

What does not Kill You Makes You Stronger: An Online Survey into Healthcare Providers' Mental Health during Corona Pandemic

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ABSTRACT

Context: Novel corona virus poses a profound and interminable threat to humanity. Healthcare providers (HCPs)' assigned responsibility to combat the disease from frontline put them in mortal danger takes a toll on their mental health.

Aim and objective: To identify HCP's unmet mental health needs.

Settings and design: A cross-sectional, online mental health survey was conducted during Unlock 1.0, June, 2020, among doctors and nursing staffs working in a South Bengal health district.

Materials and methods: Tools used were an online semistructured questionnaire, Depression, Anxiety and Stress Scale—21 Items, Insomnia Severity Index, and Brief Resilience Scale.

Statistical analysis: Descriptive statistics, Chi-square, independent *t*-test, ANOVA, and Pearson and Spearman's correlation were done by SPSS-16.

Results: Among 78 respondents, 74% are doctors, 56% males, and 80% aged between 21 and 50 years, married, having children, living with family, and working in tertiary Govt institute. About 62% had preexisting medical comorbidities, 50% had clinical insomnia, 28% opted for a psychiatric evaluation, but only half of them actually volunteered. Mean score for insomnia, depression, anxiety, stress, and resilience was 7.82, 5.72, 7.64, 4.13, and 20.27, respectively. "Fear of getting infected and infecting others" dominated 33% HCP's concern regarding COVID-19. Presence of medical and mental comorbidity, place of living, exposure, household duty, and exercise made significant difference to insomnia, stress, anxiety, and depression ($p < 0.05$). One-fourth of population reported increase in sleep and had significant association with stress and depression ($p < 0.05$).

Conclusions: High unmet mental health needs of HCPs are evident in increased burden of sleep dysfunction, medical morbidity, and reluctance to disclose about psychological issues. Clarification needed on reported hypersomnia and effect of lockdown activities on mental health.

Keywords: COVID-19, Healthcare provider, Psychiatry morbidity, Serious mental illness.

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INTRODUCTION

Novel coronavirus pandemic has shaken the very core of human existence in an unprecedented way. Without a proven cure for the virus, we are supposed to "live with it"¹ for unspecified time in future with the possibility of getting infected, more so for health professionals. From emerging as a public health threat in Wuhan, China, during the year 2019 end, to crossing every boundary of states and continents, this pandemic is bringing about long-term change in human society and behaviour.^{2,3}

While healthcare providers (HCPs) play the pivotal role in defense against the virus, thousands of them have been martyred in last 2 years in their relentless fight though the tides of crisis: Each blow stronger than the earlier. During the initial phase of the pandemic in India, the role of HCPs was like a warrior in an uncharted territory. They were fighting the invisible enemy, with no proven treatment and no vaccines in line. Their conflict between assigned responsibility and mortal fear was further perplexed by ever-changing treatment protocols and guidelines, and even issues, like societal discrimination, rejection, and assault. Vaccines, until then, being a distant hope, use of protective equipment meant the only shield against infection, unfortunately resulted in further escalating their fear of infectivity in some cases by means of doubts regarding their availability, and also, extreme discomfort using them. There have been reports of increased mental health burden in HCPs in terms of anxiety,

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insomnia, and stress-induced symptoms.^{4,5} Factors contributing to higher mental health morbidity have been identified.⁶ Such issues need to be addressed to improve professional efficacy and patient care.⁷ Importance of psychiatrists' role has been elaborated for HCPs engaged in care for COVID-19 patients;⁸ similarly, it was proven the benefit of telepsychiatry in mitigating their psychosocial issues.^{9,10}

Current study was conducted at a time when India was yet to face the worst medical crisis; rather, it was the fear and apprehension

that gripped the whole nation. It is a lookback into the plight of HCPs during the month of June, 2020, when the nation had entered Unlock 1.0 phase after 3 months of lockdown: an attempt to identify the unmet needs of HCP's mental health. Assessments were made using measures of stress, anxiety, depression, sleeping difficulty, and resilience, to identify participants who are in need of mental health care.

MATERIALS AND METHODS

It was a cross-sectional observational study with the following aims and objectives:

- Identifying those HCPs in need of mental health care
- Identifying factors influencing mental well-being
- To find out resources that helped HCPs cope with lockdown and pandemic-induced burden

All doctors and nursing staffs working in government and private medical establishments of Diamond Harbour Health District who were using smartphones were approached to participate in the research through personal contact and through social media. Following ethical clearance by institutional ethical committee, process of data collection was conducted digitally. Interested subjects were included in the study after obtaining consent of participation through appropriate method. Participants opting for psychiatric consultation were requested to provide contact number through which they were contacted within 2 weeks over phone or through social media preserving confidentiality.

Tools

The self-designed questionnaire was made available to the participants with the help of Google form containing questions regarding participants' general particulars, followed by questions with multiple response options on their work profiles, duty schedules, effect of lockdown on their daily life, and behavior. One additional question pertaining to the individual's thoughtful reflection about the ongoing situation was set for optional response. The consent form was incorporated in the first section, which on participant's acceptance allowed entry into the main questionnaire.

Depression, Anxiety, and Stress Scale—21 Items (DASS-21)

The DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. Scores for depression, anxiety, and stress are calculated by summing the scores for the relevant items.

The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder.

Insomnia Severity Index (ISI) (Morin)

The ISI is a 7-item self-report questionnaire assessing the nature, severity, and impact of insomnia. The usual recall period is the "last month," and the dimensions evaluated are as follows: severity of sleep onset, sleep maintenance, early morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, noticeability of sleep problems by others, and distress caused by the sleep difficulties. A 5-point Likert scale is used to rate each item.

Brief Resilience Scale (BRS) (Smith et al., 2008)¹¹

It is a self-reported questionnaire with six items, designed as an outcome measure to assess the ability to bounce back or recover from stress.

The research proposal was approved by Institutional Ethical Committee, Diamond Harbour Govt Medical College and Hospital.

Microsoft excel was used for tabulation, data editing (to curtail repeated entries by one participants), and descriptive statistics, and statistical analysis was done with the help of IBM SPSS version 16 software. Independent t-test and one-way ANOVA were applied to test the association between parametric variables and Chi-square test for nonparametric variables. Parametric and nonparametric correlation (Pearson's correlation and Spearman's rho, respectively) was applied where appropriate. Statistical significance was determined at $p \leq 0.05$.

RESULTS

Data were collected during Unlock 1.0 phase in India in the month of June. Among total 78 participants, 56% were male, 44% female, majority were doctors (74%), and 26% were from nursing background. Almost 30% participants were from 21 to 30 years age bracket followed by 41–50 years (27%), 31–40 years (22%), and 51–60 years (15%), and only five participants were above 60 years. Sixty-three percent of participants were married having children, living in their residence with family (70%), working in Govt institution, and working in tertiary tier (82%) (Table 1).

Exposure and Engagement to COVID Care

Greater proportion of participants were working in surgery-related disciplines (30%), followed by departments concerned with COVID services, such as emergency, critical care, fever clinic, and primary care (26%), and 44% report directly dealing with COVID care, such as emergency, COVID test laboratory, quarantine center, and COVID hospital. Forty-five percent reported changed nature of duty since the onset of pandemic; however, only 33% had reported increase in their weekly hours of duty. "Not known" was the most frequent response (78%) to COVID contact history at work, 15% were tested, 8% were quarantined suspecting contact of COVID-19, and none of the participants tested positive for COVID-19 at the time of study. Thirty-eight percent HCPs were on hydroxychloroquine prophylaxis for COVID-19 (Table 2).

Effect of Lockdown on Daily Life

Due to lockdown, 81% had to avail alternate mode of transport to work, 62% reported increase in the hours of household duty and childcare, and most of the volunteers felt it was more difficult to care for aged person (69%) and children (65%) at home (Table 2). About 62% of participants utilized the time gained in lockdown in household work, followed by engaging in social media (38%), cooking (33%), academic activity/career upgrade (27%), leisure reading (26%), and online entertainment (streaming on digital media) (26%) (Fig. 1).

Physical and Mental Health

A large number of participants (61.5%) reported having preexisting medical issues among which hypertension ($N = 14$), being overweight ($N = 9$), and diabetes ($N = 8$) were most frequent. Majority reported never being treated for mental health issues (94%); however, rest had prior ($N = 4$) or current issues ($N = 1$). Twenty-eight percent ($N = 22$) participants expressed their

Table 1: Sociodemographic and professional profile of the participants

Gender	<i>n</i>		
Male	44	56%	
Female	34	44%	
Profession			
Doctor	58	74%	
Nursing staff	20	26%	
Age distribution			
21–30 years	23	29.49%	
31–40 years	17	21.79%	
41–50 years	21	26.92%	
51–60 years	12	15.38%	
More than 60 years	5	6.41%	
Marital status/family			
Married, with children	49	63%	
Married, no children	14	18%	
Single	15	19%	
Present place of living			
Hospital campus premises	15	19.23%	
Residence with family	55	70.51%	
Separate place from family	8	10.26%	
Are you in government and/or private setup?			
Government	69	88.46%	
Public, private	3	3.85%	
Private	6	7.69%	
<i>Where do you work?</i>			
Primary tier			
Block Primary Health Center	2	3	3.85%
Primary Health Center	1		
Secondary tier			
Rural Hospital	4	5	6.41%
Sub Divisional Hospital	1		
Tertiary tier			
District Hospital	3	64	82.05%
District Hospital, Private Nursing Home, Private Chamber/Poly Clinic	1		
District Hospital, Medical College	1		
District Hospital, Private Chamber/Poly Clinic	1		
Medical College	57		
Medical College, Private Nursing Home	1		
Private health care			
Private Chamber/Poly Clinic	3	6	7.69%
Private Nursing Home	1		
Private Nursing Home, Private Chamber/Poly Clinic	2		
<i>Your discipline/department of work</i>			
Preclinical			
Anatomy	1		
Biochemistry	2		
Physiology	1	6	7.69%
Forensic medicine	1		
Microbiology	1		

High exposure				
Emergency	5			
Critical care	6			
Emergency	5	20	25.64%	
Fever clinic	1			
General outpatient department	1			
Primary health care	2			
Health administration				
CMOH office	1			
Health administration	1	6	7.69%	
Hospital administration	4			
Surgery based				
Surgery	5			
Ophthalmology	4			
ENT	3			
Anesthesiology	4	23	29.49%	
General OT	1			
Obs and Gynae	4			
Orthopedic	2			
OPD based				
Acupuncture	1			
Dentistry	4			
Dermatology	2	12	15.38%	
Physiotherapy	3			
Psychiatry	1			
Radiology	1			
Medicine and allied discipline	11	11	14.10%	
<i>Do you have any chronic medical ailment?</i>				
Medical comorbidity present	48	61.54%	Medical comorbidity	Count
			Hypertension	14
			Obesity/overweight	9
			Diabetes	8
			Hypothyroidism	4
			Gastrointestinal disease	3
			Chronic lung disease	2
			Ischemic heart disease	2
			Orthopedic problem	2
			PCOD	2
			Chronic kidney disease	1
			Dyslipidemia	1
			Hypothyroidism	1
			Chronic upper respiratory tract infection	1
			Urinary tract infection	1
No chronic illness	30	38.46%		
<i>Have you been diagnosed to have any preexisting mental ailment?</i>				
Never	73	93.6%		
Currently on treatment	1	1.3%		
Past treatment	4	5.1%		

willingness to discuss their mental health issues with a psychiatrist; however, many ($N = 8$) did not provide a valid contact number, a few ($N = 3$) did not respond when contacted by phone call and

messaging, rest were interviewed over phone among whom some ($N = 5$) had no or milder psychological issues, and some other ($N = 6$) had moderate-to-severe mental health issues that

Table 2: COVID-related profile of the participants

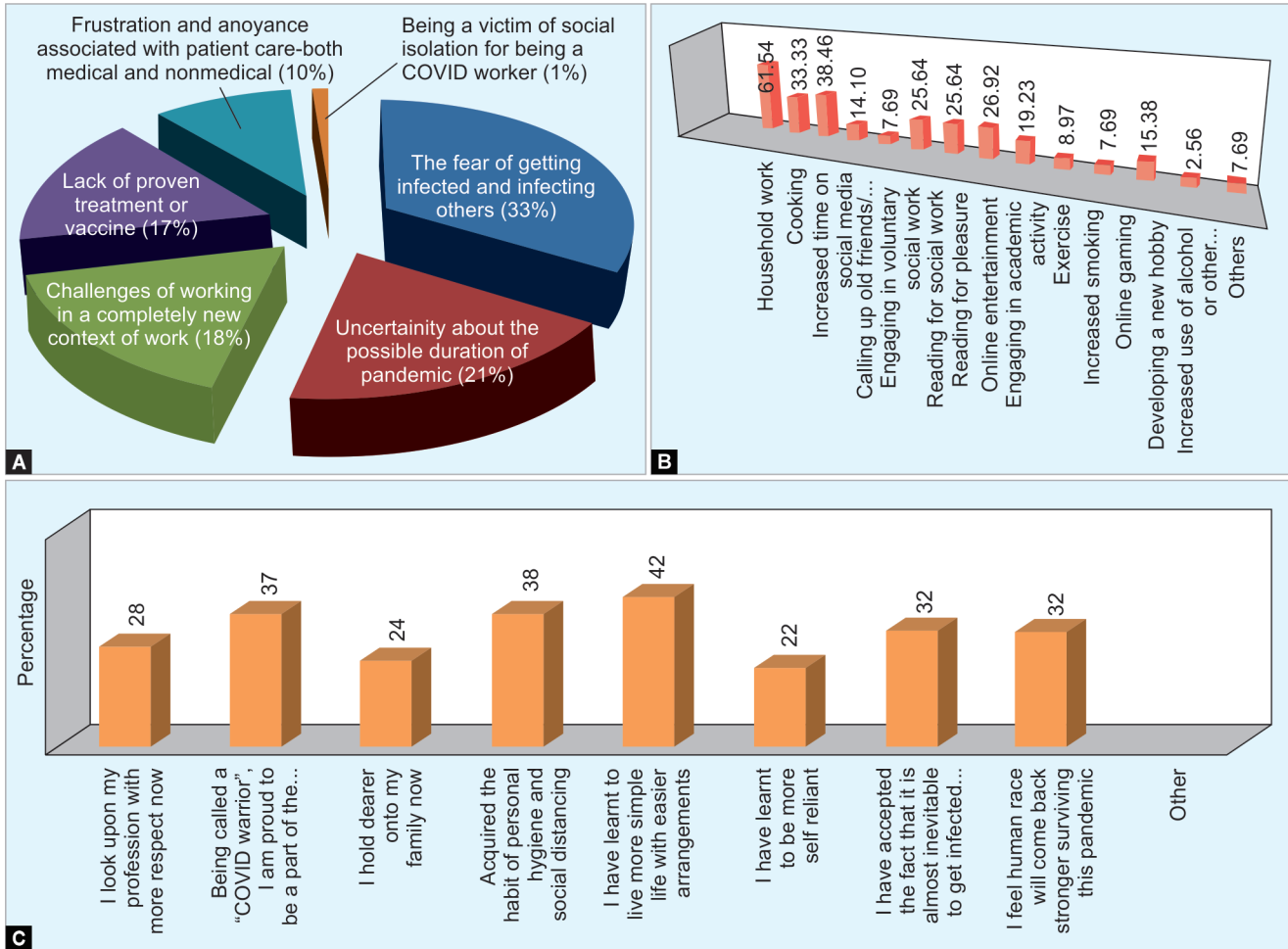
Are you directly involved in treating patients with COVID-19, such as emergency/fever clinic/isolation ward/sample collection for COVID-19/COVID test laboratory/quarantine center/COVID hospital?		
No	44	56.41%
Yes	34	56.41%
Have frequency/hours of weekly duty, increased/same as before/decreased?		
Decreased	20	25.64%
Increased	26	33.33%
Same as before	32	41.03%
Has there been any change in the nature of duty since lockdown? (such as serving in fever clinics instead of medical under graduate teaching)		
Yes	35	44.87%
No	43	55.13%
Has there been any change in the mode of transport to and from hospital since lockdown?		
No	15	19.23%
Yes	63	80.77%
Has there been any change in the hours engaged in household work and child care during lockdown period?		
Decreased	13	16.67%
Increased	48	61.54%
Same as before	17	21.79%
Did you have any exposure with a patient or colleague with COVID-19 positive status?: not known/once/multiple times		
Once	6	7.7%
Multiple times	7	9.0%
Not known	61	78.2%
I have been exposed with protective gear	4	5.1%
Have you ever been quarantined for COVID-19 prevention?		
No	72	92.3%
Yes	6	7.7%
Have you been tested for COVID-19?		
Never	66	84.6%
Once	11	14.1%
Multiple times	1	1.3%
Have you been tested positive for COVID-19?		
No	78	100%
Are/were you on hydroxychloroquine prophylaxis for novel corona?		
Yes	30	38.46%
No	48	61.54%
How often have you faced discrimination or harassment in society for being a HCP?		
Very frequently	5	6.41%
To some extent	27	34.62%
None at all	39	50.00%

(Contd...)

Table 2: (Contd...)

How often have you faced discrimination or harassment in society for being a HCP?		
I was hailed in community for being a health worker	7	8.97%
How has lockdown affected your private practice?		
Did not respond	49	62.82%
Severely affected	17	21.79%
Affected to some extent	9	11.54%
Not at all affected	2	2.56%
Do you think COVID-19 pandemic and lockdown has made any change in care of aged persons at your home?		
More difficult now	54	69.23%
Same as before	24	30.77%
Do you think COVID pandemic and lockdown has made any change in care of children at your home?		
More difficult now	51	65.38%
Same as before	27	34.62%
Are you willing to volunteer for a psychiatric consultation?		
	<i>Frequency</i>	<i>Percent</i>
No	56	71.8%
Yes	22	28.2%
Did not provide contact no	8	
No response when contacted	3	
No diagnosis	5	
High stress level	3	
Depression	1	
Moderate anxiety	1	
Sexual dysfunction	1	
Total	22	
Are you sleeping more than necessary since lock down?		
No	58	74.36%
Yes	20	25.64%

were intervened accordingly (Table 3). Themes for COVID-related concerns emerged from our study were as follows: "Fear of getting infected and infecting others" (33%) followed by "uncertainty about the possible duration of pandemic" (21%) and "challenges of working in a completely new context of work" (18%). Greatest response for positive insights from lockdown was "learning to live simply, with lesser articles and easier arrangements" (42%), followed by "acquiring better personal hygiene habits" (38%) (Fig. 1). Thirty-seven percent expressed pride in "being called a COVID warrior." A participant's spontaneous response about his



Figs 1A to C: Concern and fear, time management during lockdown, and positive insights

Table 3: Prevalence of insomnia and mental morbidity among participants

Insomnia level on ISI	Frequency	%	% prevalence of clinical insomnia
No insomnia	40	51.28	
Subthreshold insomnia	23	29.49	48.72
Moderate insomnia	13	16.67	
Severe insomnia	2	2.56	
Anxiety level on DASS	Frequency	%	% prevalence of any level of anxiety
Normal	62	79.49	
Moderate	9	11.54	20.51
Mild	5	6.41	
Severe	2	2.56	
Depression level on DASS	Frequency	%	% prevalence of any level of depression
Normal	60	76.92	
Mild	11	14.10	23.08
Moderate	7	8.97	

(Contd...)

Table 3: (Contd...)

Stress level on DASS	Frequency	%	% prevalence of abnormal stress level
Normal	66	84.62	
Mild	9	11.54	15.38
Moderate	3	3.85	
Total	78		

lockdown-induced insight was: "What does not kill you makes you stronger". Human race will learn and adopt. This might help us to fight next war against microbes."

Findings of mental health screening are as follows: Mean scores of ISI, DASS-21 and subscales, and BRS were 7.82 (7.0), 7.64 (5.8) (stress), 5.72 (4.87), 4.13 (4.2), and 20.27 (3.58), respectively. Almost 49% of respondents' scores suggested some level of insomnia, some level of anxiety in 20%, depression in 23%, and higher stress level in 15%.

Independent t-test was applied to find out difference in mental health parameters with respect to gender, profession (doctors and nursing staff), involvement in COVID-related services, availing alternate mode to transport to work, presence/absence of medical comorbidity, presence/absence of mental morbidity, history of quarantine, whether or not on hydroxychloroquine prophylaxis, reporting difficulty in aged person's and children's

care giving, willingness to volunteer for psychiatric consultation, and involvement in different lockdown time activities, such as household duties, cooking, higher use of social media, voluntary social work, academic activity, exercise, reading, calling friends/relatives, and online entertainment.

However, significant difference in mental health parameters was found in participants who had chronic medical conditions (higher stress, depression, and anxiety than those without medical conditions, $p \leq 0.05$), in participants with prior or current history of psychiatric treatment (poorer sleep, higher level of depression, anxiety, and stress, $p < 0.05$), in those who exercised during lockdown (fairer sleep than those who didn't, $p < 0.05$), and in

those who spent time streaming online (higher score of depression subscale, $p < 0.05$) (Table 4).

One-way ANOVA did not find significant difference in the scores of ISI, DASS 21, and BRS with respect to different demographic variables, and subgroup related to professional and COVID-associated factors.

The group who resided with family showed significantly lesser anxiety level than those who were either staying in hospital premises or living separately from family ($p \leq 0.05$). The group who reported decreased load of household duties paradoxically scored higher in stress, anxiety (significant, $p \leq 0.05$), and depression than those who reported either increase or same load in household duty. Stress was found to be significantly higher in the subgroup

Table 4: Comparison of mental health parameters between different subgroups using independent t-test and ANOVA

		ISI total		DASS (stress)		DASS (dep)		DASS (anx)		BRS (total)	
		Independent t-test									
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Medical comorbidity											
Absent	30.00	6.73	6.63	5.63	4.99	4.13	3.88	2.83	2.90	21.00	3.95
Present	48.00	8.50	7.21	8.90	5.99	6.71	5.20	4.94	4.70	19.81	3.30
Sig. (two-tailed)		0.28		0.015**		0.022**		0.031**		0.16	
Mental morbidity											
No H/O treatment	73.00	7.29	6.43	7.25	5.77	5.44	4.65	3.77	3.70	20.27	3.53
H/O past or present treatment	5.00	15.60	10.90	13.40	2.88	9.80	6.80	9.40	7.60	20.20	4.87
Sig. (two-tailed)		0.009**		0.021**		0.052**		0.003**		0.97	
Exercise											
No	63.00	8.70	7.20	7.95	6.00	6.14	5.03	4.24	4.31	20.13	3.63
Yes	15.00	4.13	4.75	6.33	4.92	3.93	3.83	3.67	3.89	20.87	3.42
Sig. (two-tailed)		0.022**		0.336		0.115		0.64		0.48	
Online entertainment											
No	58.00	7.79	7.17	7.02	5.91	4.95	4.33	4.00	3.85	20.26	3.66
Yes	20.00	7.90	6.66	9.45	5.27	7.95	5.74	4.50	5.22	20.30	3.45
Sig. (two-tailed)		0.95		0.11		0.017**		0.65		0.97	
Increase in sleep											
Yes	20.00			9.75	5.10	8.15	4.65	5.30	5.47	19.95	3.12
No	58.00			6.91	5.91	4.88	4.70	3.72	3.65	20.38	3.75
				0.06		0.01		0.15		0.65	
One-way ANOVA											
Place of living											
Residence with family	55.00	6.84	6.12	7.18	5.45	5.20	4.48	3.31	3.63	20.29	3.18
Hospital premises	15.00	9.47	8.09	9.07	6.48	7.27	4.74	5.67	3.64	20.40	4.53
Separate place from family	8.00	11.50	9.55	8.12	7.30	6.38	7.33	6.88	6.92	19.88	4.70
Sig.		0.13		0.528		0.32		0.022**		0.94	
Household duty											
Increased	48.00	7.25	7.28	7.48	5.85	4.92	4.37	3.52	4.15	20.62	3.36
Decreased	13.00	11.08	5.14	10.00	4.92	8.08	5.30	6.77	3.94	20.00	4.47
Same as before	17.00	6.94	7.08	6.29	6.15	6.18	5.54	3.82	4.04	19.47	3.54
Sig.		0.18		0.22		0.11		0.043**		0.51	
Exposure											
Once	6.00	2.67	3.50	9.83	5.42	5.33	3.93	2.83	2.40	20.50	3.78
Multiple times	7.00	8.86	8.24	9.43	4.89	7.14	5.73	6.00	4.90	21.43	3.99
Not known	61.00	7.90	7.01	6.77	5.75	5.36	4.83	3.90	4.33	20.33	3.32
Exposed with protective gear	4.00	12.50	5.97	14.50	3.87	9.25	5.25	6.25	2.06	17.00	6.06
Sig.		0.16		0.034**		0.39		0.38		0.25	

Significant difference is assumed at $p < 0.05$ (**)



Table 5: Chi-square test (association of hypersomnia with variables)

Increase in sleep* profession	Doctor	Nursing staff	
Sleep increased	18 90.00%	2 10.00%	0.05
Not increased	40 69.00%	18 31.00%	
Increase in sleep* medical comorbidity	No comorbidity	Comorbidity present	
Sleep increased	4 20.00%	16 80.00%	0.04
Not increased	26 44.80%	32 55.20%	
Increase in sleep* social media	Not into social media	Uses social media	
Sleep increased	8 40.00%	12 60.00%	0.02
Not increased	40 69.00%	18 31.00%	
Increase in sleep* exercise	Exercised during lockdown	Did not exercise during lockdown	
Sleep increased	13 65.00%	7 35.00%	0.04
Not increased	50 86.20%	8 13.80%	

Significant difference is assumed at $p < 0.05$ (*)

who were “exposed to COVID using adequate protection” than those who responded “once,” “multiple times,” and “don’t know” ($p < 0.05$). Anxiety was found to be significantly higher in those who were tested multiple times for COVID than those who were tested never or once ($p < 0.05$) (Table 4). Table 5 details nonparametric association of increased sleep with profession, presence of medical issues, use of social media, and exercise ($p < 0.05$).

Parametric Pearson’s correlation was applied to determine the interaction between mental health parameters under study. While insomnia scores showed a significant moderate-to-strong positive correlation with stress, depression, and anxiety score ($r = 0.6, 0.5$, and 0.5 , respectively, $p < 0.05$), it showed a weak-to-moderate negative correlation with resilience score ($r = -0.3, p < 0.05$). Strong positive correlation was also evident between depression, anxiety, and stress score ($r > 0.5-1, p < 0.05$), while resilience score had a moderate negative correlation with depression, anxiety, and stress ($r = -0.4, -0.4$, and -0.3 , respectively, $p < 0.05$) (Table 6A).

Nonparametric Spearman’s rho correlation revealed the interplay of lockdown pastime and mental health indicators. There is a decreased likelihood of insomnia to coexist with lockdown activities, like academic activities, exercise, voluntary social work, and finding a new hobby clustered together as positive distraction ($r_s = -0.22, p < 0.05$). Internet media use (online entertainment, social media use, online gaming) showed significant positive correlation with social coping (calling a friend or relative, social media use, voluntary social work) ($r_s = 0.71, p < 0.05$), positive distraction ($r_s = 0.58, p < 0.05$), also negative distraction (online gaming, increased smoking, and substance use) ($r_s = 0.25, p < 0.05$), and significant negative correlation with domestic engagement

(household work, cooking) ($r_s = -0.25, p < 0.05$) during lockdown (Table 6B).

DISCUSSION

Major share of study population were young doctors in Govt service, working in tertiary institute, married, and large part of them were directly involved with COVID care with doubtful exposure history. However, none of them was confirmed to have contracted the virus till the time of study. Exposure with protective gear implies high-grade exposure. This, along with being tested multiple times for COVID, was potential variable for stress.

Although almost 80% participants are aged below 50 years, the burden of medical morbidity was very high among them (62%). It is an important prognostic factor for adverse outcome of COVID-19 infection.¹² Given the fact about the toll of COVID-19 casualties among HCPs, which included large number of youth population as well, this was an alarming finding of our study.¹³ To add greater significance, presence of organic disease is an independent risk factor for medical health worker to develop insomnia, anxiety, depression, and other mental illness.¹⁴

In spite of apparently low (6%) frequency of mental morbidity in HCPs on the basis of self-declaration (Table 1), mental health screening parameters under study exposed an overwhelming burden of insomnia, and moderate load of stress, depression, and anxiety (Table 3) compared to other studies on HCPs.⁵ Unwillingness to share and hesitancy to disclose their problems even under an agreement of confidentiality were evident (not providing valid phone number, not responding to calls and messages). Fear of stigma about mental health might have played a role. While experts from all over the world emphasized on social support intervention,⁷ recovery programs aimed at psychological well-being of HCPs,¹⁴ and role of telephonic helpline for addressing mental health problems of HCPs,¹⁵ it was evident from our study that many of them refused to accept help or remained in denial, moving away from solution on the contrary.

Dysfunctional sleep is a primary finding in this study. While half of the participants had clinical insomnia, one-fourth of them self-reported sleeping more than usual. While level of insomnia positively correlated with stress, anxiety, and depression (Table 5), increased sleep also coexisted with significantly higher levels of stress and depression (Table 4) and reported more in doctors, subjects with medical comorbidity, more social media activity, and exercise during lockdown (Table 5). Subjects engaged in activities, like exercise and active coping (by academic, voluntary work, new hobby), during lockdown slept better, while having a mental morbidity had detrimental effect on sleep (Table 4). Some of these findings are similar to earlier literature: association of social support level, exercise, and active coping with better sleep quality in medical staffs.^{7,16} Sleep and mental illness affect each other bidirectionally. While worry, negative thinking and a state of hyperarousal in individuals with mental dysfunction lead to insomnia, sleep deprivation induces worsening of mood, twice as large as mood’s effect on sleep.¹⁶ Similarly, link of immunity to sleep is a well-established fact. Prolonged sleep disturbance is associated with declines in natural and cell-mediated immunity, and causes alteration in complex cytokine network.¹⁷ Association of insomnia with COVID-19 is widely reported, but its relation to hypersomnia isn’t much studied. The pandemic-induced dysfunctional sleep pattern in general population is contributed by disruption of

Table 6A: Pearson correlation: interplay of mental health indicators

	<i>ISI (total)</i>	<i>DASS (total)</i>	<i>DASS (stress)</i>	<i>DASS (depression)</i>	<i>DASS (anxiety)</i>	<i>BRS (total)</i>
ISI (total)	1	0.627**	0.605**	0.507**	0.534**	-0.312**
Pearson correlation Sig. (two-tailed)		0.000	0.000	0.000	0.000	0.005
DASS (total)		1	0.905**	0.906**	0.822**	-0.437**
Pearson correlation Sig. (two-tailed)			0.000	0.000	0.000	0.000
DASS (stress)			1	0.739**	0.589**	-0.323**
Pearson correlation Sig. (two-tailed)				0.000	0.000	0.004
DASS (depression)				1	0.649**	-0.471**
Pearson correlation Sig. (two-tailed)					0.000	0.000
DASS (anxiety)					1	-0.373**
Pearson correlation Sig. (two-tailed)						0.001
BRS (total)						1
Pearson correlation Sig. (two-tailed)						

**Correlation is significant at the 0.01 level (two-tailed); *Correlation is significant at the 0.05 level (two-tailed)

Table 6B: Nonparametric correlation between insomnia, stress, anxiety, depression, and lockdown pastime

<i>Spearman's rho</i>		<i>ISI (total)</i>	<i>Social coping</i>	<i>Positive distraction</i>	<i>Negative distraction</i>	<i>Internet media usage</i>	<i>Domestic engagement</i>
ISI (total)	Correlation	1	-0.047	-0.222	0.007	-0.154	0.045
	Sig. (two-tailed)		0.684	0.051	0.949	0.179	0.697
Social coping	Correlation		1	0.690**	0.035	0.719**	0.174
	Sig. (two-tailed)			0	0.758	0	0.128
Positive distraction	Correlation			1	-0.099	0.587**	0.061
	Sig. (two-tailed)				0.387	0	0.596
Negative distraction	Correlation				1	0.255*	-0.253*
	Sig. (two-tailed)					0.024	0.025
Internet media usage	Correlation					1	0.02
	Sig. (two-tailed)						0.862
Domestic engagement	Correlation						1
	Sig. (two-tailed)						

**Correlation is significant at the 0.01 level (two-tailed); *Correlation is significant at the 0.05 level (two-tailed)

routine, altered circadian rhythm, lack of physical movement, increased screen time, and psychological stress regarding uncertainty about health, employment, finances, and possible duration of pandemic.¹⁸ Recent multicentric study from India suggested that owing to lockdown-induced shift of sleep pattern, both prolonged nighttime sleep along with increase in daytime napping, is reported by sizable number of participants.¹⁹

While higher stress and anxiety level in HCPs is comparable with prior study on similar population,⁵ a number of factors appear as determinants: medical and mental morbidity, exposure with protective gear, and decreased load of household duty. Living with family appears as a protective factor against anxiety (Table 4). Female gender,¹⁴ heavier duty hours,⁵ and being a frontline health staffs engaged in treatment of COVID-19 patients^{6,20} appeared as independent risk factors for higher mental health burden in research by earlier authors. However, current study is conducted at a time when India was still a long way from the peak of pandemic and yet has witnessed 3 months of nationwide lockdown. Each state had taken some measures toward control of pandemic, widespread publicity was being done, and protective gear and prophylactic

medicines were made available by Govt agencies and by means of training and guidelines. HCPs now were more familiar with PPEs, harnessing a changed way of lifestyle and communication, gone ahead from the stage of denial and shock toward embracing a lengthy fight with COVID pandemic. Contributing factors for mental health burden evolved with HCPs adjusting to new challenges in both professional and personal life. This might explain why variable, like involvement with COVID duty, changed nature and hours of duty did not play an important role separating the psychologically burdened group in our study. The association of higher stress level with history of exposure with protective gears might be explained by the high physical distress related to PPE.²⁰ While their use is undeniable for frontline staffs for protection from COVID-19, prior research suggests using it for more than 4 hours/day may be associated with new onset headache,²¹ fluid loss and heat stress at higher working temperature, impaired visibility, and back pain.²²

Primary themes for COVID-related concerns, such as "Fear of getting infected and infecting others," "uncertainty about the possible duration of pandemic," and "challenges of working in a completely new context of work" (Fig. 1), resonate with works

of prior researchers.^{9,20} Passing more than a year and a half with pandemic, population at large including HCPs is getting accustomed with the new normal of everyday life and workplace, handful of potent vaccines are now being available, and some threats no longer appear relevant now. But with nonrelenting waves of new cases coupled with novel virulent mutant strains, this virus is on its way testing our “mental immunity.”

Some lockdown pastime/activity might indicate poorer or better mental health. Reporting of higher burden of domestic work was associated with lesser anxiety levels, and exercise during lockdown was associated with better sleep quality (Table 4). While adopting the means of passive or dysfunctional coping (smoking, use of substance, online gaming) correlated with higher anxiety levels, higher Internet media use negatively correlated with domestic engagement. Engaging in domestic work appears as a positive distraction, and might keep HCPs focused, away from increased screen time and anxiety. Interlinking between exercise, sleep quality, and active coping is demonstrated in a recent study where medical residents with less physical exercise tend to have poorer sleep and passive coping styles.¹⁶

Internet media use showed significant positive correlation with social coping. This may not be an unusual finding in a time of social distancing, when human communication and information exchange became overtly dependent on Internet, and social media might have helped alleviating confinement-related loneliness, helplessness, and anxiety by evoking a sense of belongingness. Association of depression was found with online entertainment (binge watching) in the current study (Table 3). Research so far has found its relation to depression in a dose-dependent manner²³ and also to behavioral addiction leading to a negative outcome.²⁴

Robust reflections of optimism and resilience emerged in lockdown-induced positive emotions of HCPs, such as adopting a minimalistic way of living, acquiring better personal hygiene habit, taking pride in being a “Covid warrior,” and realizing their love for family (Fig. 1). Some of these findings resonate with recently published research.^{5,25} Close proximity with family has shown beneficial for reducing anxiety in HCPs in current study. Resilience (BRS score) showed significant negative correlation with all indicators of mental pathology under study (stress, anxiety, depression, and insomnia) (Table 4). Sense of self-efficacy, a greater purpose, and social connectedness form a solid foundation for mental well-being in adversity.

Limitation

Certain limitations of this study are as follows: cross-sectional design unfit for establishing any cause–effect relationship between variables, lack of prepandemic data for comparison, small sample size, lesser participation of nursing staffs, and lack of participation of nonmedical HCPs. Like any online survey, current study is based on self-reporting, rather than objective assessment, which might have influenced the result.

CONCLUSION

The battle with COVID-19 is not a sprint, rather it is a marathon. The key warriors in this fight, the HCPs, need to remain strong and resilient—physically and mentally. This study focuses on the alarming rate of sleep dysfunction, medical comorbidities, and low willingness to share mental health issues. Optimism and positive outlook at the scenario, however, is reflected in overall response. Some novel

findings, like hypersomnia, and role of lockdown activities on mental health might arouse curiosity in future researchers.

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