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Original Article

Pediatric residents' burnout in Indonesia: a national survey during the pandemic

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Abstract

Background The uncertain and somewhat chaotic clinical learning environment during the COVID-19 pandemic may potentially trigger burnout in pediatric residents.

Objective To investigate the prevalence of burnout in pediatric residents in Indonesia during the COVID-19 pandemic and to identify potential risk factors associated with burnout.

Methods This analytic observational study was conducted between April and June 2020. A questionnaire-based survey using an Indonesian translation of the *Maslach Burnout Inventory-Human Services Survey* was conducted online across 15 pediatric training institutions treating COVID-19 patients in Indonesia. Results were interpreted in accordance with the inventory guidelines. The chi-square test was used to analyze for possible associations between each subscale and gender, marital status, training stage, as well as institution of origin. One-way ANOVA of each subscale was performed on pediatric training institutions located in different regions.

Results Of 983 respondents (82% average response rate), the prevalences of high emotional exhaustion and high depersonalization were 28.0% and 15.8%, respectively, while more than half of respondents (50.2%) had a low sense of personal accomplishment. Most respondents felt more exhausted than depersonalized. The location of pediatric training institution (Java or outside Java) was the only significant factor associated with burnout (P=0.003).

Conclusion In the early stages of the pandemic, more than half of pediatric residents in Indonesia had a low sense of personal accomplishment. The only significant factor associated with burnout among was the location of training institution (Java or outside Java), suggesting a potential role of differences in hospital situation and clinical learning environment during the pandemic between Java and outside Java. **[Paediatr Indones. 2023;63:22-8; DOI: 10.14238/pi63.1.2022.22-8**].

Keywords: *visual acuity assessment; preschool children; Lea symbols; Tumbling E chart*

Clinical workplace based-learning is paramount for every residency training program, with a hospital as the main venue. The complexity of the learning environment and the high workload may lead to burnout.[1,2] Burnout is defined as a "state of physical, emotional and mental exhaustion that results from long-term involvement in work situations that are emotionally demanding." It is characterized by gradual emotional exhaustion linked to a deterioration in motivation, depersonalization, and perceptions of decreased personal accomplishment.[3] Burnout among residents has been widely reported, including in developing countries.[4,5]

The first confirmed COVID-19 case in Indonesia was identified in March 2020. The number of cases subsequently increased, affecting various aspects of day-to-day life, including healthcare. In the context of the COVID-19 pandemic, hospitals' ability to cope

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and adapt required regulation changes regarding the number of COVID-19 cases treated and physician involvement. Treating large numbers of COVID-19 patients in a hospital may reduce the hospital's capacity to manage other normally-encountered diseases. Therefore, there is a risk of inadequacy of quantities of cases other than COVID-19 for residents' workplace-based learning and competency achievement, leading to lack of diversity of work. Pediatric residents are also involved in COVID-19 management in teaching hospitals worldwide, even though there are fewer pediatric than adult COVID-19 cases.[6,7]

An uncertain and somewhat chaotic clinical learning environment during the pandemic could further trigger burnout in pediatric residents.[8] A study by Treluyer *et al.*[8] conducted in a developed country highlighted that there was no association between burnout and exposure to the consequences of COVID-19, given that the incidence of severe COVID-19 cases among children was low. Different studies have showed that burnout may or may not be attributed to the pandemic.[8,9] Despite this, different pandemic situations and their impact on residents, as well as distinct clinical learning environments in pediatric residency programs in developing countries such as Indonesia, may influence the prevalence of burnout. Therefore, we aimed to analyze burnout in Indonesian pediatric residents in Indonesian pediatric training institutions and the possible risk factors related to burnout during the early days of the COVID-19 pandemic. The study is expected to provide insights into pediatric residents' coping during the pandemic, the prevention of burnout, and the development of better support systems in each training institution.

Methods

This analytic observational study was conducted between April and June 2020. An Indonesian translation of the *Maslach Burnout Inventory-Human Services Survey* (MBI-HSS) questionnaire was used to assess residents' burnout. This instrument has been used as a validated tool for assessing burnout from previous studies.[10,11] The MBI-HSS is a 22-item questionnaire with three subscales: emotional exhaustion (EE, 9 items), depersonalization (DP, 5 items), and personal accomplishment (PA, 8 items). Respondents answer using a 7-point Likert scale (0 = never, 1 = a few times a year or less, 2 = once a month or less, 3 = a few times a month, 4 = once a week, 5 = a few times a week, 6 = every day).[12]

The study adopted a total sampling approach. The questionnaire was distributed online to residents in the 15 existing pediatric training institutions in Indonesia through the heads of the pediatric training programs. Seven institutions were located in Java (Jakarta, Bandung, Semarang, Yogyakarta, Surakarta, Surabaya, and Malang), and eight were located outside Java (Banda Aceh, Medan, Padang, and Palembang in Sumatera, Denpasar in Bali, Banjarmasin in Kalimantan, Makassar and Manado in Sulawesi). All residents who remained pediatric trainees during the study period, completed the form, and replied online were included. Duplicate submissions were excluded. Subjects' identities were kept confidential.

Higher burnout symptoms were indicated by higher scores on the EE or DP subscales and lower scores on the PA subscale. The mean score for each domain was then used to classify the subscales. We classified EE as low ($\leq$16), moderate ($>$16 to $<$27); and high ($\geq$27), DP as low ($\leq$6), moderate ($>$6 to $<$13), and high ($\geq$13); and PA as low ($\geq$39), moderate ($>$21 to $<$39), and high ($\leq$21). Burnout was defined as high EE or high DP or low PA.12 Participants' demographic data (gender and marital status), semester, and stage (junior, intermediate, and senior) were also collected through the questionnaire.[12]

Cronbach's alpha was used to test reliability. Descriptive analysis was performed for the baseline characteristics of the subjects. The scores for each subscale of the MBI-HSS were described in means and percentages. The associations between the subscales and demographic characteristics such as gender, marital status, stage, and location of institution were analyzed using the chi-square test. One-way ANOVA of each subscale was was used to further compare pediatric training institutions located in Java and outside Java.

The study was approved by the Health Research Ethics Committee of Dr. Moewardi General Hospital, Universitas Sebelas Maret Faculty of Medicine. Participants gave informed consent prior to answering the questions and submitting the survey.

Results

A total of 983 pediatric residents from 15 pediatric residency programs participated in the study from May to June 2020, with an 82% average subject response rate and an 84% institution response rate. The Cronbach's alpha results of the total MBI-HSS and the EE, DP, and PA subscales were 0.92, 0.91, 0.80, and 0.87, respectively. **Table 1** describes the subjects' characteristics. The majority of subjects were female, married, and in the intermediate level of their residency training.

Table 2 shows the summarized burnout scores: 28.0% of subjects had high EE, and 15.8% had high DP, and 50.2% had low PA. Many subjects had moderate- to high levels of burnout in the EE, DP, and PA subscales (59.2%, 42.2%, and 95.4%, respectively). There were significant associations between the three subscales ($P<0.05$). Low EE was associated with low DP (**Table 3a**), low EE was associated with low PA (**Table 3b**), and low DP was associated with low PA (**Table 3c**).

Table 4 shows logistic regression analysis of burnout subscales by age, gender, marital status, stage, and institution. Only the location of pediatric training institution was significantly associated with burnout level ($P=0.003$). The mean difference in subscale scores between institutions located in Java and outside Java are shown in **Table 5**. Subjects from institutions in Java had a higher level of burnout in the personal accomplishment subscale, despite a lower level of burnout in emotional exhaustion and depersonalization subscales.

Table 1. Baseline characteristics of subjects

Characteristics	(N=983)
Gender, n (%)	
Male	286 (29)
Female	697 (71)
Marital status, n (%)	
Single	329 (33)
Married	639 (65)
Divorced	18 (2)
Residential stage, n (%)	
Junior (PY1)	241 (25)
Intermediate (PY2-3	407 (41)
Senior (PY4)	335 (34)
Semester, n (%)	
1	111 (11)
2	97 (10)
3	116 (12)
4	110 (11)
5	103 (10)
6	108 (11)
7	100 (10)
8	118 (12)
9	57 (6)
10	36 (4)
11	14 (1)
12	11 (1)
13	2 (0)
Location of institution	
Java	539 (55)
Outside Java	444 (45)

Discussion

The majority of pediatric residents in Indonesia had low PA in the early stages of the pandemic, indicating one aspect of burnout. Previous studies among pediatric residents in other settings8,9 had shown varying influence of pandemic conditions on resident burnout. The only significant factor associated with residents' burnout in our subjects was the location of the residency institution (within *vs.* outside Java). Since the clinical learning environment for postgraduate medical education is determined by the physical environment (e.g., safety, food, shelter, and other facilities), the emotional climate (e.g., security, constructive feedback, support, and the absence of bullying), and the intellectual climate (e.g., learning opportunities and engagement, interactions with patients, interactions between residents and their supervisors),[13,14] this study highlights the influence of the environment during the early stage of the pandemic on residents' burnout in each institution.

Burnout in pediatric residents was common even before the pandemic. Pre-pandemic studies revealed a wide range of results on burnout in pediatric residents, with prevalences varying from 17% to

Table 2. MBI-HHS scores in each sub-scale

Scores	EE	DP	PA
Mean (SD)	20.7 (11.3)	6.5 (5.7)	36.9 (8.0)
Low, n (%)	401 (40.8)	568 (57.8)	493 (50.1)
Moderate, n (%)	307 (31.2)	260 (26.4)	345 (45.3)
High, n (%)	275 (28.0)	155 (15.8)	45 (4.6)

Table 3. Associations among the burnout sub-scales

A. EE-DP				
	Depersonalization category			
Emotional exhaustion category	Low	Moderate	High	Total
Low	361	38	2	401
Moderate	160	124	23	307
High	47	98	130	275
Total	568	260	155	983
P=0.000 (Chi-square test)				
B. EE-PA				
	Personal accomplishment category			
Emotional exhaustion category	Low	Moderate	High	Total
Low	272	115	14	401
Moderate	144	145	218	307
High	77	185	13	275
Total	493	445	45	983
P=0.000 (Chi-square test)				
C. DP-PA				
	Personal accomplishment category			
Depersonalization category	Low	Moderate	High	Total
Low	370	183	15	568
Moderate	98	147	15	260
High	25	115	15	155
Total	493	445	45	983
P=0.000 (Chi-square test)				

Table 4. Logistic regression of burnout sub-scales

Variables	Emotional exhaustion			Depersonalization			Personal accomplishment		
	OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value
Age	1.00	0.97 to 1.05	0.54	0.98	0.93 to 1.02	0.30	0.99	0.95 to 1.04	0.95
Gender	1.17	0.91 to 1.52	0.25	0.94	0.72 to 1.23	0.91	0.93	0.71 to 1.22	0.61
Marital status	0.85	0.67 to 1.09	0.22	0.90	0.69 to 1.17	0.66	0.84	0.65 to 1.09	0.15
Stage	0.85	0.72 to 1.01	0.06	0.97	0.81 to 1.16	0.58	1.15	0.97 to 1.38	0.19
Location of Institution	1.70	1.34 to 2.15	0.001	1.47	1.15 to 1.89	0.003	1.44	1.12 to 1.85	0.003

Table 5. Mean difference scores between institutions located in Java and outside Java

Variables	Located outside Java (n=444)	Located in Java (n=539)	Mean difference scores	P value
Emotional exhaustion	18.97	22.19	-3.22	0.000
Depersonalization	5.73	7.10	-1.36	0.000
Personal accomplishment	37.75	36.17	1.59	0.000

70%.[1,15-18] These findings could be related to the high workload and complex learning environment.[1,2] The pandemic added still more pressure, which could have led to mental disturbances in residents.[19] Another study not limited to pediatric residents showed that higher numbers of COVID-19 patients being cared for correlated with increased prevalence of residents' burnout (EE and DP), with a reported prevalence of 66% in those who cared for >60 patients COVID-19 patients *vs.* 39% in those who cared for no COVID-19 patients.[9] Uncertainty due to the COVID-19 pandemic in day-to-day life and the residents' ability to accomplish pediatric training to a satisfactory standard may have also challenged their emotional stability.

We studied burnout in Indonesian pediatric residents early in the COVID-19 pandemic in Indonesia. The rate of COVID-19 infection started to accelerate in Java in March and April 2020, when the survey was executed; outside Java, the acceleration occurred later. Pediatric residents in Indonesia also cared for children with COVID-19, although there were fewer pediatric than adult cases. The mean scores for each subscale in our subjects indicated a moderate level of burnout. Some reasons for the relatively low level of emotional exhaustion and depersonalization were the working hours that were reduced for residents' safety and a decreased workload due to fewer patients visiting the hospital for non-COVID-19-related reasons. These might explain the moderate burnout level, despite the uncertain situation in the early months of the pandemic. It should be considered that the higher incidence of burnout in Java may be related to the much higher initial rate of increase of COVID-19 than outside Java.

Aside from the gradually increasing number of COVID-19 patients, factors that could contribute to burnout are the disease itself (susceptibility to exposure, lack of available reliable tests in the early days of the COVID-19 pandemic, and a lack of firm guidelines), the lack of available personal protective equipment, an inexperienced mitigation response throughout the national to hospital level, choosing between increasing family risk of contracting COVID-19 and attending to patients' needs, changing work shifts from the normal rotation to an emergency rotation, and financial constraints due to lack of overtime pay. A recent qualitative study conducted in a pediatric department in Singapore revealed four themes related to the COVID-19 pandemic, i.e., psychological impact, impact on duties, impact on teaching and learning, and protective measures and support system.[20]

The subscales of burnout in our study were positively correlated with each other. A previous study revealed that EE was strongly related to DP, while there was a moderate negative correlation between both these subscales and PA.[21] Our study revealed that the prevalence of high EE (28.0%) and high DP (15.8%) was less than 30%. Nevertheless, the prevalence of low PA in our study was over 50%. A study in Thailand, conducted before the pandemic and with a similar demographic background as a fellow Southeast Asian country, showed different results (17% high EE, 12% high DP, and 29% low PA).[22] Low PA refers to feelings of incompetence and unsatisfactory achievement in work. The high prevalence of low PA in our study indicates the subjects' perception that the pandemic could interrupt their studies, especially in terms of attainment of skill competency and learning outcomes. Institutions responded to early COVID-19 exposure by initiating several significant changes in the educational domain, which could signal a bleak prognosis for trainees' competency. More than 80% of residents and fellows in Saudi Arabia reported a reduction in training activities during the pandemic.[23]

In our study, location of the pediatric training institution was the only significant factor associated with burnout. Seven out of the 15 existing pediatric training institutions were located in Java. Among subjects from institutions located within Java, 54.8% had worse EE and DP, but better PA, than those from institutions outside Java. Historically, institutions within Java were established earlier, but all institutions had achieved the highest accreditation recognition from the national accrediting body, regardless of their year of establishment. The higher burnout rate in Java had not been reported previously; hence, the reason for this result could not be traced. We speculate that population density, different culture, and learning environment could be causes of this phenomenon. The population density in Java is the highest among the Indonesian islands. As referral hospitals, teaching hospitals in Java receive more patients and more severe cases, which might readily contribute to residents' burnout. Our previous study on burnout in pediatric

trainees in Indonesia (within and outside Java) before the pandemic using the *Oldenburg Burnout Inventory* revealed that almost 10% of the residents showed moderate to severe exhaustion and 16% showed moderate to severe disengagement. In our previous study, the stage of training (junior- to intermediate stage) was a risk factor for exhaustion, while the institution was a risk factor for disengagement. In the context of different institutions, it would be appropriate to investigate whether differences in learning environment were inherent to burnout aspects.[24] A recent study conducted in a pediatric department in Singapore also highlighted the role of the institution, despite the faculty and the individual, in reducing burnout.[20]

We expect our findings to alert training centers to the potential impact of burnout amidst the COVID-19 pandemic on the attainment of pediatric residents' competencies. Given that burnout in pediatric training was already an important issue long before the COVID-19 pandemic, the identification of institutional factors affecting residents' burnout in this study should be followed by attempts to create a supportive learning environment for residents. Pediatric training in Indonesia is unique, as it is university based and uses a competency-based approach. A university-based approach means that residents are enrolled as students and have to pay a tuition fee for their training. Whether competency attainment due to reduced patient encounters is also a factor in alleviating burnout (i.e., PA) needs to be discussed thoroughly by all stakeholders. Further research is required to investigate the attainment of pediatric training competencies during this period.

This study is not without limitations. First, while it identified institutional factors contributing to pediatric residents' burnout during the first months of the pandemic, the authors did not administer instruments to measure the residents' perceptions of their learning environment. This may warrant further study to identify room for improvement in each clinical training institution. Second, the study used a cross-sectional design, hence, causal links between the factors identified in this study and burnout and its prevalence among the residents cannot be confirmed. The conclusion of our study is that the majority of pediatric residents in Indonesia had low PA during the early stage of the pandemic. This finding can be explained by the lower case exposures compared to those before the pandemic, and the initiatives institutions implemented to limit patient exposure for the residents' safety. The only significant factor associated with burnout among Indonesia's pediatric residents was the location of the training institution in Java, which showed the potential role of training hospital culture and clinical learning environment during the pandemic.

Conflict of interest

None declared.

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