



## The COVID-19 Pandemic and Its Effect on the Mental Health of Doctors in India

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### Authors' contributions

This work was carried out in collaboration among all authors. Authors AN and JM designed the study, wrote the protocol, and wrote the first draft of the manuscript. Author ARH performed the statistical analysis. Authors AR, SDC, ARH, MSR and MR managed the analyses of the study. Author AN managed the literature searches. All authors read and approved the final manuscript.

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### ABSTRACT

**Background and Objectives:** For doctors at the forefront of the COVID-19 pandemic, failure to acknowledge and act on the warning signs of stress can adversely affect their professional, social and personal life. We conducted a nationwide survey of a large sample of Indian doctors to measure levels of perceived stress, identify risk factors for severe stress and assess their response to current issues related to the safety and well-being of the community.

**Methods:** An online survey using Google forms was conducted between 1st May 2020 and 15th May 2020. The core component of the survey was the standardized Perceived Stress Scale answered on a Likert scale.

**Results:** Out of 520 responders, 394 (76%) were under 45 years of age 101 (19%) were between

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18-30 years and 37 (7%) were above 60 years. 312(60%) were male doctors and 203 (40%) were female doctors. 90% of respondents had a post-graduate degree, 48(9%) had undergraduate degree and 168(32%) had super specialty degree. 313 (60.2%) of the respondents were practising in the private sector, 169 (33%) worked in public sector hospitals and 32(7%) in charitable hospitals. 109 (21%) had low stress, while 371 (71%) and 40 (8%) reported moderate and severe stress respectively. Multivariate analysis revealed the female gender, being financially insecure and ICU a place of work as independent risk factors for severe stress.

**Conclusion:** This is the first such survey done in the context of the COVID-19 pandemic from the Indian sub-continent and has identified factors that have the potential to adversely impact the mental health of doctors. These findings are applicable to many countries in Asia and Africa with similar healthcare systems and can act as a valuable guide for authorities to establish support systems at multiple levels for these “COVID Warriors”.

*Keywords: COVID-19; doctors; mental health; stress; risk factor.*

## 1. INTRODUCTION

The Coronavirus disease 19 (COVID-19) pandemic which first appeared in Wuhan, China in December 2019 has swept across the globe with India which is one of the most affected nations [1]. India's response to the pandemic has been closely watched, however, the problems are multifactorial including its large population combined with poor accessibility and an unevenly distributed healthcare. There are multiple issues faced by the health care workers (HCWs) including doctors in India such as a low ratio of doctor to patient population to bed ratio, lack of facilities in the primary healthcare sectors and lack of access to health care and caveats in awareness of a person's own health [2]. Doctors in India also face multiple other problems including an exceedingly large patient load in clinics and emergency rooms, shortage of medical equipment and essential drugs, and violence along with an upsurge in allegations of medical negligence [3].

The current COVID-19 pandemic has put a heavy strain on the already compromised healthcare system in India [4]. As the number of cases increases and critically ill patients are being admitted to hospitals, doctors are under immense stress due to various issues like prolonged work hours, lack of manpower, shortage of personal protective equipment (PPE), fear of infection and transmitting the disease to their families [5,6]. Various other social issues that occasionally get highlighted in the media include instances of doctors being manhandled, evicted out of their houses and being denied a proper burial [7]. All of these factors are likely to have an effect on the mental health of these doctors [6]. Refusing to acknowledge and act on the warning signs of

stress in this scenario can adversely affect a doctor's social, professional and personal life [8]. We conducted a nationwide survey of a large sample of Indian doctors to measure levels of perceived stress, identify risk factors for severe stress and assess their response to current issues related to the safety and well-being of the HCW community.

## 2. METHODOLOGY

An online survey using Google forms was conducted between 1<sup>st</sup> May 2020 and 15<sup>th</sup> May 2020. Perceived stress levels were analysed using the standardized 'Perceived stress scale' questionnaire (Annexure 1). To evaluate the common problems faced by healthcare workers during the current pandemic of COVID 19 and its impact on the doctors; the questionnaire was designed to include the current issues that doctors across India are likely to be facing. The questionnaire was divided into 7 sections. The first and second section comprised of the introduction to the questionnaire and basic information respectively. The third section evaluated the perceived stress using the PSS questionnaire. The fourth section dealt with the cause and effect of perceived stress on doctors by COVID-19 and methods of 'de-stressing'. The fifth part dealt with current problems they face, the sixth with the sources they depend on for information on COVID 19 and the seventh was kept for open suggestions. The questionnaire was distributed through email and WhatsApp<sup>®</sup>. The survey was open for 14 days for accepting responses. Data were collected and tabulated in an excel spreadsheet and the data was expressed as frequencies and proportions.

The following are the details of the devised questionnaire:

### **Part 1: Introduction to the Questionnaire**

This included a brief introduction about the questionnaire, the importance of conducting the current survey and how it could help doctors.

### **Part 2: Demographics and Background Information**

This section included age, gender, location, their highest scientific degree, type of workplace (public/private/charitable/hospital), designation, specialty (various disciplines of medicine and surgery) and area of work (ICU, emergency room, in-patient care, operation theatre), if they're managing patients with COVID-19 and the duration of a duty shift, any family member affected or has passed away due to COVID 19 and any quarantine advice or use of antidepressants.

### **Part 3: The Standardized Perceived Stress Questionnaire (PSS score)**

The standardized PSS score comprises of 10 questions and the scoring is done as per the response from 1 to 10 on a Likert scale.

- Scores from 1-3: Mild stress
- Scores from 4-6: Moderate stress
- Scores from 7-10: Severe stress

### **Part 4: Cause and Effect of Perceived Stress on Doctors by COVID 19 and De-Stressing**

Questions were focused on quality time spent with the family, impact of COVID 19 on daily life, their quality of sleep, worries of financial insecurity and fears they have while executing their clinical duties. Also, various modes they would adopt to de-stress were asked. We also included questions on the requirement of psychological Counselling for them during the current stressful time.

### **Part 5: Current Problems Faced By Doctors**

Doctors were asked regarding the current issues they face during the pandemic including shortages of PPE, strategies they would adopt for self-protection, changes made to their work environment, their thought on various social issues like violence reported by media towards doctors, problems with arranging funerals, media targeting doctors or their family members and questions of the impact of the current government rules for the protection of doctors were also included.

### **Part 6: Sources of Information On COVID 19:**

Doctors were questioned on what they would consider being a reliable source of information on COVID-19.

### **Part 7: Open Suggestions:**

Doctors were requested to put forward any suggestions.

## **3. RESULTS**

### **3.1 Demographics and Background Information (Table 1)**

A total of 520 doctors responded to the questionnaire. Each of them had completely engaged with the survey questions. 312 (60%) of the doctors were male and 203 (39%) were female with 5(1) % not disclosing their gender; the majority of the respondents were less than 45 years of age 394 (76%) and belonged to south Indian states 450 (85.6%) of Tamil Nadu, Karnataka, Kerala, Andhra Pradesh and Telangana. 304 (58.5%) were post-graduates, 168 (32.3%) had super specialization and 48 (9.2%) had done under graduation. The majority of the respondents were practicing in a private clinic/hospital 313 (60.2%), 169 (32.5%) belonged to public sector hospitals and 38 (7.3%) were doing their service in a charitable hospital. 161 (31.0%) doctors were from a medical speciality, 151 (29.0%) were surgeons, 104 (20.0%) practised anaesthesia and critical care, 36 (6.9%) were from non-clinical specialities and 67 (12.9%) were primary physicians. 177 (34.0%) of respondents had their duties in emergency room, 206 (39.6%) in intensive care unit, 230 (44.2%) in operation room, 336 (64.6%) in out-patient clinics and 7 (1.3%) had non ICU inpatient duties. 195 (37.5%) doctors were actively involved in managing COVID-19 patients. 66 (34%) of doctors had COVID 19-19 duty lasting for 6 hours or less at a stretch whereas 66% had a duration of more than 6 hours. 19 (10%) doctors had duty lasting for more than 12 hours at a stretch. 2% of the doctors have had one of their family members or friends affected with COVID 19 and 93 (17.9%) have a family/friend/ colleague who had passed away due to COVID-19. 70 (13.5%) said they had self-isolated due to exposure. 16 (3.1%) of doctors were on treatment for anxiety and/or depression and 3% were not willing to disclose the information.

### 3.2 Analysis of Perceived Stress Using the PSS Score (Table 1)

Among the 520 doctors, 109 (21%) had low stress, 371 (71%) had moderate stress and 40 (8%) reported high-stress levels as per the PSS questionnaire response. The predisposing factors between low and moderate to high stress were analysed. 317 (77.1%) of the doctors in the moderate to high-stress group were less than 45 years old and males predominated the low-stress group than females (76% vs 23%). 86% of Junior doctors and 76% of senior doctors belonged to the moderate to high-stress group. The stress levels among doctors working in private and public/government hospitals were comparable (79% vs 83%). Among the moderate to high-stress groups, 52% of doctors belonged to the medical specialities and anaesthesia/critical care unit ( $p < 0.05$ ). 82.6% of the anaesthetists, 81% medical specialists, 71.5% surgeons and 82% primary care doctors suffered from moderate to severe stress. More stress was seen among doctors working in the emergency room, ICU and operating room. 87% of doctors managing COVID-19 patients and 84% in doctors who had family members, relatives or a friend who died of COVID-19 were having more moderate to high level stress. Doctors whose duty hours were prolonged were also prone to moderate to high-stress levels.

### 3.3 Cause and Effect of Perceived Stress on Doctors by COVID-19 and Their Mode of De-Stressing (Table 2)

78% of doctors felt that their daily life has become challenging and 52.2% felt that the quality time spent with their family has been compromised and this was more with doctors having moderate to severe stress. 20.6% also experienced a lesser quality of sleep and 61% felt financially insecure during current times. 324 (62.4%) of the doctors were afraid of spreading the infection to their family members, especially elders and this was contributing to moderate to severe stress ( $p < 0.05$ ). The most common modes of relaxing included watching movies (69%), talking to friends or colleagues (45.6%), playing musical instruments and listening to music, dancing (each 42.5%), yoga and/or meditation (30%), exercises (36%) and reading (25.6%). All the de-stressing methods were adopted by the low stress group compared with the moderate to high stress group ( $p < 0.05$ ). Only 12.1% among the moderate high stress group would do a routine exercise when

compared to 46% in the mild stress group ( $p < 0.05$ ). 39 (9.5%) doctors in the moderate to severe stress group and 3 (2.8%) of those in the mild stress group wanted to have specialist psychological counselling for reducing stress.

### 3.4 Current Problems Faced by Doctors (Table 3)

449 (86%) of the doctors were worried about shortages of personal protective equipment (PPE). 217 (41.7%) would buy PPE of their own and 292 (56.2%) would use PPE provided by their workplaces. Those who were more worried about the shortage of PPE belonged to the moderate to severe stress category and would attempt to buy it more than those with mild stress ( $p < 0.05$ ). Modification in the medical practice included 253 (48.6%) doctors stopping elective procedures, 164 (31.5%) switching to video consultations, 176 (33.8%) stopping out-patient clinics and 125 (24.0%) did not change practice as their job mandated working in COVID-19 care areas. The majority of who were modifying their clinical practice belonged to the mild stress group ( $p < 0.05$ ). 99% of the doctors were upset about doctors not being given an undisturbed funeral. 248 (47.7%) felt they were being specifically targeted by the media and 70 (13.5%) were of the opinion that the media is giving more coverage about happenings with doctors and their families. 215 (41.3%) felt that their family was being affected by media reports on ill-treatment/violence on doctors and only 117 (22.5%) doctors felt that the new government ordinance of 7 years' imprisonment will bring a stop to the assault of doctors. 321 (61.7%) doctors felt that the ongoing violence against healthcare professionals will dissuade both children and their parents from considering medicine as a career option.

### 3.5 Sources of Information on COVID 19

Doctors were asked the medium they would depend upon for genuine information on COVID-19. 263 (50.6%) said they would rely on journals and scientific literature, 158 (30.4%) on television/newspapers and 80 (15.4%) would depend on social media. The high stress group had more dependence on television/newspapers when compared with low risk (32% vs 24%) but this was statistically insignificant ( $p = 0.4$ ).

### 3.6 Concerns & Suggestions (Table 4)

94 (18%) doctors responded. Many respondents have put forward words of encouragement for the

community, but a larger number have suggested modifications including good quality PPE, bring strict law on assaulters of doctors, need of 24 x 7 helpline number and psychological counselling for doctors who are stressed. Worries are regarding the salary cuts, unstable economy, medical students having uncertainty on their exam, the unremitting nature of the pandemic. Yoga and meditation were recommended as the de-stressor mechanism and some doctors gave their word of thanks and good label about the current survey.

#### 4. DISCUSSION

The current pandemic has shown no signs of abatement and HCWs including doctors remain as the front-line warriors against this invisible enemy. The healthcare system across the world is strained because of the current pandemic with 10-15% of patients affected requiring hospital admissions and 5% requiring ICU care [9]. This has led to a sudden surge in hospital admissions and increasing demand for doctors disproportionate to the existing facilities. Given its large population and sporadically distributed healthcare system, India is one of the countries worst hit by this pandemic.

In this unprecedented time, doctors along with other HCWs are likely to be affected by stress and burnout. Previous studies like those by Krystal et al, Khalid et al & Wu et al associated with SARS, MERS, Ebola outbreaks have reported a higher stress among medical professionals including doctors [10–12]. Unfortunately, at times, there is a lack of recognition that a person is suffering from stress, and this leads to poor decision making, poor peer and family relations, higher miscommunication and ultimately a burn out in which the person changes his/her attitude to the workplace [13]. This can bring grievous consequences in medical practice as well.

In the current survey, we looked into the severity of stress that doctors in India were undergoing during the current COVID-19 pandemic using the validated PSS score [14,15]. Among the 520 doctors who responded, 71% of doctors had moderate stress and 8% suffered from severe stress, an alarming score. A similar prevalence of stress among HCWs has been previously reported from Wuhan, the first epicentre of the epidemic [16,17]. Further while analysing, we had also found that these moderate-highly stressed doctors were likely to be younger

(<45years), females, junior doctors, working in primary care/medical specialty and anaesthesia/critical care (all high-risk areas), working for longer hours (6-12 hours>) and had had some family/friend/colleague who died due to COVID-19. These moderate-highly stressed doctors perceived their daily life as challenging, were unable to spend quality time with their family, were more likely to be financially insecure, worried about infecting their family members [18]. They also worried about shortages of PPE, bought their own PPE, did less exercise and only 16.3% considered counselling. During the course of the survey, we noted various other social factors that may contribute as stressors. 95% doctors were unhappy with their colleagues being manhandled at the workplace, 99% were worried about their colleague getting a disturbed funeral, half of them felt media was specifically targeting them and 41% felt their family was also being affected due to media exposure. Manhandling of doctors is a serious problem confined not only to the Indian subcontinent, but across various parts of the globe [19,20]. Unless these problems are publicised and stringent laws bought forward, this issue is unlikely to disappear. India passed a recent ordinance of 7 years' imprisonment for assaulting doctors, but only 22.5% of our respondents felt that would prevent the existing violence.

A study from Singapore during the COVID 19 done on HCW including doctors found a higher prevalence of depression, anxiety, and PTSD, this was however, lesser than during the previous SARS pandemic [21]. A study from Pakistan showed a higher incidence of depression and anxiety among female doctors who were working in the ICU settings, a finding noted in our survey as well [22]. Coping up with stress is extremely important and majority of the doctors in our survey resorted to watching movies and talking to friends or colleagues rather than involving in exercise, yoga, dancing or meditation. The latter are shown to be more scientifically beneficial and likely to prevent a sedentary lifestyle and associated disorders like metabolic syndrome [23–25]. An uncontrolled surge of information through social media and television on COVID-19 intuitively leads to misinformation. Encouragingly, half our respondents depended on scientific literature for genuine information for COVID-19. Doctors were also worried about the reduction in the current salary/pay scale being implemented by local governing bodies and various hospital employers during this pandemic.

**Table 1. Demography, prevalence and association of perceived stress among doctors**

	Total (N=520)	Low Stress Group (n=109)	Moderate/High Stress Group (N=411)	P Value
<b>Age group</b>				
18-30 years	101 (19.4%)	13 (11.9%)	88 (21.4%)	p<0.001
31-45 years	293 (56.4%)	64 (58.7%)	229 (55.7%)	
46-60 years	89 (17.1%)	19 (17.4%)	70 (17.0%)	
>60 years	37 (7.1%)	13 (11.9%)	24 (5.8%)	
<b>Gender</b>				
Male	312 (60.0%)	83 (76.1%)	229 (55.7%)	p<0.001
Female	203 (39.0%)	25 (22.9%)	178 (43.3%)	
Prefer not to disclose	5 (1.0%)	1 (0.9%)	4 (1.0%)	
<b>Current State/UT</b>				
TamilNadu	364 (70.0%)	73 (67.0%)	291 (70.8%)	p=0.006
Puducherry	7 (1.3%)	3 (2.8%)	4 (1.0%)	
Kerala	23 (4.4%)	8 (7.3%)	15 (3.6%)	
Andhra Pradesh	7 (1.3%)	1 (0.9%)	6 (1.5%)	
Telangana	15 (2.9%)	5 (4.6%)	10 (2.4%)	
Karnataka	34 (6.5%)	6 (5.5%)	28 (6.8%)	
Maharashtra	19 (3.7%)	1 (0.9%)	18 (4.4%)	
Delhi NCR	16 (3.1%)	2 (1.8%)	14 (3.4%)	
Punjab	6 (1.2%)	2 (1.8%)	4 (1.0%)	
Uttar Pradesh	3 (0.6%)	1 (0.9%)	2 (0.5%)	
Gujarat	2 (0.4%)	1 (0.9%)	1 (0.2%)	
West Bengal	3 (0.6%)	1 (0.9%)	2 (0.5%)	
Chandigarh	12 (2.3%)	4 (3.7%)	8 (1.9%)	
Others	9 (1.7%)	1 (0.9%)	8 (1.9%)	
<b>Highest degree</b>				
Undergraduate	48 (9.2%)	9 (8.3%)	39 (9.5%)	p<0.001
Postgraduate	304 (58.5%)	47 (43.1%)	257 (62.5%)	
Super specialty	168 (32.3%)	53 (48.6%)	115 (28.0%)	

<b>Experience</b>				
Junior doctor (<consultant)	132 (25.4%)	18 (16.5%)	114 (27.7%)	p<0.001
Senior doctor	388 (74.6%)	91 (83.5%)	297 (72.3%)	
<b>Type of workplace</b>				
Public sector hospital	169 (32.5%)	29 (26.6%)	140 (34.1%)	p<0.001
Private sector hospital/clinic	313 (60.2%)	72 (66.1%)	241 (58.6%)	
Charitable / Trust hospital	38 (7.3%)	8 (7.3%)	30 (7.3%)	
<b>Speciality</b>				
Primary care	67 (12.9%)	12 (11.0%)	55 (13.4%)	p<0.001
Medical Speciality	161 (31.0%)	30 (27.5%)	131 (31.9%)	
Surgical Speciality	151 (29.0%)	43 (39.4%)	108 (26.3%)	
Anaesthesia and Critical Care	104 (20.0%)	18 (16.5%)	86 (20.9%)	
Care	36 (6.9%)	5 (4.6%)	31 (7.5%)	
Non-Clinical Specialities Administration	1 (0.2%)	1 (0.9%)	0 (0.0%)	
<b>Area of work (multiple choices)</b>				
Emergency Room	177 (34.0%)	39 (35.8%)	138 (33.6%)	p=0.029 p<0.001 p<0.001 p<0.001
Intensive care unit	206 (39.6%)	33 (30.3%)	173 (42.1%)	
Operating theatre	230 (44.2%)	57 (52.3%)	173 (42.1%)	
Inpatient care	7 (1.3%)	4 (3.7%)	3 (0.7%)	
Outpatient care	336 (64.6%)	82 (75.2%)	254 (61.8%)	
<b>Are you actively involved in the care of COVID 19-19 suspected or proven patients?</b>				
	195 (37.5%)	25 (22.9%)	170 (41.4%)	p<0.001
<b>If you are actively managing patients affected with COVID 19-19, what is the duration of a duty shift?</b>				
<4 hours	37 (7.1%)	5 (4.6%)	32 (7.8%)	p<0.001
4-6 hours	29 (5.6%)	3 (2.8%)	26 (6.3%)	
6-8 hours	102 (19.6%)	14 (12.8%)	88 (21.4%)	
8-12 hours	59 (11.3%)	4 (3.7%)	55 (13.4%)	
>12 hours	19 (3.7%)	5 (4.6%)	14 (3.4%)	

<b>Whether you or your family or friends have been infected with COVID 19?</b>	10 (1.9%)	2 (1.8%)	8 (1.9%)	p=0.961
<b>Were you quarantined due to exposure to COVID 19 positive patient or due to travel history?</b>	70 (13.5%)	12 (11.0%)	58 (14.1%)	p=0.396
<b>Do you know of someone (family/friend/colleague) who had died due to COVID 19?</b>	93 (17.9%)	15 (13.8%)	78 (19.0%)	p<0.001
<b>Are you currently on any treatment for depression or anxiety?</b>	16 (3.1%)	1 (0.9%)	15 (3.6%)	p=0.051

**Table 2. Effects of COVID-19 on perceived stress among doctors**

	Total (N=520)	Low Stress Group (n=109)	Moderate/High Stress Group (N=411)	P Value
<b>Do you feel that your daily life has become more challenging due to the current COVID 1919 pandemic ?</b>				<b>p&lt;0.001</b>
Yes, definitely	176 (33.8%)	17 (15.6%)	159 (38.7%)	
Yes, to some extent	229 (44.0%)	41 (37.6%)	188 (45.7%)	
Not very much	56 (13.6%)	32 (29.4%)	56 (13.6%)	
Not at all	27 (5.2%)	19 (17.4%)	8 (1.9%)	
<b>Do you feel that the quality time you spend with your family has been compromised due to the current COVID 19 pandemic?</b>				<b>p&lt;0.001</b>
Yes, definitely	149 (28.7%)	12 (11.0%)	137 (33.3%)	
Yes, to some extent	124 (23.8%)	17 (15.6%)	107 (26.0%)	
Not very much	125 (24.0%)	30 (27.5%)	95 (23.1%)	
Not at all	122 (23.5%)	50 (45.9%)	72 (17.5%)	
<b>In the last month, how will you rate your sleep quality?</b>				<b>p&lt;0.001</b>
Excellent	52 (10.0%)	31 (28.4%)	21 (5.1%)	
Good	170 (32.7%)	48 (44.0%)	122 (29.7%)	
Fair	191 (36.7%)	25 (22.9%)	166 (40.4%)	
Poor	91 (17.5%)	4 (3.7%)	87 (21.2%)	
Terrible	16 (3.1%)	1 (0.9%)	15 (3.6%)	
<b>Do you feel financially insecure due to the current COVID 19 pandemic?</b>				<b>p&lt;0.001</b>
Yes, definitely	90 (17.3%)	3 (2.8%)	87 (21.2%)	
Yes, to some extent	227 (43.7%)	46 (42.2%)	181 (44.0%)	
Not very much	141 (27.1%)	37 (33.9%)	104 (25.3%)	
Not at all	62 (11.9%)	23 (21.1%)	39 (9.5%)	
<b>What is the most important fear in your mind during this current COVID 19 pandemic?</b>				<b>p=0.046</b>
Fear of contracting the infection yourself	99 (19.0%)	20 (18.3%)	79 (19.2%)	
Fear of spreading the infection to your family members especially elderly members	324 (62.3%)	60 (55.0%)	264 (64.2%)	
Staying in quarantine after being exposed to a COVID 19-19 positive patient	29 (5.6%)	6 (5.5%)	23 (5.6%)	
Others	68 (13.1%)	23 (21.1%)	45 (10.9%)	

<b>What activity do you resort to when feeling stressed?</b>				<b>p=0.019</b>
Exercise	188 (36.1%)	50 (45.9%)	138 (12.1%)	p=0.744
Listening to music	221 (42.5%)	48 (44.0%)	173 (11.7%)	p=0.428
Yoga and meditation	109 (30.0%)	26 (23.8%)	83 (6.3%)	p=0.332
Talking to friends or colleague	237 (45.6%)	45 (41.3%)	192 (10.9%)	p=0.744
Dancing	221 (42.5%)	48 (44.0%)	173 (11.7%)	p=0.414
Watching movies	361 (69.4%)	72 (66.0%)	289 (17.5%)	p=0.744
Playing musical instruments	221 (42.5%)	48 (44.0%)	173 (11.7%)	p=0.085
Reading books	133 (25.6%)	35 (32.1%)	98 (8.5%)	
<b>Have you ever felt about requirement of a specialist counselling to get de-stressed ?</b>				<b>p&lt;0.001</b>
Yes		3 (2.8%)	39 (9.5%)	
No		99 (90.8%)	305 (74.2%)	
Maybe		7 (6.4%)	67 (16.3%)	

**Table 3. Problems faced by doctors during COVID 19 pandemic**

<b>Does the reported shortage of personal protective equipment (PPE) in many places worry you?</b>				<b>p=0.275</b>
Yes, definitely	268 (51.5%)	48 (44.0%)	220 (53.5%)	
Yes, to some extent	181 (34.8%)	42 (38.5%)	139 (33.8%)	
Not very much	59 (11.3%)	15 (13.8%)	44 (10.7%)	
Not at all	12 (2.3%)	4 (3.7%)	8 (1.9%)	
<b>What measures are you planning to take for your own safety during patient care?</b>				<b>p=0.032</b>
Use PPE provided by my workplace/hospital	292 (56.2%)	73 (67.0%)	219 (53.3%)	
Seek help from government machinery/NGOs/help groups	11 (2.1%)	1 (0.9%)	10 (2.4%)	
Purchase PPEs and mask by myself	217 (41.7%)	35 (32.1%)	182 (44.3%)	
<b>What change(s) to your clinical practice have you made for your own safety during patient care?</b>				
Cancel/postpone elective procedures	253 (48.6%)	68 (62.4%)	185 (45.0%)	p=0.002
Increase Tele and Video consultations	164 (31.5%)	51 (46.8%)	113 (27.5%)	p<0.001
Stop outpatient clinics	176 (33.8%)	54 (49.5%)	122 (29.7%)	p<0.001
My job mandates being involved in the care of COVID 19-19 patients	125 (24.0%)	13 (11.9%)	112 (27.2%)	p<0.001
<b>Have you ever felt depressed or upset about the violence on healthcare workers during this pandemic of COVID 19?</b>				<b>p&lt;0.001</b>
Always	256 (49.2%)	44 (40.4%)	212 (51.6%)	
Very often	166 (31.9%)	27 (24.8%)	139 (33.8%)	
Sometimes	75 (14.4%)	24 (22.0%)	51 (12.4%)	
Very rarely	17 (3.3%)	10 (9.2%)	7 (1.7%)	
Never	6 (1.2%)	4 (3.7%)	2 (0.5%)	
<b>Have you felt upset reading news about doctors who died of COVID 19 infection not being given an undisturbed funeral?</b>				<b>p&lt;0.001</b>
Always	324 (62.3%)	61 (56.0%)	263 (64.0%)	
Very often	127 (24.4%)	21 (19.3%)	106 (25.8%)	
Sometimes	51 (9.8%)	17 (15.6%)	34 (8.3%)	
Very rarely	12 (2.3%)	7 (6.4%)	5 (1.2%)	
Never	6 (1.2%)	3 (2.8%)	3 (0.7%)	

<b>Do you believe healthcare workers (and their families) are being specifically targeted in these incidents or they are simply getting more coverage by the media?</b>				<b>p&lt;0.001</b>
Specifically targeted	248 (47.7%)	35 (32.1%)	213 (51.8%)	
More coverage by media	70 (13.5%)	24 (22.0%)	46 (11.2%)	
Not sure	202 (38.8%)	50 (45.9%)	152 (37.0%)	
<b>Do you believe the recent ordinance passed by the government regarding 7 years imprisonment for assaulting healthcare workers be sufficient to stop violence against doctors?</b>				<b>p=0.147</b>
Yes	117 (22.5%)	17 (15.6%)	100 (24.3%)	
No	206 (39.6%)	46 (42.2%)	160 (38.9%)	
Not sure	197 (37.9%)	46 (42.2%)	151 (36.7%)	
<b>Have your family members have been affected by media reports regarding violence/ill-treatment of healthcare workers?</b>				<b>p=0.275</b>
Yes	215 (41.3%)	42 (38.5%)	173 (42.1%)	
No	200 (38.5%)	39 (35.8%)	161 (39.2%)	
Not sure	105 (20.2%)	28 (25.7%)	77 (18.7%)	
<b>Do you believe recent reports of violence against healthcare workers will dissuade children and their parents from considering medicine as a career choice?</b>				<b>p&lt;0.001</b>
Yes	321 (61.7%)	51 (46.8%)	270 (65.7%)	
No	75 (14.4%)	26 (23.9%)	49 (11.9%)	
Not sure	124 (23.8%)	32 (29.4%)	92 (22.4%)	

**Table 4. Open suggestions during the current pandemic**

<b>Words of encouragement</b>
“Stay calm stay safe”
“Be cautious be safe”
“Focus more on positive happenings & news”
“Mental & physical strength is the key to overcome this problem”
“Let’s wait with positive hope”
<b>Changes in current policies</b>
Provide good quality PPE and adequate training on that
Please check doctors for co-morbidities and exempt them from COVID 19 duties
Conduct motivational talks or programs for doctors
Restrict consulting elective cases in OPD
Hotline number exclusively for doctors
Provide psychological support in form of counselling to doctors
Bring more stringent laws for assault on doctors
<b>Personal care</b>
“Self-care is the first thing to do”
“Show empathy to your spouse who is supporting you during this tough time”
“Try to spend more time with family but maintain hygienic practices”
<b>Uncertainty</b>
“I am worried about my salary cut”
“How long this pandemic is going to last”
“Worried about daily change of guidelines and protocols”
“Economic impact can be alarming”
“My exams are on the way, fear of getting infected and difficult to study in between hectic duty”
<b>To overcome stress</b>
“Practice yoga”
“Do meditation”
“Do inner engineering by Sadhguru”
<b>Regarding the present questionnaire</b>
“Well planned questionnaire”
“A bit exhaustive questionnaire but well devised”
“Thank you for devising this survey”

The limitations of the study included the non-availability of response rate as it was disseminated through WhatsApp and emails. This is a cross sectional survey and long-term chronic stress related issues like PTSD, depression, anxiety wasn’t looked into.

## 5. CONCLUSIONS

Our study has important implications and conclusions. This is the first study done from the Indian sub-continent exclusively among doctors to know their perceived stress and also the problems and possible ways of overcoming it, in the context of on-going COVID 19 pandemic. An alarming 4/5<sup>th</sup> of the doctors were suffering from moderate to severe stress and 1/6<sup>th</sup> of them were in need of counselling. They were also worried about various psychosocial aspects of the disease including violence on them and the most affected were younger female doctors working in ICU and emergency services. Despite the well-

known limitations of such surveys, we believe that our findings are applicable to many countries in Asia and Africa with similar healthcare systems. We believe the findings of this survey can help positively influence Governmental authorities, professional organizations and hospital management to take the lead and establish mechanisms at multiple levels to support doctors’ financial security, ensure adequate access to PPE at work and set up dedicated helplines and counselling facilities for those needing them. We are happy that many of the respondents felt our survey to be well-planned and was timely and necessary.

## CONSENT AND ETHICAL APPROVAL

Prior to the commencement of the survey approval of the institutional review board (IRB) at Dr. Rela Institute & Medical Centre, Bharath Institute of Higher Education & Research, Chennai, India was obtained. Consent was

obtained as a part of the survey and anonymity of the participants ensured.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## **ANNEXURE 1**

Annexure 1 is available in this link:

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## **SUPPLEMENT 1**

Supplement 1 is available in this link:

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