Acceptance of covid-19 vaccine among the healthcare providers in India

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ABSTRACT

Background: By increasing immunity, the corona virus disease-19 (COVID-19) vaccine is expected to reduce the rate of infection and severity of infection, as well as the rate of hospitalisation. Healthcare providers (HCPs) can provide a good example when it comes to their health habits. HCPs are believed to have the best vaccine acceptance rates because they are open-minded and informed. By concentrating on COVID-19 vaccine attitudes among HCPs in India, the current study gives a clear picture of vaccine acceptability.

Material and Methods: A cross-sectional observational study approach was used. Participants in the study gave their informed permission. Snowball sampling was employed to spread the survey around social media platforms (mostly WhatsApp groups and email IDs). The survey was open from April 1 through April 30, 2021, and a total of 316 responses were received. SPSS software, version 25, was used for statistical analysis (SPSS, Inc., Chicago, IL, USA).

Results: The participants’ average age was 32.8 ± 9.7, with 57% of them being male. 16.5% of the 316 individuals had a history of chronic illness. 40.5% had ever experienced COVID-19 symptoms, and 24.1% had been diagnosed with COVID-19 while on duty. Only 16.5% strongly agreed that they could get COVID-19 in the near future, and 48.1% disputed that obtaining COVID-19 infection would make them very unwell. Only 40.5% of participants were concerned about the possible side effects of the vaccine, while 63.2% were not concerned about the possible side effects of the vaccine. Only 39.2% were concerned about the affordability (high price) of vaccines. The majority (95%) of participants agreed to be vaccinated when sufficient information was provided, and only 31.7% agreed to be vaccinated if they were vaccinated free of charge.

Conclusion: Due to the high level of current willingness among healthcare professionals to accept COVID-19 vaccines, these data may not be available to the general public. Understanding the complex and interrelated factors that influence vaccination decisions and the determinants of vaccine hesitancy in a particular population is essential to inform interventions to improve immunization coverage.

Keywords: COVID-19 vaccine, Healthcare providers, vaccine acceptance
This has resulted in increased vaccine hesitancy, which may make widespread vaccine application more difficult. In a global survey of potential COVID-19 vaccine acceptance, 28.5% of participants said they would be hesitant to use the vaccine if it became available (range from 11.4% to 45.2% according to the country). Another survey of US adults revealed a 42.4% aversion to any future COVID-19 vaccine. Although people across India are eager to get immunized with the COVID-19 vaccine and simultaneously anxious for its unknown effects, data about vaccine hesitancy is scarce in Indian population. The vaccination drive for COVID-19 has already begun in India. Thus, the purpose of this study was to conduct an electronic survey of COVID-19 vaccine acceptance, perceptions, and concerns among Indian healthcare providers (HCPs). Primary care physicians are the first point of contact with patients in our health system and are the first point of contact among HCPs in health centres. Furthermore, there have been very few studies to date that have investigated primary care physicians’ perspectives on providing the vaccine to patients, anticipated patient acceptance, or the sources of hesitancy and concern that they are preparing to address. Furthermore, the data collected can be used to aid in the development of targeted messaging aimed at increasing vaccine uptake and supporting the public health goal of disease minimization and return to normalcy. Primary care physicians can help their patients overcome vaccine hesitancy by providing additional education, support, and moving COVID-19 vaccinations into the primary care setting. Governments, institutions, and health organisations should provide primary care physicians with the resources they need to address patient vaccine hesitancy and increase vaccine confidence and COVID-19 vaccination uptake.

Material Methods

The study was designed as an observational, cross-sectional study. The study protocol included the distribution of an online survey to determine healthcare workers’ perceptions and concerns about various aspects of COVID-19 vaccination in India. Ethical permission has been taken from institutional ethics committee on 23rd April 2021.

This study included HCPs such as doctors, paramedics, and nursing staff. The survey was designed following introduction and informed consent. The questionnaire was divided into several sections under the following headings: Base-line characteristics, perceptions of overall health, perceptions of COVID-19 infection and vaccination, and views on getting vaccinated and vaccine preference. The questionnaire’s contents were validated, and it was then tested for comprehension, length, and relevance on qualified volunteers. To reduce response bias, the survey was anonymized. According to a survey in Australia, 86% of people were willing to vaccinate against COVID-19 if a vaccine was available. Considering 5% of relative precision, a confidence level of 95% and 10% non-response rate, sample size was calculated to be 286 using the below mentioned formula.
sampling was used. The survey ran from April 1 to April 30, 2021, and received 316 responses. SPSS version 25 was used for statistical analysis (SPSS, Inc., Chicago, IL, USA).

**Results**

Table 1 shows the baseline characteristics of the studied HCPs. Mean age of the participants was 32.8 ± 9.7 and 57% of them were male. Average monthly income was between 50,000 to 1 lakh of 58.2% and only 12% had an average monthly income of less than 10,000. Majority (83.5%) were allopathic doctors and rest were nursing and paramedical staff. Most of the participants were graduates and postgraduates and working in urban areas. Place of residence of majority of them was in Odisha. Health status of the participants at the time of survey is described in Table 2. Among the 316 participants, 16.5% had history of chronic disease. History of ever having symptoms of COVID-19 was in 40.5% and 24.1% had been diagnosed with COVID-19 during their duty. Majority of them perceived their overall health to be good, while 22.8% perceived it as very good. Table 3 summarises the study participants’ perspectives on COVID-19 infection. Only 16.5% strongly agreed on the likelihood of contracting COVID-19 in the near future, and 48.1% disagreed on the likelihood of becoming very sick if infected with COVID-19. While 55.6% were concerned about contracting COVID-19, 53.2% were concerned about the likelihood of contracting COVID-19. COVID-19 infection, according to the majority (53.2%), can result in serious complications. Table 4 summarises the attitudes of study participants toward COVID-19 vaccination. The vast majority (87.3%) agreed that vaccination is a good idea because it reduces their fear of becoming infected and lowers their chances of contracting COVID-19 infection. The perspectives of study participants on the COVID-19 vaccine are shown in Table 5. 83.5% of participants said they wanted to get vaccinated, 74.7% said they wanted to vaccinate their family members, and 69.6% said they were willing to pay for vaccination. Approximately 75% of those polled expressed concern about the vaccine’s safety and efficacy. Whereas 63.2% were unconcerned about the potential side effects of the vaccine, only 40.5% were unconcerned about the vaccine being counterfeit or faulty. Only 39.2% were concerned about the vaccine’s affordability (high cost). The vast majority (95%) of participants agreed to take the vaccine only if adequate information about the vaccine was available, and only 31.7% agreed to take the vaccine only if it was provided free of charge. Also 45.5% agreed to take the vaccine only if it is taken by many people in the public. Table 6 establishes the association of interest for vaccination with sex and average monthly income. But there is no significant association between interest for vaccination along with other variables like nature of job, education level, location of work, history of chronic diseases, and ever diagnosed with COVID-19 infection. Table 7 shows most (84.8%) of the study participants preferred to take vaccine developed in India. While 31.6% had no preference of manufacturer, 46.8% preferred vaccine manufactured by Serum institute and 39.2% preferred vaccine manufactured by Bharat Biotech.

**Discussion**

The COVID-19 vaccine is expected to reduce infection rates and severity, as well as hospitalisation rates, by increasing immunity. HCPs are expected to set a good example in terms of their health behaviours. HCPs are thought to be the most accepting of vaccines because they are open-minded and well-educated. The current study contributes to vaccine acceptance by focusing on COVID-19 vaccine attitudes among Indian HCPs.

**Table 2: Perception regarding overall health of study participants (n=316)**

| Variable                        | n (%) |
|---------------------------------|-------|
| Perception of overall health    |       |
| Very good                       | 72 (22.8) |
| Good                            | 164 (51.9) |
| Fair                            | 64 (20.3) |
| Poor                            | 12 (3.8) |
| Very poor                       | 4 (1.3) |
| History of chronic disease      |       |
| Yes                             | 52 (16.5) |
| No                              | 264 (83.5) |
| Ever had symptoms of COVID-19   |       |
| Yes                             | 128 (40.5) |
| No                              | 188 (59.5) |
| Ever diagnosed with COVID-19    |       |
| Yes                             | 76 (24.1) |
| No                              | 240 (75.9) |

**Table 3: Perceptions related to COVID-19 infection (n=316)**

| Variable                                              | n (%) |
|-------------------------------------------------------|-------|
| Chance of getting COVID-19 in next few months         |       |
| Strongly agree                                       | 52 (16.5) |
| Agree                                                | 140 (44.3) |
| Disagree                                             | 108 (34.2) |
| Strongly disagree                                    | 16 (5.1) |
| Worried about likelihood of getting COVID-19          |       |
| Strongly agree                                       | 40 (12.7) |
| Agree                                                | 128 (40.5) |
| Disagree                                             | 116 (36.7) |
| Strongly disagree                                    | 32 (10.1) |
| COVID-19 causes serious complications                 |       |
| Strongly agree                                       | 100 (31.6) |
| Agree                                                | 168 (53.2) |
| Disagree                                             | 44 (13.9) |
| Strongly disagree                                    | 4 (1.3) |
| Will be very sick if I get COVID-19                   |       |
| Strongly agree                                       | 40 (12.7) |
| Agree                                                | 92 (29.1) |
| Disagree                                             | 152 (48.1) |
| Strongly disagree                                    | 32 (10.1) |
| Afraid of getting COVID-19                            |       |
| Strongly agree                                       | 48 (15.2) |
| Agree                                                | 128 (40.5) |
| Disagree                                             | 104 (32.9) |
| Strongly disagree                                    | 36 (11.4) |
In our study, the overall perception of vaccine acceptance is 87.3%, which is high and comparable to the studies done by Sols Arce et al.[18] in low- and middle-income countries, where the vaccine acceptance across low middle income countries (LMIC) studies was 80.3% (95% confidence interval (CI) 74.9–85.6%), with a median of 78% and range of 30.1 percentage point. Similar findings were found in a study conducted by Jyotin Jain et al.[19] among medical students in India, where the perceived acceptance of vaccines was 89.4%. Among all variables, HCPs’ gender and income are significantly related to vaccine interest. Males accepted the vaccine more than females in this study, and the difference in acceptance was highly significant. Wouters OJ, et al.[20] Kreps S, et al.[21] Shekhar R, et al.[22] Dror AA, et al.[11] and Fisher KA, et al.[23] all came to similar conclusions. This could be as a result of a lack of convenience (in the availability, accessibility, and appeal of immunisation services, including time, place, language, and cultural contexts).[23] Also, higher rates of COVID-19 vaccine acceptance among male HCPs may be explained by a risk-taking proclivity due to a lack of information about the new vaccine.[24] Respondents in our study were concerned about safety (73.4%), efficacy (74.9%), side effects (46.8%), faulty or counterfeit vaccine (59.5%), and a lack of adequate information (95%). Early trial data revealed that severe adverse effects were extremely rare,[17][21] occurring in less than 10% of clinical trial participants.[22] Concerns about minor but common and transient side effects such as fatigue, muscle pain, joint pain, and headache may also be reflected in these concerns. According to a review conducted by Troiano G, et al.[25] the most common reasons for refusing vaccine being anti-vaccine in general, concerns about safety/thinking that a vaccine produced in a hurry is too dangerous, considering the vaccine useless due to the harmless nature of COVID-19, general lack of trust, doubts about the vaccine's efficiency, belief that they were already immunised, and doubt about the vaccine's provenance. Our study has several limitations, which we will discuss here. For instance, our data do not represent all HCPs in the country because the questionnaire was distributed via email and social media, and we were unable to reach every segment of HCPs and every state. The sample, on the other hand, was chosen based on a scientifically calculated sample size. Despite sample composition differences, our main findings of high COVID-19 vaccine acceptance among HCPs are strikingly consistent across other studies.

### Conclusion

Large gaps in vaccine coverage may make controlling the pandemic difficult. Because HCPs are currently willing to accept
COVID-19 vaccine, these data may not be generalizable to the wider populace. It is critical to understand the complex and interplaying factors that influence vaccination decisions and the determinants of vaccine hesitancy in a particular population in order to inform interventions that enhance vaccine coverage. The acceptance of vaccines is heavily influenced by trust in the government. In addition to traditional approaches such as campaigning and raising awareness, evidence-based, and behaviourally informed strategies should be used to achieve high acceptance and uptake. Building trust in the COVID-19 vaccine and emphasizing the social benefits of vaccination may be novel approaches. Aside from that, using digital health for reminders, removing barriers, resolving supply chain issues, prompt planning, and other strategies—such as removing barriers, using reminders and planning prompts, and instilling trust in HCPs—will have a positive impact on vaccine acceptance in the general population.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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