

Determinants of Well-Being and Burnout Among Pediatric Residents: A Cross-Sectional Analysis

Abstract

Aims: This study aimed to investigate the relationship between demographic factors and well-being among pediatric residents and assess the applicability and interrelation of SF-8, LASA, and MBI instruments in evaluating resident well-being.

Methods: A cross-sectional survey was administered to 88 pediatric residents at a single institution. Participants completed self-reported questionnaires, including the SF-8 Health Survey, Linear Analog Self-Assessment (LASA), and Maslach Burnout Inventory (MBI). Demographic data were collected, and statistical analysis, including linear regression and Spearman correlation, were conducted to identify associations between demographic variables and well-being outcomes.

Findings: Residents living with family exhibited significantly higher LASA scores ($B = 1.00$; 95% CI: 0.23 to 1.78; $p = 0.012$) and lower SF-8 physical and mental component scores ($B = -6.50$; 95% CI: -12.54 to -0.47; $p = 0.035$; and $B = -7.16$; 95% CI: -14.28 to -0.04; $p = 0.049$; respectively). Correlation analysis showed expected interrelations among SF-8, LASA, and MBI scores, supporting their concurrent validity in assessing resident well-being.

Conclusion: Living with family is associated with improved well-being among pediatric residents, as evidenced by higher LASA scores and favorable SF-8 outcomes. These findings underscore the importance of familial support in residency training. The strong correlations among SF-8, LASA, and MBI instruments affirm their utility in evaluating resident well-being.

Keywords: burnout; medical education; medical residency; social support; psychological well being

Introduction

The well-being of medical residents is a fundamental aspect in ensuring the delivery of optimal healthcare services [1]. Well-being encompasses the physical, mental, and emotional quality of life experienced by an individual. Studies indicate a high prevalence of well-being disturbances among residents, who often face significant symptoms of depression and reduced quality of life during training. These issues are typically influenced by heavy workloads, academic demands, and limited rest [2, 3]. Studies have consistently shown that these challenges lead to high levels of stress, fatigue, and burnout among residents. Global data reveal that a significant proportion of medical residents' experience burnout [4, 5].

The challenges of resident well-being extend beyond the individual, influencing the quality of care provided to patients. Residents serve as frontline medical professionals providing patient care, making their mental and physical health pivotal to the success of medical services [6]. Residents with poor well-being often demonstrate reduced productivity, impaired interpersonal relationships, and increased risk of medical errors. Furthermore, poor well-being increases the likelihood of developing long-term mental health issues [7].

Identifying factors influencing resident well-being facilitates the development of more effective interventions [8]. Prior study reported various factors influence the resident well-being including demographics such as age, gender, marital status, living arrangements, and sources of educational funding [9]. Residents living with family may benefit from better social support, enabling them to manage stress more effectively than those living alone. Financial circumstances and other underlying factors further contribute to resident burnout [10]. These elements require in-depth analysis to understand their impact on residents' overall well-being [11].

Standardized well-being instruments serve as essential tools for assessing the degree of well-being among medical residents. In recent years, a variety of validated questionnaires have been employed to measure residents' physical health, mental health, and overall quality of life [12-14]. Among these, the Medical Outcomes Short Form-8 (SF-8), the Maslach Burnout Inventory (MBI), and the Linear Analog Self-Assessment (LASA) have demonstrated robust psychometric properties, capturing dimensions such as emotional exhaustion, personal accomplishment, physical functioning, and life satisfaction [15, 16]. Although these instruments were originally developed for broader populations, emerging evidence indicates that their scores correlate strongly with other objective indicators of resident well-being, thereby supporting their validity in this context [17, 18].

Despite numerous studies on resident well-being, few have concurrently examined how multiple objective measures interrelate [12-14, 19, 20]. Mapping the convergence and divergence of scores across SF-8, LASA, and MBI would clarify each instrument's unique contributions and guide educators in selecting the most informative combination of measures. Furthermore, given the scarcity of such research in Indonesia, incorporating an analysis of demographic variables could enrich the current literature. Therefore, this study aims to explore the relationships between demographic factors and well-being in pediatric residents while evaluating the applicability and interrelationships of the SF-8, LASA, and MBI instruments in comprehensive resident well-being assessment.

Materials & Methods

Study Design and Participants

A cross-sectional study involving pediatric resident was conducted on March 2025 at the Dr Soetomo General Academic Hospital, Surabaya, Indonesia. Ethical clearance was obtained from Institutional Review Board of Dr Soetomo General Academic Hospital (Protocol Number 1232/KEPK/II/2025). The study was carried out following Declaration of Helsinki principles. Eligible participants included all pediatric resident who provided informed consent. Residents who had not completed the required surveys were excluded from the study.

Sample Size Calculation

Minimum sample size were estimated using the standard formula for multiple regression. The minimum required sample size for our study is 81 residents.

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{f^2} + k + 1$$

k = number of predictors (10)

α = two-sided significance level (0.05)

$1-\beta$ = power (0.80)

f^2 = cohen's convention for multiple regression (medium effect size 0.15)

Assessment Tools

The SF-8 Health Survey was a shortened version of the SF-36. Its primary goal is to provide an efficient tool for assessing mental and physical health status, particularly in large-scale population surveys and clinical studies where time is constrained [21]. The SF-8 evaluates eight health domains, including physical functioning, pain, vitality, and mental health. It provides two components: Physical Component Summary (PCS) and Mental Component Summary (MCS). The SF-8 has been extensively validated, showing high correlation with the SF-36, making it a reliable tool for quality-of-life assessment [21-23].

The LASA was introduced as a straightforward tool for evaluating individuals' perceptions of well-being across various dimensions. Its objective is to offer a quick, practical, and comprehensible approach for assessing physical health, emotional well-being, and overall quality of life. The tool is particularly useful in clinical settings with limited time for patient evaluation [24]. The LASA uses a visual scale from 0 (representing the worst condition) to 10 (representing the best condition). Its reliability has been validated through multiple studies, showing high sensitivity in capturing minor changes in individuals' well-being perceptions [24, 25].

The MBI was developed by Christina Maslach and Susan E. Jackson in 1981 as a comprehensive tool for assessing burnout.[26] It measures three key dimensions: emotional exhaustion (MBI-EE), depersonalization (MBI-DP), and personal accomplishment (MBI-PA). Higher scores of MBI-EE and MBI-DP reflect higher burnout, while lower scores of MBI-PA indicate reduced job satisfaction. The MBI is frequently used to assess how workload impact burnout [27, 28]. Studies have found strong correlations between MBI scores and other instruments assessing quality of life in residents [29].

Data Collection

Participants completed demographic data and three validated instruments to assess well-being and burnout levels. Data collected were gender, age, living arrangements, professional level (junior ≤ 3 semester), prior work experience before residency (hospital or primary care), previous private practice experience, undergraduate medical education background (alumnus of Universitas Airlangga or not), presence of a partner (married), presence of children, and whether the partner was employed (indicating shared financial responsibilities). All responses were anonymized using unique participant IDs to ensure confidentiality. Informed consent was signed prior data collection.

The SF-8 Health Survey consists of eight items answered on 5- or 6-point Likert scales and converted to 0–100 norm-based scores to yield two summary measures PCS and MCS [30]. The LASA comprises five single-item well-being domains (physical, emotional, social, intellectual, and overall quality of life), each rated on a 0–10 visual analog scale, with the overall LASA score calculated as the mean of these items.[31] MBI used was the Maslach Burnout Inventory–Human Services Survey (MBI-HSS), which contains 22 items for three subscales, MBI-EE (9 items), MBI-DP (5 items), and MBI-PA (8 items).[26] Each item rated from 0 (never) to 6 (every day). The content validity of each questionnaire had thoroughly assessed by experts prior to their distribution.

Statistical Analysis

Linear regression analysis were conducted to measure the impact of independent variables to each outcome. To evaluate the associations among well-being and burnout measures the Spearman's correlation coefficients were calculated. A significance level of $p < 0.05$ was set for all analysis, which were performed using IBM SPSS Statistics, version 23.

Findings

The study included 88 medical residents, predominantly female (70.5%), with a majority over 30 years old (61.4%). Most participants were married (77.3%), had children (60.2%), and lived with family members (55.7%). Regarding training status, 61.4% were classified as senior residents, while 38.6% were junior. Prior to residency, 71.6% had work experience in hospital settings, and 69.3% had engaged in private practice. Nearly half (45.5%) were alumni of Universitas Airlangga, having completed their undergraduate medical education there. Additionally, 59.1% reported that their partners were employed, indicating shared financial responsibilities (**Table 1**).

Table 1. Demographic Characteristic and Outcomes of Study Participants

Demographic	n (%)
Age	
– > 30 years	54 (61.4)
– ≤ 30 years	34 (38.6)
Ses	
– Male	26 (29.5)
– Female	62 (70.5)
Professional level	
– Senior	54 (61.4)
– Junior	34 (38.6)
Work Experience	
– Hospital	63 (71.6)
– Primary Facility	25 (28.4)
Prior private practice	61 (69.3)
Alumnus of Universitas Airlangga (medical doctor)	40 (45.5)
Has partner (married)	68 (77.3)
Has children	53 (60.2)
Partner employed	52 (59.1)
Lives with family	49 (55.7)
Outcomes	
SF-8 PCS (0-100)	52.5 (45.0 – 60.0)
SF-8 MCS (0-100)	50.0 (40.0 – 60.0)
LASA (0-10)	7.0 (6.0 – 7.8)
MBI-EE (0-54)	17.0 (8.0 – 23.0)
MBI-DP (0-30)	4.0 (2.0 – 7.0)
MBI-PA (0-48)	29.0 (24.0 – 35.8)

DP: Depersonalization; EE: Emotional Exhaustion; LASA: Linear Analog Self-Assessment; MBI: Maslach Burnout Inventory; MCS: Mental Component Score; PA: Personal Accomplishment; PCS: Physical Component Score

Well-being and burnout assessments revealed a median SF-8 Physical Component Summary (PCS) score of 52.5 (IQR: 45.0–60.0) and a Mental Component Summary (MCS) score of 50.0 (IQR: 40.0–60.0). The median LASA score was 7.0 (IQR: 6.0–7.8). For burnout measures, median scores were 17.0 (IQR: 8.0–23.0) for Emotional Exhaustion (MBI-EE), 4.0 (IQR: 2.0–7.0) for Depersonalization (MBI-DP), and 29.0 (IQR: 24.0–35.8) for Personal Accomplishment (MBI-PA).

Table 2. The SF-8 and LASA Linear Regression Model

Predictor	B (95% CI)	SE	β	t	p-value
SF-8 PCS					
Male	0.83 (-5.47, 7.12)	3.16	0.03	0.26	0.795
Senior	1.10 (-6.05, 8.25)	3.59	0.04	0.31	0.761
Alumnus of Universitas Airlangga	0.66 (-5.36, 6.67)	3.02	0.03	0.22	0.829
Employed in hospital	-1.75 (-8.15, 4.65)	3.22	-0.06	-0.55	0.588
Private practice	6.41 (-0.04, 12.86)	3.24	0.23	1.98	0.051
Age > 30 years	3.87 (-3.73, 11.47)	3.82	0.15	1.01	0.314
Has partner	-6.55 (-16.92, 3.82)	5.21	-0.22	-1.26	0.212
Has children	4.76 (-3.01, 12.54)	3.90	0.18	1.22	0.226
Partner employed	-0.33 (-7.63, 6.96)	3.66	-0.01	-0.09	0.928
Lives with family	-6.50 (-12.54, -0.47)	3.03	-0.26	-2.15	0.035*
SF-8 MCS					
Male	-0.06 (-7.49, 7.36)	3.73	0.00	-0.02	0.986
Senior	3.19 (-5.24, 11.62)	4.23	0.10	0.75	0.453
Alumnus of Universitas Airlangga	-4.33 (-11.43, 2.77)	3.56	-0.14	-1.22	0.228
Employed in hospital	5.45 (-2.09, 13.00)	3.79	0.16	1.44	0.154
Private practice	4.83 (-2.78, 12.43)	3.82	0.15	1.26	0.210
Age > 30 years	-3.79 (-12.76, 5.17)	4.50	-0.12	-0.84	0.402
Has partner	-7.75 (-19.98, 4.48)	6.14	-0.21	-1.26	0.211
Has children	0.68 (-8.49, 9.84)	4.60	0.02	0.15	0.883
Partner employed	-1.23 (-9.83, 7.37)	4.32	-0.04	-0.29	0.776
Lives with family	-7.16 (-14.28, -0.04)	3.58	-0.23	-2.00	0.049*
LASA					
Male	-0.22 (-1.03, 0.59)	0.41	-0.06	-0.54	0.592
Senior	-0.07 (-0.99, 0.85)	0.46	-0.02	-0.16	0.876
Alumnus of Universitas Airlangga	0.11 (-0.66, 0.89)	0.39	0.03	0.29	0.774
Employed in hospital	-0.26 (-1.08, 0.57)	0.41	-0.07	-0.62	0.538
Private practice	-0.76 (-1.59, 0.06)	0.42	-0.21	-1.84	0.070
Age > 30 years	-0.05 (-1.03, 0.92)	0.49	-0.02	-0.11	0.914
Has partner	1.02 (-0.31, 2.35)	0.67	0.26	1.52	0.132
Has children	0.00 (-0.99, 1.00)	0.50	0.00	0.01	0.993
Partner employed	-0.22 (-1.16, 0.72)	0.47	-0.07	-0.47	0.639
Lives with family	1.00 (0.23, 1.78)	0.39	0.30	2.57	0.012*

*p-value<0.05; 95%CI: 95% Confidence Interval; LASA: Linear Analog Self-Assessment; MCS: Mental Component Score; PCS: Physical Component Score; SE: Standard Error

In linear regression analysis (**Table 2**), living with family was significantly associated with lower scores on both the SF-8 Physical Component Summary (PCS) (B = -6.50; 95% CI: -12.54 to -0.47; p = 0.035) and Mental Component Summary (MCS) (B = -7.16; 95% CI: -14.28 to -0.04; p = 0.049). Additionally, living with family was positively associated with higher LASA scores (B = 1.00; 95% CI:

0.23 to 1.78; $p = 0.012$), suggesting better overall well-being in this group. No other demographic variables showed statistically significant associations with SF-8 or LASA or MBI outcomes.

Table 3. The Correlation SF-8, LASA, and MBI

Correlation	PCS	MCS	LASA	MBI-EE	MBI-DP	MBI-PA
PCS	—					
MCS	0.599**	—				
LASA	-0.644**	-0.797**	—			
MBI-EE	0.502**	0.703**	-0.745**	—		
MBI-DP	0.304*	0.409**	-0.398**	0.589**	—	
MBI-PA	-0.296*	-0.379**	0.459**	-0.425**	-0.463**	—

* p -value<0.05; ** p -value<0.001; DP: Depersonalization; EE: Emotional Exhaustion; LASA: Linear Analog Self-Assessment; MBI: Maslach Burnout Inventory; MCS: Mental Component Summary; PA: Personal Accomplishment; PCS: Physical Component Summary;

Spearman correlation analysis indicated significant associations among well-being and burnout measures. The SF-8 PCS and MCS scores were positively correlated ($r = 0.599$, $p < 0.01$). Both PCS and MCS scores were negatively correlated with LASA scores ($r = -0.644$ and $r = -0.797$, respectively; $p < 0.01$). Regarding burnout dimensions, MBI-EE and MBI-DP showed positive correlations with PCS and MCS, and a negative correlation with LASA scores. MBI-PA was negatively correlated with PCS and MCS, and positively correlated with LASA scores.

Discussion

Burnout is a condition of physical, emotional, and mental exhaustion often resulting from high workload and chronic stress [32]. It is typically reflected in severe emotional fatigue, a detached attitude, and a weakened sense of personal efficacy [33]. Burnout can impair residents' ability to provide optimal care, affecting clinical decision-making, reducing empathy toward patients, and increasing the risk of medical errors. Addressing resident burnout is important in improving their health and healthcare delivery [34]. Unaddressed burnout can jeopardize residents' career sustainability and overall quality of life [35, 36].

In terms of burnout, our study on pediatric residents reported substantially lower EE and DP but also lower PA compared with U.S. medical students (EE 24.4, DP 8.0, PA 36.0) and Korean interns (combined EE 37.1, DP 17.5, PA 33.4) [19, 37]. The SF-8 score in this study closely mirror U.S. figures for PCS (52.6), but exceed U.S. MCS score (43.8).[37] The average LASA score in this study surpasses that of U.S. internal medicine trainees (6.54) and Korean interns (4.9) [13, 19]. Comparative data indicate that healthcare professionals in Western contexts exhibit higher burnout levels than their Eastern counterparts. Fish et al.[38] found that Australian nurses reported significantly greater emotional exhaustion and depersonalization than Chinese nurses, despite identical job demands. These findings suggest that Western practitioners may be more vulnerable to burnout compared to collectivist societies.

Higher overall quality-of-life score (LASA) patterns likely reflect socio-cultural influences on quality of life. Within a diverse urban Asian population in Singapore, family support and better housing independently improved SF-36 scores by 3.5–4.0 points, while ethnicity and socio-economic status together accounted for mean differences of 1.4–13.1 points across domains [39]. Such gains exceed the 5-point threshold for a minimum clinically important difference, underscoring how strong familial bonds and cultural emphasis on collective well-being can buffer stress and enhance resilience among residents, which less pronounced effects in Western training environments.

Burnout prevalence among Chinese doctors appears especially pronounced in tertiary hospitals, like our study settings. Lo et al.'s systematic review revealed overall burnout rates of 66.5–87.8% in Mainland China, with highest risk observed among physicians working over 40 hours per week in

tertiary care centers [40]. The combination of intense workloads, high patient volumes, and limited primary care infrastructure likely exacerbates stress and diminishes opportunities for humanistic patient–physician interactions in these settings. However, besides of difference regarding resident ethnicity, specialty, or training location, the MBI has demonstrated robust psychometric properties across diversity [41].

Living with family was found to be significantly associated with lower PCS, lower MCS, and higher LASA scores, reflecting better-perceived well-being among these residents. This finding underscores the importance of family support in enhancing mental health during residency training [42]. Family members may provide critical emotional encouragement, logistical assistance, and a stable environment, all of which contribute to reducing stress and improving coping mechanisms. The ability to share daily challenges and receive support from groups likely alleviates feelings of anxiety and depressive symptoms that are common in high-stress professional settings like residency [42, 43].

Several limitations exist in this study. First, this research does not establish causality or track changes over time. Longitudinal studies are needed to explore the dynamics of well-being and burnout throughout residency. Second, the reliance on self-administered questionnaires introduces the potential bias, including social desirability bias [44]. Third, this study is absence of burnout categorization into low, moderate, or high levels. This decision was made due to the lack of validated cutoff points for the MBI specific to southeast asian populations, especially Indonesia. Therefore, to avoid potential misclassification, we opted to analyze burnout scores as continuous variables rather than categorizing them into arbitrary levels.

Future research should incorporate objective assessments alongside self-reported data could offer deeper insights. Explore family functioning in greater depth rather than merely using living arrangements are needed. Previous studies suggest that family dynamics do not always directly influence psychological outcomes, complex factors may moderate the relationship between family support and individual well-being [45]. Future study also need to assess the cultural differences, interaction with other resident, or mental resilience of the resident, as these factors may vary across different settings [46].

Conclusion

This study underscores the significant association between living with family and improved well-being among pediatric residents. Residents cohabiting with family members reported higher LASA scores and lower SF-8 physical and mental component scores, indicating enhanced overall well-being. While the specific mechanisms of familial support were not explored in detail, these findings suggest that such living arrangements may provide emotional and logistical support that mitigates stress during residency. Additionally, the observed correlations among SF-8, LASA, and MBI scores align with the theoretical constructs of these instruments, reinforcing their validity in assessing the well-being of pediatric residents. These results suggest that these tools can be effectively utilized to monitor and address well-being in this population.