Original Article

Acceptance and Knowledge of COVID-19 Vaccine among Health-Care Professionals in Western Uttar Pradesh, India

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Abstract

Introduction: Knowledge and acceptance of COVID-19 vaccine among health-care professionals (HCPs) are an important aspect in the success of the vaccination drive in India, as HCPs are the first group to receive the vaccine. Various factors affecting the attitude of getting COVID-19 vaccine and to better address those factors will help in widespread acceptance among the general public. **Materials and Methods:** This was a cross-sectional study which was conducted among HCPs by circulating Google form. The form was distributed among the medical students and physicians through social networking sites such as E-mail and WhatsApp. The questionnaire consisted of 18 questions focusing on the assessment of knowledge and acceptance about COVID-19 vaccine. It was a self-administered and pilot-validated questionnaire. **Results:** Out of total participants, 473 (78%) were willing to take vaccination and were in the opinion that getting vaccination is a good idea. Eighty-eight percent of the participants were worried about the effectiveness of the COVID-19 vaccine. Fifty-five percent of the participants were anxious regarding getting vaccine and its efficacy. **Conclusion:** Knowledge and acceptance were moderate, but overall attitude of getting vaccination was positive. Majority of the HCPs are still anxious about the long-term efficacy; therefore, appropriate steps need to be taken to address the factors contributing to the low acceptance of the COVID-19 vaccine.

Keywords: Acceptance, COVID-19 vaccine, health-care professionals, knowledge

Introduction

India, the biggest democratic country and with world's second largest population started its COVID-19 vaccination drive on January 16, 2021.[1] Two vaccines which were given emergency approval for restricted use were Oxford-AstraZeneca's Covishield and Bharat Biotech's Covaxin.[1,2] Lack of data on long-term safety and efficacy, particularly for India's home produced vaccine-Covaxin, along with other factors such as knowledge of the vaccine may influence the acceptance of vaccine among the people of India.[2] This might threaten to derail the vaccination drive in India. Acceptance of any COVID-19 vaccine is an important challenge to address and will play a major role in combating the pandemic.

In India, health-care professionals (HCPs) were the first group to receive COVID-19 vaccine, so it is important to consider their attitudes about COVID-19 vaccination to better address barriers to widespread vaccination acceptance among the population. Knowledge and trust on vaccine are the key factors which will help in acceptance of the vaccine among the general population.

There have been few studies done on the general population assessing the acceptance of COVID-19 vaccine.[3-5] In a web-based cross-sectional study done in Saudi Arabia, out of 992 respondents, 642 (64.7%) participants intended to uptake vaccination.[4] Whereas a study done in United States showed a 67% acceptance of COVID-19 vaccine.[5] In a study done on 2058 Chinese population, 1879 (91.3%) stated that they would accept vaccination after it is available.[6]

Limited data are available assessing the knowledge, acceptability, and various other factors influencing the vaccination in HCPs. This study will also help us to find out the factors which are

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affecting the mind set of HCPs for receiving COVID-19 vaccine available in India. Therefore, appropriate steps can be taken for generating awareness, knowledge, and motivation among those hesitating to participate in the vaccination drive. We have planned this study to assess the knowledge and various factors influencing the acceptability of getting COVID-19 vaccine among the HCPs.

Materials and Methods

Study design

This cross-sectional survey was conducted among the HCPs, working in a Level 3 dedicated COVID-19 hospital and medical college in Western Uttar Pradesh. It was a questionnaire-based study in which Google forms were distributed among the medical students and physicians through social networking sites such as E-mail and WhatsApp. A questionnaire was developed related to knowledge and acceptance for COVID-19 vaccine in health-care worker (HCW).

Validation

The questionnaire was self-administered and was pilot-validated, on 15 HCPs. The HCW who participated in the pilot study was excluded from the study. The questionnaire had 18 questions focusing on the knowledge and acceptability of COVID-19 vaccine among the HCW. Reliability of the questionnaire was tested by Cronbach Alpha.

Sampling procedure

The sample size was calculated using the following formula:

$n = z^{2pq}/d^2$

$n = 1.96^2 \times 0.5 \times (1 - 5)/0.05^2$

$n = 384.16$

As there is no prior similar study focusing on Knowledge, Attitude, and Practices regarding the COVID-19 vaccine in India, we made the best assumption (p) for the study would be 50%. Assuming a 10% nonresponse rate, a sample size of 424 was estimated.

The Institutional Review Board approval was taken before the study IRB/14/2021, and data were collected anonymously and no personal identifying information was collected and followed the guidelines laid down in the declaration of Helsinki.

A validated questionnaire consisting 18 questions was used to collect the data by self-reporting technique. The questionnaire was focusing on two aspects, Intent of getting COVID-19 vaccination and knowledge about COVID-19 vaccine available in India. Vaccination intent was evaluated on the basis willingness to take vaccine and factors affecting the decision to get vaccinated.

Knowledge was assessed by questions asking about the details of COVID-19 vaccine type, pharmaceutical companies producing vaccine, available vaccines in India, duration between two doses of vaccine, time of immune response after second dose, temperature for storage of vaccine and type of adverse effects caused by these vaccines. The acceptance of vaccine was evaluated by their belief about the efficacy and safety of COVID-19 vaccine, barriers in getting vaccination.

Statistical analysis

The data were collected, coded, and then entered into the Excel sheet. Data were compiled and followed by analysis using the descriptive statistics. All the quantitative variables were presented as frequency and percentages.

Results

A total of 608 HCPs including students of the medical college and physicians working in the hospital participated in this study and filled up the online Google form sent to them. Out of total participants, 473 (78%) were willing to take vaccination and were in the opinion that getting vaccination is a good idea, as shown in Figures 1 and 2.

Effectiveness of COVID-19 vaccine was a concern for 536 (88%) of HCPs. Four hundred and seventy-five (78%) HCPs knew about the pharmaceutical companies producing COVID-19 Vaccine in India. One hundred and forty-three (23.5%) HCPs thought COVID-19 vaccine can give COVID infection, whereas 465 (76.5%) were not worried. Three hundred and seventy-seven (62%) were worried that vaccine will affect daily activities, as shown in Tables 1 and 2.

Discussion

As COVID-19 pandemic disrupted the health-care system worldwide, India showed the second highest confirmed cases

Table 1: Demographic profile and acceptance of COVID-19 vaccine among health-care professionals

	Number of participants (%)
Gender	
Male	318 (52.3)
Female	290 (47.6)
Total	608
Education	
Undergraduate	535 (87.9)
Postgraduate	73 (12.1)
Will you be less worried after getting vaccination for COVID19?	
Yes	453 (74.6)
No	155 (25.4)
Are you concerned about the effectiveness of COVID-19 vaccine?	
Yes	536 (88.2)
No	72 (11.8)
Do you think COVID-19 vaccine can give COVID infection?	
Yes	143 (23.5)
No	465 (76.5)
Do you think that the vaccine is not required as herd immunity is already achieved?	
Yes	130 (21.3)
No	478 (78.6)

Table 2: Knowledge about COVID-19 vaccine among health-care professionals

	Number of participants (%)
Which pharmaceutical companies are developing vaccine in India?	
Know	475 (78.1)
Don't know	133 (21.9)
Can you name the vaccine available in India?	
Know	603 (99)
Don't know	5 (1)
Are you aware of the common side effects of COVID-19 vaccine?	
Yes	583 (95.8)
No	25 (4.2)
Are you worried that side effects would interfere with daily activities?	
Yes	377 (62)
No	231 (38)
Do you think vaccine could worsen any preexisting medical ailment?	
Yes	116 (19)
No	119 (19.6)
May be	373 (61.4)
Do you think the vaccine can show interaction with other drugs?	
Yes	149 (24.5)
No	129 (21.2)
May be	330 (54.3)
How much duration is required between 2 doses of vaccine?	
Know	555 (91.3)
Don't know	53 (0.87)
After receiving 2nd dose of vaccine, the protective immune response can be seen after how many weeks?	
1 week	407 (66.9)
4 weeks	201 (33.1)
What type of vaccine is Covishield?	
Know	376 (61.8)
Don't know	232 (38.2)
What type of vaccine is Covaxin?	
Know	440 (72.4)
Don't know	168 (27.6)
How much temperature is required to store Covishield/Covaxin?	
Know	452 (74.3)
Don't know	156 (25.7)

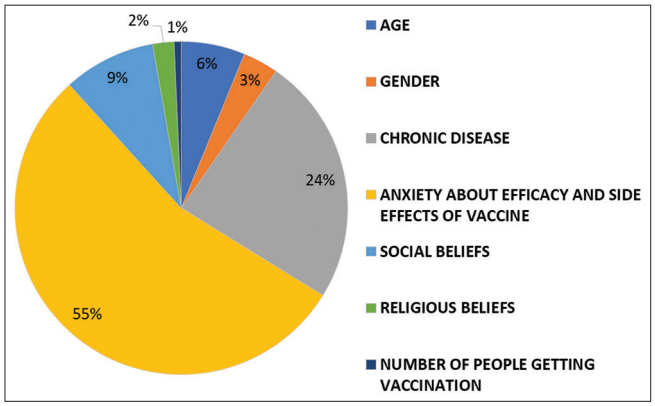

Figure 1: Factors affecting acceptance of COVID-19 vaccine among health-care professionals

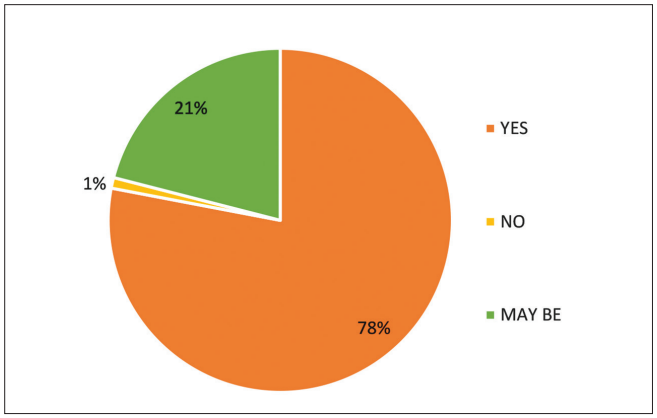

Figure 2: Distribution of intent of COVID-19 vaccination among health-care professionals

of COVID-19 but less mortality rate as compared to other developed countries. With timely lockdown, mandatory precautions and safe distancing norms in India resulted in less morbidity and mortality. Vaccination is an effective and

important way of controlling infectious disease but to achieve success, challenges such as refusal of getting vaccine or delaying it is a major factor.[7,8]

India is actively involved in the development and production of vaccine. However, with limited results of long-term efficacy and safety of COVID-19 vaccine, hesitancy among the people of getting vaccine is unavoidable. HCWs are not spared and they are also having hesitancy in getting vaccination. Knowledge and attitude of vaccine among the HCWs will affect the use and recommendation of vaccine to the patients.

In our study, 78% of HCPs were of the opinion of getting vaccination and 21% were not sure. In a study done on HCWs in Republic of Congo, only 37.7% of doctors said that they would get COVID-19 vaccine, whereas in a study done in France, the acceptance was found to be 77.6%.[8,9] Good acceptance rate in our study may be due to the awareness and motivational talks on social media by various senior HCPs and political leaders of our country.

In our study, acceptance of getting COVID-19 vaccine was seen more among the males 52% as compared to 48% females. It was similar to a study done in the United States where acceptance was more in males as compared to females.[10]

In our study, 88% of the participants were worried about the effectiveness of the COVID-19 vaccine. This may be due to the lack of long-term efficacy results of the vaccine. In a survey done in June 2020 in Australia, top two reasons affecting the willingness of uptake of COVID-19 were "concern about the safety of the vaccine in its development (36%)" and "potential side effects (10%)."[11]

In another study done in Bangladesh revealed inadequate knowledge but more positive attitude towards COVID-19 vaccination.[12] Anxiety about the efficacy and side effects of vaccine was the main factor affecting the decision of getting COVID-19 vaccine which was followed by having preexisting chronic disease and social beliefs. This could be due to the inadequate data available on long-term safety and efficacy of COVID-19 vaccine.[13]

As more information regarding the efficacy and safety profile of COVID-19 vaccine will come in future, there might be some changes in the findings of acceptance and knowledge among the people. Limitation of our study was a smaller sample size, as a bigger sample size or a multicentric study covering a greater number of HCPs, would help to minimize the bias and would also guide to understand various factors affecting the acceptance of COVID-19 vaccine.

Conclusion

HCPs knowledge and acceptance toward COVID-19 vaccine is important in the success of vaccination drive in India. Acceptance of COVID-19 vaccine was found to be less in majority of the HCPs and the main reason found was anxiety over insufficient data on its long-term efficacy. Although knowledge regarding type of vaccine, storage information, and pharmaceutical companies manufacturing vaccine in India was found to be adequate vaccine side effects, drug interactions, and effect of vaccine on other comorbid conditions were the points of concern. Therefore, appropriate steps need to be taken to address the factors contributing to the low acceptance of the COVID-19 vaccine. To expand the COVID-19 vaccination drive in India, immunization program should be designed to overcome the barriers causing less acceptability and focus on increasing the perception of the benefits of COVID-19 vaccination among the HCPs and general public. In addition, health education and public health intervention programs by health-care authorities targeting public with less acceptability and knowledge should be done in the form of testimonies and advertisements of COVID-19 vaccination.

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Conflicts of interest

There are no conflicts of interest.

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