



## Burnout among ENT Residents During Covid-19 Pandemic: What are the Contributing Factors?

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### ABSTRACT

**Introduction.** Resident doctors are susceptible to burnout syndrome, which is the combination of physical and psychological fatigue, that may affect their performance. Long-term pandemic of Covid-19 may also contribute to increasing the severity of burnout among residents doctor, might be because the increasing of work time and effort to treat the patients during the time while maintaining prevention against the possible exposure that may harm themselves. This study was aimed to evaluate burnout prevalence among ENT (Ear-Nose-Throat) medical residents in Covid-19 pandemic, and its relation to certain factors of demographic and wellness.

**Methods.** Thirty ENT medical residents of Medical Faculty of Sriwijaya University were enrolled as the study population. Burnout was measured by Copenhagen Burnout Inventory (CBI) and divided by three parameters (personal, work-related, patient-related).

**Results.** Among 30 ENT resident doctors at Rumah Sakit Moh. Hoesin, the mean level of personal burnout was 53.056 (SD 17.125), work-related burnout was 47.975 (SD 17.663), and patient-related burnout was 34.861 (SD 20.746).

**Conclusion.** Marriage, female gender, and inadequacy of PPE may contribute to the development of burnout. The burnout among resident doctors is a serious matter regarding their role as a frontline doctor during the pandemic era, because it may affect not only their performance at work, but toward their life as well.

**Keywords:** burnout, resident doctors, covid-19 pandemic, medical staff, psychiatry.

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## **Introduction**

Covid-19 is a pandemic caused by SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), with symptoms ranged from asymptomatic, that may lead to underdiagnosed, to life threatening. The disease spread via contaminated droplet from infected individual, and aerosol, that may contact to the mucosal surface of other people. The droplet will travel over longer distance if the patients are coughing or sneezing, and the viral particle may last longer in the air inside indoor environment. Preventive measures are essential to avoid contact with SARS-CoV-2, including social distancing, wearing face mask properly, frequent hand washing, covering mouth while coughing or sneezing, cleaning the surface, and good ventilation.<sup>1</sup> Nowadays, there are several variants of SARS-Cov-2 that considered more virulent, like Alpha, Beta, and Delta variants. Covid-19 became 8th most deadly pandemic in history with reported of 4.3 million death worldwide.<sup>2,3</sup> Covid-19 also hit an impact on economic and social sector, including healthcare. Increasing workload, worktime, and limited number of PPE (Personal Protective Equipment), medication, and medical instruments may contribute to an increasing stress among physicians, or other medical staff, that keep struggling to battle against Covid-19 while maintaining to protect themselves from potential exposure of the infection.<sup>4,5</sup>

Stress is a response to a stressor by an organism. Stressor can be divided into biological, physiological, and psychological and certain response will be triggered to cope with the exposure of those stimuli. In human, autonomic nervous system, through SAM (Sympathoadrenal Medullary) axis and HPA (Hypothalamic Pituitary Adrenal) axis are responsible for stress mechanism.<sup>6</sup> Stress may alter immune function, metabolism, memory, and even individual performance in certain job. The latter is usually due to chronic occupational stress that may lead to burnout.<sup>7,8</sup> The study about burnout itself dated back to 1970s when subjects, most were industrial workers, was showing psychosocial problem due to occupational stress. Nowadays, observation toward burnout is not only limited to industrial laborers, but also every sector workers, including healthcare physician.<sup>9</sup> There are several instruments that can be applied to quantify burnout on certain group of individuals, like MBI (Maslach Burnout Inventory), BM (Burnout Measure) questionnaire, OBI (Oldenburg Burnout Inventory), PHQ-9 (Patient Health Questionnaire-9), and CBI (Copenhagen Burnout Inventory).

Medical residents are one of the front line health care personnel facing against Covid-19 and may susceptible to burnout syndrome. There are lot of studies about burnout among healthcare personnel, especially medical residents. However, there are fewer numbers of studies about burnout in this era of



pandemic.<sup>10,11</sup> This study was designed to find out the burnout prevalence among ENT medical residents in Covid-19 pandemic, and its relation to certain factors of demographic and wellness.

## **Methods**

Thirty ENT medical residents of Medical Faculty of Sriwijaya University were enrolled as the study population. They were working at Rumah Sakit Mohammad Hoesin in Palembang as the main affiliation hospital. The study was conducted from June to August 2021. Anonymous electronic questionnaires were distributed among subjects through a link to Google® form. Any incomplete response of questionnaire were excluded from the study. Sociodemographic data and burnout status were collected cross sectionally and analyzed using IBM SPSS® ver. 24.

CBI scale was used to measure the prevalence of burnout among subjects. CBI scale was reliable and validated, and also free access, which consists of 19 items questionnaire that divided into three subscales.<sup>9,12,13</sup> Each of the item was measured in numerical value, based on their answer (Always / To a very high degree = 100; Often / To a high degree = 75; Sometimes / Somewhat = 50; Seldom / To a low degree = 25; Never / Almost never / To a very low degree = 0). Personal burnout, the most generic, describes a state of prolonged physical and psychological exhaustion and consists of 6 items. Work-related burnout, consists of 7 items, describing the state of prolonged physical and psychological exhaustion, which is perceived as related to the individual work. Client-related burnout, consists of 6 items, describing the state of prolonged physical and psychological exhaustion, which is perceived as related to the individual work with clients.<sup>9</sup> The word “clients” in the latter subscales was changed into “patients” to address the specific clients of the subjects line of work. Total score was calculated based on each subscales. The score below 50 was considered low, 50-74 was considered moderate, 75-99 was considered high, and a total score of 100 was considered severe burnout.<sup>9,14</sup>

## **Results**

From the total of 30 medical residents, 11 (36.7%) were males and 19 (63.3%) were females. The mean age of participants was 32.6 ( $\pm$  2.59) years old. Table 1 shows that most of the residents were at senior level (70%), married (80%), and come from Palembang (80%). While the demographic data related to Covid-19 from the same table shows that the majority of them never get Covid-19 infection (66.7%), did not contracted the disease when the data was collected (90%), and did not have family members that had Covid-19 infection. Symptoms were found in the majority of the residents that had Covid-19 infection



(90%). The working duration was decreased ( $48.333 \pm 25.54$  h) compared to the time before Covid-19 pandemic happened ( $50.167 \pm 15.946$  h) and there were 2 (6.7%) responses from participants regarding the limitation of PPE while working at the hospital. All of the residents already got Covid-19 vaccination (100%).

Table 1. Demographic data of participants

Demographic	Frequency	Percentage (%)
Gender		
Male	11	36.7
Female	19	63.3
Level of Residents		
Junior	4	13.3
Middle	5	16.7
Senior	21	70
Background		
Palembang	17	56.7
Not from Palembang	13	43.3
Marital Status		
Married	24	80
Not Married	6	20
History of Covid-19 infection		
Yes	10	33.3
No	20	66.7
Currently infected by Covid-19		
Yes	3	10
No	27	90
Symptoms while infected by Covid-19		
Yes	9	30
No / Never get infection	21	70
Covid-19 vaccination		
Already get shot	30	100
Never get shot	0	0
PPE limitation		
Yes	28	93.3
No	2	6.7
Working duration (h)	Mean	SD
Before Pandemic	50.167	15.946
In Pandemic	48.333	25.54
Working duration		
Increase	2	6.7
Decrease	15	50
No Change	13	43.3
Family members get infected by Covid-19		
Yes	14	46.7
No	16	53.3



Of the 30 participants had low total burnout ( $45.298 \pm 15.685$ ), with moderate personal burnout ( $53.056 \pm 17.125$ ), low work-related ( $47.975 \pm 17.663$ ) and client-related ( $34.861 \pm 20.746$ ) burnout. Burnout score can be seen on Table 2.

Table 2. Burnout score of participants

<b>CBI Subscales</b>	<b>Score (Mean)</b>	<b><math>\pm</math>SD</b>
Personal burnout	53.056	17.125
Work-related burnout	47.975	17.663
Client-related burnout	34.861	20.746
Total burnout	45.298	15.685

Unfortunately, the majority of demographic factors did not have a significant value related to burnout subscales (Table 3). Only marital status showed a clinically difference and statistically significant value to client-related burnout ( $37.487 \pm 21.837$  vs  $22.915 \pm 9.411$ ,  $p = 0.02$ ). Predictors of personal burnout and patient-related burnout can be seen in Table 4 and Table 5.

Table 3. Demographic related to burnout subscales

<b>Factors</b>	<b>Burnout Score (Mean / Median)</b>	<b><i>p</i> value</b>
<u>Sex</u>		
Personal burnout		
Male	54.17 (25-100)	0.812
Female	58.33 (12.5-66.67)	
Work-related burnout		
Male	46.105 ( $\pm$ 17.6)	0.667
Female	49.059 ( $\pm$ 18.088)	
Client-related burnout		
Male	31.44 ( $\pm$ 17.908)	0.502
Female	36.841 ( $\pm$ 22.449)	
<u>Age</u>		
Personal burnout	Pearson's r	
Work-related burnout	0.016	0.935
Client-related burnout	0.008	0.969
	0.135	0.478
<u>Level of Resident</u>		
Personal burnout		
Junior	62.5 (54.17-75)	0.267
Middle	62.5 (25-100)	
Senior	54.17 (12.5-66.67)	
Work-related burnout		



Junior	59.82 ( $\pm$ 14.688)	0.298
Middle	50.714 ( $\pm$ 20.421)	
Senior	45.067 ( $\pm$ 17.257)	
Client-related burnout		
Junior	39.583 ( $\pm$ 17.178)	0.89
Middle	35 ( $\pm$ 18.064)	
Senior	33.928 ( $\pm$ 22.564)	
<u>Background</u>		
Personal burnout		
Palembang	54.902 ( $\pm$ 20.636)	0.509
Not from Palembang	50.641 ( $\pm$ 11.392)	
Work-related burnout		
Palembang	49.158 ( $\pm$ 20.691)	0.682
Not from Palembang	46.429 ( $\pm$ 13.363)	
Client-related burnout		
Palembang	35.784 ( $\pm$ 21.703)	0.786
Not from Palembang	33.654 ( $\pm$ 20.231)	
<u>Marital status</u>		
Personal burnout		
Married	55.903 ( $\pm$ 15.293)	0.068
Not married	41.667 ( $\pm$ 25.75)	
Work-related burnout		
Married	49.553 ( $\pm$ 16.958)	0.337
Not Married	41.665 ( $\pm$ 20.663)	
Client-related burnout		
Married	37.847 ( $\pm$ 21.837)	0.02
Not Married	22.915 ( $\pm$ 9.411)	
<u>History of Covid-19 infection</u>		
Personal burnout		
Yes	53.334 ( $\pm$ 15.189)	0.062
No	52.917 ( $\pm$ 18.393)	
Work-related burnout		
Yes	46.784 ( $\pm$ 13.929)	0.799
No	48.571 ( $\pm$ 19.574)	
Client-related burnout		
Yes	30 ( $\pm$ 19.719)	0.373
No	37.291 ( $\pm$ 21.309)	
<u>Currently infected by Covid-19</u>		
Personal burnout		
Yes	58.333 ( $\pm$ 4.165)	0.583
No	52.469 ( $\pm$ 17.95)	
Work-related burnout		
Yes	51.19 ( $\pm$ 5.453)	0.746
No	47.618 ( $\pm$ 18.557)	
Client-related burnout		
Yes	16.67 (16.67-58.33)	0.463
No	25 (0-87.5)	
<u>Symptoms while infected by Covid-19</u>		
Personal burnout		
Yes		
No / Never get infection	55.093 ( $\pm$ 14.991)	0.677
Work-related burnout		
Yes	52.182 ( $\pm$ 18.239)	
No / Never get infection	48.015 ( $\pm$ 14.187)	0.994
Client-related burnout		
	47.959 ( $\pm$ 19.284)	



Yes No / Never get infection	30.556 ( $\pm$ 20.832) 36.706 ( $\pm$ 20.942)	0.467
<u>PPE limitation</u>		
Personal burnout		
Yes	52.084 ( $\pm$ 14.764)	0.738
No	66.665 ( $\pm$ 47.143)	
Work-related burnout		
Yes	46.938 ( $\pm$ 16.687)	0.235
No	62.5 ( $\pm$ 32.824)	
Client-related burnout		
Yes	33.333 ( $\pm$ 20.631)	0.134
No	56.25 ( $\pm$ 2.942)	
<u>Changing in a working hour</u>		
Personal burnout		
Increase	56.25 ( $\pm$ 2.942)	0.637
Decrease	48.889 ( $\pm$ 13.126)	
No Change	57.372 ( $\pm$ 21.528)	
Work-related burnout		
Increase	50 ( $\pm$ 10.097)	0.789
Decrease	44.762 ( $\pm$ 15.849)	
No Change	51.372 ( $\pm$ 20.647)	
Client-related burnout		
Increase	41.665 ( $\pm$ 23.568)	0.657
Decrease	34.444 ( $\pm$ 20.92)	
No Change	34.295 ( $\pm$ 21.793)	
<u>Family members get infected by Covid-19</u>		
Personal burnout		
Yes	58.33 (12.5-75)	0.286
No	52.085 (25-100)	
Work-related burnout		
Yes	51.019 ( $\pm$ 17.52)	0.387
No	45.312 ( $\pm$ 17.914)	
Client-related burnout		
Yes	35.119 ( $\pm$ 24.224)	0.95
No	34.634 ( $\pm$ 17.983)	

Table 4. Predictors of personal burnout

Factors	Coefficient	<i>p</i> value	$\beta$	$R^2_{adj}$
(Constant)	34.382			0.154
Married	17.423	0.026	0.414	
No change of worktime	10.927	0.078	0.322	



Table 5. Predictors of patient-related burnout

Factors	Coefficient	<i>p</i> value	$\beta$	$R^2_{adj}$
(Constant)	5.573			0.189
Female	17.342	0.036	0.41	
Married	20.353	0.048	0.399	
Inadequate PPE	30.323	0.042	0.371	

## Discussion

Our finding shows that the ENT medical residents have a low burnout score, despite the situation of Covid-19 pandemic. This was similar to reported systematic review by Rodrigues *et al* that ENT medical residents tend to have a low level of burnout compared to the other departments.<sup>15</sup> However, the review was observing burnout among residents before Covid-19 pandemic happened. The study from Elghazally *et al* reported a higher level of burnout on residents during Covid-19 pandemic.<sup>16</sup>

Our finding at each dimension of burnout suggests that the participants had a moderate level of personal burnout and a lower level on work-related, even lower score on client-related burnout. The results are quite similar to a study that conducted by Ratnakaran *et al* that reported the moderate burnout on personal dimensions and low burnout on both work-related and client-related dimensions.<sup>17</sup> Other studies found that medical residents tend to have the highest score of personal burnout rather than 2 other subscales, despite the burnout level.<sup>17-19</sup> These findings show us that medical residents have personal physical and psychological exhaustion that did not relate to their work.

We try to find the other factors that may contribute to their burnout status, including their wellness in the middle of Covid-19 pandemic. However, we found that only the marital status of residents is significantly related to their client-related burnout, despite that the burnout score between married and not married are still on the same level of burnout (<50%). Although we assume that being married and also working at the hospital may contribute to higher susceptibility of burnout, especially personal burnout, but our findings do not correspond with the majority of reported studies that having a spouse will help to protect a person to easily get burnout, like study by Chan *et al* that reported 1.4 times higher psychological fatigue on unmarried compared to the married physician during SARS outbreak in 2003.<sup>20</sup>

Female gender, marriage, and inadequacy of PPE are predictors to patient-related burnout. A study by Peckham *et al* also reports similar findings that female physicians from all specialties tend to have more





burnout than their male colleagues. One of the factors that may contribute to this issue is because female physician tend to become victims of sexual harassment, directly or indirectly, both from their colleagues and patients and this may lead to disrupting their confidence in the workplace and even their career.<sup>21,22</sup>

Treating patients in the pandemic, especially the positively diagnosed by Covid-19, is essentially required of proper PPE to protect physicians. This factor becomes a reason why the inadequacy of PPE may contribute to development of burnout, because of their worriness toward the exposure of such deadly disease. The similar result was reported by Morgantini *et al* that PPE may have a role as a protector against burnout (RR = 0.88,  $p = 0.01$ ).<sup>23</sup>

One of the drawback of our study is the design, that our study is unicenter. Therefore, this cannot describe the general population of burnout among ENT residents in our country. And there was no data regarding burnout before Covid-19 pandemic happened. However, it provide an outlook regarding the low burnout level on ENT medical residents. We can assume that maybe work in Covid-19 pandemic was being set properly, regarding the decreasing time of work or total patients that are being treated at ENT departments. Those became another lackness of our study that we did not specifically describe about work load, such as total patients, surgeries, case variety that were faced by ENT residents during the pandemic time. Future studies such as multicenter studies should be designed and carried out to find out more accurate results of burnout among residents.

## Conclusion

The prevalence of burnout among residents cannot be underestimated. Exhaustion due to burnout syndrome may lead to disruption of their work toward the patients and also their personal life. Frequently check up regarding burnout may help to find out burnout symptoms earlier so it could be treated by stress management as soon as possible.

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