practical constraints will be key in designing an effective COVID-19 vaccination policy.

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