

ORIGINAL ARTICLE

Acceptance, Anxiety, and Apprehension amidst Health Care Workers Regarding Coronavirus Disease-19 Vaccination in Chennai, Tamil Nadu

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ABSTRACT

Background: Due to the severity of the coronavirus disease (COVID-19) pandemic, vaccines were developed speedily and approved for administration. There were sections of the society, including doctors and other health workers who were hesitant about the efficacy and side effects of the vaccines in the absence of enough studies. In India, vaccination process was started with priority for health workers, but the response was not 100%. **Materials and Methods:** The study was done on 197 frontline health workers to assess their anxiety and understand their apprehension regarding the vaccine. The study was done on the last three days of the 1st working week after the vaccination started. The study was done assuring the participants total confidentiality using a survey questionnaire. **Results:** Of the 200 persons approached, three refused to participate. The study showed that there was reluctance amidst doctors to take the vaccine in the initial days. The results are analyzed and discussed. **Interpretation:** The survey showed that there was hesitation amidst doctors and nurses regarding the COVID-19 vaccination. Major cause of concern was non-availability of scientific studies on vaccination, its efficacy, and side effects. Anxiety was present among those who were not in favor of the vaccination. As the study was done in the 1st week of vaccination, attitude changes need to be studied after 4 weeks when the booster will be given to those willing to be vaccinated.

Key words: Coronavirus disease-19 vaccination anxiety in medical profession, state anxiety, vaccination anxiety, vaccination refusal

INTRODUCTION

Coronavirus DISEASE (COVID-19) pandemic hits the world hard and in India too the numbers affected were alarmingly large. Majority of the population had anxiety on day-to-day basis regarding moving out of home, about their family, and decreased confidence on the control measures for infection.^[1]

Chennai the capital city of Tamil Nadu state showed increasing numbers from the time the first cases were reported in March 2020. By August, 250,000 were infected in the state while Chennai figures touched 100,000.^[2] The city had been reporting over 1000 cases daily since late September. The numbers, however, started coming down and in December 2020 (the state recorded 1181 new positive cases, Chennai's tally was 344), 1 month before the vaccine was offered for doctors and health care workers. The number fell below 200

from the 2nd week of January 2021 and on the day (January 21, 2021) this survey started there were 166 new cases in the city. A news report in the first couple of days of vaccination showed that there had been hesitation amidst doctors to take the vaccine.

In the case of COVID-19, despite the alarming rate and spread of infection across the world, there have been regular notes of apprehension regarding the efficacy of the available vaccines.^[3] As expressed in the various media, the main cause of concern had been the speed at which the vaccines in use have been approved for use, and the non-availability of scientific

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data regarding their efficacy and side effects.^[4] Furthermore, people were in partial agreement and disagreement over necessity of vaccine as some believed it to be unsafe or a natural immunity existing to protect against COVID-19.^[5]

The general public would always have doubts and misgivings about a therapeutic or preventive intervention, and in the case of COVID-19, the widespread and far-reaching impact of social media has led to numerous “stories” regarding the vaccine. The general notion had been that the medical fraternity including doctors and nurses, and the frontline health workers engaged in the fight against the viral spread would welcome the vaccination process. Yet, it had been noted in the various social media expressions and in the print media that medical professionals who are in the frontline of the struggle against the viral pandemic were hesitant in approving/acknowledging/accepting the vaccination drive.

The study was conducted in Chennai, in South India, as the number of health-care personnel that have taken the vaccine and the target set by the government did not match like in many states in India.

This study was undertaken 5 days after the Government of India made the vaccine available for frontline health workers. The study was done with 197 health care workers, (doctors, nurses, laboratory technicians, and medical students) in a private medical college regarding their acceptance or rejection of the vaccination. The medical college hospital was also a COVID care center, in the severe stages of the pandemic.

Aim

The aim of the study is to find out if there is any apprehension or anxiety regarding COVID-19 vaccination amidst the health care workers who were being given the priority in the mass vaccination process in India.

MATERIALS AND METHODS

Study Design

A cross-sectional survey questionnaire method was used to assess the response of health care workers including doctors in the first 5 days of vaccination. State anxiety was assessed using a short 6-item scale.

Place of Study and Study Period

The study was done at ACS Medical College and Hospital, Chennai, Tamil Nadu, India, from January 21, 2021, to January 23, 2021 – the last three days of the 1st working week in which vaccination for COVID-19 was made available to frontline health workers in the country.

Participants

Out of the 200 persons approached randomly for the study, only three were not willing to take part. One hundred and ninety-seven willing participants were given a simple survey questionnaire to assess their approach to the vaccination process in the country. Of these, 114 were doctors, 21 staff nurses, and 44 medical undergraduate students who were in the final year of MBBS. There were 12 laboratory technicians and six sanitary workers who responded. Seventy-eight males and 119 females participated in the study.

Data Collection

The data collection tools comprised a structured, self-administered, questionnaire on basic demographic characteristics (age, sex, education, and profession) and attitude regarding the illness and the vaccination and the 6-item State-Trait Anxiety Inventory (STAI) were given to the willing participants.

The participants were assured of anonymity and confidentiality, and were also given the option of not taking part in the study. Without asking for the name and designation of the participants, the questionnaire was given by the department of psychiatry. No identification tags were there in the printed questionnaire.

To facilitate ease of understanding and response, the questionnaire was also translated in Tamil – the vernacular language of the State.

As anxiety can be a major factor in the hesitancy shown toward vaccination, participants were also given a short 6-item instrument, STAI-6 (6-item short form of the STAI) to assess their anxiety during the initial phase of vaccination.^[6] STAI-6 is derived from state anxiety subscale of STAI. This scale has been used as a reliable tool to measure anxiety at a given point of time.^[7,8]

Statistical Methods

The statistical analyses used were calculating percentage, one-way ANOVA, *t*-test, and Chi-square test. The degree of association was expressed as odds ratios with 95% confidence interval. The level of significance was set at $P < 0.05$.

RESULTS

Those 197 participants have age ranged from 21 to 74 years, with 158 (78.68%) of the participants are being in the age group of 21–40 years. One hundred and seventy-nine (90.86%) of the participants had completed their graduation while 18 (9.14%) had stopped their education at school level.

While 185 (94%) of the participants agreed that COVID-19 was a dangerous disease, 12 (6%) felt that it was not as

dangerous as described in media. One hundred and fifty-three (78%) agreed that vaccination was necessary, while 44 (22%) felt that there was no need for vaccination.

Among the 197 participants, 80 (41%) were willing to take the currently available vaccine and the remaining 117 (59%) were not willing.

Out of 78 male participants, 39 (50%) were willing to take the present vaccine, while 39 (50%) were not willing. Among 119 female participants, 41 (34.45%) were willing to take the vaccine, while the remaining 60 (65.55%) were not [Figure 1].

Amidst the 114 doctors who participated in the study, 54 (47%) were ready for vaccination. Of the 21 staff nurses, 4 (19%) were willing to take the vaccine, 17 (81%) were not willing. Among the 44 medical students, 13 (29%) were willing to take vaccine, while 31 (71%) were not willing [Figure 2].

Among those 117 participants, 50 (43%) claimed that they did not have full information about the vaccine while 45 (38%) were afraid of the side effects of the vaccine, 10 (8.5%) did not want the vaccine as they were having, listed contraindications for the vaccine and 8 (6.8%) felt that this vaccine will not work for COVID-19. Social media created scare about the vaccine, contributed to 3.4% ($n = 4/117$) of the participants who did not want the vaccine [Figure 3].

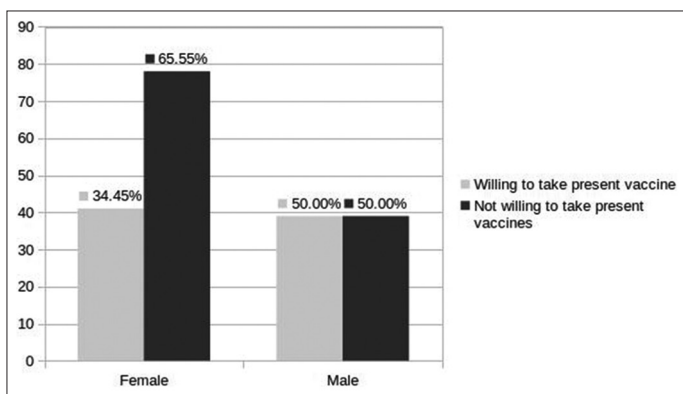


Figure 1: Gender versus willingness to take present vaccine

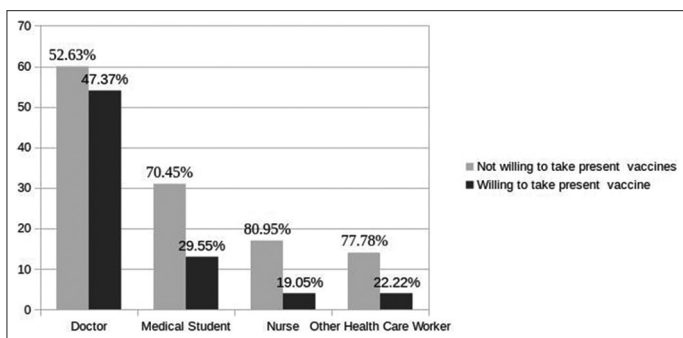


Figure 2: Profession versus willingness to take present vaccine

Of the 117 participants who were not willing to take the vaccine, 58 (49.5%) of them agreed to take vaccine if it is made compulsory to continue to work in the hospital.

Among those 117 unwilling participants, 10 (8.55%) had contraindications listed in the precautionary bulletin regarding the vaccine. Thus, in the group of 107 participants that were not ready to take the vaccine at this point in time, 82 (76.6%) were agreeing to take the vaccine if more studies are published. Out of the 80 participants who accepted the need for vaccine and willing to take the vaccine, 74 (92.5%) wanted to choose the type of vaccine between the currently available ones. Among those 74, who wished to choose the type of vaccine, 68 (92%) wanted validation from scientific studies, while 6 (8%) believed that media generated information would help them to decide.

On statistical analysis, women were found more likely to reject currently available vaccine than accept, when compared to males [Table 1]. Education had significant association with willingness to take currently available vaccine. Almost equal proportion of those who had completed their postgraduation was willing and not willing to take currently available vaccine. Those who were pursuing their undergraduation or those who completed schooling, were more unwilling to take the currently available vaccine than postgraduates [Table 1].

Profession too was observed to have a significant role in willingness to take currently available vaccine, while there was a narrow difference among doctors to take or not to take currently available vaccine, staff nurses and medical students were found more unwilling to take the currently available vaccine [Table 1].

Age factor did not contribute in decision making regarding the currently available vaccine.

Those who were not willing to take vaccine are 3 times more afraid to take currently available vaccines than those who are willing to take currently available vaccine [Table 2].

There was a statistically significant state anxiety among those not willing to take currently available vaccines compared to those willing to take present vaccines [Table 3].

Factors such as age/sex/education/profession did not bring statistically significant difference in anxiety levels among those not willing to take currently available vaccines [Table 4].

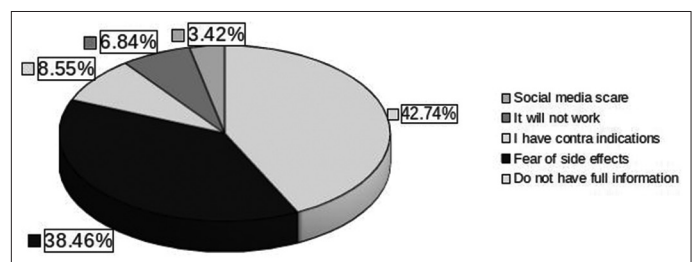


Figure 3: Reason for unwillingness to take vaccine

Table 1: Comparison of some variables to willingness to take present vaccine

Category	Subcategory	Willingness to take present vaccine (n/[%])			Odds ratio (95% CI)	P-value*
		Yes	No	Total		
Age group (in years)	<40	61 (38.6%)	97 (61.4%)	158	1.9	0.45 (>0.05)
	41–60	12 (52.2%)	11 (47.8%)	23		
	61–80	7 (43.7%)	9 (56.3%)	16		
Sex	Male	39 (50%)	39 (50%)	78	1.9	0.03 (<0.05)
	Female	41 (34.5%)	78 (65.5%)	119		
Education	Till school	4 (22.2%)	14 (77.8%)	18	0.00017 (<0.05)	
	Undergraduation	24 (27.9%)	62 (72.1%)	86		
	Postgraduation	52 (55.9%)	41 (44.1%)	93		
Profession	Doctors (practitioners)	54 (47.4%)	60 (52.6%)	114	0.014 (<0.05)	
	Medical students	13 (29.5%)	31 (70.5%)	44		
	Nurses	4 (19.1%)	17 (80.9%)	21		
	Other health care workers	4 (22.2%)	14 (77.8%)	18		

*Chi-square test, CI: Confidence interval

Table 2: Comparison of willingness to take present vaccine to fear of currently available vaccine

Willingness to take present vaccine	Afraid of currently available vaccines (n/[%])			Odds ratio at CI of 95%	P-value*
	Yes	No	Total		
No	61 (52.1%)	56 (47.9%)	117	3.26	0.00015 (<0.05)
Yes	20 (25%)	60 (75%)	80		

*Chi-square test

Table 3: Anxiety levels based on willingness to take present vaccine

Willingness to take present vaccine	State anxiety score (STAI)	P-value*
	Mean+standard deviation	
Yes	41.36+11.49	0.043 (<0.05)
No	48.30+14.07	

*t-test

DISCUSSION/INTERPRETATION

The study was done in the 1st week of the vaccine availability and therefore done on health care workers in a private medical college and hospital which was a COVID care hospital, therefore, the participants were aware of the severity of pandemic. News reports showed that the target numbers were not reached in many states in India in the first couple of days. The most common apprehension regarding vaccination was lack of sufficient scientific data followed by fear of side effects. Social media propagated myths and misconceptions were affecting only a small percentage of the participants.

Anxiety regarding vaccination has been reported for other vaccines. A similar study done for influenza A (H1N1)

Table 4: Comparison of anxiety levels to some variables among those who are unwilling to take currently available vaccine

Category	Subcategory	State anxiety score (STAI)	P-value (CI=95%)
		Mean+Standard deviation	
Age group (in years)**	<40	47.04+13.38	0.1733
	41–60	59.33+8.63	
	61–80	48.89 + 18.81	
Sex*	Male	43.33 + 12.47	0.07
	Female	49.84 +14.12	
Education**	Till school	46.67 + 14.91	0.27
	Undergraduation	44.00 + 12.18	
	Postgraduation	49.52 + 13.90	
Profession**	Doctors (practitioners)	46.37 + 13.24	0.688
	Medical students	46.00 + 13.96	
	Nurses	44.05 + 13.34	
	Other health care workers	50.26 + 14.24	

*t-test, **ANOVA – One way

vaccination in which state anxiety levels of people who did not rely on the vaccine were observed irrespective of education and profession.^[9] In this study too, state anxiety levels were clearly higher among those who were unwilling to get vaccinated. The major concern for unwillingness was the lack of complete scientific data on the vaccines. The second most expressed concern was about the side effects of the vaccine which again could be attributed to the incomplete data available, news reports that though one of the available vaccines has gone through the needed trials, an indigenously developed one did not undergo the full trial, and no scientific data were published for professionals to assess and accept the vaccine made a high percentage of unwilling

participants express that with more information they might get vaccinated.^[10,11] Similar studies in the UK too indicate this trend.^[12]

Since public apprehension regarding the vaccination has not significantly come down,^[13,14] the medical fraternity needs to be sensitized first to educate the public.

The hesitation amidst the medical fraternity may be a significant factor to consider in future campaigns when vaccination begins for the general public.

Limitations

The study was done on the first 200 the frontline health workers available, in one hospital. Larger studies across the country may produce variations in the results.

CONCLUSION

This is a preliminary study to see the response of the frontline health workers regarding the COVID-19 vaccination drive in the first few days. The study shows that the medical fraternity is having state anxiety regarding COVID-19 vaccination and therefore divided on the acceptance of the vaccine. Studies on the efficacy have to be made available to increase acceptance. The response in the first 5 days of vaccination would be helpful in planning public awareness. A study done after the first batch received the booster dose may show a different perspective.

CONFLICTS OF INTEREST

The author declares that there are no conflicts of interest regarding vaccination or vaccine types and, no financial assistance of any nature was taken from any person or party to conduct the survey.

ETHICAL APPROVAL

The study design was presented to the ethical committee of the medical college and hospital and the proposal was approved by the same.

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