Original Research Article

Knowledge, attitude, and practice study among healthcare workers, during COVID-19 pandemic in an aspiring district of Uttar Pradesh

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ABSTRACT

Background: COVID-19 (coronavirus disease 2019) declared pandemic by WHO on 30th January 2020. Till date there is no antiviral treatment or vaccine has been developed for COVID-19. Primary preventive measures include regular hand washing, social distancing and respiratory etiquettes are only proven methods till date.
Methods: A type of questionnaire based cross sectional study was conducted among the healthcare workers (HCWs) of Maharaja Suheldev Autonomous State Medical College, Bahraich.
Results: In this predominantly uneducated and socially backward area, majority of participants had knowledge about COVID-19 precautionary measures and most of them are confident of winning over the disease; 77.5% were confident of successfully controlling the disease, yet maximum healthcare workers took seriously the precautionary measures.
Conclusions: Good COVID-19 knowledge is associated with optimistic attitudes and appropriate practices towards COVID-19, suggesting that health education programs aimed at improving COVID-19 knowledge are helpful for encouraging an optimistic attitude and maintaining safe practices.

Keywords: COVID-19, KAP study, Primary prevention

INTRODUCTION

COVID-19 declared pandemic by WHO on 30th January 2020.[1] Disease is caused by novel corona virus identified in Wuhan city of China at the end of 2019 and it is a new strain not seen in human previously.

In India first case was reported in Kerala from students who returned from Wuhan China on 31st January 2020. Now the numbers increased to >35 lakh in the country and >2.5 crore infected persons worldwide, resulting into >60000 deaths in India and >8.5 lakh death worldwide while writing. Case fatality rate of COVID-19 is 2.3% which is lower than SARS (10%) and MERS (34%).[2-4]

Till date there is no antiviral treatment or vaccine has been developed for COVID-19. Details about its epidemiology, pathophysiology, treatment and prevention are still under study. Primary preventive measures include regular hand washing, social distancing and respiratory etiquettes (covering mouth and nose while coughing and sneezing) proven methods till date.[5,6]

To battle against COVID-19 and to flatten the trajectory of infection, India has imposed multiple cycles of lockdown, closure of teaching institute, offices other than emergency services and public places to ensure strict compliance with social distancing guidelines and spread of information through Arogya setu application.

HCW are frontline warriors against COVID-19 pandemic. Through various online courses and webinars developed by MOHFW, WHO and CDC knowledge, prevention strategies and management skills of HCWs being updated. Initial estimates suggest that the frontline healthcare workers could account for 10-20% of all diagnoses.[7,8] ICN's data from 30 countries shows average 6% of all infected case of COVID-19 are HCWs which ranges from 0 to 18%.[9] However, global shortage of masks, respirators, face shields and gowns, caused surging demand and supply chain disruptions, have led to efforts to conserve PPE through extended use or reuse, and disinfection protocols have been developed for which scientific consensus on best practice is scarce.[10-12] Among HCWs, depression, anxiety, physical fatigue, occupational stigma and physical violence are common during COVID-19. Thus, purpose of study is to assess the knowledge, attitude, and practice (KAPs) of HCWs toward COVID-19.

METHODS

Study design of current study was cross-sectional study. The study was conducted among the HCWs of Maharaja Suheldev Autonomous State Medical College, Bahraich during 1st week of June 2020. This is 500 bedded hospital serving 4 districts of northeast Uttar Pradesh and nearby Nepal. Data was collected from HCWs of working in MSD ASMC, Bahraich who are willing to participate. HCWs which were posted in COVID hospital or quarantined at the time of study or not willing to participate were excluded from the study.

Self-administered questionnaire based on guidelines issued by ICMR and ministry of health and family welfare (MoHFW) of India, designed to assess KAP based on COVID-19 pandemic were distributed and total 160 completely filled questionnaires were received.

The ethical committee of Maharaja Suheldev autonomous state medical college, Bahraich approved our study protocol and procedure of informed consent before conducting study.

The KAP study questionnaire consists of 4 parts. First part is demographic variables of study participants. Second includes 7 questions for assessing knowledge based on guidelines issued by ICMR and MoHFW of India for management of COVID-19, regarding symptoms, route of transmission, prevention and control strategy. Third includes 3 questions to measure attitude toward COVID-19. Fourth for assessment of HCWs practices during hospital duty hours, comprised of 3 questions.

Statistical analysis carried out by KAP scoring by HCWs were compared to demographic variables with unpaired t test, one-way analysis of variance (ANOVA). For data analysis SPSS software was used. 95% CI was used and $p < 0.05$ was set for statistical analysis.

RESULTS

A total of 160 participants working in Maharaja Suheldev ASMC, Bahraich, completed the survey questionnaire. The correct answer rates of the 07 questions on the COVID-19 knowledge questionnaire were between 57.14 to 100%. Knowledge score differs insignificantly across the gender (p=0.59), age group (p=0.7), education (p=0.329) and marital status (0.92), differ significantly across occupational group as shown in (Table 2 and 5). Doctors have significantly higher in knowledge score as compared to paramedical staff and ward boys. Approximately 97.5% participants believed that COVID-19 could be managed, though effective treatment is not available at present. Rates of answering 'false' and 'I don't know' were 0.6 and 1.8% respectively. Nearly 96.9% participants had true knowledge about the clinical sign and symptoms of the disease, whereas, 90% answered correctly about risk factors like: diabetes, chronic kidney disease, immuno-compromise state and hypertension as major cause of COVID-19 infection. Nearly 91.2% participants reported correctly while asked about the spreading of infectious disease through droplets. Surprisingly, only 70.4% reported correctly when asked whether the disease could be spread by the non-symptomatic COVID-19 infected individuals. Further, when asked about the immunity of young adults and children towards COVID-19 disease, 10.6% positive response, 80% disagreed and 9.3% health workers didn't respond to the question. 31.3% participants falsely believe that hydroxychloroquine is more effective than primary preventive measures.

Table 1: Demographic variables of study participants.

Variables	Frequency	Percentage (%)
Gender		
Male	73	45.63
Female	87	54.36
Age (years)		
20-30	101	63.13
31-40	31	19.38
>40	28	17.50
Qualification		
12th and below	14	8.75
UG	130	81.25
PG	16	10
Occupation		
Doctor	35	21.86
Paramedical staff	101	63.13
Iv class	24	15.01
Marital status		
Married	94	58.75
Unmarried	66	41.25
Duty (hours)		
<8	134	83.75
≥8	26	16.25

Table 2: Results of the knowledge survey (n=160).

Questions	True (%)	False (%)	I don't know (%)
Clinical symptoms of COVID-19 are fever, fatigue, myalgia and dry cough	155 (96.9)	0	5 (3.1)
At present no effective cure for COVID-19 is available, but supportive therapy helps to recover most of the patients	156 (97.5)	1 (0.6)	3 (1.95)
Patients who are >60 years or immunocompromised (DM/CKD/CLD), hypertensive can develop severe disease	144 (90)	3 (8.1)	13 (1.9)
Patients who are not showing any symptoms cannot infect others	19 (11.9)	119 (74.4)	22 (13.8)
COVID-19 spreads by respiratory drops of infected person	146 (91.3)	5 (3.1)	9 (5.6)
HCQ is very effective for prophylaxis than other preventive measures like hand washing, mask, social distancing	50 (31.3)	87 (54.4)	23 (14.4)
Young adults and children are immune to disease	17 (10.6)	128 (80)	15 (9.4)

Table 3: Results of the attitude survey (n=160).

S. no.	Questions	True (%)	False (%)	I don't know (%)
A1	Do you have confidence of defeating virus in future?	124 (77.5)	6 (3.8)	30 (18.8)
A2	Have fear to be infected while attending patients even with all precautions.	102 (63.8)	39 (24.4)	19 (11.9)
A3	Fear of having covid-19 even when you are tested negative.	72 (45)	49 (30.6)	39 (24.4)

Table 4: Results of the practice survey (n=160).

S. no.	Questions	Always (%)	Sometime (%)	Never (%)
P1	Frequency of hand washing or hand sanitizer during hospital duty hours	160 (100)	0	0
P2	Use of mask, gloves and spacing while attending patients	139 (86.9)	21 (13.1)	0
P3	Changes in eating habits	Healthy diet 128 (80)	Potato rich 10 (6.25)	No change 22 (13.75)

Table 5: Demographic characteristics of participants and knowledge score of COVID-19 by demographic variables.

Variables		Knowledge scores		
		Mean±SD	t/F value	P value
Gender	Male	85.32±17.7	0.52	0.59
	Female	83.91±16.56		
Age (years)	20-30	83.69±16.71	0.34	0.7
	31-40	86.17±15.86		
	>40	85.17±18.35		
Education	12th and below	83.03±18.23	1.36	0.329
	UG	83.93±17.07		
	PG	91.07±12.64		
Occupation	Doctor	98.78±05.336	0.20	0.0001
	Para medicals	81.33±17.11		
	IV Class	77.38±15.14		
Marital status	Married	84.66±17.09	0.09	0.92
	Unmarried	84.39±16.51		

The attitude of health workers (Table 3 and 6) towards the final success in defeating COVID-19 differed across genders, age group, education, occupation, work hours and marital status. Male (84.9%) showed significantly better degree of attitude towards defeating the disease, compared to female (72.4%, p value <0.01). Further the younger age group (88.1%) showed positive attitude towards defeating the disease and difference is significant (p value <0.01). The educated group showed difference in opinion according to their educational qualifications. Undergraduate degree holders (76.9%) showed better response towards defeating the disease. Doctors (97.1%) found to have high degree of agreement towards defeating the disease.

Table 6: Attitudes towards COVID-19 by demographic variables.

Variables	A1 (N%)			A2 (N%)			A3 (N%)		
	Yes	No	Can't say	Yes	No	Can't say	Yes	No	Can't say
Gender									
Male (73)	62 (84.9)	07 (9.5)	04 (5.4)	53 (72.6)	9 (12.3)	11 (15.1)	48 (65.7)	8 (10.9)	17 (93.3)
Female (87)	63 (72.4)	4 (4.6)	20 (23) **	54 (62.1)	23 (26.4)	10 (11.5)	32 (36.8)	32 (36.8)	23 (26.4) ***
Age group (years)									
20-30 (101)	89 (88.1)	4 (3.9)	8 (7.9)	66 (65.3)	23 (22.8)	12 (11.9)	44 (43.6)	27 (26.7)	30 (29.7)
31-40 (31)	21 (67.7)	6 (19.3)	4 (13)	21 (67.7)	5 (16.1)	5 (16.1)	19 (61.3)	6 (19.4)	6 (19.4)
>40 (28)	15 (53.6)	1 (3.6)	12 (42.9) **	20 (71.4)	4 (4.3)	4 (14.3)	17 (60.7)	7 (25)	4 (14.3)
Education									
12th and below (14)	14 (100)	0	0	8 (57)	2 (14)	4 (28)	10 (71.4)	1 (7.1)	3 (21.4)
UG (130)	100 (76.9)	6 (4.6)	24 (18.5)	87 (66.9)	26 (20)	17 (19.5)	56 (43.1)	37 (28.5)	37 (28.5)
PG (16)	11 (68.8)	5 (31.2)	0**	12 (75)	4 (25)	0	14 (87.5)	2 (12.5)	0**
Occupation									
Doctor (35)	34 (97.1)	0	1 (2.9)	27 (77.1)	0	8 (22.8)	18 (51.4)	1 (2.8)	16 (45.7)
Para medical (101)	74 (73.3)	4 (4)	23 (22.7)	65 (64.3)	23 (22.7)	13 (12.9)	43 (42.6)	37 (36.6)	21 (20.8)
IV class (24)	17 (70.8)	7 (29.2)	0**	15 (62.5)	9 (37.5)	0**	19 (79.2)	2 (8.3)	3 (12.5) ***
Work (hours)									
<8 (134)	114 (85.1)	6 (4.5)	14 (10.4)	87 (64.9)	26 (19.4)	21 (15.7)	72 (53.7)	29 (21.6)	33 (24.6)
≥8 (26)	11 (42.3)	5 (9.2)	10 (3.8) ***	20 (76.9)	6 (25)	0	8 (30.8)	11 (42.3)	7 (26.2) *
Marital status									
Married (94)	66 (70.2)	9 (9.6)	19 (20)	64 (68.1)	19 (20.2)	11 (11.7)	51 (54.3)	20 (21.3)	23 (24.5)
Unmarried (66)	59 (89.4)	2 (3)	5 (8.3) *	43 (65.2)	13 (19.7)	10 (15.1)	29 (44)	20 (30.3)	17 (25.8)

*p value<0.05, **p value<0.01, ***p value<0.001

Table 7: Results of multiple binary logistic regression analysis on factors significantly associated with attitudes towards COVID-19.

Attitude variables	Variables	Frequency	P value
A1: Confidence of defeating (vs. disagree)			
Marital status	Married vs Unmarried	69/67	0.2
Gender	Male vs Female	75/61	0.24
Age-group (years)	20-30 vs >40	93/16	0.998
	20-30 vs 31-40	98/11	0.144
Education	≤12th vs PG	14/16	0.013
	UG vs PG	106/16	<0.001
Occupation	Doctor vs ward boy	34/24	0.9
	Paramedics vs ward boy	75/24	0.003
Work duration (hours)	≥8 vs <8	16/120	0.002
A2: Fear of infection (vs disagree)			

Continued.

Attitude variables	Variables	Frequency	P value
Occupation	Doctor vs ward boy	27/24	0.998
	Paramedics vs ward boy	88/24	0.278
A3: Fear of infection on negative test (vs disagree)			
Gender	Male vs female	56/64	<0.001
Education	≤12th vs PG	16/11	0.783
	UG vs PG	93/16	0.051
Work duration (Hours)	≥8 vs <8	19/101	0.029
Occupation	Dr vs ward boy	19/21	0.614
	Paramedics vs ward boy	43/19	0.002

Table 8: Practices towards COVID-19 by demographic variables.

Variables	P1 (N%)			P2 (N%)			P3 (N%)		
	Always	Sometime	Never	Always	Sometime	Never	Healthy	Potato rich	No Change
Gender									
Male (73)	73 (100)	0	0	65 (89)	8 (11)	0	60 (82.2)	1 (1.4)	12 (16.4)
Female (87)	87 (100)	0	0	74 (85.1)	13 (14.9)	0	68 (78.2)	9 (10.3)	10 (11.5) *
Age Group (Years)									
20-30 (101)	101 (100)	0	0	86 (85.1)	15 (14.9)	0	82 (81.2)	7 (6.9)	12 (11.9)
31-40 (31)	31 (100)	0	0	27 (87.1)	4 (12.9)	0	21 (67.7)	0	10 (32.3)
>40 (28)	28 (100)	0	0	26 (92.9)	2 (7.1)	0	25 (89.1)	3 (10.7)	0**
Education									
12th and Below (14)	14 (100)	0	0	13 (92.9)	1 (7.1)	0	12 (85.7)	2 (14.3)	0
UG (130)	130 (100)	0	0	112 (86.2)	18 (13.8)	0	107 (82.3)	7 (5.3)	15 (11.5)
PG (16)	16 (100)	0	0	14 (87.5)	2 (12.5)	0	9 (56.3)	1 (16.3)	6 (37.5) *
Doctor (35)	35 (100)	0	0	35 (100)	0	0	32 (91.4)	0	3 (8.6)
Occupation									
Para medicals (101)	101 (100)	0	0	81 (81.2)	20 (19.8)	0	78 (77.2)	10 (9.9)	12 (11.9)
IV Class (24)	24 (100)	0	0	23 (95.8)	1 (4.2)	0**	18 (75)	0	6 (25) *
Work (Hours)									
<8 (134)	100	0	0	123 (91.8)	11 (8.2)	0	112 (83.6)	9 (6.7)	12 (8.9)
≥8 (26)	100	0	0	16 (61.5)	10 (38.5)	0***	16 (61.5)	1 (3.8)	9 (34.6) **
Marital status									
Married (94)	66 (70.2)	9 (9.6)	19 (20)	82 (87.2)	12 (12.8)	0	71 (75.5)	4 (4.3)	19 (20.2)
Unmarried (66)	59 (89.4)	2 (3)	5 (8.3)	57 (86.4)	9 (13.6)	0	57 (86.4)	6 (9.1)	3 (4.5) *

*p value<0.05, **p value <0.01, ***p value <0.001

Table 9: Results of multiple binary logistic regression analysis on factors significantly associated with practices towards COVID-19.

Variables		Frequency	P value
P2: Use of Mask, Gloves and Spacing while attending patients			
Work duration (Hours)	≥8 vs <8	21/134	<0.001
Occupation	Doctors vs ward boy	35/24	0.998
	Paramedic vs ward boy	101/24	0.01
P3: Change in eating habits			
Gender	Male vs Female	61/77	0.04
Work duration (Hours)	≥8 vs <8	17/121	0.596
Occupation	Doctors vs ward boy	32/18	0.68
	Paramedic vs ward boy	88/18	0.998
Marital	Married vs Unmarried	75/64	0.446
Education	≤12 vs PG	10/14	0.755
	UG vs PG	114/10	0.637
Age (Years)	20-30 vs >40	89/28	0.639
	20-30 vs 31-40	89/25	0.55

When asked about the fear of getting infected while attending patients even with all precautions, 63.7% health workers (male-72.6% and female-62.1%) agreed and believed to get infected with the contagious disease whereas 24.4% disagreed and 11.9% participant were clueless about the dissemination of infection. Among different age group, 31-40 years, group showed fear towards disease (female-62.1% and male-72.6%) while attending the patients. In the educated group, participants having UG qualification (66.9%) but the difference across above groups (gender, education, work duration, age) are statistical insignificant. The doctors (77.1%) were positive towards contacting the disease even after taking proper precaution while attending COVID positive patients and the difference across groups are significant (p=0.002). The attitude of health workers towards fear of having COVID-19 even after tested negative was 45%, whereas 30.6% disagreed and 24.4% didn't give any opinion, where gender wise 65.7% male and 36.8% female answered 'yes' to this question. Among the educated group, the participants having PG qualification showed positive opinion towards the question. Fear of COVID -19 even tested negative is significantly higher in males (p<0.001), postgraduate (p=0.004), average duty hours (p<0.05) and ward boys (p<0.001). The knowledge about spreading of COVID-19 among IV class health workers found to be lower when compared to doctors. The multiple binary logistic regression analysis towards attitude in combating the disease between all variable entities, like: age, gender, education and occupation found to be significantly associated (p<0.05) with no confidence of winning.

The practice survey (Table 4 and 8) among the study participants suggested that all were aware about the frequency of hand washing or use of hand sanitizer during hospital duty hours. Majority of health worker participants (86.9%) had followed the social distancing, wore masks and gloves while attending patients.

Nevertheless, some portion of health workers (13.1%) sometimes were not able to follow social distancing and had not worn masks or gloves while attending the suspected patients due to some emergency situation. The rate of practice of wearing mask and gloves significantly disagree among the variable groups, when compared among occupational groups (p=0.004) and work duration groups (p=0.001) participants (Table 8). The change in eating habits improved among most of health workers (80%). Healthy eating habits are significantly seen more among males, doctors, unmarried, HCWs with average working hours, 20-30 years age group. This group started having protein, vitamins and mineral rich diet and decreased intake of potatoes. When compared and calculated the multiple logistic regression analysis, the rate of practices of diet differed significantly across gender (p=0.04), doctors, paramedics and class IV employee (p=0.04) and between married and unmarried (p=0.01) participants.

DISCUSSION

This study was conducted, when COVID-19 has already been declared as pandemic affecting all sectors of society. HCWs as frontline warriors against COVID-19 have more likelihood of acquiring disease compared to general population. Currently, MoHFW is conducting many online training programmers to improve HCWs knowledge which further affect their attitude and practices and hence can help in prevention of spread of such highly contagious disease in HCW.

This KAP study towards COVID-19 is crucial for this region as this type of study involves the hospital's healthcare provider where awareness among the demographic population is less. In this predominantly uneducated and socially backward area, majority of participants had knowledge about COVID-19 precautionary measures and most of them are confident

of winning over the disease; 77.5% were confident of successfully controlling the disease, yet maximum healthcare workers took seriously the precautionary measures by maintaining the social distancing, use of hand sanitizers, mask and gloves while attending the patients. The characteristics of KAP towards COVID-19 was analysed and noticed some demographic factors associated with KAP; these findings are useful for public health policy-makers and health workers to recognize target populations for COVID-19 prevention and health education. The findings of this study are highly significant among variables though it was conducted at initial stage on the onset of contagious disease. It is also recorded that most of the information about COVID-19 were gathered from news channels, newspaper, internet and official websites among the health workers. This evidence can be supported by the significant knowledge score and p values among the health workers of different categories. The positive attitude of most of the health workers enhances confidence of defeating the epidemic, COVID-19. The knowledge about this disease among health workers fetched higher scores and significant statistical values. The attitude towards COVID-19 was optimistic as most of the participant answers were significantly associated with less likelihood of "disagree" and "I don't know". The health workers had good knowledge about the high infectivity of the COVID-19 virus, which can be easily transmitted between people via invisible respiratory droplets. Unfortunately, some health workers were unaware about the contagious disease and they didn't wear mask, gloves or maintained social distancing while attending the patients. These potentially risky behaviors were related to male gender, occupation and education of health workers. These groups were identified and taken up for intensive training and retraining. It was also noted from this study that male gender with age group 31-40 years were more precautious about the disease progression and proliferation, hence they took preventive measures to get rid of infection and this result is similar to the studies conducted in China, which also reported that practice scores were affected by gender.[13,14] It is well noted from this study that higher COVID-19 knowledge scores were found to be significantly associated with a lower likelihood of negative attitudes and potentially dangerous practices towards COVID-19 epidemic. It is further suggested that the health education intervention would be more effective and beneficial for health workers to cope up with the situation. The knowledge about COVID-19 may be imported to the health workers through webinar programs for up gradation of the recent advancement of the disease. The significant associations between different demographic variables and KAP towards COVID-19 have overestimated knowledge and rates of preventive practices and underestimated rates of positive attitudes towards COVID-19.

This study has some limitations. This survey was conducted only in HCWs of medical college, so result drawn cannot be generalized to HCWs of other government or private hospital. The measurement can be inaccurate due to limited number of studies participants.

CONCLUSION

In this rural area of Bahraich district, where relatively low socioeconomic status prevails, majority health workers have had good knowledge, optimistic attitudes, and appropriate practices towards COVID-19 during the rapid rise period of the COVID-19 outbreak. In addition, good COVID-19 knowledge is associated with optimistic attitudes and appropriate practices towards COVID-19, suggesting that health education programs aimed at improving COVID-19 knowledge are helpful for encouraging an optimistic attitude and maintaining safe practices.

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