



AN OBSERVATIONAL STUDY OF PRACTICE OF COVID-19 VACCINATION AMONG HEALTHCARE WORKERS AT A TERTIARY HEALTHCARE CENTRE: A SURVEY BASED ANALYSIS.

Healthcare

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The rapid and extensive spread of the COVID-19 pandemic has become a major cause of concern for the healthcare profession. Development of SARS-CoV-2 vaccine is considered as the only way to significantly reduce the threat of this pandemic in view of no proper treatment available against COVID-19 till date. However, the success of COVID-19 vaccination in India is dependent upon the acceptance of vaccine among general population, besides the proven safety and efficacy of the Indian COVID-19 vaccines (Covishield and Covaxin). In view of that, we conducted an online survey among the first to be vaccinated priority group (healthcare workers) in India who are at high risk of exposure, with the aim to assess the beliefs and experiences related to Indian COVID-19 vaccines and to project that upon the general population of India. **Method:** This cross sectional study was conducted using a validated self administered online questionnaire that was distributed through emails, online social networking platforms (online survey) and also printed form of questionnaire in both English and Hindi languages (paper survey). The participants of the study were informed about the objectives of the study and after obtaining an informed consent, they completed the questionnaire on their background and vaccination-behaviour related variables (including past vaccine compliance, risk factors for severe COVID-19, and COVID-19 vaccine perceptions and experience). **Results:** Our study included 750 healthcare workers (HCW) of which 415 were doctors, 286 were medical students and 49 were paramedical staff. Of the total number of participants, n=617 (82.3%) have received the COVID-19 vaccine. 75.6% of the study population (n=504) were not hesitant for getting vaccination against COVID-19. Majority of the HCWs believed in the safety and efficacy of COVID-19 vaccine and wanted their family members to get vaccinated. **Conclusions:** Our study concludes that Health Care Workers show acceptance and confidence in the vaccination programme against Covid 19. This can contribute to general population compliance and willingness to accept Covid 19 vaccine.

KEYWORDS

INTRODUCTION

COVID-19 is the defining global health crisis of this era and the greatest challenge we have ever faced since World War II. The virus which first emerged in Wuhan, China in December 2019, has spread globally and has caused an unprecedented crisis which has affected not only the healthcare system but also has a major impact on the socio-economic status worldwide.[1] The World Health Organization (WHO) on 11th March, 2020 declared the novel coronavirus (COVID-19) outbreak a pandemic.[2]

The enormity of the crisis and multiple catastrophic consequences that came along with COVID-19 being, enforcement of quarantine and lockdown, social distancing measures, community use of facemasks at all times and travel restrictions resulted in tremendous impairment of physical and psychosocial well being of people and a massive decline in economy as well. This resulted in an intense international effort in developing a safe and effective COVID-19 vaccine in the hope that it will extract the world out of its current crisis.

Ever since the commencement of the pandemic, scientists and virologists have done extensive research to come up with an effective treatment for infection with COVID-19 ranging from immunomodulators, antivirals and convalescent plasma therapy but have faced significant challenges.[3] A large number of clinical trials have been done and are underway investigating treatments and preventive measures for COVID-19. One of the largest international randomized trials for COVID-19 treatments is the Solidarity clinical trial. (World Health Organization, 2020)[4]

Despite the various modalities of treatment available, development of SARS-CoV-2 specific vaccine is considered as the only way to significantly control the threat of this pandemic. Without a vaccine against SARS-CoV-2, there always is a risk that new outbreaks of the disease will emerge. While rigorous testing, contact tracing and quarantine procedures will help to control the spread of COVID-19, the only way to significantly reduce the threat is for enough population to become immune to the virus so that they cannot pass it on. Herd immunity can be achieved either by many people becoming infected, which is extremely risky and costs thousands of lives or through vaccination, hence COVID-19 vaccine is the only safe route back to normality.

The world's largest COVID-19 vaccination campaign started on January 16th in India, with the aim of vaccinating 300 million people by August 2021 including 30 million healthcare workers and frontline workers and 270 million people above 50 years of age. COVID-19 vaccination in India has been initiated with two types of vaccines: Covishield (by Serum Institute of India Ltd) and Covaxin (by Bharat Biotech International Ltd).[5] With the second highest population in the world, getting high coverage of India's population with the COVID-19 vaccine will be important in controlling the global spread of SARS-CoV-2.

The prerequisite for a successful vaccination campaign is mass vaccination which is a major challenge with vaccine hesitancy being a major obstacle to vaccine undertaking among others like geography, time, social class, human behaviour. Similarly, the acceptance and uptake of COVID-19 vaccines presents an unprecedented challenge. Therefore the vaccination efforts need to be expanded to target diverse populations to achieve herd immunity.

The acceptance of COVID-19 vaccine depends highly upon the behaviour of the general population towards it, with healthcare workers playing a major role in it, who can either facilitate or discourage vaccination by creating more or less enabling environments and by influencing the behaviours of the general population. Hence targeting healthcare workers, who are centrally located in the network and have more opportunities to influence vaccination behaviour, can lead to greater impact on behaviour change efforts.[6]

Therefore, we have designed a questionnaire for healthcare workers to study their behaviour and experience with COVID-19 vaccination. This paper also throws light on vaccination behaviour related variables (including past vaccine compliance and risk factors for severe COVID-19).

MATERIALS AND METHODS

A validated self administered 35 items questionnaire was rolled out to all healthcare workers including doctors, medical students, nursing staff and other supporting staff in tertiary care hospitals, through emails, online social networking platforms (online survey) and also printed form of questionnaire in both Hindi and English languages (paper survey) during the months of February and March 2021. The

validated, self administered electronic questionnaire was uploaded to online survey administration software, google forms.

The primary participants were requested to roll out the survey further. On receiving and clicking the link, participants got auto directed to the informed consent page, followed by the survey questionnaire. We had a total of 750 respondents for this study. The participants were informed about the objectives of the study. Although the respondents provided us with their names and contact details for correspondence, this information has been kept confidential and was used only to rule out unwanted entries.

This questionnaire has three sections consisting of:

- A. COVID-19 infection related history
- B. Brief medical history pertaining to vaccination in general
- C. Approach towards COVID-19 vaccine

The initial part of questionnaire begins with participant's sociodemographic information including age, sex, city where they belong to and their designation as a healthcare worker. The first section of questionnaire collected particulars about the participant's experience with COVID-19. The second section gathered information about the participant's medical history, past vaccine compliance and risk factors for severe COVID-19. The third section assessed the vaccination status of participants for COVID vaccine, their attitude towards it and post vaccine experiences.

Most of the items in the questionnaire had two options, while a small number had multiple options too. The option with maximum response was plotted on the graph, and in some questions, responses from two options were combined and were plotted as a single bar. The data collected from the participants were presented using descriptive statistics including frequencies and percentages.

AIMS

The aim of this study is to know about the experiences of COVID-19 vaccination among healthcare workers and its projection upon the general population in order to increase the acceptance and to reduce the hesitancy of COVID-19 vaccines.

OBJECTIVES

1. To study the attitude of COVID-19 vaccine among healthcare workers.
2. To identify the enablers and barriers for COVID-19 vaccine.

RESULTS

Demography: Our study included healthcare workers (HCW) of which n=415 were doctors, 286 were medical students and 49 were paramedical staff. Majority of them were young belonging to the age group 18-40 years as shown in table no 1.

Table no 1: Demographic characteristic of participants

		Doctor	Medical student	Paramedical staff
Age Group (Years)	18-29	187(45.1)	281(98.3)	5(10.2)
	30-39	136(32.8)	5(1.7)	18(36.7)
	40-59	68(16.4)	0(0)	25(51)
	>60	24(5.8)	0(0)	1(2)
Sex	Female	161(38.8)	146(51)	17(34.7)
	Male	254(61.2)	140(49)	32(65.3)
Total		415(100)	286(100)	49(100)

COVID-19 Infection Related History:

This section was designed to understand the incidence of COVID-19 infection. Out of the total study participants, 164 have tested positive for COVID-19 previously, out of which 29 have tested positive more than once. Of the total study participants 255 got tested for antibody titre prior to vaccination, of which 58 tested positive for antibodies.

Table No 2: COVID-19 Infection Related History

		Doctor	Medical student	Paramedical staff
History of COVID-19 infection	Once	99(23.8)	21(7.3)	15(30.6)
	More than Once	24(5.8)	4(1.4)	1(2)
	Never	292(70.4)	261(91.3)	33(67.4)
Antibody titre	Did not get tested for antibodies	258(62.2)	203(71)	34(69.4)
	No	103(24.8)	81(28.3)	13(26.5)

	Yes	54(13)	2(0.7)	2(4.1)
Vaccination against COVID-19	No	89(21.4)	41(14.3)	3(6.1)
	Yes	326(78.6)	245(85.7)	46(93.9)
Total		415(100)	286(100)	49(100)

Attitude of HCWs towards COVID-19 Vaccine:

From the last part of the questionnaire, we have tried to understand the acceptance of COVID-19 vaccine among healthcare workers and their experience and behaviour related to it. Of the total number of participants, n=617 (82.3%) have received the COVID-19 vaccine.

75.6% of the study population (n=504) were not hesitant for getting vaccinated against COVID-19, whereas 32.8% (n=246) of the study population were hesitant for getting the COVID vaccine, the major reasons being that the participants were not sure about the safety and efficacy of the vaccine and were waiting for more studies pointing towards its safety and acceptance.

The majority of the cohort for this study were not hesitant for getting the COVID-19 vaccine, which serves as the enablers for vaccination, with major reasons being that they believed in the safety and efficacy of vaccines, to prevent complications arising from COVID-19 vaccination and self motivation.

Table No 3: Acceptance For COVID 19 Vaccine

Hesitancy to covid vaccine	Doctor	Medical student	Paramedical staff
No	270(65.1)	199(69.6)	35(71.4)
Yes	145(34.9)	87(30.4)	14(28.6)

We also found out that a part of the study population who received the COVID-19 vaccine, experienced symptoms after receiving their first dose of COVID-19 vaccine, the most common symptoms being pain and swelling at the site of injection, followed by fever, myalgia and headache, which lasted for less than one day.

When asked whether the healthcare workers would want their family members to be vaccinated, 93.6% responded with a yes and 6.4% responded with a no. Lastly, 41% of the healthcare workers under study went easy on their usage of personal protective equipment post vaccination, whereas 59% strictly followed the usage of personal protective equipment after receiving the COVID-19 vaccine.

Table No 4: Barriers For COVID 19 Vaccination

Reason for hesitancy	Doctor (n=145)	Medical student (n=87)	Paramedical staff (n=14)
Allergy to vaccine	2(1.4)	0	0
Pregnant and lactating woman	7(4.8)	0	0
Concerned about the potential side effects	74(51)	26(29.9)	7(50)
Recent history of covid positive	16(11)	2(2.3)	3(21.4)
Waiting for more studies to show safety and efficacy	74(51)	47(54)	4(28.6)
Not sure about safety and efficacy of vaccine	98(67.6)	12(13.8)	6(42.9)

Table No 5: Enablers For COVID 19 Vaccination

Reason for motivation	Doctor (n=270)	Medical student (n=199)	Paramedical staff (n=35)
To avoid complication	77(28.5)	50(25.1)	6(17.1)
Believe in safety and efficacy of indian vaccine	132(48.9)	103(51.8)	17(48.6)
Self motivation	94(34.8)	78(39.2)	19(54.3)
Mandatory by institution	18(6.7)	31(15.6)	6(17.1)
To get rid of taking precaution	30(11.1)	31(15.6)	7(20)

DISCUSSION

One of the major game changing healthcare sector interventions of the 21st century was development of vaccination and it would not be an understatement to say that vaccination has made the greatest contribution to global health.[7] Despite an overwhelming evidence for the value of vaccines in preventing life threatening diseases and mortality, the acceptance rate of vaccines globally is still low and faces

innumerable obstacles.[8] There are multiple factors which affect the acceptance of vaccines, like geography, human behaviour, social class, time and ethnicity. The major obstacle being public perception of the benefits and relative risks of vaccination.[9]

Similarly, the COVID-19 vaccine being recently introduced in a very short span of time, has faced significant challenges in its uptake and acceptance globally. Henceforth a number of studies have been conducted in several countries and are still underway determining the acceptance rate and barriers against vaccination. [10] [11] [12] All across the world vaccines from different companies have been approved like Pfizer BioNTech, Moderna and Oxford AstraZeneca. In India the two vaccines that have been granted emergency use authorization by the Central Drugs Standard Control Organization (CDSCO) in India are Covishield (Astrazeneca's vaccine manufactured by Serum Institute of India) and Covaxin (manufactured by Bharat Biotech Limited). Both the Indian COVID-19 vaccines have completed their phase I and phase II clinical trials. Covishield has completed its phase III trials in the UK and bridging trials in India.[13] With the second largest population and one of the biggest pharmaceutical manufacturing companies in the world, India has a central role in the COVID-19 vaccination effort. Besides the availability of COVID-19 vaccines many factors influence the uptake of vaccines, an enabling environment, social influences and motivation to get vaccinated. There are multiple ways of approaching the general population, with social influence being an important one. Healthcare workers play a major role when it comes to providing an enabling environment and have greater opportunities in influencing vaccination behaviour. Hence we conducted this study on healthcare workers who are the early priority group to receive the COVID-19 vaccine and are more often a trusted source of advice on vaccination.

Our study showed that the majority of the study population were not hesitant to get vaccinated because they believed in the safety and efficacy of vaccines, were strongly motivated, and wanted to avoid the complications arising from COVID-19 infections. Most of the study participants receiving the vaccine experienced only mild symptoms which lasted less than a day.

Regarding the strategies for encouraging vaccine acceptance we found that people were concerned about the potential side effects of vaccines and waiting for more studies to prove the safety of vaccines. Hence we conducted this study among HCWs who are the pioneers in COVID-19 management to ensure their own safety as well as others and to encourage the general population to get vaccinated against Covid 19 vaccine.

CONCLUSION

Our study emphasized on acceptance of Covid 19 vaccine amongst HCWs. As the most trusted source of information on Covid 19 vaccine are HCWs, their acceptance and positive attitude towards covid 19 vaccine in spite of probability of relative hazards, actually reduce the level of hesitancy and improve the acceptance of vaccine in general population.

Although interventions should be crafted in the form of reviving the trust in National health authorities as well as structured awareness and education campaigns which will ultimately reduce the hesitancy after transparent information regarding safety and efficacy of vaccines and technologies used in their manufacturing.

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