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Original Research Article

Burn out among health care workers during COVID-19 pandemic in a tertiary care centre Kerala: a cross sectional study

Ruth Abraham[1]*, Maneesha Planthottathukunnel Rajan[1], Safa Puliyakkadi[2]

[1]Department of Community Medicine, Sree Narayana Institute of Medical Sciences, Ernakulam, Kerala, India
[2]South Tees NHS Trust, United Kingdom

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***Correspondence:**
Dr. Ruth Abraham,
E-mail: ruthabraham0923@gmail.com

ABSTRACT

Background: Burnout as an occupational disease is of global concern. From the beginning of the COVID-19 pandemic, healthcare workers (HCWs) were under heavy workload conditions. The study was done to assess prevalence of burnout among HCWs of a tertiary care hospital in Central Kerala.
Methods: This cross-sectional study was conducted among HCWs of a tertiary hospital using a simple random sampling method. Data was collected using a semi-structured questionnaire through Google forms. Burnout was assessed using Copenhagen burnout inventory (CBI). Bivariate analysis was done to find the factors affecting burnout among the study participants using SPPS software.
Results: The mean age of the study participants was 31.26±6.11 years and the majority were females 79 (70.5%). The prevalence of personal burnout, work related burnout and patient related burnout were 55.4%, 44.6% and 32.1% respectively. Those who were staying with family had higher chance of personal (p=0.004), work related (p=0.032) and patient related (p=0.023) burnout. HCWs who wear working in full personal protective equipment (PPE) kit had significantly higher personal (p=0.003, OR=3.4), work related (p<0.001, OR=5.2) and patient related (p=0.022, OR=3.01) burnout. HCWs who had done high proportion of COVID-19 related duty had significantly higher personal (p=0.018) and patient related (p=0.022) burnout.
Conclusions: Almost half of the HCWs are physically and emotionally exhausted with their work, which needs to be addressed. Psychological interventions should be enhanced to reduce burnout among HCWs and to improve the quality of health care delivered by them during the pandemic.

Keywords: Burnout, HCWs, COVID-19, Pandemic, India

INTRODUCTION

Burnout is known as a psychological syndrome, occurring as a result of negative responses to occupational stressors. The term burnout was coined by Freudenberg and was used to describe worker's reactions to the chronic stress common in occupations having numerous direct interactions with people. This is a syndrome typically characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment.[1] Burnout is an occupational disease is of global concern, as it affects worker's physical and mental health. Since the beginning of the COVID-19 pandemic, the HCWs had been under heavy workload conditions globally, thus leading to the increased prevalence of burnout.[2] Burnout is a recognized occupational problem among HCWs, which can be aggravated by the COVID-19 pandemic.[3]

Globally, the researchers had pursued various ways to prevent and treat the COVID-19 infection and its psychological impact on the patients. However, not many steps had been taken by the government and

administrators of the healthcare institutes to lessen the gravity of psychological stress on the HCWs. The world health organization (WHO) had formally acknowledged this grave risk and had released a document regarding the psychosocial consideration during the COVID-19 pandemic.[4]

A rapid global survey was done in 60 countries among HCWs during the COVID-19 pandemic and 51% were found to have suffered from burnout.[5] Studies done in Japan and Romania among the resident doctors found that 43.6% and 76% had burnout.[6,7] A study conducted in Spain during the pandemic found that 41.1% of HCWs were emotionally exhausted.[8] India has been the second largest populated country, was affected severely by the COVID-19 pandemic. Even though a large number of studies are available worldwide, in the Indian context, there are only a few studies. So, this study is aimed to study the prevalence of burnout among HCWs in Central Kerala of India.

METHODS

Study design and background

A cross-sectional study was conducted in government medical college Thrissur having a high COVID-19 patient load in Central Kerala. This hospital was the apex and referral COVID-19 treating hospital for the three districts of Kerala (study setting) including Palakkad, Malappuram and Thrissur. Permission for the study was also obtained from the superintendent of the tertiary care hospital. Ethical approval was obtained from the institutional ethics committee from govt. medical college Thrissur (IRC Protocol No: IEC/GMCTSR/181/2021). The data was collected during November 2021 to February 2022.

Inclusion and exclusion criteria

Study participants were HCWs who were working in COVID-19 related activities in the hospital for at least 6 months prior to the onset of the study. In addition, they should have spent 50% or more of their total working hours on COVID-19 related duties in the hospital (as per the duty roster). They included specialist doctors or physicians, resident doctors (including junior and senior residents), intern doctors, registered nurses, and other HCWs (nursing assistants, laboratory technicians, and clerical staff). Those who were severely sick and those who didn't give consent were excluded from the study.

Sample size

The sample size was calculated using the formula $n=4pq/d^2$ (where p=67%, based on a previous study on the proportion of burnout among HCWs during COVID-19 pandemic by Denning et al q=1-p, and the allowable error d=15% of p, with a 95% confidence interval).[9] After adding a non-response rate of 25%, the final sample size was taken to be 112.

Data collection and sampling method

A list of HCWs was obtained from the administrative session of the hospital which was sequentially numbered. To ensure high internal validity, simple random sampling was done using a computer-generated random number table. The study participants were contacted via email. Web-based data collection was done using a pre-tested questionnaire through Google forms. Consent for the study was also obtained through Google form itself and confidentiality of participants were maintained.

Study tool

A semi-structured questionnaire was employed to collect all the relevant data. The first part of the questionnaire is related to general information about the individual and the second part was regarding assessing burnout. Details were enquired regarding the age, gender, marital status, place of stay, whether staying with family, hours of work per day, proportion of COVID-19 related work in the past one month, where you working with full PPE or minimal PPE, and co-morbidities if any.

Burnout was assessed using CBI, in which burnout was assessed in three domains: personal, work related and patient related.[10] There were specific questions under these three domains of burnout. There were six questions under the first domain which is personal burnout. Under the work related and patient related domains there were seven and six questions respectively. Each of the questions used for assessing burnout had five response categories. The options given in the questionnaire were "always", "often", "sometimes", "seldom", and "never". CBI score of more than 50 was taken as the presence of burnout.[10]

Operational definition

The government of Kerala had issued guidelines for the rational use of PPE kits in hospitals.[11] The full component of PPE includes an N-95 respirator mask, gloves, face shield, goggles, gowns, shoe cover, and head cover. Full PPE kits were used in high-risk settings such as intensive care units, during aerosol generating procedures, performing an autopsy, and in the laboratory. Recommended PPE in moderate risk areas including outpatient department, inpatient isolation rooms, laundry, and other supportive services were an N-95 mask and gloves.

Statistical analysis

Data was entered into excel sheets and analyzed using IBM SPSS software version 18. Quality variables were expressed as percentages with a 95% confidence interval and quantity variables as mean and standard deviation. Bivariate analysis was done to find the factors affecting burnout among the study participants and the results were expressed in odds ratio (OR) with a 95% confidence

interval (CI). All factors found to have a p<0.05 in the bivariate analysis were included in a multiple logistic regression model. All the p=2 tailed and a p<0.05 was considered significant.

RESULTS

The mean age of the study participants was 31.26±6.11years. Of the total 112 study participants, the majority were females 79 (70.5%). Those who were residing with family were 64 (57.1%). Among study participants, 91.97% were doctors (14.3% interns, 38.4% junior residents, 19.6% specialist doctors, and the rest other junior doctors), 5.36% staff nurses, and 2.67% other staff. Baseline characteristics of the study participants were given in table 1. Among the study participants, 10.7% had one or more co-morbidities. The most common co-morbidities among them were diabetes (4.5%) and hypertension (1.8%).

The average score of personal, work related and patient related burnout among the study participants were found to be 55.0±19.9, 49.2±20.8, and 43.1±24.6. Details of different domains were given in Tables 2-4. The prevalence of personal, work related, and patient related burnout was found to be 55.4%, 44.6% and 32.1% respectively. The details regarding the prevalence of burnout among study participants are given in Table 5.

The association between burnout and selected factors such as gender, staying with family, working hours, COVID-19 related duty hours, use of full PPE kits, place of stay, marriage and co-morbidities were done using binary logistic analysis. Of which staying with family was found to be significantly associated with personal (p=0.004, OR=3.1), work related (p=0.032, OR=2.2) and patient related (p=0.023, OR=2.5) burnout (Table 6). HCWs who wear working in full personal protective equipment (PPE) kit had significantly higher personal (p=0.003, OR=3.4), work related (p<0.001, OR=5.2) and patient related (p=0.022, OR=3.01) burnout. HCWs who had done high proportion of COVID-19 related duty (75% or more) in the past one month had significantly higher personal (p=0.018) and patient related (p=0.022) burnout. Other factors were not statistically significant with burnout.

On multiple logistic regression analysis use of the full PPE kit during the duty in the hospital was found to have significantly higher personal burnout levels than the counterparts (Adjusted odds ratio: 2.54, 95% confidence interval: 1.07-6.01, p=0.034). In addition, work related burnout was also significantly higher in those using the full PPE kit (Adjusted Odds ratio: 3.68, 95% confidence interval: 1.4-9.67, p=0.008).

Table 1: Baseline characteristics of study participants, (n=112).

Baseline characteristics	Categories	Numbers	Percentage (%)
Age group (years)	21-25	18	16.1
	26-30	45	40.2
	30-35	25	22.3
	≥36	24	21.4
Gender	Male	33	29.5
	Female	79	70.5
Marital status	Married	77	68.7
	Unmarried	35	31.3
Occupation	Interns	16	14.3
	Junior resident doctors	43	38.4
	Senior resident doctors	13	11.6
	Specialist doctors	22	19.6
	Staff nurse	6	5.4
	Other HCWs	12	10.7
Place of stay	Within 8 km of hospital	81	72.3
	Outside 8 km (within same district)	28	25
	Another district	3	2.7
Staying with family	Yes	64	57.1
	No	48	42.9
COVID-19[#] related duty (%)	50-75	32	28.6
	>75	80	71.4
Usage of PPE kit	Minimal PPE	39	34.8
	Full PPE	73	65.2
Co-morbidities	Present	12	10.7
	Absent	100	89.3

Table 2: Domain 1-Personal burn out and distribution of responses from the study participants.

Domain 1	Always, N (%)	Often, N (%)	Sometimes, N (%)	Seldom, N (%)	Never, N (%)	Mean score
How often do you feel tired	16 (14.3)	32 (28.6)	53 (47.3)	7 (6.3)	4 (3.6)	60.9±23.4
How often do you feel physically exhausted?	14 (12.5)	28 (25)	60 (53.6)	8 (7.1)	2 (1.8)	59.8±21.6
How often do you feel emotionally exhausted?	11 (9.8)	53 (47.3)	31 (27.7)	12 (10.7)	5 (4.5)	61.8±24.2
How often do you feel I can't take it anymore?	5 (4.5)	34 (30.4)	39 (34.8)	18 (16.1)	16 (14.3)	48.7±27.6
How often do you feel worn out?	6 (5.4)	33 (29.5)	45 (40.2)	17 (15.2)	11 (9.8)	51.3±25.7
How often do you feel weak and susceptible to illness?	13 (11.6)	26 (23.2)	44 (39.3)	23 (20.5)	13 (11.6)	47.5±26.4
Average score	55.0±19.9					

Table 3: Domain 2-Work related burnout and distribution of responses from the study participants.

Domain 2	Always, N (%)	Often, N (%)	Sometimes, N (%)	Seldom, N (%)	Never, N (%)	Mean score
Do you feel burn-out at the end of working days	15 (13.4)	47 (42.0)	33 (29.5)	11 (9.8)	6 (5.4)	62.1±25.5
Are you exhausted in morning thinking of another day work	13 (11.6)	24 (21.4)	36 (32.1)	16 (14.3)	23 (20.5)	47.3±32.1
Do you feel every working hour is tiring for you?	7 (6.3)	25 (22.3)	32 (28.6)	18 (16.1)	30 (26.8)	41.3±31.6
Do you have enough time for family and friends during leisure time?	7 (6.3)	24 (21.4)	35 (31.3)	34 (30.4)	12 (10.7)	45.5±27.1
Is your working emotionally exhausting?	11 (9.8)	34 (30.4)	32 (28.6)	19 (17)	16 (14.3)	51.1±30.1
Does your work frustrate you?	3 (2.7)	33 (29.5)	37 (33)	24 (21.4)	15 (13.4)	46.6±26.7
Do you feel burnout because of your work?	8 (7.1)	34 (30.4)	38 (33.9)	16 (14.3)	16 (14.3)	50.5±28.7
Average score	49.2±20.8					

Table 4: Domain 3-Patient related burnout and distribution of responses from the study participants.

Domain 3	Always, N (%)	Often, N (%)	Sometimes, N (%)	Seldom, N (%)	Never, N (%)	Mean score
Do you feel hard to work with your patients?	4 (3.6)	14 (12.5)	37 (33)	39 (34.8)	18 (16.1)	38.2±25.5
Does it drain your energy	7 (6.3)	25 (22.3)	41 (36.6)	24 (21.4)	15 (13.4)	46.7±27.6
Do you find it frustrating to work with patients?	2 (1.8)	19 (17)	34 (30.4)	32 (28.4)	25 (22.3)	36.8±26.8
Do you feel that you give more than you get when you work with patients?	20 (17.9)	16 (14.3)	32 (28.6)	26 (23.2)	18 (16.1)	51.3±33
Are you tired of working?	8 (7.1)	21 (18.8)	42 (37.5)	21 (18.9)	20 (17.9)	44.6±28.9
Do you sometimes feel wonder how long you will be able to continue to work with patients?	9 (8)	17 (15.2)	36 (32.1)	24 (21.4)	26 (23.2)	40.9±30.6
Average score	43.1±24.6					

Table 5: Prevalence of burnout among the study participants.

Prevalence of burnout	Number (%)	95% CI
Personal burnout	62 (55.4)	46.1-64.2
Work related burnout	50 (44.6)	35.8-44.6
Patient related burnout	33 (32.1)	24.2-41.2

Table 6: Bivariate analysis between personal, work related and patient related burnout and selected factors of the study participants.

Variables		Personal burn out, (n=62) (55.4%)			Work related burnout, (n=50) (44.6%)			Patient related burnout, (n=36) (32.1%)		
		N (%)	OR (95% CI)	P value	N (%)	OR (95% CI)	P value	N (%)	OR (95% CI)	P value
Age (years)	21-30	37 (59.7)	1.3 (0.6-2.9)	0.42	31 (62)	1.53 (0.7-3.3)	0.27	25 (69.4)	2.27 (0.9-5.3)	0.055
	>30	25 (40.3)	1 (Ref.)		19 (38)	1 (Ref.)		11 (30.6)	1 (Ref.)	
Gender	Male	16 (25.8)	1 (Ref.)	0.34	11 (22)	1 (Ref.)	0.12	9 (25)	1 (Ref.)	0.48
	Female	46 (74.2)	1.4 (0.6-3.3)		39 (78)	1.9 (0.8-4.5)		27 (75)	1.4 (0.6-3.4)	
Staying with family	No	28 (45.2)	1 (Ref.)	0.004	23 (46)	1 (Ref.)	0.032	15 (41.7)	1 (Ref.)	0.023
	Yes	34 (54.8)	3.1 (1.4-6.9)		27 (54)	2.2 (1.1-4.9)		21 (58.3)	2.5 (1.1-5.7)	
COVID-19# related duty (%)	50-75	12 (19.4)	1 (Ref.)	0.018	10 (20)	1 (Ref.)	0.071	5 (13.9)	1 (Ref.)	0.022
	>75	50 (80.6)	2.78 (1.2- 6.5)		40 (80)	2.2 (0.9-5.2)		31 (86.1)	3.4 (1.2-9.8)	
Use of full PPE kit during duty	No	14 (22.6)	1 (Ref.)	0.003	8 (16)	1 (Ref.)	<0.001	7 (19.4)	1 (Ref.)	0.022
	Yes	48 (77.4)	3.43 (1.5-7.7)		42 (84)	5.25 (2-12.9)		29 (80.6)	3.01 (1.2-7.7)	

#Proportion of COVID-19 related duty done in the past 1 month.

DISCUSSION

The objective of our study was to study the prevalence of burnout among HCWs in Central Kerala during the COVID-19 pandemic. HCWs were exposed to high levels of workload during the second wave of the COVID-19 pandemics in India. The present study revealed that the prevalence of personal, work related, and patient related burnout among HCWs working during the ongoing COVID-19 pandemic was 55.4%, 44.6% and 32.1% respectively. The findings were higher than a previous study done in India among 2026 HCWs during the COVID-19 pandemic, where burnout was assessed using the same scale and found that 44.6% had personal burnout and only 26.9% had work-related burnout.[12] High burnout among HCWs can lead to decreased patient satisfaction, and increased risk of medical negligence. This can indeed lead to an increased risk of litigation of the HCWs. In addition, burnout among HCWs can increase psychological morbidities including anxiety, depression, smoking, alcohol, and drug abuse.[13]

The present study had a higher personal burnout than a study in America among 337 HCWs where the mean score of personal burnouts was found to be 49.2±18.6.[14] This indicates the need for burnout to be regarded as an occupational hazard in healthcare settings across the globe, especially during a pandemic.[15,16]

A study done in Turkey observed that the burnout levels of male and the female healthcare staff were similar.[17]

In contrast, Jalili et al and Patel et al found that younger age and female gender were predisposing factors for burnout.[13,18] In our study also the prevalence of burnout was higher in the younger age group and among females but it was not statistically significant.

In our study, HCWs who stayed with family had statistically higher burnout. Similar findings were obtained by Patel et al in a study done in Ahmedabad.[18] This could be due to the fear that family members may contact COVID-19 infection from the health care worker.

In our study, HCWs who had a higher proportion of COVID-19 duties had statistically higher burnout. Similar findings were obtained by studies done in Jordan where physicians working more than 48 hours per week had a twice higher risk than others.[19]

In our study, those who used full PPE kits had statistically higher burnout compared to those using minimal PPE. It may be because wearing full PPE kits for 6 to 8 hours can cause physical exhaustion like headache, dehydration, difficulty in breathing, skin irritation, feeling significant heat, and profuse sweating.[20] In addition due to the high patient load and the tropical climate, these symptoms can get exaggerated and lead to emotional exhaustion and burnout among HCWs. In previous literature lack of availability of PPE kits was a reason for increased burnout among health workers.[21] But there was no shortage of PPE kits in the present study setting.

The strength of this study is that it assessed the association of usage of PPE kit and duration of COVID-19 related duties with burnout among HCWs. These were not explored much in the previously available literature. In addition, knowledge regarding the prevalence and predictors of burnout would help the administrators to provide information and training to HCWs to prevent the same.

Nevertheless, there were a few limitations that need to be addressed. It was difficult to assess temporal causation as the present study had a cross-sectional design and a longitudinal study design might provide more insight as the pandemic is still ongoing.

CONCLUSION

Healthcare providers can experience occupational stress causing burnout, which could be aggravated during COVID-19 pandemic. Almost half of the HCWs are physically and emotionally exhausted from their work. This indicates the need of hospital environment to be made proactive and supportive. Providing a worker-friendly environment will decrease stress and burnout in HCWs. The use of interventions like mindfulness techniques, counseling, cognitive behavioral therapy, and social skill training may be helpful in preventing burnout. These psychological interventions can be enhanced to reduce burnout among HCWs and to improve the quality of health care delivered by them during the pandemic. In addition, the promotion of mental well-being among HCWs has to be one of the main priorities for policymakers and hospital administrators.

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