

## EFFECT OF NOVEL CORONAVIRUS ON MENTAL HEALTH OF MEDICAL AND NURSING PROFESSIONALS IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Objectives:** The present study was planned to estimate the prevalence and pattern of physical symptoms and to identify the association between demographic, clinical variables, and physical symptoms with mental health status.

**Methods:** Medical and nursing professionals involved in COVID-19 care in a tertiary care hospital were invited to participate in a cross-sectional study using a self-administered online questionnaire within the period from November 2020 to February 2021. This online questionnaire collected information on demographic variables, clinical variables, and physical symptoms prevalence in the past month and the responses to the Impact of Events Scale-Revised (IES-R) instrument. The association between demographic, clinical variables, and physical symptoms with mental health was evaluated by linear regression.

**Results:** A total of 143 participated with the mean age of 41.82±7.26 years. IES-R scale which measured psychological impacts showed a mean score of 17.35±12.53 and most of the participants 97 (67.8%) had minimal psychological impact. However, the presence of physical symptom (anxiety) and coming in contact with suspected or infected materials predicted higher psychological impact and showed statistically significant association ( $p=0.001$ ).

**Conclusion:** One-third of the study participants showed psychological impact ranging from mild-to-moderate grade. This shows that mental health issues are on the rise which is often underdiagnosed, need to be focused, and plan interventions by policy makers.

**Keywords:** Coronavirus disease, Novel corona virus, Medical and nursing professionals, Mental health, Psychological impact.

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### INTRODUCTION

A novel coronavirus disease (COVID-19) was first reported in Wuhan city of China in November 2019 [1]. Soon with alarming level of spread and severity throughout China and elsewhere, COVID-19 was declared as a pandemic by the World Health Organization (WHO) in the early March 2020 [2]. India being a densely populated country, the concerned authorities initially imposed a 21-day lockdown on March 24, 2020, with social distancing norms but continuing all essential services [3]. However, from January 30 to August 10, 2020, India reported 2,215,074 confirmed cases with >44,000 deaths [4]. A psychological impact on healthcare workers (HCWs) as well as on the general population is well known during infectious disease outbreaks. A one such example was observed during the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 with remarkable psychological sequelae [5]. The medical staff combating sudden emergence of SARS experienced psychological distress, with fear and anxiety appearing immediately and depression, and post-traumatic stress symptoms which appeared gradually later and impacted extensively [6,7].

Although Indian government in association with different institutes of national importance launched helpline numbers to provide guidance and counseling [8], with the alarming levels of new cases, unfortunately, HCWs experienced social isolation due to avoidance by their family or community and also having contact with infected people were common causes of trauma [9]. With the psychological outcomes such as depression, anxiety, and stress and its significant association with the presence of physical symptoms [10], and with increase in COVID-19 death rolls and its wide spread, the panic due to the COVID-19 disease is on rise [11]. However, with limited data in Indian settings, this study was an attempt to find the effect of novel coronavirus on mental health among medical and nursing professionals and to estimate the prevalence and pattern of somatic manifestations.

### METHODS

#### Study design and participants

This was a cross-sectional questionnaire-based study conducted in a tertiary care hospital, Karnataka. After the Institutional Ethics Committee (No: ESICMC/GLB/IEC/01/2021) approval, all medical and nursing professionals involved in COVID-19 care and willing to participate voluntarily after giving informed consent were enrolled for the study.

#### Method of recruitment

All participants were provided with information on nature and purpose of the study and consent electronically before registration. Doctors, nurses, and interns involved in COVID-19 care fulfilling inclusion/exclusion criteria were registered in the study. The data were collected from November 2020 to February 2021; using an online (Google form) platform to minimize physical interaction.

#### Study questionnaire

It consisted of three parts.

The first part collected the sociodemographic information (age, gender, education level, marital status, nature of COVID-19 care duty, and type of family).

Second part collected information regarding contact history variables such as close contact with COVID-19 confirmed case, contact with suspected COVID-19 case, and travel history from containment zone in the past 14 days were recorded. Subjects with physical symptoms in preceding month such as headache, lethargy, insomnia, sore throat, fever, breathlessness, poor appetite, anxiety, cough, and cold were taken into consideration. Subjects with pre-existing medical or psychiatric

illness, history of medications intake for physical symptoms, and psychiatrist consultation during COVID-19 care were taken into consideration. The third part consisted of 22-items questionnaire from Impact of Event scale-revised (IES-R) which measures the effect of everyday traumas, acute stress, and routine life stress. Further, the scale was divided into intrusion, avoidance, and hyperarousal subscales, for which each question scores ranged from 0 through 4. The total IES-R score was graded as mild (24–32), moderate (33–36), and severe psychological impact (>37) [12-14].

### Statistical analysis

Demographic and clinical variables were analyzed by descriptive statistics. Subscales and total score of IES-R were expressed as mean and standard deviation. Linear regression was used to compute the univariate associations between demographic variables, clinical variables, and IES-R score.  $p < 0.05$  was considered as significant.

## RESULTS

### Characteristics of study participants

A total of 143 responses were obtained. The mean age of the participants was  $41.82 \pm 7.26$  years (Range; 21–53 years) with a male preponderance ( $n=85$ ; [59.4%]). Most of the participants ( $n=100$ ; [69.9%]) belong to nuclear families.

### IES-R score and psychological impact

The psychological impacts as measured by IES-R scale showed a mean score  $17.35 \pm 12.53$  and median of 17.00. Most of the participants 97 (67.8%) had minimal psychological impact. However, 11 (7.7%) reported severe psychological impact, as shown in Table 1.

### Association of demographic variables, clinical variables, and physical symptoms and its impact on mental health

On linear regression, it showed that there was no statistically significant association between demographic and psychological health. However, among clinical variables, participants who had contacted with suspected or infected materials showed statistically significant association ( $p=0.001$ ). However, considering physical symptoms; 34 (23.78%) participants reported the presence of fatigue. Twenty-eight (17.48%) participants reported presence of anxiety. Nevertheless, headache was more frequently reported symptom accounting for ( $n=36$ ) 25.17% and breathlessness was the least accounting for merely in one (0.007%) participant. On univariate linear regression analysis, it showed that the presence of anxiety and its impact on psychological health was a statistically significant (CI: 5.125–15.006;  $p=0.001$ ). However, there was no statistically significant association between the physical symptoms such as headache, sore throat, cough, poor appetite, myalgia, fever, insomnia, and breathing difficulty (Table 2).

## DISCUSSION

In the present study, we explored mental health impact of Novel Coronavirus among medical and nursing professionals. Results show that headache (25.17%) was the most frequently reported physical symptom, followed by fatigue (23.78%), anxiety (19.58%), and sore throat (18.88%). The concerns regarding livelihood, economy,

and health increased as the COVID-19 disease progressed. With uncertainty in mutations and its impact on mental health, Government of India initiated counseling and guidance with the support of helpline numbers [8].

Overall, among the 143 respondents, 32.2% had significant (mild to severe) psychological impact due to effect of Novel Coronavirus. This finding is similar from the study conducted by Varshney *et al.* in New Delhi, India 2020, which reported 33.2% of participants suffered a psychological impact ranging from mild to severe among 653 respondents [12]. However, our findings were dissimilar from the study conducted by Wang *et al.* in China 2020; conducted in the early phase of COVID-19 upsurge in China which demonstrated psychological impact ranging from moderate to severe in 53.8% participants [13]. This difference in findings could be ascribed to data collection in the early phase in above study which could have altered over time and as a result should be inferred accordingly.

Learning from the experiences, it has been repeatedly emphasized from the previous studies by Hawryluck *et al.* [14], Wu *et al.* [7] that mental health impacts are linked to department and occupation. Therefore, guidance and counseling are quintessential as psychological aid, which would help in plummeting the psychological distress and upholding strategies that adapt with pandemic situation [15]. Clinical variables showed that contact with suspected or infected materials had statistically significant association ( $p < 0.001$ ) with psychological impact which corroborated with the study conducted by Kang *et al.* [16] in Wuhan, China 2020.

In the present study, the presence of physical symptoms was a predictor for mental health in response to the exposure to Novel Coronavirus disease. Headache was the most commonly reported symptom which corroborated with the study conducted by Chew *et al.* in the year 2020 [10]. Although, pre-existing primary headache as a diagnosis is an independent predictor [17], headache may often be unsubstantiated due to its subjectivity and vague in nature, which in actual condition may be a reflection of primary psychological distress [18]. Therefore, headache as a physical symptom may be related to adverse impact of psychological impact or an exacerbation of their pre-existing condition. Interestingly, anxiety as an emotional distress showed statistical significant association with the impact on psychological health ( $p=0.0w01$ ) which correlated with the study conducted by Chew *et al.* in the year 2020 [10]. This could be explained due to intense fear of transmitting the infection to fellow colleagues and or a family members in an already burnout HCWs. Therefore, this possibly explains the relationship between physical symptoms and mental health distress.

### Strength and limitations of the study

The present study provides data on actual impact on mental health among medical and nursing professional during a pandemic of such devastating nature. However, the limitations of our study are; firstly, being cross-sectional in the study design, it does not allow for causality interpretation. Second, although, self-administered questionnaire-based study is an effective way of assessing mental health-interrelated

**Table 1: Distribution of IES-R score [12-14]. (n=143)**

Sl.no	Scale	Categories	Frequency	Percentage
1	Impact of event scale-revised	Minimal	97	67.8
		Mild	28	19.6
		Moderate	07	4.9
		Severe	11	7.7
IES-R Subscales		Items	Mean±SD	Median
2	Intrusivity subscale	Q 1,2,3,6,9,14,16,20	5.78±4.99	5.00
3	Avoidance subscale	Q 5,7,8,11,12,13,17,22	7.07±5.14	7.00
4	Hyper-arousal subscale	Q 4,10,15,18,19,21	4.47±3.70	4.00

Q: Question number from IES-R scale, SD: Standard deviation

Table 2: Univariate linear regression of demographic and clinical variables with psychological impact

S.no	Variables	n (%)	R <sup>2</sup>	Standardized beta (95% CI)	p-value
1	Age	Mean (143)-41.82 years	0.018	-0.136 (-0.522-0.051)	0.106
2	Gender	Male-85 (59.4) Female-58 (40.6)	0.000	-0.006 (-4.434-4.110)	0.940
3	Marital Status	Single-72 (50.3) Married-71 (49.7)	0.005	-0.069 (-5.923-2.447)	0.413
4	Type of family	Nuclear-100 (69.9) Joint-43 (30.1)	0.022	-0.150 (-8.632-0.413)	0.075
5	Close contact with confirmed COVID-19 case	Yes-106 (74.1) No-37 (25.9)	0.026	-0.160 (-9.328-0.128)	0.056
6	Contact with suspected or infected materials	Yes-107 (74.8) No-36 (25.2)	0.087	-0.295 (-13.173-3.936)	0.001*
7	Presence of comorbid condition	Yes-14 (9.8) No-129 (90.2)	0.004	0.060 (-1.049-2.237)	0.476
8	History of intake of HCQ prophylaxis	Yes-15 (10.5) No-128 (89.5)	0.024	-0.156 (-13.166-0.358)	0.063
Physical symptoms					
1	Presence of headache	Yes-36 (25.17) No-107 (74.83)	0.046	0.216 (1.539-10.977)	0.010
2	Presence of fatigue	Yes-34 (23.78) No-109 (76.22)	0.002	-0.047-8.110-4.523)	0.575
3	Presence of anxiety	Yes-28 (19.58) No-115 (80.42)	0.103	0.321 (5.125-15.006)	0.001*
4	Presence of sore throat	Yes-27 (18.88) No-116 (81.82)	0.020	0.141 (-0.895-11.341)	0.094
5	Presence of insomnia	Yes-18 (12.59) No-125 (87.41)	0.033	0.182 (0.696-13.132)	0.030
6	Presence of cough	Yes-16 (11.19) No-127 (88.81)	0.000	0.015 (-6.073-7.234)	0.863
7	Presence of fever	Yes-13 (9.09) No-130 (90.91)	0.005	0.068 (-4.279-10.279)	0.417
8	Presence of poor appetite	Yes-10 (6.99) No-133 (93.01)	0.024	0.154 (-0.530-15.724)	0.067
9	Presence of breathlessness	Yes-1 (0.7) No-142 (99.30)	0.015	0.122 (-6.590-43.378)	0.148

CI: Confidence interval, SD: Standard deviation, \*Indicates statistically significant

problems [19,20], the symptoms reported could not be verified by a medical professional due to nature of study design being online. Since the present findings are restricted to early phase of pandemic in India, further a longitudinal study in larger sample would possibly help policy makers in framing guidelines.

## CONCLUSION

This study shows significant association between the contacts with suspects or infectious materials and physical symptoms with mental health and array of physical symptoms experienced by medical and nursing professionals. Hence, there is a need to consider mental health issues and plan interventions such as psychological support among HCWs during pandemic situations by policy makers.

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## AUTHORS' CONTRIBUTIONS

PP and SB conceptualized and designed study. PP, S and SB collected the data. S, SB and SSC analyzed the data. PP, SB, and S prepared the manuscript. Final proofreading was done by all.

## CONFLICTS OF INTEREST

None.

## FUNDING

None.

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