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A cross sectional study to assess the expressed COVID-19 preventive practices among the health care workers and public visiting tertiary care hospital, AIIMS, Jodhpur

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Abstract:

BACKGROUND: The corona virus disease-2019 (COVID-19) infection is a current public health crisis, and it is challenging to the world health-care system. As there is no treatment, prevention is the crucial importance to break the chain of transmission of infection and prevent fatality among the high-risk populations. The aim of the study was to assess the Expressed COVID-19 preventive practices among health-care workers (HCWs) and the public visiting tertiary care hospital, AIIMS, Jodhpur.

METHODOLOGY: A cross-sectional study was conducted among 406 HCWs and 238 public, recruited by convenient sampling technique. A validated and pretested self-structured practice questionnaire used to collect the data regarding COVID-19 preventive practice. The data were collected through online Google Forms and interview techniques and analyzed by software SPSS 26 version.

RESULTS: Majority of 87.7% HCWs and 76.5% public always followed practice of hand wash with soap and water and sanitize for 20 s. Majority of 79.6% HCWs and 49.2% public maintain social distance in public place. Gender ($\chi^2 = 18.806 P \leq 0.001$) and education ($\chi^2 = 43.270 P \leq 0.001$) among HCWs and in public demographic variable income ($\chi^2 = 21.102 P = 0.002$), religion ($\chi^2 = 13.302 P = 0.006$) and source of information ($\chi^2 = 17.030 P = 0.026$) was significantly associated with level of COVID-19 preventive practice.

CONCLUSION: The study showed moderate level of COVID-19 preventive practice among HCWs and public. Based on this result, an effective IEC intervention programs can be designed to educate public and HCWs and follow a safe COVID-19 preventive practice.

Keywords:

Coronavirus, corona virus disease-2019, health personnel, infection, preventive practice, public

Introduction

The corona virus disease-2019 (COVID-19) infection is current public health crisis and it is challenging to the world health-care system. The incidence of COVID-19 cases reached more than crores in India with number second position in the list of highest cases of COVID-19.^[1]

The COVID-19 is caused by severer acute respiratory syndrome (SARS)-corona virus-2 and it is transmitted by inhalation or contact with infected droplets. The incubation period ranges from 2 to 14 days. The person infected with COVID-19 usually asymptomatic and symptomatic patient will have fever (50%), cough (38%), sore throat, breathlessness, loss of test and smell, fatigue, malaise, and some cases

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will have conjunctivitis. Most of the people suffer from mild illness. The people who have comorbidities, the disease may progress to moderate to severe and it may lead to pneumonia, acute respiratory distress syndrome (ARDS), shock, acute kidney injury, and multiorgan dysfunction. The overall case fatality rate is estimated to range between 2% and 3%^[2] and in India the fatality rate is 1.4% (MOHFW).

The infection can transmit through droplets generated during coughing and sneezing by both symptomatic and asymptomatic patient.^[3] These infected droplets can spread 1–2 m and deposit on surfaces. The virus can remain survive on surfaces for days in favorable atmospheric conditions but are destroyed in less than a minute by common disinfectants such as sodium hypochlorite and hydrogen peroxide.^[4]

Studies have shown higher viral loads in the nasal cavity due to exuberant inflammatory response which play vital role in pathophysiology of ARDS especially in COVID-19 patients^[5] as compared to the throat with no difference in viral burden between symptomatic and asymptomatic people. They can be infectious for as long as the symptoms last and even on clinical recovery. Some people may act as super spreaders.^[6]

Prevention is the crucial importance to break the chain of transmission of infection and prevent fatality among high-risk population. Prevention of COVID-19 infection makes difficult because of its nonspecific features of infection, the infectivity even before onset of infection in the incubation period, spread of infection from asymptomatic people, long incubation period, prolonged duration of illness, and spread of infection even after the clinical recovery.^[7]

Health-care workers (HCWs) are back bone of health system in India and they are the high-risk population among all other to be infected with COVID-19. In the SARS outbreak of 2002, 21% of those affected were HCWs. Around the worldwide, more than 7000 health workers lost their life due to COVID-19 infection, around 1320 HCW died in Mexico, around 1077 in the US, 649 in the UK 634 in Brazil, 631 in Russia, and 573 in India. As per the Indian Government, Ministry of health report, more than 87,000 HCWs have been infected and around 573 have lost their lifer due to COVID-19. Over half of the death (292) has been reported from the Maharashtra state.^[8]

The WHO and Health Ministry, Government of India have issued the guidelines includes maintain social distancing 1 m, wearing mask at public places, following cough etiquettes and frequent hand hygiene every 30 min, stay home and self-isolate when minor symptoms such as cold and cough, and postponing nonessential travel.^[9]

Ayurvedic remedies include consumption of hot water, hot food and herbal drinks, gargling with medicated water, steam inhalation, diet, sleep, mental relaxation, lifestyle behaviors, and yoga. The Ayurveda works with rejuvenation and stimulation of immunity in host.^[10]

A cross-sectional knowledge, attitudes, and preventative practice (KAP)/symptomatology online survey by Archana and Varadharaju reports that the overall high score was 84.19% for knowledge, 69% for attitude, and 60.8% for practice toward COVID-19. Age >20 years was associated with a high knowledge of COVID-19. Women had lower practice scores compared to men (odds ratio [OR] = 0.72; 95% confidence interval [CI] 0.56–0.92).^[11]

As there is no specific treatment and vaccines for this new COVID-19 pandemic, the prevention is the only option to reduce the mortality and morbidity among the high-risk population. It is of immense importance that the public should have good knowledge and preventive practice measures. The precautionary measures such as compulsory practice of social distancing, self-isolation, usage of personal protective equipment (PPE), adequate hand hygiene along with respiratory hygiene and effective quarantining are required right now to prevent further community transmission.^[11] Therefore, the present study is conducted to assess the expressed COVID-19 preventive practice among the HCWs and public visiting tertiary care hospital, AIIMS, Jodhpur. Our study finding may provide baseline information to authorities for developing policy and various measure to improve the awareness regarding preventive measure among the HCWs and public which may help to curtail the COVID-19 pandemic.

Aim

To assess the Expressed COVID-19 preventive practices among HCWs and public visiting tertiary care hospital, AIIMS, Jodhpur, Rajasthan.

Methodology

Study design and setting

A cross-sectional study was conducted between December 2020 and January 2021 to assess the expressed COVID-19 preventive practice among the HCWs and public visiting the tertiary care hospital, AIIMS, Jodhpur.

Sample and sampling techniques

The convenient sampling method was used to recruit 644 study participants among them 406 were HCWs and 238 were public. The sample size was calculated based on the previous study findings with 80% of power and 5% of precision. In this study, the researcher included more sample than calculated sample size (338) to enhance the external validity of the study findings.

Ethical consideration

Ethical permission was obtained from the institutional ethical committee of AIIMS (AIIMS/IEC/2020/3232) Jodhpur, and informed consent was taken from the participants before starting the study.

Data collection instrument and technique

A self-structured questionnaire was validated by ten experts in the field of nursing and medical and reliability of tool was assessed by using split half method that was ($r = 0.87$). The tool consists of 30 items with the response item of always (2), sometime (1), and never (0) from different domains of COVID-19 preventive practice such as personal hygiene, cleanliness, social distancing, diet, exercise, home remedies, travelling, and one open-ended question to express their additional practices. The self-structured expressed practice score ranged from 0 to 58. The score more than 75% (>43) was considered as good practice, score 51%–75% (29–42) was considered as moderate, and $< 50\%$ (<28) was considered as poor practice. The data were collected by paper pencil based self-administered structured practice statements and interview techniques for that sample who were available at the time of data collection and online modes was used to collect the data from the sample whom the researcher cannot easily access. Confidentiality regarding the data was assured to get co-operation throughout the procedure of data collection. Through online mode, 257 responses from HCW and 86 responses from public received, out of which 5 HCWs did not give online consent to participate in study and through interview and paper pencil-based self-administered method 254 responses from HCW and 152 responses from public were collected. The collected data were analyzed for missing values and data were coded in excel. The coded data were analyzed by using IBM SPSS statistics for windows version 26.0. Armonk, NY: IBM Corp. The descriptive statistics carried out to calculate the frequency, mean, standard deviation of variables and inferential statistics was done to calculate Chi-square and Fisher's exact to find the association between level of expressed COVID-19 preventive practice and demographic variables $P < 0.05$ was considered statistically significant.

Results

The majority (64.5%) of the HCWs and 47.5% of public belongs to age group of 20–30 years. In gender, majority of the HCWs (59.6%) and public (66.4%) were male. Most of the HCWs (90.6%) and public (84.0%) were Hindu. The most (90.4%) of the public had an income below 20,000 Rs. The major source of information for HCWs (76.6%) and public (64.7%) was electronic media. Majority of the (58.2%) HCW were nursing officers and 73.5% of public were working in private organization. Only

15.8% of HCW and 23.9% of the public were exposed to COVID-19 infection.

The demographic variables of HCW such as gender ($\chi^2 = 18.806 P \leq 0.001$) and education ($\chi^2 = 43.270 P \leq 0.001$) and demographic variables of public such as income ($\chi^2 = 21.102 P = 0.002$), religion ($\chi^2 = 13.302 P = 0.006$) and source of information ($\chi^2 = 17.030 P = 0.026$) had highly significant association with expressed level of COVID-19 preventive practice. The socioeconomic demographic characteristics and association with COVID-19 preventive practices among HCW and public were summarized in Table 1.

The Tables 2 describe the area-wise frequency of level of COVID-19 preventive practice among HCW and public in which majority of the HCW (87.7%) and Public (76.5%) were expressed that they always wash hands and with soap and water for at least 20 s whereas only 47.3% of HCW and 35.7% of public always wash their hands every 30 min. Majority of the of the HCW (77.3%) always use adequate PPE, whereas only 39.5% of public use Mask at work place always. Majority of HCW (66.3%) and public (64.7%) always take bath after reaching home.

Majority of the HCW always maintain social distancing at public places (79.6%) as well as at workplace (71.2%), whereas only 49.2% of public always maintain social distancing at public places. Only 35% of the HCW and 31.5% of public always practice yoga and exercise.

The Table 3 describing the area-wise level of COVID-19 preventive practice among HCW and public in which 54.2% of HCW and 54.6% of public expressed that, they sometime consume outside food. 55.0% of public and 37.7% of HCW always drink warm water. 34.7% of HCW expressed that they never drink Khaada and 53.8% of public expressed that they sometime drink Khaada. Majority of HCW (72.4%) and public (61.3%) always avoid unnecessary travelling. Most of the HCW (85%) and public (79.8%) always use mask whenever they go out.

Figure 1 summarized that 48.50% HCW and 62.80% public expressed moderate level whereas 47.50% HCW and 37.70% public expressed good level of COVID-19 preventive practice.

The overall mean practice score with standard deviation was $42.05 + 7.026$ among HCWs and $40.50 + 5.8836$ among public regarding expressed COVID-19 preventive practices.

Discussion

The present study reported that less than half percentage HCW and public expressed moderate level of COVID-19 preventive practices. The recent study conducted in

Table 1: Association of sociodemographic variables with level of expressed corona virus disease-2019 preventive practices among health care workers and public (n=644)

Demographic variable	HCW (n=406)		Public (n=238)	
	Percentage	P	Percentage	P
Age (years)				
15-20	2.7	0.345	0.8	0.153
20-30	64.5		47.5	
30-40	26.4		32.8	
>40	6.4		18.9	
Gender				
Male	59.6	0.000*	66.4	0.095
Female	40.6		33.6	
Education				
Illiterate	0.2	0.000*	0.4	0.126
Primary	3.2		8.8	
Secondary	4.9		27.7	
Higher secondary	8.9		22.3	
Degree and diploma	61.6		31.9	
Postgraduate	21.2		8.8	
Income (Rs.)				
<20,000	27.6	0.089	51.7	0.002*
20,000-30,000	12.8		38.7	
30,000-40,000	14.8		5.0	
>40,000	44.8		4.6	
Source of information				
Electronic media	76.6	0.269	64.7	0.026*
Print media	21.7		29.4	
Friends	1.0		3.4	
Family members and relatives	0.7		2.5	
History of COVID-19 infection				
Yes	15.8	0.438	23.9	0.518
No	84.2		76.1	
Religion				
Hindu	90.6	0.149	84.0	0.008*
Muslim	6.7		14.3	
Christian	1.7		1.7	
Others	1.0		0.0	
Types of health care worker				
Doctor	21.7		0.302	
Nursing officer	58.1			
Hospital attendant	13.5			
Sanitary worker	4.9			
Technician	1.7			
Occupation				
Government employee			10.5	0.586
Private			73.5	
Shop keeper			4.2	
Business			11.3	
Un-employee			0.4	

*Significant at P<0.05. HCW=Health care workers, COVID-19=Corona virus disease-2019

China by Yang *et al.*^[12] on COVID-19 infection control practices reported that 56.97% health personnel hand

hygiene compliance and 28.95% put on and 37.81% put off protective equipment's correctly.

This research findings shows that majority of the HCW (87.7%) and Public (76.5%) have shown good preventive practices in term of washing hands. HCW (79.6%) were always maintaining social distancing at public places, 77.3% always used adequate PPE/ mask, 66.3% were always taking bath after reaching at home and only 35% of the HCW always practiced yoga and exercise, 72.4% always avoid unnecessary travelling always avoid unnecessary travelling, and 34.7% expressed that they never drank Khaada as a preventive practice of COVID-19 infection.

Whereas findings shows that nearly half of the public (49.2%) only were always maintaining social distancing at public places, 39.5% always used adequate mask at work place, 79.8% always used mask whenever they went out, 64.7% were always taking bath after reaching at home, 31.5% of public always practiced yoga and exercise, 61.3% always avoid unnecessary travelling, and 53.8% of public expressed that they sometime drank Khaada as a preventive practice of COVID-19 infection. Our findings were similar to findings reported in similar studies conducted in India by Kumar *et al.*^[13] and at Etiopa by Bekele *et al.*^[14] and at Salman *et al.*^[15]

Furthermore, Wu and Munthali^[16] study on KAPs towards COVID-19 among international students in China, the results revealed that all the students (300, 100%) adhered to and practiced set preventive measures against COVID-19 and that there was a positive correlation between attitudes and preventative practices ($r = 0.219, P < 0.01$). Study results indicated that 100 (100%) respondents use obligatory face masks when doing outdoor activities, while 256 (85.3%) did not allow visitors in their university dormitories. It was found that 299 (99.7%) were washing their hands frequently and 282 (94%) did not touch their faces with hands when they were dirty. The results indicated that 287 (95.7%) avoided going out and kept a distance of 3 m from anyone.

Similar study finding reported by Amsalu *et al.*^[17] on practice of COVID-19 prevention measures and associated factors among residents of Dire Dawa City, Eastern Ethiopia. Findings revealed that out of the total respondents, 262 (40.7%) (95% CI: 37–44.4) of the residents had a good practice on prevention methods of COVID-19. Nearly one-third (32.7%), and 29.7% of the respondents were cover their mouth and nose during coughing and sneezing, and keeping their social distance, respectively.

Limitations and recommendation

The study is limited to HCWs who are working at tertiary care hospital, AIIMS, Jodhpur, Rajasthan and

Table 2: Statement wise frequency of expressed corona virus disease-2019 preventive practices among health care workers and public

Question number	Practice domains	Practice level of HCW (n=406) (%)			Practice level of public (n=238) (%)		
		Always (2)	Sometime (1)	Never (0)	Always (2)	Sometime (1)	Never (0)
Personal hygiene							
1	I wash my hands with soap and water/sanitizer at least for 20 sec	87.7	12.3	0.0	76.5	22.3	1.3
2	I wash/sanitize my hands every 30 min	47.3	46.3	6.4	35.7	56.7	7.6
3	I follow cough etiquette whenever I sneeze and cough in public	85.7	9.1	5.2	83.6	12.6	3.8
4	I clean my house floor with disinfectant solution	67.0	29.1	3.9	64.7	31.1	4.2
5	I keep hand sanitizer with me all the time	67.5	27.1	5.4	64.3	28.2	7.6
6	I use adequate PPE/mask in workplace	77.3	17.7	4.9	39.5	40.8	19.7
7	I follow safe disposable of biomedical waste as per guidelines/used mask in dustbin	89.7	8.9	1.5	79.8	14.3	5.5
8	I inform authority if I have flu-like symptoms	86.0	12.6	1.4	77.3	18.1	4.2
9	I do take bath first, after reaching home	66.3	20.9	12.8	64.7	29.4	5.9
Social distancing							
10	I don't invite friends and relatives to my home unnecessarily	63.1	29.3	7.6	76.9	21.8	1.3
11	I use to maintain social distance in public places	79.6	20.0	0.5	49.2	36.6	13.9
12	I follow social distance at work place	71.2	26.1	2.7	73.25	25.2	1.3
Exercise							
13	I practice exercise and yoga daily	35.0	45.8	19.2	31.5	51.3	17.2
14	I engage in play activities daily	30.8	51.2	18.0	54.2	32.24	13.4

HCW=Health care workers

Table 3: Statement wise frequency of expressed corona virus disease-2019 preventive practices among health care workers and public

Question number	Practice domains	Practice level HCW (%)			Practice level public (%)		
		Always (2)	Sometime (1)	Never (0)	Always (2)	Sometime (1)	Never (0)
Diet							
1	I do not consume outside food	38.2	54.2	7.6	34.5	54.6	10.6
2	I drink warm water	37.7	53.7	8.6	55.0	40.8	4.2
3	I eat healthy food compare to previous to build up immunity	65.3	31.0	3.7	63.9	34.0	2.1
4	I eat more fruits and vegetables compare to previous	58.6	36.0	5.4	55.0	37.8	7.1
5	I do not share food items at work place	52.2	36.2	11.6	35.7	44.5	19.7
Home remedies							
6	I drink khaada (ayurvedic syrup) once a day	20.0	45.3	34.7	17.2	53.8	29.0
7	I take immune booster ayurvedic medicine	17.2	31.8	51.0	11.3	32.8	55.9
8	I use more turmeric, garlic, and ginger in a food	53.4	35.7	10.8	62.2	29.0	8.8
9	I drink golden milk every day (milk with haldi)	27.8	44.8	27.3	34.0	48.3	17.6
10	I eat neem leaves every day	17.0	26.4	56.7	15.5	49.6	34.9
Travelling							
11	I go to the place where there are a large number of people	12.8	43.1	44.1	34.0	40.8	25.2
12	I use a face mask whenever I go out of home and market	85.0	10.3	4.7	79.8	16.8	3.4
13	Least often I use public transport	45.8	40.6	13.5	43.3	43.3	13.4
14	I leave the house unnecessarily	7.1	27.6	65.3	21.8	29.4	48.7
15	I avoid unnecessary traveling	72.4	22.7	4.9	61.3	31.5	7.1

HCW=Health care workers

public visiting outpatient department at same. In this researcher collected the expressed COVID-19 preventive practices rather than the observed COVID-19 preventive

practice. The researcher ensured the confidentiality and anonymity to ensure the honest expression of COVID-19 preventive practices by the HCW and public to get

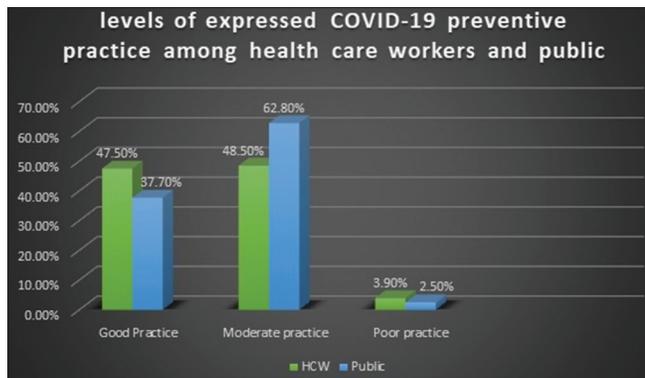


Figure 1: Level of expressed corona virus disease-2019 preventive practice among health care workers and public

reliable and authenticated study findings in order to generalize the study findings to target population.

Further studies can be conduct

- On larger number of samples
- Comparative studies between general public and HCWs
- An observational study
- Interventional study.

Conclusion

This present study conclude that the HCW and public have moderate COVID-19 preventive practice and always follow the general preventive measure such use of mask, social distancing, cough etiquettes, and handwashing and less concerned about the Ayurvedic immune booster, Khaada, golden milk, eating outside food, and yoga/exercise to boost the immune system.

The HCW and public need more awareness regarding COVID-19 preventive practices, especially in the areas of diet, exercise, travelling and home remedies so an effective IEC intervention programs can be designed to educate public and HCWs and follow a safe COVID-19 preventive practice and we recommend further studies on large number of sample and can conduct observational study to assess the practice for more generalizability of the study findings.

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Conflicts of interest

There are no conflicts of interest.

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