



ACCEPTABILITY OF VACCINATION AGAINST COVID-19 AMONG HEALTH CARE WORKERS IN A DISTRICT IN WESTERN MAHARASHTRA.

Community Medicine

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ABSTRACT

This study aims to estimate the acceptability of vaccine against COVID-19 and associated factors offered in health-care workers (HCWs) working in public health department, since they have the highest direct exposure to the disease. **METHODOLOGY-** An analytical cross-sectional study was conducted in a district in Western Maharashtra. HCW's who accept to participate; were eligible for this study. Method of Convenient sampling was used. Study was conducted during the month of January 2021. Data was collected with the use of a self-administered questionnaire, developed on the basis of "Exposure Risk Assessment in the context of COVID-19", and consisted of two parts: demographics and KAPs. Data was analyzed using Microsoft Office Excel 2007. **RESULTS:** In the study, 238 HCWs participated, including 84(34.87%) men and 154 (64.70%) women. 98.31% of the participants heard about COVID-19 and the vaccine, and 77.73% of them attended training or workshop about COVID-19. Only 29.83% of the participants said that they would get a vaccine whenever offered. Being a male healthcare worker (ORa=1.08, 95% CI: 0.60-1.93), being a doctor (ORa=2.23; 95% CI: 1.10-4.48) and having a positive attitude towards COVID-19 (ORa=3.74; 95% CI: 1.83-7.63) were the variables that were significantly associated with willingness to get vaccinated. **CONCLUSION:** In the context of a pandemic, vaccine hesitancy is a major barrier to implementing vaccination campaigns. Understanding and addressing vaccine hesitancy will be crucial to their successful implementation.

KEYWORDS

Covid-19, Vaccination, Healthcare workers

INTRODUCTION:

A massive global human disaster has been created by a contagious respiratory infectious disease caused by novel coronavirus (SARS-CoV-2) which has the same veiled RNA structure resembling SARS-CoV-1 that caused the Severe Acute Respiratory Syndrome (SARS) outbreak.(1). The first cases of COVID-19 were identified in Wuhan, China at the end of December 2019. The virus has affected virtually every country across the world and the number of deaths continues to increase. The World Health Organization (WHO) declared it as a pandemic On March 12, 2020. (2) As of March 20th, 2021, over 124million cases and 2.73million deaths have been reported globally. At the time of the study, India was the third largest affected country with 11.7million cases and 1, 60,000 deaths, but the numbers were increasing. Social distancing and quarantine may slow the spread of the virus and flatten the epidemic curve; but it may not be sufficient to completely halt the spread of COVID-19. Herd immunity gained by infection or vaccination should be well established within the population. It is well known that for achieving Herd immunity a vaccine or 70% population getting infected with the disease and becoming resistant is a must. (3) The most effective way of controlling infectious diseases is often vaccination, while its success is challenged by individuals and groups who choose to delay or refuse vaccines.(4) Although immunization has successfully reduced the global burden of illness and death, public confidence in vaccines can be affected by various concerns. Vaccine hesitancy can lead to delays and refusal and sometimes contribute to disease outbreaks. (5) Attitudes and utilization of vaccination by healthcare workers (HCW) is a major factor that is consistently associated with patient acceptance and vaccination, adherence to vaccination schedules, and reduced hesitation/aversion.(6) Health professionals' intention to use and to recommend the vaccine to their patients depends on their knowledge and attitudes about vaccines. It is well reported that healthcare professionals who have an unfavorable attitude, aversion or hesitation towards vaccinations transmit these hostile attitudes to vaccination to patients and tend to recommend vaccination less frequently.(7) The quality, content and dissemination of educational information about vaccines by healthcare professionals have been shown to be useful in improving patient acceptance of vaccinations, reducing reluctance, and guiding informed decisions about vaccination.(8) Patients often trust and rely on healthcare professionals for information about vaccines and vaccine-preventable diseases, as well as the therapeutic and public health benefits associated with immunization.(6,8) The

major challenge for public health experts is the waning of public confidence in vaccines worldwide. Public confidence in vaccines worldwide is a cause of concern and a major challenge for public health experts.(9) The impact of the current pandemic on the intention to be vaccinated against COVID-19 with an approved vaccine has not made it unanimously accepted that if it were available it would be obviously adopted. Therefore, the objective of this study is to evaluate the acceptability of a COVID-19 vaccine and associated factors offered to HCWs, since they have the highest direct exposure to the disease. (10)

METHODOLOGY:

Study Design, Site and Participants-

An analytical cross-sectional study was conducted in one of the randomly selected blocks in a district in Western Maharashtra. All the healthcare workers (Sweepers, Peons, Auxiliary nurse midwives, Multipurpose workers, Health Assistant Male and Female, Pharmacists, Community health officers, Medical Officers, etc) in that particular block were included in the study. There were about 242 HCW's of all cadres in this block. HCW's who accepted to participate were eligible for this study. HCW's who were absent or were not traceable due to prolonged leaves on the day of the survey and those who didn't wish to participate in the study or those who had already received the vaccine were excluded from the study.

Type of Sampling-

The method of convenience sampling was applied for selection of the study subjects.

Duration-

The study was conducted during the month of January 2021. The HCW's were approached during their weekly review meetings held at the headquarters.

Survey Questionnaire and Data Collection-

Data was collected with the use of a self-administered questionnaire, which was developed based on the "Exposure Risk Assessment in the context of COVID-19" and consisted of two parts: demographics and KAPs.(11) Demographic variables included age, gender, marital status, years of working experience and the source of information related to COVID-19. The second part included 12 questions on COVID-19 related knowledge (clinical manifestations, disease

transmission, patient care approach), 3 questions on attitude towards COVID-19 (confidence about overcoming the pandemic, willingness to get COVID-19 vaccine), and lastly 3 questions were related to practices towards COVID-19 prevention (social distancing, general preventive measures, consistency of PPE use); each correct answer was given one point (zero points for an incorrect answer).

A participant who provided correct answers to 80–100% of the knowledge-related questions was considered having sufficient COVID-19 knowledge. Regarding attitudes and practices, a participant with a score higher than the mean score was considered to have positive attitudes or comply with good practices. The primary variable of interest in the KSP module was related to the statement, "If a COVID-19 vaccine was available, I would have it." (12) Participants were enrolled from each cadre that provides patient care and laboratory services to patients of the participating health centers. Each participant received an anonymous questionnaire sheet after getting informed on the objectives and activities of this study.

Ethical Approval-

All the HCWs were informed about the objectives of the study, and they agreed and signed a consent form before participation. The study was approved by the ethics committee of the parent institute and a prior permission was obtained from the District Health Officer of the said district.

Statistical Analysis-

Data was analyzed using Microsoft Office Excel 2007. Categorical data related to demographic variables are presented as frequencies and proportions. The associations between independent variables and the primary outcomes (acceptance and intention to receive a COVID-19 vaccine) were tested using *t*-test or Chi-square test as appropriate.

RESULTS-

Table 1 Sociodemographic Characteristics of Healthcare Workers' (N=238)

VARIABLES	FREQUENCY
Sex	Male
	84(34.87)

	Female	154(64.70)
Age	18-25	21(8.82)
	25-40	155(65.12)
	>40 years	62(26.05)
Marital status	Married	169(71.00)
	Unmarried /widowed	69(28.99)
Occupation	Doctor	40(16.80)
	Nurse	167(70.16)
	Pharmacist	8(3.36)
	Laboratory technician	7(2.94)
	Sweeper / peon	16(6.72)
Years of experience	<10 years	13.5(56.72)
	>10 years	103(46.21)
Residence	Urban	128(53.78)
	Rural	110(46.21)
Heard about novel coronavirus and vaccine	Yes	234(98.31)
	No	4(1.68)
Attended training or workshop regarding covid-19	Yes	185(77.73)
	No	53(22.26)
I would have a covid-19 vaccine whenever offered to me	Yes	71(29.83)
	No	167(70.16)

In the study, out of the total 242 HCW's, 238 HCW's participated and completed the questionnaire, including 84 (34.87%) men and 154 (64.70%) women (**Table 1**). Most participants were over 25 years of age (91.17%); the average age was 40.3 years (standard deviation [SD]: 11.7). The majority of participants were allied health workers (83.18%). 56.72% of HCW's had less than 10 years of experience while 43.27% had more than 10 years of experience in public health department and 71% of them were married. Almost all (98.31%) of the participants agreed that they heard about COVID-19 and the vaccine, and 77.73% of them had an opportunity to attend training or workshop about COVID-19. Despite all these things only 29.83% of HCW's said that they would get vaccinated with the COVID-19 vaccine.

Table 2 Univariate association of variables affecting the intention to accept Covid-19 vaccine among healthcare workers

Variables		Acceptance and intention to receive Covid-19 vaccine		OR (CI 95%)	P
		Yes	No		
Sex	Male	26(30.9)	58(69.0)	1.08 (0.60-1.93)	0.78
	Female	45(29.2)	109(70.7)		
Age	<25 years	6(28.5)	15(71.4)	0.86	0.86
	25-40 years	48(30.9)	107(69.0)		
	>40 years	17(27.4)	45(72.5)		
Marital status	Married	51(30.1)	118(69.8)	1.17 (0.63-2.16)	0.85
	Unmarried/Widowed	20(26.0)	49(71.0)		
Occupation	Doctors	18(45.0)	22(55.0)	2.23 (1.10-4.48)	0.02
	Nurses & other HCW's	53(26.7)	145(73.2)		
Year of experience	<10 years	44(32.5)	91(67.4)	1.36 (0.77-2.39)	0.28
	>10 years	27(26.2)	76(73.7)		
Heard about covid-19	Yes	70(29.9)	164(70.0)	1.28 (0.13-12.51)	0.83
	No	1(25.0)	3(75.0)		
Attended training or workshop regarding covid-19	Yes	57(30.8)	128(69.1)	1.24 (0.62-2.46)	0.53
	No	14(26.4)	39(73.5)		
Residence	Urban	41(32.0)	87(67.9)	1.25 (0.71-2.18)	0.42
	Rural	30(27.2)	80(72.7)		
Knowledge towards covid-19	Sufficient	66(30.2)	152(69.7)	1.3 (0.45-3.72)	0.62
	Insufficient	5(25.0)	15(75.0)		
Attitude towards covid-19	Positive	60(37.7)	99(62.2)	3.74 (1.83-7.63)	0.01
	Negative	11(13.9)	68(86.0)		
Practice toward covid-19	Good	40(31.2)	88(68.7)	1.15 (0.65-2.01)	0.60
	Bad	31(28.1)	79(71.8)		
Isolation & treatment of people infected with covid-19 are the effective ways to reduce the spread of the virus	Yes	70(30.0)	163(69.9)	1.71 (0.18-15.57)	0.02
	No	1(20.0)	4(80.0)		

Some variables were significantly associated with COVID-19 vaccine acceptance after stepwise selection including: older age, occupation, belief that isolation and treatment of people who are infected with COVID-19 are effective ways to reduce the spread of the virus, positive attitude and attended training or workshop about Covid-19 (**Table 2**).

The variables that were significantly associated with reporting

willingness were being a male healthcare worker (ORa=1.08, 95% CI: 0.60-1.93), being a doctor (ORa=2.23; 95% CI: 1.10-4.48) and having a positive attitude towards COVID-19 (ORa=3.74; 95% CI: 1.83-7.63).

DISCUSSION:

In public health, vaccination is one of the most important advances. It was responsible for the eradication of smallpox and the control of

infectious diseases (e.g., rubella, diphtheria, polio, etc) in many parts of the world. (13) As a result, scientists have been racing to develop and test new vaccines to protect against SARS-CoV-2. (14) In this survey, only 29.83% of the participants said that they would get a vaccine against COVID-19 if and when one becomes available. (15) This low acceptance in our study may be explained by the harm of social networks and spread of misinformation. Since the first COVID-19 cases, misinformation has spread across traditional media and social media, called by WHO an infodemic (i.e., excessive amounts of misinformation and rumors that make it difficult to identify reliable sources of information). (16) After hearing about poor vaccine quality and the false information conveyed by mass media, healthcare workers may have developed vaccine hesitancy, which can influence their decisions to get vaccinated and to promote the vaccine to their patients. In our study, older HCWs accepted to get vaccinated. This may be due to the notion that older adults and people with serious comorbidities that are particularly vulnerable to worst outcomes from COVID-19, can create considerable fear amongst the elderly. (17) In terms of gender, we observed that more men accepted to get vaccinated compared to women. (15, 18, 19) This may be due to an increased risk perception of disease in men compared to women. However, people most likely at-risk for COVID-19 infection will accept vaccination. Perceptions of risk are an inherent part of the decision-making process. Healthcare worker recommendations play an influential role in their patients' vaccination behavior. They serve as an important source of information for the general public and their consultation can also be a key factor in patients' decision to be vaccinated or not. In this context and with the low positive response for acceptability of vaccination in our participants, there is a significant need for addressing concerns and increasing awareness to improve chances for higher acceptance of a COVID-19 vaccine. Otherwise, there is an additional chance of mass rejection of COVID-19 vaccine in the general population when a vaccine becomes available.

CONCLUSION:

Currently, during this COVID-19 pandemic, only approximately 30% of the HCWs interviewed said they would get a COVID-19 vaccine if available. In the context of a pandemic, vaccine hesitancy is a major barrier to implementing vaccination campaigns. To maintain the benefits of vaccination programmes, understanding and addressing vaccine hesitancy will be crucial to their successful implementation. Developing strategies to address concerns identified in the study to decrease vaccine hesitancy will be the key to success.

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