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Original Research Article

Knowledge, attitude and practice of health care workers towards COVID-19 vaccination

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ABSTRACT

Background: A sound knowledge about vaccination against coronavirus disease-2019 (COVID-19) among health professionals is of great importance in spreading right information to general population. Aim of the study was to find the level of knowledge, attitude and practice (KAP) of health professionals towards COVID-19 vaccination.
Methods: This observational study based on questionnaire done in two district hospitals of North India. Following questionnaire's content validity, printouts of questionnaire were distributed among the healthcare workers. The assessment was made by a scoring scheme for KAP. The statistical analysis done using SPSS software and Spearman's rank co-relation used to calculate the correlation between KAP.
Results: Total 300 subjects participated in study. Social networking platform was the major source for acquiring information about COVID-19 vaccination among paramedical staff while the source of knowledge for doctors was mainly scientific websites.62.67% had moderate knowledge, 88% had positive attitude towards vaccination and 73% showed good practice. There was significant difference of KAP towards vaccine between doctors and paramedics.
Conclusions: In most of health care workers level of knowledge towards COVID-19 vaccination was found to be moderate and attitude was predominantly positive. Adequate knowledge and positive of health professionals are very important for increasing the acceptance of vaccination in general population.

Keywords: Knowledge, Attitude, Practice, COVID-19 vaccine, Health care workers

INTRODUCTION

Pandemic of COVID-19 disease is responsible for significant morbidity and mortality throughout the world which further caused considerable financial load on health care system. At end of 2020, some of the vaccines were under trials and a few got emergency approval for vaccination. The vaccination also helps in acquiring herd immunity which is better as compared to acquiring immunity after disease as mortality is a concern in later case.[1] For achievement of effective herd immunity at least half of the inhabitants are supposed to receive vaccine. As this vaccine is new, people are hesitant towards vaccine which in turn results in poor acceptance rate. A study done in China showed that only 25% of at-risk healthcare workers got vaccinated against H1N1 during the pandemic.[2] Most important thing required for successful immunization program is acceptance of vaccine because majority of approved vaccines underwent clinical trials for a period of less than 1 year and the complete published data on its long-term safety and efficacy are not available. There are a lot of myths among regarding COVID-19 vaccine particularly among those having some type of co-morbidities. Some persons are of the thinking that COVID-19 vaccine can worsen their underlying medical condition.[3] It is important to study KAP towards vaccination for COVID-19 disease among health professionals as their knowledge is very

useful in addressing general population myths towards COVID-19 vaccine and hence increasing the vaccine acceptance rate.

METHODS

This observational study based on questionnaire done in two district hospitals (Reasi and Udhampur) of J and K state, India from June 2021 to October 2021. Study included health care workers including doctors and paramedics (nurses, pharmacists and laboratory technicians) working in these two hospitals who voluntarily participated in the study. Language used for framing questionnaire was both English and Hindi. Total number of questions were 20, 8 in knowledge, 6 in attitude and 6 in practice section. All questions framed were close ended except one question in knowledge section (Q. no. 5) which is open and close ended as well. Questions in knowledge section were set on the basis present knowledge of COVID-19 vaccines available in India. One point was given for every correct answer. Higher scores mean better knowledge. Questions in attitude section were based on accepting the minor side-effects of vaccine, advice of getting vaccinated to others and reasons for non-acceptance of vaccine. To record the responses Likert type scale of range from 1 to 5 was used with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. We conducted principal component analysis (PCA) with Varimax rotation to divide the items into factors. The number of factors retained was derived by considering the magnitude of the eigenvalues, Kaiser's (1960) eigenvalues (greater than 1) rule, the proportion of variance extracted, item content, and the interpretability of the resulting factors. As for factor loading after the Varimax rotation, items with a factor loading less than 0.5 on all factors were excluded. We investigated the internal consistency by calculating Cronbach's alpha and by calculating item-total correlations for each factor that was identified with the factor analysis, an Alpha greater than 0.70 was considered acceptable and optimal item-total correlation was considered to be between 0.2 and 0.5. Results from the factor analysis indicated that each factor accounts for approximately 40% of the variance. Cronbach's alpha coefficients for various questions in the questionnaire were greater than the accepted number of ≥0.70. Calculation of internal consistency (Cronbach's alpha 0.703-0.834) and cross validation provided evidence of reliability and lack of redundancy of items. We found that the number of factors, the factor structure and factors loadings were for the greater part comparable between the first randomly created sub-sample and the total sample. After getting the satisfactory reliability score, the predesigned validated questionnaires were distributed among the study participants. Participants were asked to fill out the questionnaire within time period of 4 weeks and a reminder was sent to the participants once in a week via WhatsApp. After 4 weeks questionnaire with responses was collected back from the participants.

Statistical analysis

The presentation of the Categorical variables was done in the form of number and percentage. The comparison of the variables which were qualitative in nature were analysed using Chi-Square test. If any cell had an expected value of less than 5 then Fisher's exact test was used. Spearman rank correlation coefficient was used for correlation between KAP. The data entry was done in the Microsoft excel spreadsheet and the final analysis was done with the use of statistical package for social sciences (SPSS) software, IBM manufacturer, Chicago, USA, ver 25.0. For statistical significance, p value of less than 0.05 was considered statistically significant. Knowledge was graded as adequate, moderate and inadequate with cut off of >75%, 50-75% and <50% respectively. Attitude was graded as positive and negative with cutoff of ≥50% and <50% respectively. Further practice was graded as good, fair and poor with cut off of ≥66.7%, 33.3-66.7% as and <33.3% respectively. Spearman's rank corelation was used to see correlation between KAP.

RESULTS

A total of 300 subjects participated in this study, 91 (30.33%) doctors and 209 (69.67%) paramedics. There were 122 (40.67%) males and 178 (59.33%) females. Table 1-3 showed questionnaire with participant's responses for KAP respectively. Table 4 showed level of KAP among study participants. Co-relation between KAP is given in Table 5. Most of the participants had moderate knowledge (62.67%) about the vaccine and there was statistically significant difference between knowledge of doctors and paramedics. Most common source for acquiring knowledge was social media platform for paramedical staff and scientific websites for doctors. Positive attitude towards vaccination was seen in 88% of the participants which was a strength to the vaccination campaign. There was also a statistically significant difference of attitude and practice between doctors and paramedical staff.

Table 1: Questionnaire for knowledge and its response.

Knowledge	Doctor (n=91) (%)	Paramedic, (n=209) (%)	Total, n (%)	P value
Medium of getting information about COVID-19 vaccine				
Social media	24 (26.37)	112 (53.59)	136 (45.33)	
News paper	0 (0)	8 (3.83)	8 (2.67)	
Friends and colleagues	0 (0)	3 (1.44)	3 (1)	<0.0001*
Staff members	2 (2.20)	80 (38.28)	82 (27.33)	
Scientific websites	65 (71.43)	6 (2.87)	71 (23.67)	

Continued.

Knowledge	Doctor (n=91) (%)	Paramedic, (n=209) (%)	Total, n (%)	P value
Is currently available vaccine in India recommended for children				
No	90 (98.90)	121 (57.89)	211 (70.33)	<0.0001*
Yes	1 (1.10)	88 (42.11)	89 (29.67)	
Vaccine gives lifelong immunity				
Strongly agree	0 (0)	15 (7.18)	15 (5)	<0.0001*
Agree	0 (0)	30 (14.35)	30 (10)	
Neutral	0 (0)	44 (21.05)	44 (14.67)	
Disagree	45 (49.45)	116 (55.50)	161 (53.67)	
Strongly disagree	46 (50.55)	4 (1.91)	50 (16.67)	
Person who had covid in past can get vaccine for COVID				
Strongly agree	49 (53.85)	12 (5.74)	61 (20.33)	<0.0001*
Agree	42 (46.15)	148 (70.81)	190 (63.33)	
Neutral	0 (0)	7 (3.35)	7 (2.33)	
Disagree	0 (0)	35 (16.75)	35 (11.67)	
Strongly disagree	0 (0)	7 (3.35)	7 (2.33)	
Contraindicators for COVID vaccine				
Pregnancy and lactation	13 (14.29)	153 (73.21)	166 (55.33)	<0.0001*
Hypertension	0 (0)	13 (6.22)	13 (4.33)	
Diabetics	0 (0)	27 (12.92)	27 (9)	
None of these	78 (85.71)	16 (7.66)	94 (31.33)	
Antibody titer against COVID-19 is recommended before vaccination to look for neutral antibodies				
No	50 (54.95)	53 (25.36)	103 (34.33)	<0.0001†
Yes	41 (45.05)	156 (74.64)	197 (65.67)	
I can get covid infection even after getting vaccinated				
No	1 (1.10)	32 (15.31)	33 (11)	<0.0001*
Yes	90 (98.90)	177 (84.69)	267 (89)	
Protective measures need to be followed even after				
No	0 (0)	18 (8.61)	18 (6)	0.002*
Yes	91 (100)	191 (91.39)	282 (94)	

*Fisher's exact test, † Chi square test

Table 2: Questionnaire for attitude and its response.

Attitude	Doctor, (n=91) (%)	Paramedic, (n=209) (%)	Total	P value
Is COVID-19 vaccination certificate mandatory for international travelers				
No	0 (0)	48 (22.97)	48 (16)	<0.0001*
Yes	91 (100)	161 (77.03)	252 (84)	
Minor side-effects after vaccination are acceptable				
Strongly agree	11 (12.09)	1 (0.48)	12 (4)	<0.0001*
Agree	59 (64.84)	133 (63.64)	192 (64)	
Neutral	21 (23.08)	69 (33.01)	90 (30)	
Disagree	0 (0)	6 (2.87)	6 (2)	
I will recommend vaccination to my family and friends				
Strongly agree	27 (29.67)	5 (2.39)	32 (10.67)	<0.0001*
Agree	61 (67.03)	141 (67.46)	202 (67.33)	
Neutral	3 (3.30)	56 (26.79)	59 (19.67)	
Disagree	0 (0)	7 (3.35)	7 (2.33)	
Which type of immunity do you prefer				
Natural immunity	87 (95.60)	102 (48.80)	189 (63)	<0.0001†
Vaccine immunity	3 (3.30)	68 (32.54)	71 (23.67)	
Herd immunity	1 (1.10)	39 (18.66)	40 (13.33)	
How much is your worry about major long term side effects of vaccine				
Very much	0 (0)	83 (39.71)	83 (27.67)	<0.0001†
Less	26 (28.57)	45 (21.53)	71 (23.67)	
Least	12 (13.19)	56 (26.79)	68 (22.67)	
Not much	34 (37.36)	24 (11.48)	58 (19.33)	
No worry	19 (20.88)	1 (0.48)	20 (6.67)	

Continued.

Attitude	Doctor, (n=91) (%)	Paramedic, (n=209) (%)	Total	P value
Does your religious beliefs prevent you from receiving vaccine				
No	89 (97.80)	198 (94.74)	287 (95.67)	0.357*
Yes	2 (2.20)	11 (5.26)	13 (4.33)	

*Fisher's exact test, †Chi square test.

Table 3: Questionnaire for practice and its response.

Practice	Doctor, (n=91) (%)	Paramedic, (n=209) (%)	Total, n (%)	P value
Are you participating in any vaccine trial				
No	89 (97.80)	148 (70.81)	237 (79)	<0.0001*
Yes	2 (2.20)	61 (29.19)	63 (21)	
Which COVID-19 vaccine do you prefer for vaccination				
Whole cell activated vaccine	37 (40.66)	70 (33.49)	107 (35.67)	0.005*
Live attenuate vaccine	44 (48.35)	84 (40.19)	128 (42.67)	
MRNA vaccine	10 (10.99)	39 (18.66)	49 (16.33)	
Vector deriver vaccine	0 (0)	16 (7.66)	16 (5.33)	
How eager are you to get vaccinated for COVID-19				
Eager	80 (87.91)	120 (57.42)	200 (66.67)	<0.0001*
Not eager	10 (10.99)	80 (38.28)	90 (30)	
Unsure	1 (1.10)	9 (4.31)	10 (3.33)	
Have you motivated your relatives, friends or neighbors to get vaccinated				
No	0 (0)	77 (36.84)	77 (25.67)	<0.0001*
Yes	91 (100)	132 (63.16)	223 (74.33)	
Have you or any known to you who get vaccinated and develop major side effects				
No	86 (94.51)	163 (77.99)	249 (83)	0.0005†
Yes	5 (5.49)	46 (22.01)	51 (17)	
Have you got yourself vaccinated				
No	1 (1.10)	15 (7.18)	16 (5.33)	0.046*
Yes	90 (98.90)	194 (92.82)	284 (94.67)	

*Fisher's exact test, †Chi square test

Table 4: Comparison of level of KAP between doctor and paramedic.

Variables	Doctor, (n=91) (%)	Paramedic, (n=209) (%)	Total, n (%)	P value
Knowledge				
Inadequate knowledge	0 (0)	13 (6.22)	13 (4.33)	<0.0001*
Moderate knowledge	8 (8.79)	180 (86.12)	188 (62.67)	
Adequate knowledge	83 (91.21)	16 (7.66)	99 (33)	
Total	91 (100)	209 (100)	300 (100)	
Attitude				
Positive attitude	91 (100)	173 (82.78)	264 (88)	<0.0001*
Negative attitude	0 (0)	36 (17.22)	36 (12)	
Total	91 (100)	209 (100)	300 (100)	
Practice				
Poor practice	0 (0)	3 (1.44)	3 (1)	<0.0001*
Fair practice	8 (8.79)	70 (33.49)	78 (26)	
Good practice	83 (91.21)	136 (65.07)	219 (73)	
Total	91 (100)	209 (100)	300 (100)	

*Fisher's exact test.

Table 5: Correlation between KAP.

Variables	Correlation coefficient	P value
Knowledge and attitude	0.181	0.002
Knowledge and practice	0.205	0.0004
Attitude and practice	0.005	0.935

Spearman rank correlation coefficient

DISCUSSION

In the existing set-up of COVID-19 disease, social media has been playing a vital role in making public aware about vaccine against COVID-19. The overall major resource of information in current study was social networking platform (45.33%). This showed that social networking platform has reached people very well which

help in acquiring sufficient awareness about vaccination. Similarly other study found social networking platform and television as chief source of acquiring knowledge about the vaccination.[4] Also, in present study there is statistically significant difference in the source of acquiring knowledge of vaccination between doctors and paramedics and main source of information for doctors was scientific websites. In present study adequate level of knowledge is seen in 33% of the participants. So, even if social media plays an important role but there should always be some administrative control over different sites so that fake knowledge and myths will not spread. In current study, 66.67% of participants were eager to receive vaccine which may be due to the fact that 64% were agreed that minor side-effects after vaccine are acceptable. This upbeat attitude was because of good knowledge about vaccination. In a survey including 19 countries, the acceptance of covid-19 vaccine was found to be 71%.[5] The acceptance of COVID-19 vaccine was found to be 91% in China, 76% in France, 64% in Saudi Arabia and 57% in United States.[6-9] In present study 78% of participants advised administration of vaccine to their close ones. In another study, 59.3% of participants will recommend vaccination to others.[4] Around 28% of participants had reticence for receiving vaccine due to fear of major side-effects. A survey done in China showed that 47% of the people wanted to wait for getting vaccinated till they get proper confirmation that the vaccine is safe.[6] Similar results were shown in other studies also where cause for not receiving vaccine were safety issues.[9,10] Some studies also showed selection of vaccine and its efficacy as main concerns for not getting vaccinated.[11,12] To know the exact cause for hesitation towards getting vaccinated will be helpful in disposing off their false opinions and increasing the acceptance of the vaccine.

CONCLUSION

In present study, in most of health care workers level of knowledge towards COVID-19 vaccination was found moderate and attitude was predominantly positive. Adequate knowledge and positive of health professionals is very important for increasing the acceptance of vaccination in general population.

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