Original Research

Assessment of knowledge, attitude and anxiety among junior resident doctors in India during COVID-19 Pandemic

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Abstract

Introduction: Healthcare workers were the frontline defence against the COVID-19 pandemic, especially the junior resident doctors, and were among those at the highest risk of acquiring the disease. Disease transmission among them was worsened by overcrowding, lower work force, lack of isolation facilities, lack of standard quality personal protection equipment, contaminated environment and inadequate knowledge and practice of infection control practices.

Objectives: To assess the knowledge, attitude and anxiety among junior resident doctors in India with respect to COVID-19

Methods: A cross-sectional study was conducted during August-October 2020 among 451 junior resident doctors in India. A validated 35-item questionnaire was distributed to the participants using social media platforms. The snowball sampling technique was used.

Results: A total of 451 junior resident doctors were included as study participants, of whom 52.3% were women. More than 90% of them had a good level of knowledge regarding COVID-19.Almost allof the participants believed that wearing masks (98%) and keeping social distance (100%) would reduce the risk of COVID-19 transmission, but that government regulations were insufficient to combat the disease (63%). The level of anxiety among study participants was on the higher side.

Conclusions & Recommendations: The level of anxiety among the junior resident doctors was relatively high. Therefore, mental and psychological support is crucial for them, and in turn, essential for effective management of the health crisis.

Keywords: knowledge, attitudes, anxiety, COVID-19, junior resident

Introduction

Coronaviruses are a large family of viruses that infect humans and cause illnesses ranging from the common cold to severe acute respiratory syndrome. It is a zoonotic pathogen that can be passed from animal to human as well as human to human (1). COVID-19 was declared an outbreak by the World Health Organization (WHO) on 31 December 2019. It had spread across the world rapidly, thereby causing a public health crisis, and was declared a global pandemic by the WHO on 11 March 2020 (2-3).

Healthcare workers were the frontline defence against the COVID-19 pandemic, especially the junior resident doctors, subjecting them to the highest risk of acquiring the disease. Disease transmission among them was worsened by overcrowding, lower work force, lack of isolation facilities, lack of standard quality personal protection equipment, contaminated environment, and inadequate knowledge and practice of infection control practices (4). The WHO recommended preventing its transmission by protecting the healthcare workers and patients' close contacts (5). As COVID-19 was a novel disease that caused devastating effects across the globe, it had created significant levels of confusion, anxiety and fear among the general population as well as among those treating them, and this directly influenced the healthcare practices and led to late diagnosis, inadequate infection control practices and consequently the spread of the disease (6). Therefore, assessment of knowledge, attitude and anxiety among healthcare workers with respect to COVID-19 is important for the appropriate management and smooth functioning of our health system, especially in health crisis situations. A few studies regarding the knowledge, attitude and anxiety towards COVID-19 among healthcare workers are available in the literature (7-8), but not specifically among the junior resident doctors, who formed the most important

frontline force against COVID-19. Hence, this study was done to assess the knowledge, attitude and anxiety among junior resident doctors in India with respect to COVID-19.

Methods

This cross-sectional descriptive study was conducted in August-October 2020 among junior resident doctors working in primary, secondary and tertiary health centres across India. A 35-item structured online questionnaire was prepared in English language using Google Form and contained sociodemographic details and questions related to knowledge, attitude and anxiety with respect to COVID-19. Knowledge was assessed using five questions and was considered good if the participants secured a score above the mean level. Attitudes toward COVID-19 were assessed using seven questions assessed on a 5-point Likert scale ranging from "never", "occasionally", "sometimes", "often" and "always". The validation of questionnaire was done on its content and relevance by one epidemiologist, two public health experts and one microbiologist. The questionnaire was pretested on 20 junior resident doctors.

Snowballing sampling technique was used to select the participants. They were sent an invitation asking them to answer the survey and pass on the questionnaire to their peers using social media platforms such as Facebook and WhatsApp. A total of 475 junior residents accepted the invitation and responded to the questionnaire; 24 of them did not complete the questionnaire; hence 451 junior residents who completed the questionnaire were included as study participants.

Data analysis

Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 21. The results are presented in frequencies and percentages.

Results

The online survey captured data from 451 junior resident doctors working in different medical fields in India. All were of Indian origin and only those who could understand English and had access to the internet. The majority consisted of women (52.3%); in 26–30-year age group; and working in private hospitals, and the remainder at government hospitals (54.1%). About 31.5% of them worked in close contact with COVID-19 patients (Table 1).

With regards to knowledge, the majority were able to correctly answer the incubation period of COVID-19 (85.6%) and that the virus spreads through touching, sneezing and close contact (78.5%). Over 10% did not regard loss of smell/taste, fever and dry cough as symptoms of COVID-19. Even though 98% knew that COVID-19 patients can be asymptomatic, only 91.8% knew that asymptomatic carriers can also transmit the infection to healthy individuals. Furthermore, 98.9% knew that early symptomatic and supportive treatment can help most patients to recover from the infection (Table 2). Out of the highest possible score of 9 points, the mean knowledge score was 7.7 (SD=0.97). A score of 7 and above was considered as 'good knowledge', 4-6 as 'moderate knowledge' and 3 and below as 'poor knowledge', where 90.2% of the participants scored 7 and above.

With regards to attitudes, almost all the participants believed that wearing a face mask (98.2%) and maintaining social distance (100%) are necessary to stop the spread of the virus, while 83.8% agreed that they will quarantine/isolate themselves if they develop fever and cough. Approximately 63% believed that government regulations were not adequate to combat the disease while 43% believed that COVID-19 will not cease to be a public health emergency by the end of 2022. However, 96.2% considered travelling within India not to be safe during the pandemic. Around 27% were satisfied with the media coverage on COVID-19, while 24.8% admitted that they felt more stressed because

of it and 19% that media distorted the truth regarding the same (Table 3).

With regards to associated anxiety, the majority admitted that they always or often thought about the pandemic (67%) and/or had talked about it with friends (56.6%) during the past one week. About 28.4% reported that they were always worried about themselves as well as their close ones, with 10.2% admitting that they felt scared when someone within their social circle got infected and 19% always being worried about the inadequate personal protection equipment at their workplace. Consequently, 25.5% had reduced their social contacts and 67.2% avoided parties, large meetings and gatherings. Around 40% avoided ordering food items online the previous week (Table 4).

Discussion

This study aimed to assess the knowledge, attitude and anxiety of junior resident doctors in India with respect to COVID-19. Good level of knowledge seen in 90.2% of the participants was comparable to the results of Dixit et al. who reported that the knowledge regarding COVID-19 among 117 healthcare workers (46.15% doctors, 25.64% nurses and 28.2% technical staff) of a tertiary care hospital in India was good in about 94% of the participants (9). This implies that the knowledge level is good not only among doctors but also among nurses and technical staff. However, the median value of knowledge for doctors was higher than nurses and technical staff (p=0.02). Similarly, Wahed et al. reported that among a total of 465 health care workers in Egypt, 94.2% (n=438) had an adequate level of knowledge, which was found to be 'good' especially among the physicians (7). Mehrotra et al. reported that, among 827 medical personnel across India that included doctors and nurses, the majority (65.5%) had a moderate level of knowledge regarding COVID-19 (10). The same study also reported that, even though the level of knowledge regarding the symptoms, mode of transmission, and

Table 1: Sociodemographic characteristics of the study participants (N=451)

Socio demographic characteristic	No.	%
Sex		
Male	215	47.7
Female	236	52.3
Age in years		
21-25	66	14.6
26-30	347	76.9
31-35	36	8.0
More than 35	2	0.4
Current marital status		
Single	220	48.8
Married	229	50.8
Other	2	0.4
State of working		
Andhra Pradesh	2	0.4
Bihar	2	0.4
Delhi	12	2.7
Goa	6	1.3
Karnataka	19	4.2
Kerala	329	72.9
Maharashtra	30	6.7
Pondicherry	11	2.4
Telangana	4	0.9
West Bengal	3	0.7
Hospital type		
Government	207	45.9
Private	244	54.1
Direct contact with COVID-19 patients		
Yes	142	31.5
No	159	35.3
Maybe	150	33.3

preventive measures was good among the participants, there were some gaps in knowledge regarding the implementation of management protocols. This must have been because the study was conducted briefly after the onset of the pandemic (April 2020) when all the details of the disease were yet to be fully understood compared to the current study which was conducted in October-November 2020, when healthcare workers had a better understanding of the disease. The findings of Mendoza et al. also had reported that the majority of healthcare workers in Venezuela had good knowledge on COVID-19 (11).Therefore, as evident in our study and that of Wahed et al., the overall development was not a barrier to healthcare workers' acquisition of knowledge. Bhagavatula et al. found that a significant proportion of healthcare workers globally had poor knowledge regarding the transmission (n=276; 61.0%) and symptoms (n=288; 63.6%) of COVID-19 (12). This must also have been

due to the fact that our study was conducted during October–November 2020, when the healthcare workers had a better understanding of the disease compared to this study, which was conducted briefly after the onset of the pandemic (March 2020) when all the details of the disease were yet to be fully understood.

Table 2: Knowledge regarding COVID-19 among junior resident doctors (N=451)

Questions on knowledge	No.	%
What is the incubation period of COVID-19?		
• Less than 7 days	21	4.7
• 1–14 days	386	85.6
• 12–24 days	41	9.1
• 1–3 months	2	0.4
• I don't know	1	0.2
Is it possible for a COVID-19 patient to show no symptoms?		
• Yes	442	98
• No	5	1.1
• I don't know	4	0.9
Does consuming meat or having direct contact with wild animals cause COVID-19?		
• Yes	92	20.4
• No	269	59.6
• I don't know	90	20.0
Patients with COVID-19 cannot transmit the virus to others when asymptomatic		
• True	21	4.7
• False	414	91.8
• I don't know	16	3.5
There is no effective cure for COVID-19 currently, but early symptomatic and supportive treatment can help most patients recover from the infection		
• True	446	98.9
• False	3	0.7
• I don't know	2	0.4

In this study, most junior doctors reported that they took precautions such as avoiding crowded places and practicing proper hand hygiene, which indicated a positive attitude and general willingness to make behavioural changes in the face of the COVID-19 pandemic. Similar results were seen by Dixit et al., where most of the healthcare workers had a positive attitude towards COVID-19 (9). Positive attitudes were seen more among the allied health professionals than physicians according to Wahed et al. (7). A negative attitude was observed among the majority of healthcare workers regarding COVID-19 in Venezuela, according to Mendoza et al. (11). Similarly, Basnet et al. reported that healthcare personnel in a tertiary care hospital in Nepal lacked optimistic attitudes and were related to the impact of COVID-19 on the economy of Nepal (13). This may be due to the fact that health infrastructure availability and the economy in India may be better than that in Venezuela and Nepal. The level of anxiety among the participants in our study was on the higher side due to the fear of infection as well as

that of their friends and family. Approximately, 19% being always worried about the inadequate personal protection equipment at workplace may be due to the fact that our study was done at a time when the cases were at its peak and there was a severe scarcity of personal protection equipment. Similarly, Mendoza et al. found that most of the healthcare workers feared of getting infected with COVID-19 (62.9%) and infecting their relatives and loved ones (84%) (11).

Table 3: Attitude of junior resident doctors towards COVID-19 pandemic (N=451)

Questions on attitude	No.	%
Do you think wearing masks can lower the risk of corona virus infection?		
• Yes	443	98.2
• No	8	1.8
Do you think social/ physical distancing is essential to stop the spread of virus?		
• Yes	451	100.0
Do you think traveling across /within the country is safe during this time of pandemic?		
• Yes	14	3.1
• No	434	96.2
• I don't know	3	0.7
Do you think the regulations taken by the government are enough to combat this disease?		
• Yes	125	27.7
• No	286	63.4
• Don't know	40	8.9
Do you think COVID-19 will cease to be a public health emergency of international concern by the end of this year?		
• Yes	138	30.6
• No	194	43.0
• Maybe	119	26.4
How likely are you to self-quarantine if you have fever, cough or any other symptoms?		
• Highly	378	83.8
• Maybe	66	14.6
• Not likely	7	1.6
What is your take on the media coverage of the COVID-19 pandemic?		
• Very satisfied/keeps me updated	122	27.1
• Makes me worry more/stressful	112	24.8
• Not enough information	34	7.5
• There are more lies than the truth	86	19.1
• I don't follow any media updates	51	11.3
• No comments	46	10.2

Also, Gupta et al. reported the anxiety levels among 368 healthcare workers in India as follows: severe anxiety (GAD-7 score >10) was observed among 7.3% health care workers; moderate anxiety among 29.3%; mild anxiety among 12.5%; and minimal anxiety among 50.8% healthcare workers. Sleep quality was poor-to-fair among 31.5% of the health care workers (14).

Table 4: Anxiety among junior resident doctors regarding COVID-19 (N=451)

Questions on anxiety	No.	%
Over the past one week, how often have you thought about this pandemic?		
• Never	2	0.4
• Occasionally	86	19.1
• Sometimes	61	13.5
• Often	183	40.6
• Always	119	26.4
Over the past one week, how often have you feared the risk of acquiring infection while treating patients?		
• Never	52	11.5
• Occasionally	104	23.1
• Sometimes	116	25.7
• Often	101	22.4
• Always	78	17.3
Over the past one week, how often have you avoided large meetings and gatherings?		
• Never	8	1.8
• Occasionally	20	4.4
• Sometimes	14	3.1
• Often	106	23.5
• Always	303	67.2
Over the past one week, have you avoided social contact?		
• Never	36	8.0
• Occasionally	53	11.8
• Sometimes	88	19.5
• Often	159	35.3
• Always	115	25.5
Over the past one week, have you avoided ordering food online?		
• Never	117	25.9
• Occasionally	40	8.9
• Sometimes	50	11.1
• Often	66	14.6
• Always	178	39.5
Over the past one week, how often have you have talked with your friends about this pandemic?		
• Never	14	3.1
• Occasionally	82	18.2

• Sometimes	100	22.2
• Often	169	37.5
• Always	86	19.1
Over the past one week, how often have the posts on social media about COVID-19 freaked you out?		
• Never	148	32.8
• Occasionally	93	20.6
• Sometimes	106	23.5
• Often	67	14.9
• Always	37	8.2
Over the past one week, how often have you worried about the inadequate PPE at your workplace?		
• Never	97	21.5
• Occasionally	89	19.7
• Sometimes	85	18.8
• Often	95	21.1
• Always	85	18.8
Over the past one week, how often have you been afraid when anyone in your social circle reports being sick?		
• Never	70	15.5
• Occasionally	111	24.6
• Sometimes	140	31
• Often	84	18.6
• Always	46	10.2
Over the past one week, how often have you felt worried about yourself and close ones acquiring the disease?		
• Never	23	5.1
• Occasionally	83	18.4
• Sometimes	108	23.9
• Often	109	24.2
• Always	128	28.4

There had been some limitations of the study. Due to the severe spread of COVID-19 and lockdown situations in the country, personal interviews with the study participants to collect data could not be adopted. As in the case of any web-based, online survey, the data presented here depends highly on the participants' sincerity, reliability, and motivation. The responses to the survey were self-reported, leading to reporting bias for social desirability, which may affect the results. Also, the participants were selected through a non-randomized sampling method, so the results may not be generalizable to the entire junior residents' population in India and hence, need to be interpreted cautiously.

Conclusions & Recommendations

The knowledge level regarding COVID-19 among junior resident doctors in India was found to be 'good'. The majority believed that wearing masks and maintaining social distance will reduce the risk of transmission but felt that the government regulations are inadequate to combat the disease. Despite good knowledge, the anxiety level among them was

relatively high. Hence, provision of mental and psychological support from friends and family as well as administrative and financial support from the government and hospital management is crucial for the junior residents during future health crisis.

Public Health Implications

- Healthcare workers are the frontline defence against the COVID-19 pandemic.

- The knowledge level regarding COVID-19 among the junior resident doctors was found to be good.

- Provision of mental and psychological support from friends and family, as well as administrative and financial support from the government and hospital management, is crucial for the junior resident doctors.

Author Declarations

Competing interests: The authors declare that they have no competing interests.
Ethics approval and consent to participate: Ethics clearance was granted by the Ethics Review Committee of the Pushpagiri Institute of Medical Sciences and Research Center, Tiruvalla, Pathanamthitta. Informed written consent was obtained from each participant prior to data collection.
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Conducting counselling sessions, providing periodic duty off and safe working environment, the recruitment of more workers, providing allowances and special financial schemes are some of such examples.

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