International Journal of Community Medicine and Public Health
Thomas EE et al. Int J Community Med Public Health. 2022 Feb;9(2):836-843
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20220248

Original Research Article

Attitude and practice towards COVID-19 vaccination among healthcare workers in Kerala

Enid Elizabeth Thomas*, Jayasree Anandabhavan Kumaran

Department Community Medicine Government Medical College, Kannur, Pariyaram, Kerala, India

Received: 01 December 2021
Accepted: 15 January 2022

***Correspondence:**
Dr. Enid Elizabeth Thomas,
E-mail: enid0989@gmail.com

ABSTRACT

Background: COVID-19 is a major public health challenge for the whole world. The introduction of vaccines in such a short span of time is a great achievement, but this has also received mistrust and hesitance among the public as well as Healthcare workers (HCW).
Methods: This was a descriptive study done during the period of April 2021-May 2021 to assess the attitude and practice towards COVID-19 vaccination among HCW in Kerala. Data was collected using a semi structured questionnaire and the data was analyzed using Epi info software.
Results: The study was done among 126 HCW whose mean age was 31.60±7.8 SD years. Majority (91.3%) agreed that COVID-19 vaccine is necessary to control the pandemic and 81.7% had already taken and 11.1% were planning to take soon. Duration of protection (61.1%), protection against new strains (57.1%), inadequate studies on long term effects (47.6%) and inadequate clinical trials (26.9%) were the most common concerns. 79.6% had experienced adverse effects following vaccination. Fever (51.4%), injection site pain (45.6%) and myalgia (41.7%) were the most common adverse effects experienced.
Conclusions: Most of the HCW had positive attitude and practice towards COVID-19 vaccination. Only minor adverse effects were reported. But there were still concerns regarding the same which should be addressed.

Keywords: Attitude, Practice, COVID-19 vaccination, Health care workers

INTRODUCTION

COVID-19/Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has become a major public health challenge for the whole world. With initial cases reported from Wuhan city in China in December 2019, the pandemic is still raging. WHO Director-General Dr. Tedros, says there must be a 'new normal' a world that is healthier, safer and better prepared.[1]

Globally, as of 2nd November 2021, there are 246,951,274 confirmed cases of COVID-19-19, including 5,004,855 deaths, reported to WHO. India reports 34,308,140 confirmed cases and 4,59,191deaths.[2] There are 49,68,657 confirmed cases in Kerala, of which 1.16% are active cases. The recovery rate is 97.76% and death rate is 0.64%. The test positivity rate is 11%.[3]

Kerala model of healthcare is known worldwide. The experience and investment made in disaster preparedness and emergency response in the past during Kerala floods in 2018 and Nipah outbreak in 2019 helped the government of Kerala to act promptly in the COVID-19-19 situation. In collaboration with the key stake holders, the state formulated innovative approaches to deploy resources and put up a timely and comprehensive response.[4] Inspite of all these efforts and praise from international community in the initial phase, the state's pandemic curve is now defying all predictions. It is one among the top five states in India with the highest number of COVID-19 cases.[5]

With the development of vaccines, there seems to be a new ray of hope for the world to fight the pandemic out. The introduction of various vaccines within a short span of one year is undoubtedly a great achievement. This is welcomed

worldwide. But this has also received mistrust and hesitance among public as well as health workers. WHO defines vaccine hesitancy as 'delay in acceptance or refusal of vaccines despite availability of vaccination services'.[6] Questions regarding the effectiveness and efficacy of vaccine, adverse effects, worry about commercial gain, concerns regarding clinical trials moving too fast and preference for natural immunity are some of the reasons for hesitance.[7]

India has started vaccination against COVID-19 on 16th January, 2021. The ministry of health and family welfare has started giving vaccinations for people aged 18 years and above. Healthcare workers (HCW) and frontline workers were vaccinated first. Vaccines administered in India have been cleared for efficacy and safety by the drug regulatory bodies.[8] Health workers play a major role in influencing the attitude of public regarding vaccination. This is a group particularly entrusted with passing on reliable information to the public, which in turn influences compliance with vaccination campaigns and schedules. Their attitude towards vaccination will decide their own vaccine uptake and likelihood of recommending the same to others including patients, friends and family.

The aim of the study was to find out the attitude and practice towards vaccination among health care workers in Kerala.

Objectives

The objectives of this study were (a) to study the attitude of healthcare workers towards COVID-19 vaccination; and (b) to find out the practice of COVID-19 vaccination among HCW.

METHODS

This was a descriptive study done to assess the attitude and practice towards COVID-19 vaccination among healthcare workers in Kerala. It was done during the period of April 2021-May 2021. Taking 36% as the prevalence of vaccine acceptance among healthcare workers and 10% absolute precision, a sample size of 93 was obtained, which was rounded off to 100.[9] Convenience sampling was done to recruit the study participants. Data was collected using a semi structured questionnaire which had two parts: part-1 included questions about personal details and socio-demographic information such as age, address, phone number, type of family, religion, education, previous history of COVID-19. Part-2 included questions about determinants, attitude and practice regarding COVID-19 vaccination. It was converted to Google forms which were administered via Whats app or e-mail to all healthcare workers in the personal contacts. All 126 people who responded were included in the study. The data was analyzed using Epi info software.

RESULTS

The age group of the study population varied from 22 to 68 years with a mean age of 31.60±7.8 SD years. Out of the 126 healthcare professionals who took part, majority (51.6%) were Hindus and 61.9% were females. Most of them (81.7%) were modern medicine practitioners and majority (87.3%) had no co morbidities. Baseline characteristics of the study population are shown in Table 1.

Table 2 shows the COVID-19 related information of the study participants. 14.3% had a previous history of confirmed COVID-19 and 17.5% gave a family history of COVID-19. Majority (73.8%) had been involved in dealing with COVID-19 patients. Majority (76.9%) relied on WHO official website for information related to COVID-19.

Table 3 shows the attitude on each aspect related to COVID-19 vaccination among study participants. 118 (93.6%) of the participants agreed that it was fair to vaccinate HCW in the initial phase. The reasons were- they were frontline workers with the highest risk, so they deserved it first (103, 81.7%), vaccinated HCW could treat patients better (5, 3.9%), if HCW fell ill, there would be shortage of staff to look after patients (4, 3.1%), vaccinated HCW could do work without fear of COVID-19 (3, 2.3%), it would build confidence among public regarding vaccination (2, 1.5%) and as it was a government order, we were supposed to obey (1, 0.7%). 2 (1.5%) were neutral and 6 (4.8%) disagreed to vaccinating HCW first. If there were serious adverse effects, it would knock out frontline workers (2, 1.5%), not enough trials had been done on these vaccines (2, 1.5%), experimenting with HCW was not fair (1, 0.7%) and more efficient vaccines would be invented later (1, 0.7%) were the reasons for disagreement.

Concerns regarding COVID-19 vaccine are shown in Table 4. In the present study, 81.7% had taken vaccine and 79.6% had some adverse effects following vaccination. Table 5 shows their preference for other vaccines. Table 6 explains the practice regarding vaccination, Table 7 enlists the adverse effects experienced by vaccines and Table 8 shows the motivating factors for vaccination and Table 9, what vaccines felt after taking COVID-19 vaccination.

Table 1: Baseline characteristics of the study population (n=126).

Variables	Frequency	Percent
Sex distribution		
Females	78	61.9
Males	48	38.1

Continued.

Variables	Frequency	Percent
Age group (years)		
20-29	41	32.5
30-39	73	57.9
40-49	5	4.0
50-59	5	4.0
60-69	2	1.6
Religion		
Hindu	65	51.6
Christian	39	30.9
Muslim	20	15.9
Nil	2	1.6
Profession		
Modern medicine practitioner	103	81.7
Nursing	9	7.1
B pharm (Pharmacy)	4	3.2
Dental surgeon	4	3.2
Ayurveda/homeo practitioner	2	1.6
Others	4	3.2
Place of work		
Government hospital	64	50.8
Private sector	62	49.2
Comorbidity#		
Bronchial asthma	10	7.9
Dyslipidemia	3	2.3
Diabetes mellitus	2	1.6
Hypertension	2	1.6
Hypothyroidism	1	0.8
Obstructive sleep apnoea	1	0.8
Coronary heart disease	1	0.8
None	110	87.3

Note: #-not mutually exclusive.

Table 2: COVID-19 related information of the study participants (n=126).

Variables	Frequency	Percent
Previous history of confirmed COVID-19		
No	108	85.7
Yes	18	14.3
Family history of COVID-19		
No	104	82.5
Yes	22	17.5
Have you ever been involved in dealing with COVID-19 patients		
No	33	26.2
Yes	93	73.8
Source of information regarding COVID-19 vaccine#		
WHO official website	97	76.9
Newspaper/TV	42	33.3
Peers	32	25.3
MOHFW (Ministry of Health and Family Welfare)	16	12.6
Journals	5	3.9
YouTube, Instagram, Facebook	4	3.1
Experts	2	1.5
IAP (Indian Association of pediatrics)	2	1.5
IMA (Indian Medical Association)	2	1.5
ICMR (Indian Council of Medical Research)	2	1.5
KGMOA (The Kerala Government Medical Officers' Association)	2	1.5

Note: #-not mutually exclusive.

Table 3: Attitude towards COVID-19 vaccination among the study population (n=126).

No.	Questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
		N (%)	N (%)	N (%)	N (%)	N (%)
1	It is safe to take COVID-19 vaccine given in India	48 (38.1)	70 (55.6)	7 (5.6)	1 (0.8)	0 (0)
2	COVID-19 vaccine given in India is effective	25 (19.8)	79 (62.7)	20 (15.9)	1 (0.8)	1 (0.8)
3	COVID-19 vaccination is necessary to control the pandemic	70 (55.6)	45 (35.7)	10 (7.9)	0 (0)	1 (0.8)
4	Even without vaccination, the pandemic will subside on its own by developing herd immunity	1 (0.8)	15 (11.9)	36 (28.6)	50 (39.7)	24 (19)
5	Healthcare workers use proper infection control measures, so we are not at risk of developing COVID-19 like the general population	6 (4.8)	16 (12.7)	15 (11.9)	53 (42.1)	36 (28.6)
6	Healthcare workers deal more closely with COVID-19 patients than others, so we should be vaccinated	81 (64.3)	38 (30.2)	3 (2.4)	1 (0.8)	3 (2.4)
7	It is fair to vaccinate healthcare workers in the initial stage	77 (61.1)	41 (32.5)	2 (1.6)	6 (4.8)	0(0)
8	There is much hesitance regarding COVID-19 vaccination among health care workers	2 (1.6)	27 (21.4)	27 (21.4)	62 (49.2)	8 (6.3)
9	There is unnecessary fear regarding COVID-19 vaccination among health care workers	2 (1.6)	27 (21.4)	28 (22.2)	61 (48.4)	8 (6.3)
10	There is no need to practice infection control measures after receiving both the doses of vaccine	1 (0.8)	1 (0.8)	2 (1.6)	23 (18.3)	99 (78.6)
11	How long do you think will COVID-19 vaccine protection last?		<1 month 1(0.8)	1-3 months 28 (22.2)	3 months-1 year 71 (56.3)	>1 year 26 (20.6)
12	Do you think Covaxin is safer than Covishield?		Yes 23 (18.3)	No 32 (25.4)	Don't know 71 (56.3)	
13	Do you wish your country provided some other COVID-19 vaccine other than Covishield and Covaxin?		Yes 70 (55.5)	No 55 (43.6)	Don't know 1 (0.8)	
14	Will you encourage others to take vaccine?		Yes 126 (100)	No 0 (0)		

Table 4: Concerns regarding COVID-19 vaccine (n=126).

Concerns#	Frequency	Percent
Duration of protection	77	61.1
Protection against new strains	72	57.1
Inadequate studies on long term effects	60	47.6
Inadequate clinical trials	34	26.9
Commercial profiteering	31	24.6
Adverse effects	28	22.2
Speed to market	26	20.6
Infertility	5	3.9
Nil	0	0

Note: #-not mutually exclusive.

Table 5: Which vaccine do you wish your country provided other than Covishield and Covaxin? (n=126).

Vaccine	Frequency	Percentage
Pfizer	55	43.6
Sputnik	19	15.1
Moderna	11	8.7
Johnson and Johnson	2	1.5
Other new efficient vaccines	3	2.3
Any mRNA vaccine	1	0.7
German made vaccines	1	0.7
Don't know	1	0.7
None	55	43.6

Table 6: Practice regarding COVID-19 vaccination.

S. no.	Questions	Responses		
1	Have you taken COVID-19 vaccine? (N=126)	Yes	No	Planning to take soon
		103 (81.7%)	9 (7.1%)	14 (11.1%)
2	If you have taken vaccine, did you take it willingly (N=103)	Yes, fully willing	Somewhat hesitant	
		98 (95.1%)	5 (4.8%)	
3	Reason for not taking vaccine (N=9)	Not eligible for vaccine (allergy/pregnant/lactating/recent COVID-19 infection in the past two months/bleeding disorder)		
		9 (100%)		
4	Did you experience any adverse effect following vaccination? (N=103)	Yes	No	
		82 (79.6%)	21 (20.3%)	

Table 7: Adverse effects experienced after vaccination (n=103).

Adverse effects	Frequency	Percent
Fever	53	51.4
Pain at site of injection	47	45.6
Myalgia	43	41.7
Generalized body-ache	28	27.1
Headache	22	21.3
Malaise	23	22.3
Nausea	11	10.6
Joint pain	5	4.8
Dizziness	5	4.8
Vomiting	2	1.9
Sleep	1	0.9
GERD	1	0.9
Rash	1	0.9
Rhinitis	1	0.9
Nil	21	20.3

Note: #-not mutually exclusive.

Table 8: If has taken/planning to take vaccine, what was the strongest motivating factor for the same? (n=117).

Motivation factors	Frequency	Percent
Protection of self and family	97	82.9
Protection of patients	8	6.8
Protection of self and family, patients	1	0.8
because all healthcare workers are taking vaccine	7	5.9
All of the above	1	0.8
To be a role model as I'm an HCW	1	0.8
Herd immunity	1	0.8

Continued.

Motivation factors	Frequency	Percent
Studies showing hospitalization due to COVID-19, post-vaccination reduced drastically	1	0.8

Table 9: If you have taken vaccine, how do you feel now? (n=103).

How do you feel?	Frequency	Percent
Feeling confident	42	40.7
Feeling happy	36	34.9
Still in fear of long-term side effects	16	15.5
Neutral	3	2.9
Feeling safe from complications of COVID-19 disease	1	0.9
Feeling grateful	1	0.9
Feeling partially safe	1	0.9
Feeling the same need to take precautions	1	0.9

DISCUSSION

This is a pioneer study regarding vaccine hesitance among HCW in Kerala. In the present study among 126 HCW, it was interesting to note that majority (76.9%) relied on WHO official website for COVID-19 related information. In a similar study conducted among healthcare professionals of Egypt, colleagues (78.96%) and social media (77.66%) were the main source of information.[9] It points to the fact that healthcare professionals in Kerala depended on reliable sources of information.

73.8% of the study participants were involved in dealing with COVID-19 patients.14.3% had a previous history of confirmed COVID-19 and 17.5% had a family history of COVID-19. A muti-centric study in Canada showed that occupational COVID-19 exposure was independently associated with acceptance of COVID-19 vaccine.[10] Another study in Egypt also revealed that those who dealt directly with COVID-19 patients were three times more likely to accept COVID-19 vaccine than others.[11] Elhadi et al in their study also reported that if they had a family member or friend affected with COVID-19, it was positively associated with vaccine acceptance.[12]

In the present study to see the general attitude and practice of healthcare workers regarding COVID-19 vaccine, it was seen that majority (91.3%) agreed that COVID-19 vaccine is necessary to control the pandemic and 81.7% had already taken and 11.1% were planning to take soon. Only 7.1% had not taken vaccine because they were not eligible for the same. The systematic review conducted by Hajure et al revealed that about two-thirds of the studies among healthcare workers showed a positive attitude (≥50%) towards COVID-19 vaccination. African and Asian studies were observed to have a more negative attitude whereas United Arab Emirates reported highest rate of acceptance.[13] Another scoping review, by Biswas et al of 35 studies across the world reported that the prevalence of vaccine hesitancy among healthcare workers varied from 4.3 to 72%.[14] Vaccine hesitancy was found among 10.6% of the medical students in India.[15]

The results of the present study were in contrast to the studies done in Egypt where only 21% accepted and 51% of the participants were undecided and in Congo where only 27.7% of HCWs were willing to take COVID-19 vaccine.[11,16] But a study done in China revealed 76.98% of the HCW accepted COVID-19-19 vaccine.[17] A similar study done in India showed that 36% were willing to take the vaccine while 56% were not sure or would wait. 8% of them had no plans to get vaccine.[9] Another study from India done among HCW in a tertiary care centre showed 92.7% had a positive attitude towards vaccine.[18] Even though all the study participants in the present study had a positive attitude, 23% thought that there was still much hesitance and fear regarding COVID-19 vaccination among HCW in Kerala.

The present study stands out in the sense that it took into consideration different dimensions of attitude among HCW towards COVID-19 vaccination which other studies had not looked into. 93.7% of the study participants agreed that vaccines provided in India were safe and 82.5% thought they were effective. 58.7% disagreed that even without vaccination, the pandemic would subside on its own by developing herd immunity. 94.5% believed that since HCW deal more closely with COVID-19 patients, they should be vaccinated and 93.6% agreed that it was only fair to vaccinate them in the initial phase of the pandemic before the general population. Majority (81.7%) said as they were frontline workers with the highest risk, they deserved vaccination first. 96.9% had positive attitude towards practicing infection control measures even after vaccination.

Majority (56.3%) thought the protection of vaccine would last for 3months to 1 year. All the study participants would recommend vaccination for others. This was in contrast to the study done by Fares et al where only 42.08% of the HCW were willing to do the same.[11] This again points to the strong positive attitude among HCW in Kerala. This attitude also reflected on the good practice. This was again in line with the findings of the Egyptian study where HCW who recommended vaccination for others had 17 times

higher odds of acceptance.[11] 55.5% preferred other vaccines to the two vaccines given in India and Pfizer was the most preferred vaccine (43.6%). This was similar to the study done by Metwali et al where HCW preferred vaccines of US origin (55.3%).[19] But in a study done in India, 26.9% preferred a foreign or imported vaccine, 36.9% preferred a domestic (Indian) vaccine and 36.2% agreed on either.[20]

Duration of protection (61.1%), protection against new strains (57.1%), inadequate studies on long term effects (47.6%) and inadequate clinical trials (26.9%) were the most common concerns among the study participants. This was similar to many studies done across the world.[10,11,12,17,21] Concerns for safety, efficacy and effectiveness and distrust of the government were barriers to vaccination according to a systematic review done by Li et al.[17] Fares et al in their study showed that the reasons for vaccine hesitancy and refusal were inadequate clinical trials (92.4%) and fear of vaccine's side effects (91.4%).[11] Another study reported lack of trust in vaccine safety (85%) and receiving little (78%) or conflicting (69%) information about vaccines as reasons for the same.[22] A concern with proper storage was the biggest barrier to acceptance of vaccine in another study.[19] It should be noted that 3.9% of the HCW in this study had concerns regarding fertility following vaccination. Even though a small percentage, they could spread wrong information and negative attitude in the community. Hence it is utmost important to address these concerns with supporting scientific evidence. Li et al in their study, also suggested tailored communication strategies and more transparency on safety and efficacy of vaccines to increase the vaccine acceptance of HCWs.[17]

Among the vaccines (N=103), 79.6% had experienced adverse effects following vaccination. Fever (51.4%), injection site pain (45.6%) and myalgia (41.7%) were the most common adverse effects in this study. This was in line with the reported side effects of covishield.[23] None had serious adverse effects requiring hospitalization. Pain at injection site (89.8%), fatigue (62.2%), headache (45.6%) and myalgia (37.1%) were the most commonly reported side effects among HCW in Czech Republic.[24] Similar findings were reported in a study done in Kathmandu.[25] 50.88% of the participants reported AEFI after taking Covishield, in a study done in Bangladesh, of which swelling and pain at the injection site (37.07%) and fever (25.84%) were the most common.[26]

Protection of self and family was the strongest motivation for vaccination among 82% of the vaccines, followed by protection of patients (6.8%). Singhania et al in their study also reported protection of self (66.0%), family (65.1%), the patients (40.5%), and the entire community through herd immunity (54.7%) as the reasons for taking vaccination.[20] 80.7% of the vaccines in this study had a positive feeling after vaccination. They felt confident/ happy/grateful/safe from complications, whereas 15.5% were still in fear of long-term side effects of the vaccine.

CONCLUSION

From the present study, it could be concluded that most of the HCW had positive attitude and practice towards COVID-19 vaccination. This would in turn help to prevent vaccine hesitance among the public as HCW influence their decision on vaccine acceptance. However, there were still concerns regarding the same which should be addressed.

The major limitation of our study was that it had a small sample size and the study population consisted mainly of modern medicine practitioners, so results might not be generalized to the entire HCW community. Further, the adverse effects were self-reported, hence there could be bias and misrepresentation.

ACKNOWLEDGEMENTS

We would like to thank all the HCW who participated in this study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Thomas EE, Kumaran JA. Attitude and practice towards COVID-19 vaccination among healthcare workers in Kerala. Int J Community Med Public Health 2022;9:836-43.