

Research Article

# Physicians' Preparedness to Protect Themselves against COVID-19 during the Unlock Phase in India: An Online Survey

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## I N F O

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## A B S T R A C T

**Introduction:** Physicians, being at the forefront of managing the COVID-19 pandemic, were more susceptible to COVID-19 infection. However, there are hardly any studies which document their preparedness to protect themselves from getting infected.

**Objectives:** To assess the preparedness of physicians to protect themselves from COVID-19 during the post-lockdown unlock phases 3.0 and 4.0 in India and its association with work-related and sociodemographic factors

**Methods:** An online survey was conducted among physicians, using a pre-tested and pre-validated questionnaire shared through WhatsApp and E-mail between August 14 and October 17, 2020. It consisted of questions regarding socio-demographic and work-related characteristics. COVID-19 preparedness was assessed using a seven-item questionnaire, with each response on a seven point Likert scale. A score of 7 out of 14 was considered adequate for COVID-19 preparedness. The association between COVID-19 preparedness and work-related characteristics was explored using chi-square tests. Logistic regression analysis was carried out to find the independent predictors of COVID-19 preparedness.

**Results:** Out of the 757 responses received, 79% of the physicians were found to be prepared against COVID-19. Majority of the respondents (77.5%, 587/757) were men and 28.2% (213/757) of the subjects were in the age group of 40–50 years. Around one-fifth (21.7%, 164/757) of the physicians perceived being protected from acquiring COVID-19 infection and 47.6% (360/757) were anxious about contracting the infection. Bivariate analysis showed that a higher age, more years of experience, and working in a private set-up were associated with better COVID-19 preparedness among the physicians.

**Conclusion:** Majority of physicians took steps to be prepared for self-protection from COVID-19. Physicians working in private facilities were more prepared than those in government health facilities.

**Keywords:** Social Distancing, Masks, Personal Protective Equipment, Health Facilities, COVID-19

## Introduction

Physicians were at the forefront of managing the COVID-19 pandemic which exposed them to the risk of infection. Doctors accounted for 0.5% of the total deaths in India due to COVID-19 with 196 reported deaths among doctors between January and August 2020.<sup>1,2</sup> Physicians' unpreparedness has been mentioned as one of the reasons for the mortality among doctors. It was also not possible to screen all patients for COVID-19 which further put doctors at risk.<sup>3,4</sup>

In the post-lockdown phase, as the gradual resumption of mobility and services was allowed, the risk of spread of infection in the community increased ; which led to an exponential rise in the number of cases in India from 2,394 in May to 96,424 in September 2020.<sup>5</sup>

Studies from India regarding the preparedness of physicians to protect themselves from COVID-19 during the unlock phases are scarce.<sup>6</sup>

We aimed to assess the preparedness of physicians to protect themselves from COVID-19 during the post-lockdown unlock phases 3.0 and 4.0. We also attempted to explore certain socio-demographic and work-related factors and analyse their association with COVID-19 preparedness.

## Methodology

An online cross-sectional survey was conducted using Google Forms between August 14 and October 17, 2020. The links to these online forms were circulated in the E-mail and WhatsApp groups of the Indian Association of Pediatrics and the Indian Medical Association, with reminders given thrice. Thus, a convenience sampling methodology was used. All those physicians who had been a part of managing COVID-19 patients in their respective settings were included in the study. During this study period, 757 responses were received.

The pre-tested and pre-validated data collection tool consisted of the following sections: socio-demographic information, work experience, working environment, comorbidities, and preparedness to protect themselves from COVID-19. A review of the national and international guidelines was done to identify the personal protective measures recommended for COVID-19.<sup>7-9</sup>

Based on the consensus of the authors, seven items were finally kept in the COVID-19 preparedness section. These were: social distancing (0 - none or not sure; 1 - most of the time; 2 - all the time), frequent hand washing (0 - no; 1 - yes, but not for two minutes; 2 - yes, for two minutes), hand sanitiser (0 - no; 1 - any sanitiser or strength not known; 2 - 70% alcohol), mask (0 - cloth mask; 1 - any

triple layered or surgical mask; 2 - N95 or any combination), personal protective equipment (PPE) (0 - none or cloth mask only or cloth mask and gloves; 1 - surgical mask only; 2 - N95 mask only; 3 - surgical/ N95 mask and gloves or surgical/ N95 mask and face shield and gloves; 4 - full PPE kit), hydroxychloroquine (HCQS) prophylaxis (0 - no; 1 - yes ), and vitamin C and zinc prophylaxis (0 - no; 1 - yes). The minimum and maximum possible total score was 0 and 14 respectively. Those with a total score above seven were considered well prepared and those with a score of seven or less were labelled poorly prepared to protect themselves against COVID-19. The questionnaire also had questions related to their COVID-19 infection status and their self-perceived anxiety about getting infected with COVID-19. The online form consisted of the details of the study and online consent was obtained. Approval from the Independent Ethics Committee, Maanav Health Foundation vide letter no MHF EC/OU/20/484 was obtained.

## Statistical Analysis

Data were automatically compiled in a comma-separated file which is a feature of Google Forms. It was converted to Microsoft Excel, cleaned, and used for data analysis. As the respondents consisted of a sizable proportion of paediatricians, the variable field of speciality was classified into two categories i.e., paediatricians and non-paediatricians for the purpose of comparisons. Categorical variables such as the status of preparedness against COVID-19, gender, field of speciality, COVID-19 status of the workplace etc. were presented as proportions and percentages. The chi-square test was used to find out the association between COVID-19 preparedness status and other categorical variables such as age groups, field of speciality, gender, COVID-19 status of the workplace, and so on. Binomial logistic regression was used to find out the independent predictors of COVID-19 preparedness status. The independent variables for which  $p < 0.25$  in bivariate analysis were put in the regression model. All tests were two-tailed and a p-value less than 0.05 was considered significant. Epi Info for Windows software was used for statistical analysis. Odds ratios with 95% CI showed the association of COVID-19 preparedness with certain sociodemographic and work-related variables.

## Results

A total of 757 responses were received from physicians all over India. The sociodemographic details and work-related particulars of the physicians have been shown in Table 1 and the association of certain variables with COVID-19 preparedness status has been provided in Table 2. It was seen that less than one-tenth (6.6%, 50/757) of the participants had suffered from COVID-19 prior to participation in the survey.

Table 1. Sociodemographic Details and Work-related Characteristics of the Physicians (N = 757)

Variables	Frequency (n)	Percentage (%)
Age (years)		
< 40	182	24.0
40–50	213	28.2
51–60	197	26.0
> 60	165	21.8
Gender		
Men	587	77.5
Women	170	22.5
Workplace location		
Urban	675	89.2
Rural	82	10.8
Type of health facility (workplace)		
Private	519	68.5
Government	136	18.0
Corporate/ trust	53	07.0
Private (corporate/ trust)	49	06.5
Duration of work experience (years)		
< 10	164	21.7
10–20	192	25.3
21–30	199	26.3
> 30	202	26.7
Speciality		
Paediatrician	554	73.2
General practitioner	86	11.4
Others	117	15.4
COVID-19 status of the workplace		
Fully non-COVID-19	478	63.1
Both COVID-19 and non-COVID-19	258	34.1
Fully COVID-19	21	02.8
Workplace within the health facility during COVID-19		
Both Outpatient and inpatient departments	483	63.8
Outpatient department	262	34.6
Inpatient department	12	01.6
Number of patients seen before lockdown		
< 20	196	25.9
20–50	337	44.5
> 50	224	29.6
Number of patients seen in unlock 3 and 4 phases		
< 20	558	73.7
20–50	172	22.7
> 50	27	03.6

**Table 2. Association of Certain Socio-demographic and Work-related Variables with COVID-19 Preparedness Status among the Physicians (N = 757)**

Variables	Good COVID-19 Preparedness n (%) 598 (79)	Poor COVID-19 Preparedness n (%) 159 (21)	Odds Ratio (95% CI)	Adjusted Odds Ratio* (95% CI)
Age (years)				
< 40	134 (73.6)	48 (26.4)	Ref	Ref
40–50	171 (80.3)	42 (19.7)	1.45 (0.91–2.34)	1.14 (0.47–2.75)
51–60	163 (82.7)	34 (17.3)	1.72* (1.05–2.82)	1.44 (0.47–4.37)
> 60	130 (78.8)	35 (21.2)	1.33 (0.81–2.19)	1.15 (0.31–4.22)
Gender				
Men	466 (79.4)	121 (20.6)	0.90 (0.59–1.36)	---
Workplace location				
Urban	535 (79.3)	140 (20.7)	0.87 (0.50–1.49)	---
Speciality				
Paediatricians	435 (78.7)	119 (21.5)	1.11 (0.75–1.66)	---
Type of health facility where working				
Private	462 (81.3)	106 (18.7)	1.69* (1.16–2.49)	1.63* (1.10–0.43)
Government	136 (72.0)	53 (28.0)		
Duration of work experience (years)				
< 10	120 (73.2)	44 (26.8)	Ref	
10–20	154 (80.2)	38 (19.8)	1.49 (0.91–2.44)	---
21–30	164 (82.4)	35 (17.6)	1.72* (1.04–2.84)	
> 30	160 (79.2)	42 (20.8)	1.39 (0.86–2.27)	
COVID-19 status of the workplace				
COVID-19	217 (77.8)	62 (22.2)	0.89 (0.61–1.28)	---
Workplace within the health facility during COVID-19				
Inpatient department	384 (77.6)	111 (22.4)	0.78 (0.53–1.13)	1.17 (0.77–1.77)

### COVID-19 Preparedness

Good COVID-19 preparedness was found in 79% of the physicians. Around one-fifth (21.7%, 164/757) of the physicians perceived being protected from acquiring COVID-19 infection and 47.6% (360/757) were anxious about contracting the infection. However, there was no

significant difference in the COVID-19 preparedness status among those who reported feeling anxious and those who did not ( $p = 0.24$ ). The Cronbach's alpha value for the COVID-19 preparedness scale was 0.4.

The item-wise distribution of the physicians with respect to COVID-19 preparedness is given in Table 3.

**Table 3. Item-wise Distribution of COVID-19 Preparedness Score among the Physicians (N = 757)**

Item	Frequency (n)	Percentage (%)
Social distancing		
All the time	143	18.9
Most of the time	527	69.6
Not sure	87	11.5

Frequent handwashing Yes	356	47.0
Use of hand sanitisers Yes	685	90.5
Use of masks N95 Surgical Triple layer	644	85.1
	70	09.3
	43	05.7
Use of personal protective equipment Mask, face shield and gloves Mask Mask and gloves Full PPE suit	461	60.9
	131	17.3
	91	12.0
	74	09.8
Hydroxychloroquine prophylaxis taken	336	44.4
Vitamin C and/ or zinc prophylaxis taken	427	56.4

## Discussion

An online survey was conducted to find out the COVID-19-related preparedness among physicians. Majority of the respondents were from the state of Gujarat and were paediatricians. This might be because the study was led by the authors who were members of the Indian Academy of Pediatrics from the state of Gujarat and the data were collected by circulating the questionnaire link of the Google Form by e-mail and on online social media messaging platforms such as WhatsApp.

Based on the cut-off selected, most of the physicians showed good preparedness. Studies from India,<sup>6</sup> Jordan,<sup>10</sup> and Palestine<sup>11</sup> have reported a lack of preparedness among physicians. All these studies were done in the early phase of the pandemic while our study was done at a relatively later stage which may have resulted in the lower preparedness seen in these studies. The difference may also be due to the different scales and items used for measuring the preparedness of physicians against COVID-19, and differences in the population groups.

COVID-19 preparedness was more in the higher age group, i.e. 51–60 years as compared to those less than 40 years. This may be because it was found in earlier studies that COVID-19 is more severe in the older age groups and among those with comorbidities. Moreover, comorbidities are more prevalent in the higher age group. This might have made the higher age group physicians more prepared against COVID-19.<sup>12</sup> A study from Ghana<sup>13</sup> supports this finding, while another one from Jordan reported that age is not correlated with COVID-19 preparedness scores<sup>10</sup>.

Self-reported anxiety about the spread of COVID-19 was not significantly associated with physicians' preparedness status for COVID-19 in our study. A study from Jordan reported higher COVID-19 preparedness scores among those who felt anxious about its spread.<sup>10</sup>

The proportion of those who were prepared for COVID-19 among those with work experience of 21–30 years and among those with less than 10 years of experience showed no statistical difference, as per the multivariate analysis.

Gender and urban-rural setting were not found to be associated with COVID-19 preparedness in our study. This may be because the messages related to COVID-19 were received by both genders and by physicians in both urban and rural settings in a uniform manner. Another reason may be that all the participants had access to the internet so they might have received similar information related to COVID-19. Moreover, the proportion of female practitioners, those belonging to rural areas, and practitioners other than paediatricians was quite low. This could be another possible reason for not finding any significant association between these variables, and the level of preparedness (even if it truly existed). Other studies have shown a higher score for COVID-19 preparedness among men as compared to women.<sup>10,13</sup>

No difference with respect to COVID-19 preparedness was found between paediatricians and non-paediatricians. Studies by Hashim et al.<sup>14</sup> and Suleiman et al.<sup>10</sup> have also reported that COVID-19 preparedness is not affected by speciality. We could not find any study regarding COVID-19 preparedness conducted among paediatricians and non-paediatricians. However, we found studies on the seroprevalence of COVID-19 among paediatricians to be 16.8%<sup>15</sup> while among healthcare workers to be 12.5%.<sup>16</sup>

A higher proportion of physicians were found to be COVID-19-prepared in private set-ups as compared to those in government set-ups. We hypothesised that the monitoring of the healthcare workers with respect to compliance with COVID-19-appropriate behaviour might have been more in non-government set-ups than in government facilities. Further research is needed to explore the reasons for this difference between government and non-government



set-ups. A study from Jordan reported that there was no difference in COVID-19 preparedness among physicians between government and private hospitals.<sup>10,13</sup>

Working in a COVID-19 or a non-COVID-19 set-up or in an OPD or IPD setting was also not found to be associated with COVID-19 preparedness. This may be because, by the time of data collection of our study, it was known that asymptomatic cases also spread the infection<sup>17</sup> and there were reports of community transmission in the media<sup>18</sup>.

Frequent hand washing was not reported among half of the respondents. This may be because most of the respondents reported the use of hand sanitisers. A previous study from India showed similar findings.<sup>6</sup> Most of the participants reported the use of N95 masks in our study. A study from Jordan also found that almost all healthcare workers reported practising hand hygiene and using N95 masks. N95 masks are recommended in healthcare settings where aerosol generation or close examination of the oral cavity or dentures is anticipated. Personal Protective Equipment (PPE kit) is recommended when managing Severe Acute Respiratory Illness of COVID-19.<sup>7</sup>

The majority of the physicians were using masks, face shields and gloves. COVID-19 preparedness is a function of personal perception of risk, knowledge about risk factors, and availability of resources to be protected from COVID-19.

Around half of the respondents in the present study were taking HCQ, vitamin C and zinc as prophylaxis or immunity-enhancing drugs. This was expected as there were some scientific studies which showed a beneficial effect of hydroxychloroquine in preventing COVID-19, even though the evidence was not unanimous. The guidelines of many state governments recommended hydroxychloroquine as a prophylactic measure<sup>19</sup> and vitamin C and zinc intake to enhance immunity for protection against COVID-19. This might have led some of the physicians to consume it to protect themselves from COVID-19.<sup>20,21</sup> Although this was recommended in the initial phase of the pandemic, prophylaxis with HCQ, and the use of zinc and vitamin C recommendation was withdrawn soon. This could also be the reason that many practitioners were not taking this prophylaxis.

### Limitations

The respondents having been selected by non-probability sampling lacked external validity. Online surveys suffer from sampling issues and mostly non-probability samples are obtained.<sup>22</sup> Therefore, these results should be inferred in this context. The COVID-19 preparedness scale had a low internal consistency. This may be due to the lesser number of items in the scale. One method to increase the reliability is to remove the items with low inter-item correlations, which in our case, did not help as the number of items was already less.

### Conclusion

Overall, it was found that most physicians had good COVID-19 preparedness to protect themselves against COVID-19. Physicians working in private facilities were more prepared than in government health facilities. We suggest that physicians in government set-ups must be motivated and supported to improve their preparedness for self-protection against COVID-19. The lessons learnt during the COVID-19 pandemic can help to make strategies for other natural and man-made disasters.

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