



KNOWLEDGE AND PERCEPTION OF HEALTHCARE WORKERS AND OTHER FRONTLINE COVID WORKERS ABOUT COVID-19 VACCINATION AT A TERTIARY CARE HOSPITAL IN INDIA

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ABSTRACT

Aim of study: Several vaccines have been approved against coronavirus disease (COVID-19) and distributed globally. However, knowledge and perception of healthcare workers and other Frontline COVID workers about COVID-19 vaccination are poorly understood. Thus, this study aimed to investigate the same at a tertiary care hospital in India. **Material & Methods:** A cross-sectional, observational, questionnaire-based study was conducted amongst 1550 healthcare workers and other frontline COVID workers who voluntarily agreed to participate in the study. The survey was conducted using a well-structured and self-reported questionnaire along with three sections, one each on socio-demographics, knowledge, and perception. Chi-square test was performed to determine the variables predicting knowledge and perception towards COVID-19 vaccinations. **Results:** Knowledge score of ≥ 2 (out of 3) was obtained amongst 1489 (96%) while perception score of ≥ 4 (out of 8) was found amongst 1446 (93%) of study subjects respectively. 1444 (95%) were aware of two doses of vaccination and 1124 (74%) knew about the types of vaccines available in the country. About 1443 (94%) of subjects agreed that vaccination is a necessity to end this pandemic and considered recommending the vaccine to their family members. About 1190 (80%) subjects were in favor of getting vaccinated even if it was not provided free of cost. There was no significant difference in knowledge and perception based on age and history of COVID 19. **Conclusions:** The findings of our study reflect adequate knowledge and positive perception towards COVID-19 vaccine amongst the healthcare workers and other frontline COVID workers.

Keywords: Knowledge, Perception, Covid-19, Vaccine, Side Effect.

INTRODUCTION

COVID-19, caused by a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has become a serious issue worldwide owing to its rapid spread. [1] The disease had been first reported in December 2019 (Wuhan, China) and declared as a pandemic by the World Health Organization (WHO) on March 11, 2020. [2] Since then, COVID-19 associated cases with related mortality and morbidity has been on the rise.

Currently, multiple therapeutic approaches are being tried to deal with the infection but none of them are definitive or curative. Thus, prevention of transmission by precautionary measures, such as mandatory wearing of face masks, face shields, using sanitizers is the best hope for public health. [1,3] However, the end of the pandemic is dependent on an effective COVID-19 vaccine. [4,5] In view of the spread and deleterious effects of the disease, there is increasing competition for COVID-19

vaccine invention [6,7] and new, more effective vaccines are likely to be developed over time. Covaxin and Covishield which are the two vaccines by Bharat Biotech and Serum Institute of India respectively were approved for emergency use in India from 16th January 2021. [8] In order to implement the most effective vaccination strategy, it is very important to examine community acceptance of COVID-19 vaccinations [9] as it is crucial for Government and policy makers to address all barriers to vaccine distribution. As Healthcare workers and other Frontline COVID workers were the primary beneficiaries of COVID-19 vaccination, we decided to study their knowledge and perception about it.

AIMS AND OBJECTIVES:

1. To assess the knowledge about COVID-19 vaccines,
2. To study the perception about COVID-19 vaccination, amongst the participants.

MATERIALS AND METHODS:

Study design:

Cross-sectional, observational, questionnaire based study.

Study Participants:

Study participation was open to All Healthcare workers (doctors, nurses, dentists, physiotherapists) and other Frontline COVID workers (pharmacists, administrators, janitors, drivers) aged 18 years or more who were vaccinated at our centre and were willing to complete the pre-validated questionnaire which was in three languages viz. English, Marathi and Hindi. Participants who could not understand either of the languages used in the questionnaire were excluded.

Study site:

COVID-19 vaccination centre at our tertiary care hospital

Sample size: 1550

Duration:

2 months (1st February 2021- 31st March 2021)

Procedure:

The study was initiated after approval from the Institutional Ethics Committee (IEC). Each participant was given 10 minutes to complete a questionnaire that included sociodemographic details and 14 questions out of which 3 were related to knowledge and 11 were related to perception. Individual participants were assigned a knowledge score of <2 and ≥ 2 based on number of correct responses to knowledge related questions. A perception score of < 4 and ≥ 4 based on number of positive responses to perception related questions except questions 2, 3, and 5, the responses to which were analyzed in percentages. Chi-square test was performed to determine the variables

predicting knowledge and perception towards COVID-19 vaccinations

Scope of the questionnaire:

Major aspects addressed were knowledge regarding COVID-19 vaccine, concerns/apprehensions of the participants, choice of vaccine, outlook of participants towards precautions to be taken post vaccination and significance of vaccination program.

Questionnaire:

1. Do you think vaccination is a necessity to end this pandemic?
a. Yes b. No
2. Source of information:
a. Social media b. News (Print/Audiovisual)
c. Workplace d. Others please specify
3. What prompted you to take vaccine?
a. Health concerns b. Safety of family members
c. Vulnerability d. Others, please specify
4. You are taking vaccination WITHOUT any concern/apprehension, is that right?
a. Yes b. No
5. What are your concerns while taking vaccine-
a. Cost b. Safety c. Doubt about efficacy d. Others, please specify
6. Are you aware that you will be given two doses?
a. Yes b. No
7. Would you take vaccine if it was not provided free of cost?
a. Yes b. No
8. Would you insist/encourage your family members to take the vaccine?
a. Yes b. No
9. Are you aware of different types of covid-19 vaccines available?
a. Yes b. No
10. Given a choice, would you be selective for any covid-19 vaccine?
a. Yes (Covishield / Covaxin) b. No
11. Going forward, which source would you now consider most reliable to seek vaccine related information post vaccination?
a. b. c.
12. Do you consider manufacturing of Covid-19 vaccine by Indian companies as a significant achievement?
a. Yes b. No
13. Is the set up for vaccination satisfactory?
a. Yes b. No
14. Will you continue wearing masks and taking safety precautions post vaccination?
a. Yes b. No.

RESULTS:

As shown in Table-1 (N=1550), median age of participants was 38 years (age range 20-74), male

participants (57%) outnumbered female participants (43%). While 536 (37%) participants came in close contact with COVID-19 patients, 906 (63%) did not. Out of total participants, only 411 (38%) participants had suffered from COVID-19 infection in the past.

In Table -2, Number of responses by participants for a said question was calculated and their response was shown in percentage. While 94% agreed that vaccination is a necessity to end this pandemic, only 74% of subjects were aware of different types of COVID 19 vaccines available. They had apprehensions about taking the vaccine of which safety was their major concern (66%). About 95% of them were aware that they will be administered two doses. 80%

of subjects agreed to get vaccinated even if it was not provided free of cost and 94% would insist that their family members take the vaccination. Information about the vaccine was obtained from the workplace (58%) but after getting vaccinated, major sources for seeking vaccine related information were public health guidelines, medical literature, webinars, hospitals, news, and social media. 98% considered manufacturing of vaccines by Indian companies as a significant achievement and 97% of the subjects were satisfied with infrastructure for the vaccination. 99% of subjects committed to wear masks and take safety precautions even after vaccination.

Table-1 Characteristics of Study Participants (N= 1550)

| Characteristics | Age in Years, Median, IQR | Gender | | History of Close Contact | | History of COVID-19 | |
|-----------------|---------------------------|--------|--------|--------------------------|-----|---------------------|-----|
| | | Male | Female | No | Yes | No | Yes |
| Number | 38 (30-48) | 880 | 670 | 906 | 536 | 1055 | 411 |
| Percentage | ----- | 57% | 43% | 63% | 37% | 72% | 38% |

Table -2 Details of Questionnaire

| Question Number | Q-1 | | Q-2 | | | Q-3 | | | | Q-4 | | Q-5 | | | | | | |
|--------------------------|------------------------------|------|----------|------|------|------|-------|------|-----|------|-------|-----|------|------|--------------|-----|--------------------------|-----|
| Answer Options | No | Yes | A | B | C | D | A | B | C | D | No | Yes | A | B | C | D | | |
| Response by Participants | 97 | 1443 | 537 | 373 | 849 | 50 | 750 | 974 | 128 | 35 | 707 | 819 | 41 | 907 | 161 | 35 | | |
| % Response | 6% | 94% | 36% | 26% | 58% | 3% | 50% | 65% | 8% | 2% | 46% | 54% | 3% | 66% | 12% | 3% | | |
| Question Number | Q-6 | | Q-7 | | | Q-8 | | | Q-9 | | Q-10 | | News | | Social media | | Public health guidelines | |
| Answer Options | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Response By Participants | 83 | 1444 | 306 | 1190 | 91 | 1441 | 404 | 1124 | 336 | 1175 | 369 | 119 | 444 | 44 | 484 | 4 | | |
| % Response | 5% | 95% | 20% | 80% | 6% | 94% | 26% | 74% | 22% | 78% | 76% | 24% | 91% | 9% | 99% | 1% | | |
| Question Number | Medical literature, webinars | | Hospital | | Q-13 | | | Q-14 | | | Q-15 | | | | | | | |
| Answer Options | No | Yes | No | Yes | No | | Yes | | No | | Yes | | No | Yes | | | | |
| Response by Participants | 476 | 12 | 426 | 62 | 32 | | 1505 | | 41 | | 1500 | | 8 | 1518 | | | | |
| % Response | 98% | 2% | 87% | 13% | 32% | | 1505% | | 3% | | 1500% | | 1% | 99% | | | | |

Table -3 Details of knowledge score

| Type | N (%) |
|------------------------|------------|
| Knowledge Score | |
| < 2 | 61 (4%) |
| >= 2 | 1489 (96%) |

As shown in table-3, 96% of the participants had knowledge score > 2(out of 3).

| Type | Knowledge Score < 2 | Knowledge Score >= 2 | Chi-square p-value |
|---------------------------------|---------------------|----------------------|--------------------|
| Age | | | |
| < 38 years | 29 (47%) | 739 (47%) | 0.75 |
| >= 38 years | 32 (53%) | 750 (53%) | |
| Sex | | | |
| Male | 46 (75%) | 834 (56%) | 0.003 |
| Female | 15 (25%) | 655 (44%) | |
| History of covid 19 | | | |
| No | 33 (65%) | 1022 (72%) | 0.24 |
| YES | 18 (35%) | 393 (28%) | |
| History of close contact | | | |
| No | 14 (30%) | 892 (64%) | < 0.0001 |
| YES | 32 (70%) | 504 (36%) | |
| Comorbidity | | | |
| No | 56 (92%) | 1131 (81%) | 0.03 |
| YES | 5 (8%) | 269 (19%) | |
| Type of worker | | | |
| Frontline worker | 9 (16%) | 124 (8%) | 0.22 |
| Doctor | 23 (41%) | 703 (48%) | |
| Nurse | 5 (9%) | 141 (10%) | |
| Paramedical | 9 (16%) | 168 (11%) | |
| Other | 10 (18%) | 333 (23%) | |

Table-4 Details of Perception Score

| Type | N (%) |
|-------------------------|------------|
| Perception Score | |
| < 4 | 104 (7%) |
| >= 4 | 1446 (93%) |

As shown in Table-4, 93% of participants had perception score >=4 (out of 8).

| Type | Perception Score <4 | Perception Score >= 4 | Chi-square p-value |
|---------------------------------|---------------------|-----------------------|--------------------|
| Age | | | |
| < 38 years | 64 (52%) | 704 (49%) | 0.01 |
| >= 38 years | 40 (38%) | 742 (51%) | |
| Sex | | | |
| Male | 44 (42%) | 836 (58%) | 0.002 |
| Female | 60 (58%) | 610 (42%) | |
| History of covid 19 | | | |
| No | 40 (44%) | 1015 (74%) | < 0.0001 |
| YES | 51 (56%) | 360 (26%) | |
| History of close contact | | | |
| No | 29 (36%) | 877 (64%) | < 0.0001 |
| YES | 52 (64%) | 484 (36%) | |
| Comorbidity | | | |
| No | 86 (86%) | 1101 (81%) | 0.21 |
| YES | 14 (14%) | 260 (19%) | |
| Type of worker | | | |
| Frontline worker | 8 (8%) | 125 (9%) | |

| | | | |
|--------------------|----------|-----------|------|
| Doctor | 47 (47%) | 679 (48%) | 0.62 |
| Nurse | 13 (13%) | 133 (9%) | |
| Paramedical | 13 (13%) | 164 (12%) | |
| Other | 18 (18%) | 325 (23%) | |

DISCUSSION:

The COVID-19 vaccine has been identified as the ideal solution to end the ongoing pandemic. Numerous vaccines are being developed and data of several clinical trials have recently been released with positive results, leading to many countries approving specific vaccines for implementation of vaccination programs.

In India, the government started the COVID-19 vaccination roll-out from 16th January 2021, but the complete newness of the COVID-19 vaccination posed questions about the distribution and acceptability of vaccines in this country. Thus, this study has been conducted to assess the knowledge and perception among healthcare and other frontline workers (since they were the initial beneficiaries) about COVID-19 vaccinations in India. These findings will be crucial in developing vaccination related awareness and health education programs.

96% of the participants in our study had knowledge score of ≥ 2 (out of 3) and there was no significant difference in knowledge based on age, history of COVID-19 or type of participant and a perception score of ≥ 4 (out of 8) was seen in 93%.

In our study older participants had a positive perception towards the vaccination which is in contrast with another study where younger participants aged between 18-25 years were more likely to have a better perception.⁽¹⁰⁾

The above data indicated adequate knowledge and positive perception about vaccination amongst our participants showing a positive outlook towards this novel idea.

Healthcare workers including doctors and nurses had better awareness about the different types of COVID-19 vaccines available and were likely to take more safety precautions post vaccination as compared to other frontline workers. Adverse reaction to the vaccine was the major concern amongst the healthcare workers as compared to other frontline workers ($p < 0.05$) while frontline workers in our study were more likely to worry about cost as compared to healthcare workers.

In another study regarding vaccine purchase and affordability, most participants (14,050, 93.1%) believed that the COVID-19 vaccine should be provided free of cost, while only 7272 (48.2%) of them, would purchase it if available for sale.⁽¹¹⁾ This shows that despite vaccination being the only option to end this pandemic, besides safety, cost is also an important factor which is being considered by frontline workers.

1518 (99%) of our participants had committed to mask wearing and taking other safety precautions even post

vaccination like a study by Elhadi et al where 10,268 (68.1%) participants had reported similar adherence to mask wearing.

In our study, higher proportion of healthcare workers were likely to encourage their family members to take the vaccine as compared to other frontline workers ($p < 0.05$). Vaccine hesitancy, especially for the COVID vaccine is widespread probably due to misinformation and false propaganda, which can hamper concerted efforts by public health authorities to control this pandemic.⁽¹²⁾ Such a type of misinformation had led to a surge in poliomyelitis in Nigeria as the local population had boycotted the vaccination program. [13,14]

In developing nations such as India, it is therefore of utmost importance to have adequate measures in place to promote compliance to vaccination. This can be done by circulating scientific information regarding the necessity and safety of the vaccine in a language that is simple and easy to understand by the general population. [15, 16]

While our cross-sectional survey method may not be able to draw a strong conclusion, distribution of the questionnaire at the vaccination centre helped to include all types of participants. Further studies, preferably multi-centric with a larger sample size will help in generalizing the results globally.

CONCLUSION:

Currently, the various COVID-19 vaccines seem to be the only option for putting an end to this pandemic. Our study revealed adequate knowledge and positive perception towards COVID-19 vaccination program in our participants who were healthcare workers and other frontline COVID 19 workers. To enhance compliance to vaccination in the general population, policy makers and other health authorities can take certain appropriate steps like having multiple vaccination centres, keeping the entire process hassle-free and inexpensive as well as ensuring vaccination of differently abled and senior citizens.

Knowledge regarding COVID-19 vaccines can be increased by using a variety of resources like hoardings, pamphlet distribution by the government, helpline numbers to develop a positive perception. Implementation of measures such as mandatory vaccination certificate for access to certain public places like shopping malls, theatres, gardens as well as for out station travel will motivate the general population to get vaccinated.

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This study did not have any sponsorship or funding. There was no conflict of interest in this study.

Confidentiality was maintained for the whole data of the study.

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