

Professional Quality of Life in Intensive Care Unit Professionals during COVID-19 Pandemic: A Prospective Observational Cross-sectional Study

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ABSTRACT

Background and aims: The coronavirus disease-2019 (COVID-19) has significant positive and negative impacts on the professional life of intensive care unit (ICU) professionals. This study was conducted to evaluate compassion satisfaction (CS), burnout (BO), and secondary traumatic stress (STS) in ICU professionals and to study demographic and occupational variables related to them.

Methods: This prospective observational study was undertaken on ICU professionals involved in direct care of critically ill COVID-19 patients. The online questionnaire consisting of demographic, work-related parameters, and professional quality of life scale version 5 (ProQOL 5) was sent to 1,080 ICU healthcare workers. The subgroups of ProQOL 5, CS, BO, and STS were calculated and compared across study parameters. Linear regression was performed to evaluate variables which were independently associated with ProQOL.

Results: The response rate in the present study was 39.8%, and after evaluation, 320 responses were found eligible for final analysis. There was predominance of average levels of CS, BO, and STS. Female gender, contractual job, lesser work experience, greater workload, and COVID-19 infection in close acquaintance of participants were factors observed to independently associated with increase in negative aspects of ProQOL (BO and STS). Further, increase in duty hours and COVID-19 infection in close social circle were observed to independently decrease positive aspects (CS).

Conclusion: This study shows that despite majority of respondents reporting moderate levels BO and STS, CS is maintained during the COVID-19 crisis. The identification of risk factors is vital to support ICU professionals by targeted interventions.

Keywords: Burnout, Compassion fatigue, COVID-19 pandemic, Intensive care units, Professional.

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HIGHLIGHTS

Most of the literature on occupational health of critical care workers during coronavirus disease-2019 (COVID-19) pandemic has focused on negative elements associated with the profession; the present study explores both positive and negative emotions experienced by them in relation to their work in critically ill patients.

Despite majority of participants reporting moderate levels of BO and STS due to ongoing health crisis imposed by COVID-19, around 97% of them maintained moderate-to-high degrees of CS. It is therefore necessary to implement programs aimed at improving CS and preventing compassion fatigue.

INTRODUCTION

The ongoing COVID-19 pandemic, besides its ravaging physical effects, has unleashed a number of mental health issues for healthcare workers (HCWs).¹ Those working in intensive care units (ICU) are particularly vulnerable to adverse mental health concerns due to demanding and high stress work environment, ethical decision-making, witnessing the continuous suffering of patients, end-of-life issues, medical futility, and demanding relatives.² During the COVID-19 times, the work-related stress for them is compounded by inordinate workload, limited resources, difficulty in involving relatives in patient care, limited therapeutic options for disease, personal risk of infection, possibility of transmission to family members, illness or loss of family members/colleagues.³

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Despite the fact that positive and negative emotions of HCWs in relation to their professional life during COVID-19 pandemic co-existed, most of literature on mental health of HCWs focused upon estimation of negative emotion such as burnout, anxiety, and depression. COVID-19 pandemic has brought considerable public attention to the role of frontline HCWs. In many countries, they were hailed for their critical role across various spectrum of patient care and many HCWs affirmed pride in doing their jobs despite fatigue and challenges.⁴ A previous study on ICU professionals indicated that despite a 78% moderate risk of burnout, 98% of participants reported moderate-to-high levels of CS which provided some balance to stress of working in ICU.⁵ Identification of magnitude and factors related to positive and negative emotions of critical

care workers is essential to develop continuous contingency plans for improving their professional lives.

The present study was conducted with an aim to assess positive and negative aspects of professional quality of life in ICU professionals during COVID-19 pandemic using ProQOL-5 and to assess the demographic and work-related variables associated with it.

METHODS

After approval from institutional ethical committee, this prospective observational study was conducted on COVID-19 frontline HCWs serving in five COVID-19 intensive care units. The study was undertaken in a tertiary care-designated COVID-19 hospital from December 24, 2020, to January 15, 2021. Doctors and nursing staff involved in direct care of critically ill COVID-19 were recruited for participation. HCWs providing indirect care (administrative management, indirect services such as housekeeping and laboratory services) to patients and those who had ICU posting for less than 30 days were excluded from study.

The list of HCWs including names and phone numbers was obtained through respective administrative rooms located in each ICU. Participants were sent link for SurveyMonkey online survey questionnaires on their WhatsApp numbers. The survey was anonymous and their participation was voluntary.

The online questionnaire (Annexure I) consisted of demographic and work-related parameters (Annexure I) and ProQOL-5. The ProQOL-5 developed by Stamm was used to assess the professional quality of life of study participants.⁶ It measured compassion satisfaction (CS), burnout (BO), and secondary traumatization stress (STS) in HCWs facing critically ill COVID-19 patients. There are 30 items in Likert scale ranging from 1 (never) to 5 (very often) in ProQOL-5. The category raw scores may range from 10 to 50. On a subscale (CS or BO or STS), a score of 22 or less is interpreted as "low," from 23 to 41 as "average," and 42 or higher is considered as "high."

To improve response from participants, the survey was kept anonymous and kept shorter focusing only on association of ProQOL to demographic and work-related factors. Participants were informed in the beginning that results of survey will be used to uncover challenges at workplace and for scientific publication.

Sample size calculation was based on the assumptions of minimum 80% power and 5% significance level. Based on a previous study, the prevalence rate of severe burnout in intensivists in India during COVID-19 ranges from 20 to 40%.⁷ Taking prevalence of 30% and assuming 95% confidence level and a margin of error (confidence interval) of $\pm 5\%$, the required sample was 323 subjects for the study. Assuming a response rate of 30%, the survey link was sent to 1,080 doctors and nurses. Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean \pm standard deviation (SD). Normality of data was tested by Kolmogorov-Smirnov test. Qualitative variables were compared using Chi-square test. Unpaired *t*-test was applied to compare mean values between the two groups. Multiple liner regression analysis was applied to see independent variables related to CS, BO, and STS. *p*-value less than 0.05 was considered as significant at 95% confidence level. The statistical software SPSS version 24.0 was used in the analysis.

RESULTS

A total of 430 responses were received (39.8% response rate); 84 responses were incomplete and hence were deleted. Twenty-six participants were excluded as they reported duration of ICU postings of less than 30 days. Therefore, 320 responses were finally analyzed.

We found average levels (score between 23 and 41) of CS (76.3%), BO (74.3%), and STS (75.6%) in majority of respondents. High CS (score more than 41) level was observed in 20.6% whereas high BO and STS were seen in 0.3 and 0.9% of respondents, respectively.

The CS score was found to be significantly higher in age group of 36–40 years, those who were married, had children and were residing with their families. It was also found to be significantly higher in nurses compared to doctors and those having no history of COVID-19 infection in colleagues or family members (Table 1).

On multivariable regression analysis, increase in number of duty hours and history of COVID-19 infection in participant's close acquaintance were found independently associated with decrease in CS score (Table 2).

BO score was higher among the younger people, doctors, unmarried, those having no children, residing alone and had history of COVID-19 infection in friends or family members. Contractual nature of job, lesser work experience, and infection in close social circle of participants were factors observed to be independently associated with increase in BO score (Tables 1 and 3).

Female gender, increase in average number of patients encountered per day, and no previous experience of working in ICU prior to COVID-19 pandemic were independent variables on regression analysis, and found to be linked with increase in STS score in the present study (Tables 1 and 4).

DISCUSSION

ProQOL is the quality one feels in relation to their work as a caregiver and involves both the positive and negative aspects of one's job. CS is an individual's sense of fulfillment or achievement regarding his or her efforts to help another person. It is often described as a protective factor against the negative elements of professional life CF and BO. The ongoing COVID-19 pandemic has brought many positive elements for HCWs. Frontline healthcare workers, taking on the difficult task of global public health emergency, have come in limelight and it has been a positive reinforcement. Buselli et al. evaluated 265 HCWs using professional quality of life scale and found that HCWs exposed to COVID-19 experienced both positive and negative psychological outcomes at the same time.⁸ They found lack of significant levels of CF in HCWs similar to Magnavita et al.⁹ The physicians in general and frontline staff have more compassion satisfaction while working for COVID-19 patients. A study from China reported that burnout frequency is lower among HCW working on COVID-19 frontline compared to those working in non-COVID locations. It is hypothesized that frontline HCWs perceived more public support and less weight of sufferings.¹⁰ Another study from Spain reported that despite the current health crisis situation, the levels of CF and BO have remained moderate/high. Compassion satisfaction seems to be increasing, possibly due to their motivation to relieve suffering and due to perceived social recognition.¹¹

Compassion fatigue (CF) is a negative emotion that has been described as the cost a caregiver experiences as a result of caring others who are distressed or traumatized. It is convergence of

Table 1: Demographic and work-related characteristics of participants to CS, BO, and STS

	CS score	p value	BO score	p value	STS score	p value
Gender						
Male	35.8 ± 6.6	0.92	26.3 ± 5.1	0.79	26.1 ± 5.9	0.26
Female	35.8 ± 6.7		26.5 ± 5.4		26.8 ± 6.3	
Marital status						
Married	36.8 ± 6.5	0.033	25.3 ± 5.5	0.003	26.7 ± 5.4	0.59
Single	35.2 ± 6.6		27.1 ± 4.9		26.3 ± 6.5	
Children						
Yes	37.3 ± 6.7	0.011	24.7 ± 5.9	<0.001	26.4 ± 5.3	0.8
No	35.2 ± 6.5		27.1 ± 4.8		26.5 ± 6.4	
Residence						
With family	36.4 ± 6.6	0.049	25.6 ± 5.2	0.003	26.3 ± 5.7	0.58
Alone	35 ± 6.7		27.4 ± 5.2		26.7 ± 6.5	
Age (in years)						
≤25	35.9 ± 6.2	0.04	26.0 ± 5.0	0.005	26.33 ± 6.4	0.14
26–30	35 ± 6.3		27.0 ± 5.0		26.9 ± 6.0	
31–35	37 ± 6.5		26.1 ± 5.1		26.6 ± 5.9	
36–40	39 ± 4.9		25.5 ± 5.8		26.3 ± 6.2	
>40	35.5 ± 12.9		21.1 ± 6.6		22.1 ± 6.0	
Job category						
Doctor	35.0 ± 6.3	0.003	27.2 ± 5.0	<0.001	26.8 ± 6.3	0.23
Nurse	37.4 ± 7.1		24.7 ± 5.5		25.9 ± 5.5	
Type of job engagement						
Regular	35.9 ± 6.9	0.5	26.1 ± 5.5	0.06	26.4 ± 6.3	0.6
Contractual	35.3 ± 5.1		27.6 ± 4.0		26.8 ± 5.0	
Previous work experience in ICU						
Yes	35.6 ± 6.6	0.39	26.6 ± 5.3	0.33	26.9 ± 6.3	0.08
No	36.2 ± 6.7		26.0 ± 5.2		25.7 ± 5.5	
Acquired COVID-19 infection						
Yes	34.9 ± 7.0	0.39	26.5 ± 5	0.33	27.1 ± 6.4	0.08
No	36.0 ± 6.5		26.4 ± 5.3		26.4 ± 6.0	
H/O COVID-19 infection in friends/family members						
Yes	35.2 ± 6.8	0.004	27.1 ± 5.2	<0.001	26.9 ± 6.2	0.061
No	35.7 ± 5.8		24.3 ± 4.9		25.5 ± 5.8	

The bold values are the values which are <0.05 and hence statistically significant

STS and BO and results from giving high levels of energy and compassion over a prolonged time to those who are suffering often without experiencing the positive outcomes. BO is a state of physical, mental, and emotional exhaustion arising from an assertiveness-goal achievement response. It results in diminished morale, frustration, a sense of loss of control, and may affect workers in any profession. On the other hand, STS occurs from rescue- caretaking response and arises when an individual cannot save someone from harm resulting in guilt and distress.¹² It is commonly described in fields where patients have a tendency for enhanced suffering such as trauma, oncology, and critical care.^{13,14} STS and BO can lead to CF if they are not mediated by CS.

CF can lead to headache, digestive problems, sleep disturbances, weight loss, irritability, depersonalization, chronic physical, and emotional exhaustion. It can also lead to various work-related problems such as absenteeism, tardiness, reduced ability to feel

empathy, exaggerated sense of responsibility, and impaired ability to make decisions.¹⁵ HCWs with higher risk of negative aspects of ProQOL are likely to be associated with poor quality of patient care and safety measures.^{16,17} A recent study showed that negative aspects of ProQOL are predictors of poor adherence with infection control measures including hand hygiene.¹⁸

Since the beginning of the pandemic, critical care units around the world are treating patients experiencing potentially life-threatening COVID-19 symptoms. COVID-19 pneumonia is reported to have higher ICU mortality and patients often have longer ICU stay.^{19,20} Additionally, there is limited therapeutic options available for the disease. These concerns can lead to perceived inability of ICU professionals to alleviate suffering of those in their care and they are vulnerable to experience the sense of failure.²¹

Azoulay et al. in a cross-sectional survey among intensivists part of European Society of Intensive Care Medicine reported



Table 2: Linear regression model with compassion satisfaction (CS) as dependent variable and demographic and work-related factors as predictive variables

Predictive variables	Unstandardized coefficient		Standardized coefficient	95% C.I. for B		p value
	B	SD	Beta	Lower bound	Upper bound	
Age	-0.109	0.763	-0.015	-1.61	1.392	0.88
Gender	-0.67	0.812	-0.05	-2.26	0.92	0.41
Marital status	-0.492	1.189	-0.03	-2.83	1.84	0.67
Having children	0.283	1.552	0.01	-2.77	3.33	0.85
Type of residence	-0.789	0.845	-0.05	-2.45	0.87	0.35
Job category	1.152	1.281	0.08	-1.36	3.68	0.36
Type of job engagement	-0.933	1.016	-0.05	-2.93	1.06	0.35
Work experience	0.098	0.164	0.06	-0.22	0.42	0.55
Previous experience of working in ICU	0.255	0.892	0.01	-1.5	2.00	0.77
Number of times COVID ICU postings	-0.066	0.152	-0.02	-0.36	0.23	0.66
Average number of patients attended per day	-0.057	0.039	-0.09	-0.13	0.02	0.14
Average duty hours per day	0.46	0.218	0.14	0.03	0.88	0.03
History of COVID-19 infection to respondent	1.345	0.999	0.078	-0.62	3.31	0.17
History of COVID-19 infection to family members or close friends of respondent	1.766	0.912	0.11	-0.02	3.56	0.05

The bold values are the values which are <0.05 and hence statistically significant

Table 3: Multivariable linear regression model with burnout (BO) dependent variable and demographic and work-related factors as predictive variables

Predictive variables	Unstandardized coefficient		Standardized coefficient	95% C.I. for B		p value
	B	SD	Beta	Lower bound	Upper bound	
Age	0.934	0.584	0.162	-0.215	2.082	0.111
Gender	0.746	0.619	0.071	-0.472	1.963	0.229
Marital status	0.379	0.907	0.035	-1.406	2.165	0.676
Having children	-0.231	1.193	-0.02	-2.579	2.117	0.846
Job category	-0.051	0.989	-0.005	-1.998	1.896	0.959
Type of job engagement	1.615	0.774	0.121	0.092	3.138	0.038
Type of residence	0.936	0.645	0.089	-0.334	2.206	0.148
Work experience	-0.363	0.126	-0.321	-0.611	-0.115	
Previous experience of working in ICU	0.149	0.88	0.01	-1.584	1.882	0.865
Number of times COVID ICU postings	0.071	0.116	0.039	-0.157	0.299	0.54
Average number of patients attended per day	0.044	0.03	0.097	-0.015	0.102	0.144
Average duty hours per day	-0.118	0.166	-0.047	-0.445	0.208	0.477
Previous experience of ICU	-0.33	0.683	-0.03	-1.674	1.015	0.63
History of COVID-19 infection to respondent	-0.211	0.761	-0.016	-1.709	1.287	0.782
History of COVID-19 infection to family members or close friends of respondent	-2.267	0.696	-0.187	-3.637	-0.897	0.001

The bold values are the values which are <0.05 and hence statistically significant

prevalence of symptoms of anxiety, depression, and severe burnout was 46.5, 30.25, and 51%, respectively.⁷ Khanse et al. conducted a questionnaire-based survey among HCWs caring for COVID-19

patients in India. The prevalence of personal burnout was 44.6%, work-related burnout was only 26.9%, while 52.8% of respondents had pandemic-related burnout. The prevalence of personal and

Table 4: Multivariable linear regression model with secondary traumatic stress (STS) as dependent variable and demographic and work-related factors as predictive variables

Predictive variables	Unstandardized coefficient		Standardized coefficient	95% C.I. for B		p value
	B	SD	Beta	Lower bound	Upper bound	
Age	-0.793	0.701	-0.12	-2.172	0.586	0.258
Gender	1.627	0.746	0.133	0.158	3.096	0.03
Marital status	-1.21	1.092	-0.097	-3.36	0.94	0.269
Having children	-1.21	1.426	-0.088	-4.017	1.597	0.397
Job category	0.039	1.177	0.003	-2.278	2.357	0.973
Type of job engagement	1.083	0.933	0.069	-0.754	2.92	0.247
Type of residence	1.004	0.776	0.082	-0.524	2.531	0.197
Work experience	-0.062	0.151	-0.048		-0.36	0.235
Previous experience of working in ICU	-0.271	1.063	-0.015	-2.363	1.821	0.799
Number of times COVID ICU postings	0.019	0.14	0.009	-0.256	0.293	0.894
Average number of patients attended per day	0.085	0.036	0.161	0.014	0.155	0.019
Average duty hours per day	-0.103	0.2	-0.035	-0.496	0.291	0.607
Previous experience of ICU	-1.971	0.819	-0.153	-3.583	-0.358	0.017
History of COVID-19 infection to respondent	-0.742	0.918	-0.047	-2.548	1.065	0.42
History of COVID-19 infection to family members or close friends of respondent	-0.937	0.838	-0.067	-2.586	0.711	0.264

The bold values are the values which are <0.05 and hence statistically significant

work-related burnout was significantly higher among females and young respondents. The doctors were 1.64 times and the support staff were five times more likely to receive pandemic-related burnout.²²

Our results suggest that despite majority of participants reporting moderate levels of BO and STS due to ongoing health crisis imposed by COVID-19, around 97% of them maintained moderate-to-high degrees of CS. It is therefore necessary to implement programs aimed at improving CS and preventing CF such as mindfulness training, compassion cultivation training, self-care, and coping strategies and resilience building.

In the present study, the only personal characteristic found to be independently associated with negative aspects of ProQOL is female gender. Although there are conflicting reports in literature regarding association of gender to BO, a recent meta-analysis demonstrated that women have higher overall BO compared to men and employment in a gender atypical occupation increases risk of BO.²³ Vulnerability to emotional exhaustion and dissatisfaction with work-life balance in female intensivists and critical care nurses increase their risk of BO.²⁴ Among the work-related variables, we found contractual job engagement and low work experience to be independent predictors of BO. Low level of work control, job security, and job satisfaction among temporary workers have previously been found to be associated with higher psychological morbidity in occupational medicine.²⁵ Similarly, increase in years of work experience is a negative predictor for emotional exhaustion and de-personalization and hence employees who have worked in a particular field for longer period of time experiences less BO compared to those who have less experience.²⁶

In accordance with previous studies, the increase in number of duty hours is observed to decrease CS and the number of patients encountered per day was independent factor leading to STS.²⁷

Enormous number of COVID-19-affected patients superimposed with burden of working in full PPE have shown to increase nursing by 33% compared with usual activity for critically ill patients.²⁸

History of COVID-19 infection in family members or close friends of respondents was independently observed to decrease CS and increase BO. A number of surveys of frontline HCWs have shown that risk of transmitting infection to family members is one of the major concerns during pandemic. Experience of COVID-19-related traumatic events has shown to heightened emotional exhaustion and more detached attitude at work.²⁹

The present study has many limitations. First, the study was conducted in single urban-dedicated COVID-19 hospital of India; hence assessment of impact of differential availability of resources and work practices across various centers on ProQOL was limited. Second, our survey was conducted in English and language barriers might have resulted in inaccurate responses. Third, we assessed only the role of demographic and work-related factors in ProQOL. Other domains such as organizational, personal, and social domains of an individual also attribute to ProQOL, which were not investigated in the present study. Fourth, participant's self-rating of symptoms might have introduced bias in assessment of bias. To mitigate bias, the survey was kept anonymous and respondents were assured of confidentiality.

CONCLUSION

In the present study, despite majority of respondents reporting moderate levels of BO (74.3%) and STS (75.6%), moderate degree of CS (76.3%) is maintained during the COVID-19 crisis. Female gender, contractual job engagement, lesser work experience, increase in workload, and COVID-19 infection in close acquaintance of participants were found to independently increase negative aspects



of professional life of ICU healthcare workers. Increased awareness to these risk factors would be helpful in planning specific strategies to prevent progression of BO and STS and improving compassion.

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REFERENCES

- Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3(3):e203976. DOI: 10.1001/jamanetworkopen.2020.3976.
- Kerlin MP, McPeake J, Mikklesen ME. Burnout and joy in the profession of critical care medicine. *Crit Care* 2020;24(1):98. DOI: 10.1186/s13054-020-2784-z.
- Mehta S, Machado F, Kwizera A, Papazian A, Moss M, Azoulay E, et al. COVID-19: a heavy toll on health-care workers. *Lancet Respir Med* 2021;9(3):226–228. DOI: 10.1016/S2213-2600(21)00068-0.
- Liu Q, Luo D, Haase JE, Guo Q, Wang XQ, Liu S, et al. The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *Lancet Glob Health* 2020;8(6):e790–e798. DOI: 10.1016/S2214-109X(20)30204-7.
- Highfield J, Parry-Jones J. Professional quality of life in intensive care medicine: the 2018 faculty of intensive care medicine workforce survey. *J Intensive Care Soc* 2020;21(4):299–304. DOI: 10.1177/1751143719877102.
- Stamm BH. The concise ProQOL manual. 2nd ed. Pocatello. 2010. Available from: <https://proqol.org/uploads/ProQOLManual.pdf>.
- Azoulay E, Waele JD, Ferrer R, Staudinger T, Borkowska M, Povoja P, et al. Symptoms of burnout in intensive care unit specialists facing the COVID-19 outbreak. *Ann Intensive Care* 2020;10:110. DOI: 10.1186/s13613-020-00722-3.
- Buseli R, Corsi M, Baldanzi S, Chiumiento M, Lupo ED, Dell'Oste V, et al. Professional quality of life and mental health outcomes among health care workers exposed to SARS-CoV-2 (Covid-19). *Int J Environ Res Public Health* 2020;17(17):6180. DOI: 10.3390/ijerph17176180.
- Magnavita N, Tripepi G, Di Prinzio RR. Symptoms in health care workers during Covid-19 pandemic. A cross sectional survey. *Int J Environ Res Public Health* 2020;17(14):5218. DOI: 10.3390/ijerph17145218.
- Wu Y, Wang J, Luo C, Hu S, Lin X, Anderson AE. A Comparison of burnout frequency among oncology physicians and nurses working on the frontline and usual wards during the COVID-19 epidemic in Wuhan, China. *J Pain Symptom Manag* 2020;60(1):e60–e65. DOI: 10.1016/j.jpainsymman.2020.04.008.
- Ruiz-Fernandez MD, Ramos-Pichardo JD, Ibanez-Masero O, Cabrera-Troya J, Carmona-Rega MI, Ortega-Galan AM. Compassion fatigue, burnout, compassion satisfaction and perceived stress in health care professionals during COVID-19 health crisis in Spain. *J Clin Nurs* 2020;29:4321–4330. DOI: 10.1111/jocn.15469.
- Rauvola RS, Vega DM, Lavigne KN. Compassion fatigue, secondary traumatic stress and vicarious traumatization: a qualitative review and research agenda. *Occup Health Sci* 2019;3:297–336. DOI: 10.1007/S41542-019-00045-1.
- Kaur A, Sharma MP, Chaturvedi SK. Professional quality of life among professional care provider at cancer palliative care centres in Bengaluru, India. *Indian J Palliative Care* 2018;24(2):167–172. DOI: 10.4103/IJPC.IJPC_31_18.
- Monroe M, Morse E, Price JM. The relationship between critical care work environment and professional quality of life. *Am J Crit Care* 2020;29(2):145–149. DOI: 10.4037/ajcc2020406.
- Lombardo B, Eyre C. Compassion fatigue: a nurse's primer. *Online J Issues Nurs* 2011;16(1):3. DOI: 10.3921/OJIN.Vol16No01Man03.
- Tawk DS, Scheid A, Prot J, Shanafelt T, Trockel M, Adair KC, et al. Evidence relating health care provider burnout and quality of care: a systematic review and meta-analysis. *Ann Intern Med* 2019;171(8):555–567. DOI: 10.7326/M19-1152.
- Colindres CV, Bryce E, Coral-Rosero P, Ramos-Soto RM, Bonilla F, Yassi A. Effect of effort-reward imbalance and burnout on infection control among Ecuadorian nurses. *Int Nurs Rev* 2018;65:190–199. DOI: 10.1111/inr.12409.
- Manomenidis G, Panagopoulou E, Montgomery A. Job burnout reduces hand hygiene compliance among nursing staff. *J Patient Saf* 2019;15(4):e70–e73. DOI: 10.1097/PTS.0000000000000435.
- Armstrong RA, Kane AD, Cook TM. Outcomes from intensive care in patients with COVID-19: a systematic review and meta-analysis of observational studies. *Anaesthesia* 2020;75(10):1340–1349. DOI: 10.1111/anae.15201.
- Lapidus N, Zhou X, Carrat F, Riou B, Zhao Y, Hejblum G. Biased and unbiased estimation of average length of stay in intensive care units in the COVID-19 pandemic. *Ann Intensive Care* 2020;10:135. DOI: 10.1186/s13613-020-00749-6.
- Alharbi J, Jackson D, Usher K. The potential for COVID-19 to contribute to compassion fatigue in critical care nurses. *J Clin Nurs* 2020;29(15–16):2762–2764. DOI: 10.1111/jocn.15314.
- Khansé RW, Dhakulkar BS, Mahajan HC, Kulkarni AP. Burnout among health care workers during COVID-19 pandemic in India: results of a questionnaire-based survey. *Indian J Crit Care Med* 2020;24(8):664–671. DOI: 10.5005/jp-journals-10071-23518.
- Beauregard N, Marchand A, Bilodeau J, Durand P, Demers A, Haines III VY. Gendered pathway to burnout: results from the SALVEO study. *Ann Work Expo Health* 2018;62(4):426–437. DOI: 10.1093/annweh/wxx114.
- Burnham EL, Burns KEA, Moss M, Dodek PM. Burnout in female intensivists: a hidden pandemic? *Lancet Respir Med* 2019;7(4):292–294. DOI: 10.1016/S2213-2600(19)30029-3.
- Hünefeld L, Gerstenberg S, Hüffmeier J. Job satisfaction and mental health of temporary agency workers in Europe: a systematic review and research agenda. *Work Stress* 2019;34(1):82–110. DOI: 10.1080/02678373.2019.1567619.
- Portoghese I, Galletta M, Coppola RS, Finco G, Campanga M. Burnout and workload among health care workers: the moderating role of job control. *Saf Health Work* 2014;5(3):152–157. DOI: 10.1016/j.shaw.2014.05.004.
- Lucchini A, Gianì M, Elli S, Villa S, Rona R, Foti G. Nursing activities score is increased in COVID-19 patients. *Intensive Crit Care Nurs* 2020;59:102976. DOI: 10.1016/j.iccn.2020.102876.
- Temsah MH, Al-Sohime F, Alamro N, Al-Eyadhy A, Al-Hasan K, Jamal A, et al. The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *J Infect Public Health* 2020;13(6):877–882. DOI: 10.1016/j.jiph.2020.05.021.
- Wahlster S, Sharma M, Lewis AK, Patel PV, Hartog CS, Jannotta G, et al. The coronavirus disease 2019 pandemic's effect on critical care resources and health care provides. *Chest* 2021;159(2):619–633. DOI: 10.1016/j.chest.2020.09.070.

ANNEXURE I: SURVEY QUESTIONNAIRES

Assessment of Professional Quality of Life during COVID-19 Pandemic in Healthcare Workers Working in Intensive Care Units

Demographics

1. AGE:
2. GENDER
 - Male
 - Female
3. MARITAL STATUS
 - Single
 - Married
4. DO YOU HAVE CHILDREN?
 - Yes
 - No
5. JOB CATEGORY
 - Doctor
 - Nursing staff
6. TYPE OF JOB ENGAGEMENT
 - Regular
 - Contractual
7. TYPE OF RESIDENCE:
 - Alone
 - With family
8. WORK EXPERIENCE (in years):
9. NUMBER OF TIMES POSTED IN COVID ICU (along with number of days in each posting):
10. AVERAGE NUMBER OF PATIENTS ATTENDED PER DAY:
11. AVERAGE HOURS OF DUTY HOURS:
12. BEFORE START OF COVID-19 PANDEMIC HAVE YOU WORKED IN ICU:
 - Yes
 - No
13. HAVE YOU EVER TESTED POSITIVE FOR COVID-19?
 - Yes
 - No
14. HAVE ANY OF YOUR FRIENDS/COLLEAGUES/FAMILY MEMBERS TESTED POSITIVE FOR COVID-19?
 - Yes
 - No

Professional Quality Of Life Scale (PROQOL)

When you [help] COVID-19 patients, you have direct contact with their lives. Your compassion for those you [help] can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a [helper]. How frequently you experienced these things in the last 30 days?

15. I AM HAPPY.
 - Never
 - Rarely

- Sometimes
 - Often
 - Very often
16. I AM PREOCCUPIED WITH MORE THAN ONE PERSON I [HELP].
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 17. I GET SATISFACTION FROM BEING ABLE TO [HELP] PEOPLE.
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 18. I FEEL CONNECTED TO OTHERS.
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 19. I JUMP OR AM STARTLED BY UNEXPECTED SOUNDS.
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 20. I FEEL INVIGORATED AFTER WORKING WITH THOSE I [HELP].
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 21. I FIND IT DIFFICULT TO SEPARATE MY PERSONAL LIFE FROM MY LIFE AS A [HELPER].
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 22. I AM NOT AS PRODUCTIVE AT WORK BECAUSE I AM LOSING SLEEP OVER TRAUMATIC EXPERIENCES OF A PERSON I [HELP].
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often
 23. I THINK THAT I MIGHT HAVE BEEN AFFECTED BY THE TRAUMATIC STRESS OF THOSE I [HELP].
 - Never
 - Rarely
 - Sometimes
 - Often
 - Very often

ANNEXURE I: SURVEY QUESTIONNAIRES

24. I FEEL TRAPPED BY MY JOB AS A [HELPER].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
25. BECAUSE OF MY [HELPING], I HAVE FELT "ON EDGE" ABOUT VARIOUS THINGS.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
26. I LIKE MY WORK AS A [HELPER].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
27. I FEEL DEPRESSED BECAUSE OF THE TRAUMATIC EXPERIENCES OF THE PEOPLE I [HELP].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
28. I FEEL AS THOUGH I AM EXPERIENCING THE TRAUMA OF SOMEONE I HAVE [HELPED].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
29. I HAVE BELIEFS THAT SUSTAIN ME.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
30. I AM PLEASED WITH HOW I AM ABLE TO KEEP UP WITH [HELPING] TECHNIQUES AND PROTOCOLS.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
31. I AM THE PERSON I ALWAYS WANTED TO BE.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
32. MY WORK MAKES ME FEEL SATISFIED.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
33. I FEEL WORN OUT BECAUSE OF MY WORK AS A [HELPER].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
34. I HAVE HAPPY THOUGHTS AND FEELINGS ABOUT THOSE I [HELP] AND HOW I COULD HELP THEM.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
35. I FEEL OVERWHELMED BECAUSE MY CASE [WORK] LOAD SEEMS ENDLESS.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
36. I BELIEVE I CAN MAKE A DIFFERENCE THROUGH MY WORK.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
37. I AVOID CERTAIN ACTIVITIES OR SITUATIONS BECAUSE THEY REMIND ME OF FRIGHTENING EXPERIENCES OF THE PEOPLE I [HELP].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
38. I AM PROUD OF WHAT I CAN DO TO [HELP].
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often
39. AS A RESULT OF MY [HELPING], I HAVE INTRUSIVE, FRIGHTENING THOUGHTS.
- Never
 - Rarely
 - Sometimes
 - Often
 - Very often

ANNEXURE I: SURVEY QUESTIONNAIRES

40. I FEEL "BOGGED DOWN" BY THE SYSTEM.

- Never
- Rarely
- Sometimes
- Often
- Very often

41. I HAVE THOUGHTS THAT I AM A "SUCCESS" AS A [HELPER].

- Never
- Rarely
- Sometimes
- Often
- Very often

42. I CAN'T RECALL IMPORTANT PARTS OF MY WORK WITH COVID-19 VICTIMS.

- Never
- Rarely

- Sometimes
- Often
- Very often

43. I AM A VERY CARING PERSON.

- Never
- Rarely
- Sometimes
- Often
- Very often

44. I AM HAPPY THAT I CHOSE TO DO THIS WORK.

- Never
- Rarely
- Sometimes
- Often
- Very often