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Original Research Article

Attitude and perception versus reality of COVID-19 vaccination among healthcare professional: a survey

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ABSTRACT

Background: The pandemic of COVID-19 infection has almost paralyzed the world since the first infection was reported in December 2019. We have seen 3 waves of infection in the country, out of which the second wave caused by the delta variant was the most severe. Along with the preventive measures of masking, maintaining social distance, and handwashing, the vaccines seemed to be the most logical next step. Many vaccines received emergency use approvals with hardly any efficacy and adverse effects data available with the process inducing a significant amount of anxiety among the public. This survey was aimed at understanding the attitude and perception of our hospital employees towards COVID-19 vaccination.
Methods: This is a cross-sectional study conducted among health care workers (HCW) at CMC, Vellore between March 2021 to July 2021. The HCWs who are willing to participate in this study were recruited and collected the quantitative data on their attitude and perception towards COVID vaccine. In-depth interviews were conducted among those who did not take vaccine to understand the reasons for not taking vaccine. The data were analyzed using statistical package for the social sciences (SPSS).
Results: The survey results were analyzed on 435 HCWs. 58.4 percent of the HCWs trust the institutional protocols as the trusted source of information about vaccine. Most of the HCWs agreed that vaccines are the only protective way, and they are safe and effective.
Conclusions: Sensitization and awareness programs with transparency of vaccine development processes, safety and efficacy will help remove barriers.

Keywords: COVID-19, Vaccine, Health care worker, Survey, Attitude, Perception

INTRODUCTION

COVID-19 has almost crippled the world since its emergence in December 2019 in Wuhan, China. It has caused millions of deaths and it continue to remain as a cause of mortality and morbidity to the human life. Since its inception, several studies have been done all over the world and yet the treatment remains uncertain.[1,2] Prevention seems to be the best method in the current scenario. It also helps in developing the herd immunity which remains one of the primary goals of the vaccination strategy.

India is known to be the largest manufacturer and supplier of vaccines in the world market. Due to the expedited process of vaccine development, there have been many concerns raised regarding the efficacy and safety of these vaccines leading to poor uptake.

On 01 January 2021, the Drug Controller General of India (DCGI) approved emergency use of the Oxford–AstraZeneca vaccine (local trade name "Covishield").[3] On 02 January, the DCGI also granted an interim emergency use authorization to BBV152 (trade name "Covaxin"), a domestic vaccine developed by Bharat Biotech in association with the Indian Council of Medical Research and National Institute of Virology.[4]

This approval was met with some concern, as the vaccine had not then completed phase 3 clinical trials. Due to this status, those receiving Covaxin were required to sign a consent form while some states chose to relegate Covaxin to a "buffer stock" and primarily distribute Covishield.[5,6]

In India, 91,45,43,000 took their first dose of COVID vaccine and 66,12,17,351 of them took the second dose by 17 January 2022 (www.cowin.gov.in). At the end of the first wave, vaccination was started in our country on 16thJanuary 2021 initially for the health care workers followed by other frontline workers. When vaccination was launched in India, there were 2 vaccines which were made available. One was Covishield and the other was Covaxin.

Hence, this study aims to study the attitude and perception towards COVID-19 vaccine among health care professionals.

METHODS

This is a cross sectional study. The survey was planned after an expedited request and approval from the institutional review board and ethics committee.

Setting

This survey was undertaken as the vaccination began in our institution. Christian Medical College and Hospital (CMCH), Vellore is a 2600 bedded tertiary level care hospital situated in the southern part of Indian Sub-continent. There are around 10600 employees in our institution.

We began vaccination on the 21 of January 2021. As per the rules laid down by the Government of India to vaccinate the health care workers, vaccination drive was initiated. This study was conducted between March 2021 to July 2021.

Participants

All healthcare workers in CMC who are eligible for the vaccine, who have been successfully vaccinated and willing to participate in our study were recruited. Participants who were not working in CMC and not willing to give consent to take part in the study were excluded.

Sample

The sample size has been calculated based on the possible adverse effects described in literature and these have varied from 20% to 70%. Hence sample size has been calculated based on detection of adverse effects by sample of proportions. We aimed at collecting 400 participants.

Data collection

This study is divided into two arms, phase I and phase II.

Phase I

All the healthcare workers who have been vaccinated were requested to fill a predesigned questionnaire.

Phase II

In-depth interviews were conducted using interview guide to understand the vaccine hesitancy among those who did not take vaccine.

Data analysis

The quantitative data were analysed using statistical package for the social sciences (SPSS) software (version 19) and the qualitative data were analysed using Dedoose – a web-based application to analyse qualitative data.

RESULTS

A total of 435 healthcare workers responded to the questionnaire. The demographic profile of the HCWs is depicted in Table 1. About 60.2 percent were females and 39.8 percent were males. The age of the participants ranged from 18 to 72 years (M_{age}=30.39, SD=10.47).

Table 1: Demographic profile of the health care professionals.

Variable	Frequency N=435	Percent
Age (years)		
18-29	260	59.8
30-49	150	34.5
Above 50	25	5.7
Gender		
Male	173	39.8
Female	262	60.2
Designation category		
Medical officers	85	19.5
Paramedical staff	111	25.5
Support staff	18	4.1
Nurses and supervisors	87	20.0
Student	99	22.8
Clerical/administrative staffs	35	8.0

The designation category of the respondents shows medical officers (19.5%), paramedical staff (25.5%), support staff (4.1%), nurses and supervisors (20.0%), student (22.8) and clerical/administrative staffs (8.0).

Most of the HCW agreed that vaccines are the only protective way, and they are safe and effective. The adverse effect of the vaccine was not a major concern for most of them. The other parameters of attitude and perception towards COVID-19 vaccine is summarized in the Table 2.

Attitude and perception towards COVID vaccine

The side effect profile was very minimal and majority of them reported to have pain and soreness at the site of the injection. Majority of them felt tired after the vaccine and a small proportion of them (53.6 percent) complained of fever. Gastrointestinal symptoms, like diarrhea and vomiting was seen is 32 (7.4%) and 8 (1.8%) healthcare workers respectively.

In Figure 2, many participants expressed that pain at the site (85%) followed by tiredness (71.3%), myalgia (68.5%), soreness of arm (57.7%), fever (53.6%), chills (27.8). Very few have experienced diarrhea (7.4%) and vomiting (1.8%).

Qualitative data

In the phase II of the study, in-depth interviews were conducted among 20 health care professionals to understand the reasons for vaccine hesitancy and analyzed the interviews using Dedoose web application.

Most of the health care professionals raised concerns on quality and efficacy of vaccine. The following were the reasons for not taking the vaccine. Out of 20 interviews, 17 respondents raised concerns on safety, followed by fear (6), co-morbidities (5), other reasons such as waiting for sputnik, got positive recently (5), and pregnant and lactating mother (3).

Themes emerged

The following themes were emerged from the in-depth interviews among the health care professionals: perception towards vaccine, qualities/efficacy of vaccine, trusted source of information about vaccine, reasons for vaccine hesitancy (fear, co-morbidities, planning for pregnancy, pregnant or lactating mother, positive for COVID-19, and other reasons), and understanding of adverse events/safety concerns.

The details of the qualitative analysis are depicted in the Table 3.

Table 2: Attitude and perception towards COVID vaccine.

Attitudes	Agree N (%)	Not sure N (%)	Disagree N (%)
It is important to get a vaccine to protect the people from COVID-19	370 (85.1)	48 (11.0)	17 (3.9)
Pharmaceutical companies have developed safe and effective COVID-19 vaccines	302 (69.4)	110 (25.30)	23 (5.3)
COVID-19 vaccines made in India are safer than those made in other countries	164 (37.7)	227 (52.2)	44 (10.1)
COVID-19 vaccine may have side effects which can resolve	327 (75.2)	99 (22.8)	9 (2.1)
Most people will refuse to take the COVID-19 vaccine because of side effects	331 (76.1)	56 (12.9)	48 (11.0)
The government should make the vaccine available for all citizens for free	390 (89.7)	20 (4.6)	25 (5.7)
Government should make vaccine compulsory for all	229 (52.6)	69 (15.9)	137 (31.5)
This vaccine is safe	373 (85.7)	47 (10.8)	15 (3.4)
I took vaccine because I am working in high-risk area/COVID ward	340 (78.2)	12 (2.8)	83 (19.1)
I feel that this vaccine has good efficacy	305 (70.1)	102 (23.4)	28 (6.4)
I'll refer/recommend this vaccine to others	360 (82.8)	45 (10.3)	30 (6.9)
Adverse events are common in this vaccine	245 (56.3)	85 (19.5)	105 (24.1)
Vaccination decreases my chances of getting COVID-19 or its complications	327 (75.2)	73 (16.8)	35 (8.0
I took this vaccine because in future I may not get vaccine as it is highly demand	229 (52.6)	39 (9.0)	167 (38.4)
I would like to make this vaccine compulsory to all	236 (54.3)	64 (14.7)	135 (31.0)
This vaccine strengthens the immunity system	275 (63.2)	117 (26.9)	43 (9.9)
Currently there is no other vaccine available now; so, I took this vaccine	189 (43.4)	45 (10.3)	201 (46.2)
Continue use of face mask/social distancing after the vaccination	420 (96.6)	6 (1.4)	9 (2.1)

Table 3: Results of the in-depth interviews.

Themes	Excerpts	Interpretation
Perception towards vaccine	"Vaccine response and symptoms can vary from person to person. The only difference between COVID vaccine and other vaccine are other vaccines are extensively studied but COVID vaccine have been approved in an emergency situation because of decrease data" (paramedical staff)	The HCWs compared COVID vaccine with the other vaccines which were studied extensively
	"…first, it should fulfil the purpose of vaccination. It should be effective and should not have side effects. It should not have any adverse events in long term. Even after five years there should not be any adverse events" (administrative staff)	They perceive a vaccine should be effective without any adverse events for a long time. Due to lack of long-term studies, this vaccine may cause harm in the long run
Quality and efficacy of the vaccine	"The main thing is efficacy. Because nowadays there are lot of mutant and variants are coming. So, it should be efficient against any kind of variant and should not have side effects. Fever and allergy are minor effects but worried about the major like, anaphylaxis and clotting disorder" (Medical Officer)	Many HCW raised concerns about quality and efficacy of vaccine. With the development of variants, there was a fear that vaccine may not be protective against the variants and repeated doses must be taken to have complete protection from the virus
	"Efficacy of the vaccine is less but then it goes along with the tag line which says something is better than nothing so taking the vaccine is a better choice" (paramedical staff)	The HCWs understood COVID-19 is a communicable disease
Trusted source of information	"We can trust WHO, CDC to a large level. But they are also not without errors. Because CDC initially had lot of errors even in the testing protocols, the markers they use, safety protocols, etc. And even we can trust publishing sites like Lancets, which have good extensively open data, results, discussion everything, on the vaccines. That is also good source about vaccine" (paramedical staff)	The health care workers believed that the doctors and other health care providers, government websites are the most trusted source for information and recommendations about COVID-19 vaccines
	"Trusting COVID vaccine is very difficult. Because, first of all it was released in emergency situation with very less trials, even though it has phase three trials, but not enough data as compared to other vaccines. I have taken the flu vaccine, which has been extensively studied. So obviously the trust will be less than already existing vaccines. But since we have observed among the normal health care workers that the vaccines do not have any adverse reactions among our own colleagues so it has become more trustable" (paramedical staff)	
	"Government website like COWIN, trusted newspapers like Hindu and Deccan chronicle can be trusted. I won't trust WhatsApp, it might be fake we can take positive news and healthy tips and home remedies like Kabasura Kudineer, ginger juice, etc we can trust. I won't trust messages about tablets unless doctor recommends" (paramedical staff)	
Vaccine hesitancy	"Vaccine is to protect us against the infection, I know someone who has taken both the doses but still got affected wondering why to get vaccine" (support staff)	HCWs have very mixed feelings about the COVID-19 vaccine and they are dominated by fear, co-morbidities and the media. Most people plan to wait and see how it goes with others before they decide whether to get the vaccine
	"I don't trust the vaccine without hearing what happened to others who took vaccine and I will wait for at least 6 months to see how vaccine reacts to others" (paramedical staff)	There are several reasons for not taking vaccine. Efficacy of vaccine plays a major role in getting vaccine. Most people are not willing to get the COVID-19 vaccine until it has been out and proven to be safe

Continued.

Themes	Excerpts	Interpretation
	"I have my own health issues so I was not ready to take, so I was postponing it" (administrative staff)	Some reported that they have their own health issues, like wheezing
Understanding of adverse events/safety concerns	"…any side effects that is subsidized in 48 hours is acceptable. For children who got vaccinated may have fever, body pain, pain at the site may resolve in 48 hours in okay. It is not considered as side effects. Even it is beyond 48 hours is side effects" (administrative staff)	The biggest concern is over the safety of the vaccine especially in people with comorbidities. Adverse effects were one of the most dreaded reasons for vaccine hesitancy. Isolated media reports of side effects made it difficult for the common man to understand and weigh the risk and benefits of vaccination. Lack of data and knowledge of the most important reasons which led to the safety concerns of the vaccine
	"Vaccine may aggravate already underlying health issues related to pulmonary or respiratory disease, like asthma" (paramedical staff)	
	"It is pretty much safe; it does have minimum side effects like any other vaccine. Not sure. It is safe for a healthy individual without any co-morbidities." (Medical Officer)	
	"Personally, I have not seen any side effects apart from very mild rashes and fever" (Medical Officer)	

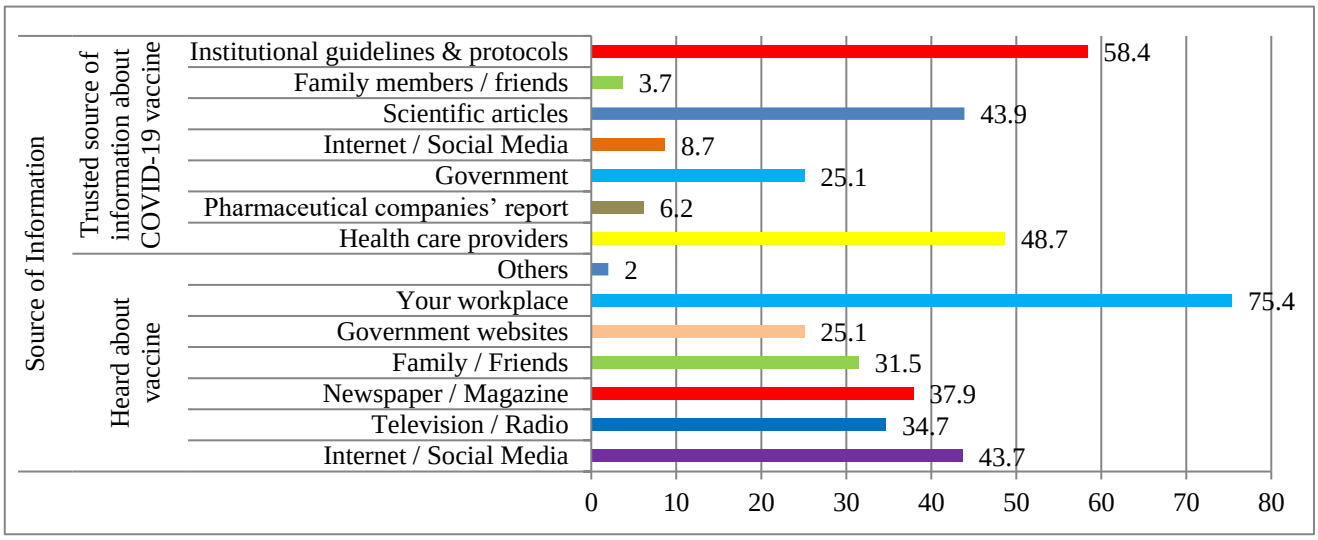

Figure 1: Trusted source of information about COVID-19 vaccine.

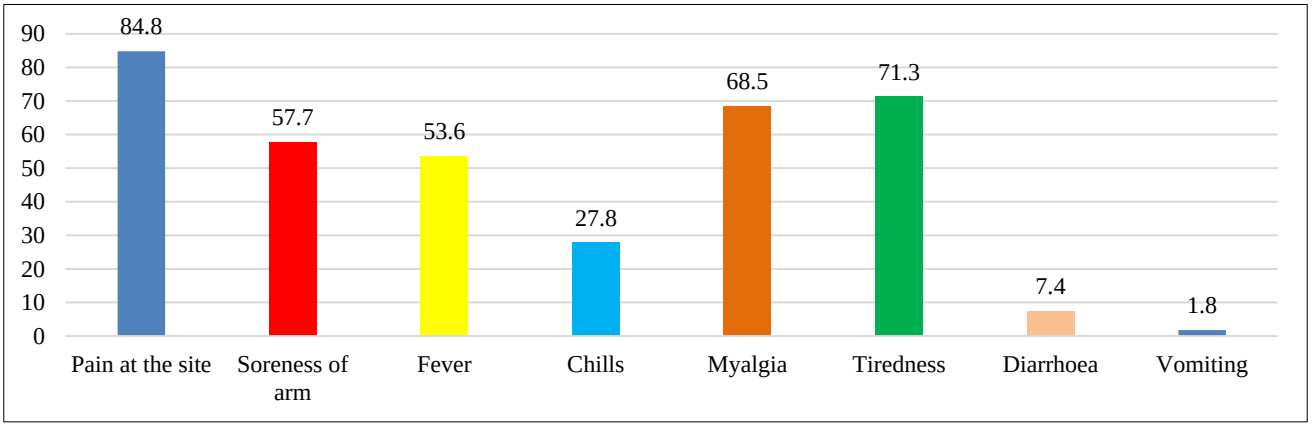

Figure 2: Side effects experienced after vaccination.

DISCUSSION

The present study was designed to understand the attitude and perceptions towards COVID-19 vaccination. There could be a different perception of all the participants regarding vaccination as all the study participants were health care professionals.

The attitude towards vaccination will change over time as more information is provided by health authorities and policymakers about a potential COVID-19 vaccine.

Availability of information to the public is one of the important factors which has a great impact in acceptance of the vaccine.

The overall mean age of the vaccinated health care workers was 30.39 years yet was lower than the study conducted in Ghana, largely because of the presence of a small proportion of health-care workers among the participants of this study.[7]

In this study, majority of the adverse events were non-serious. The findings of the present study showed pain at the site (84.8%), tiredness (71.3%), myalgia (68.5%) yet no casualty related serious adverse events (SAEs). This is in line with the study conducted by Soumya et al and Riad et al.[8,9]

Studies have shown that higher trust in the health system was associated with the use of preventive health services such as vaccination in this present study, health care professionals trusted "institutional guidelines and protocols" as the trusted source of information about COVID vaccine.[10] In order to maximize vaccine acceptance, health authorities need to build trust in the public through the transparent management of vaccine development stages and the production and effectiveness of the SARS-COV-2 vaccine. Policy makers should ensure that the data on vaccine development and reporting the adverse events must be transparent to the general public in-order to increase the vaccine uptake.

Vaccine hesitancy was defined by the WHO strategic advisory group of experts (SAGE) as "delay in acceptance or refusal of vaccination despite availability of vaccination services".[11] This is not a new phenomenon and has existed since vaccines were first introduced, and the reasons behind it are multifaceted and complex, with geographical variations.[12]

In the context of COVID-19, there is emerging evidence that people's belief in misinformation about the virus and especially their views about the origin of COVID-19 (i.e. that it was manufactured) will make them less likely to accept a vaccine when it becomes widely available.[13,14]

The studies conducted to explore the COVID-19 vaccine hesitancy has shown that various socio-economic and demographic variables, different constructs of health belief model (HBM) level of knowledge related to vaccine and vaccination process, attitude towards COVID-19 vaccination, newness, safety, and probable side effects of the vaccine have been primarily responsible for vaccine hesitancy around the world.[15-21]

Strengths and limitations

To our knowledge, this qualitative study is the first attempt to understand the knowledge, attitude, and concerns regarding the COVID-19 vaccine among health care professionals. This information can be used by the healthcare professionals and policy makers to make their communications to channel appropriate messages as a part of the vaccination campaign for strengthening positive attitude in masses regarding COVID-19 vaccine. This study is limited to health care professionals only. More studies can be conducted on different groups to know the reasons for hesitation towards COVID-19 vaccine.

CONCLUSION

Paucity of data regarding efficacy of COVID vaccines, rapidity of vaccine rolls out and media hype of adverse events led to HCW distrust. Sensitization and awareness programs with transparency of vaccine development processes, safety and efficacy will help remove barriers. It is paramount importance to understand that there is no universal strategy to address vaccine hesitancy and any intervention should be tailored to suit local cultural beliefs and should be maintained over time.

Further quantitative and qualitative studies are needed to investigate variables other than those investigated in this study to reveal the factors affecting vaccination attitudes.

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