International Journal of Community Medicine and Public Health
Lohiya J et al. Int J Community Med Public Health. 2021 Apr;8(4):1765-1772
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20211231

Original Research Article

Psychological implications of COVID-19 pandemic among health care professionals of Madhya Pradesh India

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Received: 11 February 2021
Accepted: 09 March 2021

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ABSTRACT

Background: The rapid spread of the COVID-19 pandemic has loaded remarkable psychological stress on people around the world, predominantly the Health Care Professionals (HCPs). The present study aimed to assess anxiety and fear of getting infected among HCPs working during the current viral outbreak. Also, doctors' knowledge about various practice modifications to combat the novel coronavirus disease (COVID-19) outbreak has been evaluated.
Methods: A cross-sectional study was conducted on Health care professionals (HCPs) of Madhya Pradesh India using an online survey. A pretested and pre-validated questionnaire was designed on Google forms and link generated was shared through social media. A total of 320 doctors from different cities of Madhya Pradesh have participated in the study. A Chi-Square and Spearman Correlation test was applied using SPSS version 25.
Results: Present Study reveals that more than two-thirds of HCPs (80%) were anxious and worried about the overwhelming effect of COVID-19. Among HCPs, dental professionals (61%) unfolded greater fear and anxiety level than the medical professionals. The majority of participants (92%) were updated with good knowledge and awareness of recent changes in the treatment protocols regarding the COVID-19 pandemic. However, the implementation of modifying treatment protocol was recorded as 71%.
Conclusions: High psychosomatic implications of COVID -19 outbursts were seen in HCPs while working in their respective fields. So providing psychological first aid is a significant care component for populations that have been victims of emergencies and disasters.

Keywords: Anxiety, Corona virus, Fear, Health care professionals, Practice modifications

INTRODUCTION

The latest outburst of respiratory illness caused by a novel corona virus (named "COVID-2019") has gained alertness globally and has been documented as a serious public health threat by US Centers for Disease Control and Prevention (CDC).[1] The outbreak has quickly spread to most countries and claimed numerous lives subsequent to its first report in Wuhan, Hubei Province in China in December 2019. The World Health Organization (WHO) confirmed the COVID 19 to be a pandemic on the 11th of March 2020.[2]

The major route of human-to-human spread of the virus is via hands, saliva, nasal droplets, and surface Contacts.[3] COVID-19 has an extended incubation period of 2-14 days, with erratic severity from asymptomatic to life-threatening symptoms among different individuals. The

infected individual typically presents with upper respiratory tract infection (RTI) and complaints of high-grade fever, a dry cough, and dyspnea.[4]

It may get critical and life-threatening in individuals of older age and with co morbidities like cardiovascular disease, hypertension, diabetes, chronic respiratory disease, and cancer.[5] Infected persons can be asymptomatic, therefore not just making the diagnosis complex but preventing the spread of the disease an arduous challenge.[3]

Till the moment, there is no proven treatment or immunization against SARS-CoV-2. The disease is controlled with appropriate symptomatic treatment (antipyretics, analgesics) and supportive care along with training for prevention and control with isolation, and disinfection.[6]

India has the third-highest active cases of corona virus in the world. The pandemic has resulted in an overwhelming and unprecedented burden on the healthcare system across the world.

Healthcare professionals (HCPs) are exposed to a higher risk of getting infected due to their close contact with infected patients and potentially spreading it to their peers, families, and other patients.[7] Under these circumstances, it may be natural for HCPs to develop a fear of being infected by their patients.

Fear and anxiety are dominant feelings that may be associated with the overwhelming reports on COVID-19 pandemic by social, electronic, and print media.[8] Being on the list of the high-risk profession, doctors are very much expected to develop severe anxiety about the current pandemic situation.

Majorities of HCPs are unenthusiastic and feel afraid of treating patients in such a situation. However numerous reports of infection and fatalities of HCPs have surfaced, which are of grave concern.

Therefore, it is extremely important to recognize the psychological implication of COVID-19 pandemic among HCPs as WHO Director-General Tedros Adhanom Ghebreyesus said, "This is a time for facts, not fear. This is the time for science, not rumors. This is the time for solidarity, not stigma. This outbreak is a test of solidarity - political, financial, and scientific. We need to come together to fight a common enemy that does not respect borders".[9]

So the present study aimed to assess anxiety and fear of getting infected among HCPs working during the current viral outbreak. Also, doctors' knowledge about various practice modifications to combat the novel coronavirus disease (COVID-19) outbreak has been evaluated.

METHODS

The present cross-sectional study was conducted from the 10th of June 2020 to the 20th of June 2020. The study was conducted using an online survey questionnaire as the country was in the state of national lockdown. Conducting a population-based survey in this critical condition was not possible.

A well designed pretested and a pre-validated questionnaire was designed on Google forms and link generated was shared through social media and an e-mail to the medical and dental professional and received all responses through an online survey submission. Both convenience sampling (researchers themselves contacted doctors to participate in the study) and snowball sampling (the participating doctors were asked to forward the questionnaire to their colleagues) were used so that maximal participation could be ensured.

Only medical and dental doctors were included in the study. Any Paramedical staff, medical or dental students, and participants with a history of psychological or cognitive disorder were excluded from the survey.

The questionnaire consisted of three Parts: Demographics, the fear among doctors about getting infected with COVID-19, and the information about their practice modifications to combat the COVID-19 outbreak by the Centers for Disease Control and Prevention (CDC) and ADA practice guidelines. The online Questionnaire contained a total of 19 questions among which 8 assessed fear and the remaining 11 assessed Knowledge and practice modifications among Indian doctors. A total of 322 doctors from different cities of Madhya Pradesh were participated and submitted the questionnaire, excluding 22 unfilled or partially filled forms. The study was submitted for ethical approval and has been approved for ethical clearance by the ethical review board of our institution. Statistical Analysis was done on SPSS version 25. A Chi-Square and Spearman Correlation test was used to control confounders and assess the relation of doctors' responses concerning age and designation.

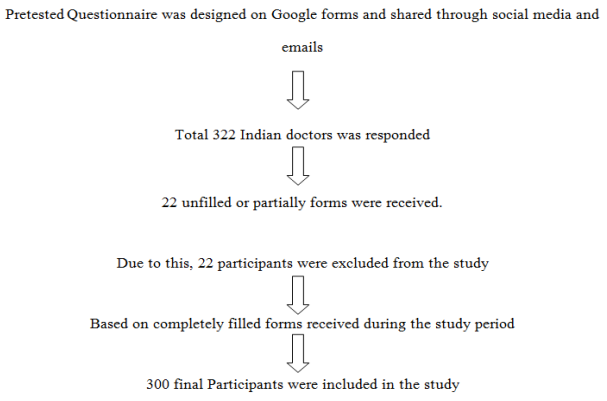

Figure 1: Flow chart of participants recruitment procedure.

RESULTS

A total of 300 health care professionals from different districts of Madhya Pradesh India submitted a filled questionnaire. The descriptive data of the participants are presented in Table 1. Out of 300 doctors, 135 (45%) were males and 165 (55%) were females. The leading age-band was 20-30 years old, accounting for approximately 55 %.

A substantial more percentage of Dental practitioners participated (54%) to medical practitioners (46%). According to qualification 174 (58%) were graduates and 126 (42%) were postgraduates while 81% were working in the private sector and nearly only 7% and 11% were working in semiprivate and government setup. The mainstream of participants was working in hospitals (73%) while 26% work in the clinics.

Table 1: Demographic details of health care professionals (HCPs) (n=300).

Demographics		N (%)
Gender	Male	135(45)
	Female	165(55)
Age (in years)	20 to 30	167 (55.7)
	31 to 40	81 (27)
	41 to 50	28 (9.3)
	51 to 60 8	19 (6.3)
	Above 60	5 (1.7)
Designation	Medical Practitioner	138(46)
	Dental Practitioner	162(54)
Qualification	Graduates	174 (58)
	Post graduates	126 (42)
Work place	Hospital	220(73)
	Clinic	80(26)
Work setting	Private	244(81.3)
	Semiprivate	22(7.3)
	Government	34(11.3)

Table 2: Fear and anxiety assessment of health care professionals according to designation.

Questions		Designation		Total N (%)	P value
		Medical Practitioner N (%)	Dental Practitioner N (%)		
Q1. Are you afraid of getting infected with COVID-19 from a patient and co worker?	Yes	87 (40.8)	126 (59.2)	213 (71)	*0.006
	No	35 (53.8)	30 (46.2)	65 (21.7)	
	Unaware	16 (72.7)	6 (27.3)	22 (8)	
Q2. Are you anxious when providing treatment to a patient who is coughing or suspected of being infected with COVID-19?	Yes	101 (44.7)	125 (55.3)	226 (75.3)	0.330
	No	28 (54.9)	23 (45.1)	51(17)	
	Unaware	9 (39.1)	14 (60.9)	23 (7.7)	
Q3. *Do you want to close your medical/dental practice until the number of COVID-19 cases starts declining?	Yes	41 (33.3)	82(66.7)	123 (41)	*0.001
	No	77 (56.6)	59 (43.4)	136 (45.3)	
	Not Applicable	20 (48.8)	21 (51.2)	41 (13.7)	
Q4. Do you feel nervous when talking to patients in close vicinity?	Yes	68 (41.5)	96 (58.5)	164 (54.7)	0.221
	No	61 (51.7)	57 (48.3)	118 (39.3)	
	Unaware	9 (50.0)	9 (50.0)	18 (6)	
Q5. Do you have fear that you could carry the infection from your work place back to your family?	Yes	117 (43.5)	152 (56.5)	269 (89.7)	*0.008
	No	15 (60.0)	10 (40.0)	25 (8.3)	
	Unaware	6 (100)	0 (0)	6 (2)	
Q6. Are you afraid of getting quarantined if get infected?	Yes	58 (43)	77 (57)	135 (45)	0.193
	No	74 (47.1)	83 (52.9)	157 (52.3)	
	Unaware	6 (75)	2 (25)	8 (2 .7)	
Q7. Are you anxious about the cost of treatment if you get infected?	Yes	44 (36.1)	78 (63.9)	122 (40.7)	*0.010
	No	85 (54.1)	72 (45.9)	157 (52.3)	
	Unaware	9 (42.9)	12 (57.1)	21 (7)	
Q8. Do you feel afraid when you hear that people are dying because of COVID-19?	Yes	107 (46.1)	125 (53.9)	232 (77.3)	0.051
	No	20 (37.7)	33 (62.3)	53 (17.7)	
	Unaware	11 (73.3)	4 (26.7)	15 (5)	

*= P value is statistically significant.

Table 3: Knowledge and practice modification among health care professionals (HCPS) according to designation.

Questions		N (%)	N (%)	Total N (%)	P value
Q9. Are you aware of the mode of transmission of COVID-19?	Yes	133 (45.4)	160 (54.6)	293 (97.7)	0.172
	No	5 (71.4)	2 (28.6)	7 (2.3)	
Q10. Are you updated with the current cdc or WHO guidelines for cross-infection control regarding COVID-19?	Yes	126 (46.3)	146 (53.7)	272 (90.7)	0.393
	No	8 (36.4)	14 (63.6)	22 (7.3)	
	Unaware	4 (66.7)	2 (33.3)	6 (2)	
Q11.*Are you currently asking every patient's travel history before performing any treatment?	Yes	122 (49.6)	124 (50.4)	246 (82)	*0.022
	No	5 (38.5)	8 (61.5)	13 (4.3)	
	Not Applicable	11 (26.8)	30 (73.2)	41 (13.7)	
Q12.*Are you currently taking every patient's body temperature before performing any treatment?	Yes	116 (53.5)	101 (46.5)	217 (72.3)	*0.000
	No	10 (29.4)	24 (70.6)	34 (11.3)	
	Not Applicable	12 (24.5)	37 (75.5)	49 (16.3)	
Q13. *Are you deferring medical/dental treatment of patients showing suspicious symptoms?	Yes	74 (42)	102 (58)	176 (58.9)	*0.000
	No	43 (68.3)	20 (31.7)	63 (21.1)	
	Not Applicable	21 (35)	39 (65)	60 (20.1)	
Q14.*Do you think surgical mask is enough to prevent cross-infection of COVID 19?	Yes	35 (64.8)	19 (35.2)	54 (18)	*0.006
	No	98 (41.4)	139 (58.6)	237 (79)	
	Unaware	5 (55.6)	4 (44.4)	9 (3)	
Q15. *Do you think n-95 mask should be routinely worn in work place due to the current outbreak?	Yes	110 (44)	140 (56)	250 (83.3)	*0.025
	No	16 (45.7)	19 (54.3)	35 (11.7)	
	Unaware	12 (80)	3 (20)	15 (5)	
Q16. *Have you ever worn an N-95 mask while treating a patient in your medical/dental practice?	Yes	111 (61)	71 (39)	182 (60.7)	*0.000
	No	16 (18.4)	71 (81.6)	87 (29)	
	Not Applicable	11 (35.5)	20 (64.5)	31 (10.3)	
Q17. Do you routinely follow universal precautions of infection control for every patient?	Yes	118 (48.4)	126 (51.6)	244 (81.6)	0.272
	No	13 (36.1)	23 (63.9)	36 (12)	
	Unaware	7 (36.8)	12 (63.2)	19 (6.4)	
Q18. Do you wash hands with soap and water/use sanitizer before and after treatment of every patient?	Yes	129 (44.9)	158 (55.1)	287 (95.7)	0.083
	No	1 (33.3)	2 (66.7)	3 (1)	
	Unaware	8 (80)	2 (20)	10 (3.3)	
Q19. Are you aware of which authority to contact if you come across a patient with suspected COVID-19 infection?	Yes	124 (47)	140 (53)	264 (88)	0.422
	No	8 (33.3)	16 (66.7)	24 (8)	
	Unaware	6 (50)	6 (50)	12 (4)	

*= P value is statistically significant.

Description of fear and anxiety level among health care professional towards COVID-19 was reveal in Table 2. 71% of HCW were afraid of Getting Infected with COVID-19 from a Patient and Co-Worker in which maximum apprehension was seen in dental professionals (59.2%) then medical professionals (40.8%). While treating symptomatic and suspected COVID-19 patients 75.3% of participants were anxious and 41% of participants want to close their practice until the number of COVID cases declines. More than 54 % of participants feel nervous when talking to patients in close vicinity, 89.7% have fear of carrying the infection from the workplace to their families, and 45% were afraid of getting quarantined if they got infected. The anxiety rate regarding the cost of treatment if they got infected was 40.7%, while 77.3% felt scared while they learned about

mortalities because of COVID-19. In all aspects, dental doctors show more fear and anxiety level against COVID in contrast to medical doctors.

Several factors of fear that shows a statistical significant difference between the groups are fear of getting infected from patients (p=0.006), close their practice until the number of cases declines (p=0.001), fear of carrying infection from work to home (p=0.008), anxiety regarding the cost of treatment (p=0.010).

Description of knowledge and practice modification regarding COVID-19 among Health care Professionals was given in table 3. Most participants (97.7%) were aware of the mode of transmission of COVID-19, nearly 90% were updated with the current CDC or WHO guidelines for cross infection control. Consequently, 82% preferred recording a patient's travel history, 72.3% recording the patient's body temperature before performing any treatments, and 58.9 % deferred treatment of patients who revealed suspicious symptoms. In terms of using personal protection, only 79% believed that a surgical mask is not enough to prevent cross-infection of COVID-19. In comparison, 83.3% favored the use of N-95 masks should be routinely worn in the workplace during the current outbreak, and about 60% wearing an N-95 mask with face shield while treating a patient. Although majority (81.6%) participants follow universal precautions of infection control, 95 percent of participants practiced washing hands with soap and water or sanitizer before and after treatment of patients, while 88% of participants were aware of the proper authority to contact if they came across a patient with a suspected COVID-19 infection.

Concerning knowledge and practice modification among HCPs during COVID-19 both the groups show a highly statistical significant difference in several aspects like recording every patient's travel history (P=0.022) and Body temperature (p=0.000) before performing any procedure, deferring treatment of patients showing suspicious symptoms (p=0.000), surgical mask is enough to prevent cross-infection (p=0.006) and N-95 mask should be routinely worn in the workplace during COVID-19 (P=0.025).

DISCUSSION

COVID-19, are considered to be highly mutated, and vaccines or treatment are not much efficient and available.[10] The transmission of COVID-19 poses a risk for people who come in close contact with an infected individual, and the risk is greater among those who are in close proximity to or work close to the patient, i.e. our healthcare personnel.[11] As we know, after the outbreak of COVID-19 in Wuhan, the medical workforce took pains to struggle with the disease in the front line and sheltered the health of the public.[12] The mental health of frontline Health care workers is a concern.

Preceding studies have shown that large outbreaks of a novel or serious infectious diseases are associated with levels of anxiety that may be far greater than the risk of becoming infected or of mortality from infection.[13] In 2016, James et al. identified that epidemics of infection triggered anxiety and behaviors that were related to fear, which had long-term consequences.[14] This indicates that public awareness was an important factor in controlling both infectious disease and the effects of stress associated with the disease.

To our knowledge, the number of studies in this aspect was limited and no studies had explored the psychological status between medical and dental doctors during the COVID-19 pandemic. So the present study aimed to document the fear, anxiety level, and practice modification among the Indian medical and dental professionals during the COVID-19 outbreak.

The present study revealed that the large number of HCPs (71%) especially dental professionals had fear of Infection with COVID-19 from a Patient and Co-Worker and also show statistical significance (P<0.05) between the groups. A similar finding was revealed by Wen Lu et al in March 2020 shows that medical professionals are more worried about being infected than the administrative staff.[15] Muhammad Adeel Ahmed et al in March 2020 confirm that 87% of dental professionals were scared of infection from patients and co-workers. As COVID-19 are spreading rapidly worldwide and HCP are dealing with sick patients continuously so they are at higher risk of acquiring infectious diseases.[4] The primary route for transmission of coronavirus is through droplets and aerosols and dental procedures can generate a large number of droplets and aerosols which increase the possibility of dentists and dental healthcare workers getting infected and further spreading the virus.[15]

Majority of HCPs were apprehensive in providing treatment to a patient with suspicious symptoms and carrying infections from their workplace to their families. Asaad et al in their study show nearly 70% of HCW are worried about carrying the infection to their families which is similar to the current study.[16] Since COVID-19 can be transmitted from person to person through droplets and hand contact during an incubation period as well as on an acute attack.[17] Thus the fear of getting infected by patients and carrying the infection to home is justified. Most of the HCPs want to close down their practices until the number of cases declines, which affect the patients who are suffering from medical problems and those who are undergone to multiple visits medical treatment and also experiences delay in medical care. Moreover, the current guidelines on the COVID-19 outbreak propose that OPD and non-emergency services have been stopped in several hospitals so that all resources are diverted for combating COVID-19 and emergency medical care.[18]

However, in the present study HCPs are less concerned about the cost of treatment if infected by COVID-19. In

India, the corona patients' treatment is free of cost in government hospitals and labs or at government expenses.[19] So the fear of getting infected is more as compared to the cost of treatment among HCPs. This analysis also shows the low anxiety of quarantined if infected by COVID-19. While the study done by Mei Bai et al in 2004 illustrates a high anxiety level among those who are quarantined during the SARS outbreak.[20] Although, quarantine is often an unpleasant experience for those who undergo it. But it is an effective way to protect the public. Findings of the present analysis show different results from the other study because the study was done on Health care professionals who know the significance of being quarantined during the outbreak of disease and protect the other people from infection.

Existing research also revealed the greatest fear of participants about the growing mortality rate due to COVID-19. A similar outcome was seen in the study done by Muhammad Adeel Ahmed et al. in March 2020.[4] The growing number of people infected with COVID-19 increases the awareness of mortality associated with infection, and the novel nature of the viral infection has resulted in anxiety in the population.

HCPs in this study, the majority 98% were aware of the mode of transmission of COVID-19. Analogous result was shown by Ogolodom et al while Bhagvathula et al revealed that healthcare workers had insufficient knowledge about the COVID-19 pandemic.[21,22] Both sample size and environmental variations of our studies could be responsible for the noted discrepancies. Numerous clinical guidelines have been issued for COVID-19, proposing infection prevention and control practices during the COVID-19 pandemic, along with standard practices recommended as a part of routine healthcare delivery to all patients. It was encouraging to discover that a large number of participants in the present study were updated with the current CDC or WHO Guidelines for Infection control including asking patients' travel history and recording patients' body temperature.

Spread of the COVID-19 virus can occur directly or indirectly by contact with infected people.[23] Highlights of the present study is that the highest number of HCPs believe that Surgical Mask alone is not enough to prevent COVID-19 infection. According to WHO the use of a mask alone is insufficient to provide an adequate level of protection or source control, other protective, personal, and community-level measures should also be adopted to suppress the transmission of respiratory viruses.[24] In specific settings like a dental clinic various procedures are performed that produce aerosols, which causes airborne transmission of the COVID-19 virus.[25] Therefore the majority of the participants suppose that N-95 mask or face shields be routinely worn in the workplace by HCPs.

The fact that HCWs are at risk of infection in the epidemic chain is a critical issue because HCWs help in controlling the outbreak. Therefore, all possible actions must be taken to control the spread of the infection to HCWs by taking appropriate measures to reduce these risks.[26] Substantiation from COVID-19 epidemics shows that hand hygiene is very important to protect health care workers from getting infected.[27] Naseer Ahmed et al demonstrate in their study that 87.8% were practicing washing hands soap and use of alcohol-based sanitizer while 67.8% of health care professionals were practicing universal precaution for infection control.[27] Findings of the current study support the evidence of the previous study and show that HCPs are more aware of the recent guidelines against coronavirus disease and also follow the universal precautions of infection control followed by washing hands with soap and water or alcohol-based sanitizer before and after the treatment of every patient.

Protection of HCPs and prevention of intra-hospital transmission of infection are important aspects in epidemic response and this requires that HCPs must have updated knowledge regarding the source, transmission, symptoms, and preventive measures.[28]

The study reveals that HCPs are updated with good knowledge but show a high level of fear and anxiety regarding the COVID-19 pandemic. Dental professionals' unfolded greater fear and anxiety level than medical professionals because the nature of their job is such that they are in close contact with the patient and also due to the production of various aerosol particles during dental treatment procedure so they are at high risk of infection. Reported facts, dental health pro-fessionals (DHPs), and patients are at high risk of infections from different types of bacteria, viruses, and fungus.[29] To ensure a safe working environment and to prevent transmission of infection numerous clinical guidelines are issued. Strict adherence to these guidelines is needed to prevent the potential spread of infection in dental or medical practice.

Limitation: This is the first study to report the level of fear/anxiety, knowledge, and attitude and practice modification among medical and dental professionals toward the COVID-19 outbreak in Madhya Pradesh, India.

Despite good study findings we acknowledge some limitations, and cautions must be taken while generalizing the outcome of the study due to the convenient sampling methodology, restricted sample size with some reduced response rate, sample clustering from a single city.

Therefore, carrying out large-scale research from another segment in India is important to further explore the height of awareness and anxiety of HCPs at the national level.

CONCLUSION

The psychosomatic and psychiatric implications secondary to the phenomenon, both on an individual and a communal level, tend to be underestimated and ignored,

generating gaps in managing strategies and increasing the load of associated diseases.

Providing psychological first aid is a critical care component for populations that have been victims of emergencies and disasters. Policies targeting the general population and specific clusters must be developed, including health professionals who are directly exposed to the pathogen and have elevated anxiety rates. The WHO reveals that psychological factors are directly related to the key cause of morbidity and mortality in the world. Thus, increased investment in research and planned actions for mental health in analogous with infectious outbreaks is urgently needed worldwide.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Lohiya J, Saxena V, Bhambhani G, Chaturvedi S, Jain S, Bhambal AM. Psychological implications of COVID-19 pandemic among health care professionals of Madhya Pradesh India. Int J Community Med Public Health 2021;8:1765-72.