Burnout and Associated Factors among Thai Anesthesiology Residents

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ABSTRACT

Objective: The study evaluates the prevalence of burnout and the associated risk factors among Thai anesthesiology residents.

Materials and Methods: This cross-sectional study was conducted by an online questionnaire and sent 385 anesthesiology residents in Thailand. The questionnaire consisted of a consent form, personal information, potential risk factors of burnout, and the Thai version of the Copenhagen Burnout Inventory-Student Survey (CBI-SS).

Results: A total of 248 respondents completed the questionnaire. The overall prevalence of burnout among Thai anesthesiology residents was 35.5%. Sleeping for 5-6 hours (odds ratio 3.68, 95% CI 1.40 to 9.68, p = 0.008), sleeping less than 5 hours (odds ratio 6.89, 95% CI 1.90 to 24.92, p = 0.003), along with dissatisfaction and the idea of discontinuation of training, were associated with higher burnout (odds ratio 8.38, 95% CI 3.65 to 19.25, p < 0.001 and odds ratio 3.11, 95% CI 1.57 to 6.18, p = 0.001, respectively). Compared to first-year residents, second-year residents exhibited a lower risk of burnout (odds ratio 0.32, 95% CI 0.134 to 0.76, p = 0.009) while no significant difference among third-year residents (odds ratio 0.54, p = 0.17, 95% CI 0.25-1.17).

Conclusion: The prevalence of burnout among Thai anesthesiology residents was high. Sleeping less than 7 hours, experiencing dissatisfaction, and contemplating discontinuation of training were associated with a higher risk of burnout, while being a second-year resident lowered the risk.

Keywords: Burnout; anesthesiology; resident; Thailand (Siriraj Med J 2023; 75: 736-743)

INTRODUCTION

Burnout is a work-related syndrome characterized by emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment.[1] It responds to chronic job-related stressors and is exclusively associated with the work environment. Burnout has been associated with strained relationships among team members[2], leading to adverse effects on health and overall quality of life. Physicians have reported increasing levels of stress and burnout[3], which can have detrimental effects on the quality of patient care and potentially contribute to medical errors.[4,5]

Anesthesiologists exhibit a relatively high prevalence of burnout. The prevalence of burnout among anesthesiology varies across studies, ranging from 13.8% for burnout syndrome to as high as a 59% risk of burnout.[6,7] Of particular concern is the high risk of burnout during residency training. A survey conducted among anesthesiology residents in the United States found that 41% were at high risk of burnout.[8] The precise reasons of anesthesia residents' burnout remain unclear. However, it is plausible that they lack experience and need to acquire knowledge, cognitive abilities, and technical skills, as well as adapt to efficient perioperative teamwork, which contributes to this heightened risk.

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Objective: No study has reported on the prevalence of burnout among Thai anesthesia residents. The study objective is to evaluate the prevalence, and possible factors associated with burnout among Thai anesthesia residents.

MATERIALS AND METHODS

Cross-sectional study

Following the approval from the Ethics Committee of Thammasat University (COA No.023/2566), the data collection period took place from January 22, 2023, to February 12, 2023.

Participants

Inclusion criteria were Thai anesthesiology residents who were in the Thai anesthesia training program during the study period. Anesthesia residents who declined to answer the questionnaire were excluded.

Questionnaire

The Questionnaires consisted of four sections: a consent form, personal data, potential risk factors of burnout, and the Thai version of the Copenhagen Burnout Inventory Student Survey (Thai CBI-SS). The questionnaire was developed using the online Google Forms application. A research assistant reached out to the representatives of 14 institutions throughout Thailand that host anesthesia resident training programs to share the online questionnaire with all anesthesia residents. Participants could accept or decline answering it. All responses were collected anonymously. To ensure maximum participation, the research assistant sent reminders once a week for three consecutive weeks.

Participants were asked to furnish details about their demographic characteristics (including gender, age, marital status, years of resident training, underlying disease, income, smoking habits, alcohol consumption, and exercise habits). The potential risk factors of burnout were reviewed in relevant literature.[7,8-10] These factors included working hours, shift hours, adequacy of consultation, sleep duration, workplace resources, job support at work and at home, satisfaction with resident training, an idea to discontinue training, as well as demographic characteristics data. The final section was the Thai version of the Copenhagen Burnout Inventory Student Survey (Thai CBI-SS). The Thai CBI-SS consisted of a comprehensive set of twenty-five questions categorized into four domains: personal burnout (six items), study-related burnout (seven items), colleague-related burnout (six items), and teacher-related burnout (six items). Each item was rated on a five-point Likert scale, ranging from '100 (always)' to '0 (never/almost never)'. Scores between 50 and 74 were categorized as 'moderate' burnout, scores between 75 and 99 were classified as 'high' burnout and a score of 100 indicated severe burnout.

The Copenhagen Burnout Inventory (CBI), developed by Kristensen TS[11], has demonstrated good reliability and validity as a measure of burnout. Winwood and Winefield[12] confirmed that the CBI effectively conceptualizes burnout, and exhibits strong reliability and validity. Moreover, the Copenhagen Burnout Inventory-Student Survey (CBI-SS)[13] has been acknowledged as a reliable and valid instrument for evaluating burnout among medical students. Correlational analyses between CBI-SS and the Maslach Burnout Inventory-Student Survey (MBI-SS), a widely-used standardized tool, have revealed moderate to strong correlations. The CBI-SS has undergone linguistic translation and cultural adaptation into several languages, including Thai. Research has validated the Thai version of the Copenhagen Burnout Inventory-Student Survey (CBI-SS) and demonstrated its reliability as an effective tool for evaluating burnout syndrome among preclinical medical students in Thailand.[14]

Although anesthesia residents are part of a postgraduate training program, in the Thai cultural educational system, Thai residents interact with the staff in a teacher/student relationship. The decision was made to utilize the CBI-SS instead of the CBI because the CBI-ss has a teacher-related burnout question domain.

Statistical analysis

The sample size was calculated based on a previous report of the prevalence of burnout (41%), with an acceptable margin of error (0.05). The calculated sample size was 372. The decision was made to recruit all Thai anesthesia residents at the time of the study, which totaled 385 considering the survey dropout rate. The data were analyzed using StataCorp. Version 17. College Station, TX: StataCorp LLC; 2021. Descriptive statistics summarized the characteristics. Categorical variables were depicted in the form of frequencies and percentages. Continuous variables were described using either means with standard deviations or medians with interquartile ranges. For comparing continuous variables, t-tests or Wilcoxon rank-sum tests were employed. Categorical variables were compared using either chi-square tests or Fisher exact tests. Logistic regression analysis identified predictors of burnout. Univariate associations were initially examined, and factors with a p-value < 0.1 were included in the multivariable logistic regression model to identify independent risk factors. Results were reported as odds ratios with 95% confidence intervals. A p-value < 0.05 indicated statistical significance.

RESULTS

Out of the 385 Thai anesthesia residents from 14 institutions who were invited to participate in the online questionnaire, a total of 250 individuals responded, resulting in a response rate of 64.94%. Among the respondents, 248 participants completed all the questions, while 2 residents declined to answer the questionnaire.

Physician characteristic

The majority of respondents, 200 were female (80.65%). The median age was 29 years old, with a range of 27 to 30 years. Among the respondents, there were 77 first-year residents (31.05%), 77 second-year residents (31.05%), and 94 third-year residents (37.90%) who completed the questionnaire.

Regarding underlying disease, 15 individuals (6.05%), reported underlying diseases including allergic rhinitis, polycystic ovary syndrome, gastritis, obstructive sleep apnea, migraine, and Glucose-6-Phosphate Dehydrogenase deficiency. Five residents (2.02%) had a major depressive disorder. Further details of participant characteristics are shown in Table 1.

Prevalence

The prevalence of burnout among Thai anesthesia residents who responded to the questionnaire was 35.48% (95% CI 0.30 to 0.42), with 33.06% experiencing moderate burnout and 2.42% experiencing high burnout. No participants reported severe burnout. These findings indicate that burnout is a significant concern among Thai anesthesia residents.

Factors associated with burnout

The univariate analysis was conducted to screen factors associated with burnout and found ten factors associated with burnout. The results are presented in Table 2. Following the screening procedure, a multivariable logistic regression analysis was conducted to validate the findings, identifying four significant factors which are sleep duration, year of resident training, dissatisfaction, and having an idea of discontinuation of resident training associated with burnout. The result is shown in Table 3.

Sleeping less than 7-8 hours was identified as a significant risk factor for burnout, particularly among residents who slept less than 5 hours (odds ratio 6.89, 95% CI 1.90 to 24.92, P = 0.003). Additionally, residents who slept for 5-6 hours also had a higher risk of burnout (odds ratio 3.68, 95% CI 1.40 to 9.68, P = 0.008).

Dissatisfaction with resident training and having an idea of stopping resident training were found to be significant risk factors for burnout (odds ratio 8.38, 95% CI 3.65 to 19.25, P = 0.00, and odds ratio 3.11, 95% CI 1.57 to 6.18, P = 0.001, respectively).

Compared to first-year residents, second-year residents had a significantly lower risk of burnout (odds ratio 0.32, 95% CI 0.134 to 0.76, P = 0.009). However, no significant difference was observed between third-year residents and first-year residents (odds ratio 0.54, P = 0.17, 95% CI 0.25 to 1.17).

DISCUSSION

The prevalence of burnout among Thai anesthesiology residents is high at 35.48%, although lower than reported in the United States by Oliveira et al. (41%)[8] and Huaping Sun (51%).[9] Various factors may contribute to this difference, including individual variations, cultural influences, and differences in training programs between countries. Additionally, the study's sample size may have influenced the prevalence rate, as only 66.67% (248 of 372) of the target sample size was recruited. However, this online response rate of 64.94% is higher than the average reported in recent meta-analyses of online surveys which was around 44.1%.[15]

The multivariable logistic regression analyses identified factors including sleeping time, year of training, satisfaction with the training program, and the idea of discontinuation of training that were significantly associated with burnout among Thai anesthesiology residents. The results align with previous research[10,16] that has found an association between insufficient sleep and increased risk of burnout. In this study, sleeping less than 7 hours increased the burnout risk. Insufficient sleep can have various physical, cognitive, and emotional effects that increase stress levels and make individuals more susceptible to burnout. While this study focused on sleep duration, Hannah K. Allen[17] has found an association between the poor quality of sleep which is characterized by difficulties falling asleep or frequent awakenings, and burnout. Additionally, Chatlaong T found an association between sleep quality and emotional exhaustion, which is a component of burnout among resident trainees.[18] However, our questionnaire evaluated only the duration, not the quality, of sleep. It would be valuable for future studies to consider evaluating both sleep duration and quality to provide more understanding of the relationship between sleep and burnout.

According to the research conducted by Huaping Sun and De Oliveira GS[8,9], it was discovered that an increase in the age of physician trainees corresponded to a reduced risk of experiencing burnout. The second-year residents had a significantly lower risk of burnout compared to first-year residents, while there was no

TABLE 1. Descriptive statistics of respondent characteristics.

Characteristic	N 248
Sex	
Male	48 (19.35)
Female	200 (80.65)
Year of resident training	
3rd year	94 (37.90)
2nd year	77 (31.05)
1st year	77 (31.05)
Age	29 (27-30)
Marital status	
Single	139 (56.05)
Married	17 (6.85)
In relationship	92 (37.10)
Have children	5 (2.02)
Have underlying disease	15 (6.05)
Have Psychological disease	5 (2.02)
Smoking	2 (0.81)
Alcohol drinking	128 (51.61)
Exercise	
Routine	16 (6.45)
Sometimes	125 (50.4)
No	107 (43.15)
Official working hours per month	
>160	119 (47.98)
128-160	115 (46.37)
80-120	14 (5.65)
Shifts hours per month	
>160	13 (5.24)
128-160	54 (21.77)
88-120	73 (29.44)
40-80	97 (39.11)
<40	11 (4.44)
Income	
Enough to save	8 (3.23)
Enough to spend	75 (30.24)
Not enough	165 (66.53)
Sleeping time (hours)	
7-8	31 (12.50)
5-6	169 (68.15)
<5	48 (19.35)
Dissatisfaction with resident training	62 (25)
Having thought about discontinuing training*	114 (45.97)
Job support at home	
No support	198 (79.84)
Not enough	43 (17.34)
Enough	7 (2.82)
Job support at work	
No support	75 (30.24)
Not enough	153 (61.69)
Enough	20 (8.07)
Resource for working	
Not enough	118 (47.58)
Enough but not easy to use	92 (37.10)
Enough and easy to use	38 (15.32)
Consultation	
No consultation	122 (49.19)
Not enough	95 (38.31)
Enough	31 (12.5)

Data are presented as number (%) or median (range). *One piece of data is missing from the answers of 248 participants.

significant difference among third-year residents. A possible explanation for this finding is that second-year residents have had more time to adapt to their work, studies, and interactions with colleagues and the work environment. They may have gained more experience and developed better coping strategies, which could contribute to a lower risk of burnout. On the other hand, first-year residents are faced with the challenges of acquiring new knowledge and navigating stressful situations which could increase their risk of burnout. Interestingly, our study did not find a significant difference in burnout risk between first-year and third-year residents. This could be attributed to the fact that third-year residents carry higher responsibilities, face greater expectations, and need to maintain high levels of concentration as they prepare for the board-certified examination. These factors may offset the additional experience they have gained.

Residents who expressed dissatisfaction with the training program and considered discontinuing their training had a significantly higher risk of burnout. The association between burnout and job satisfaction has been observed in previous studies, such as Govardhan LM's study, which found an inverse correlation between burnout

TABLE 2. Univariate analysis for factors associated with burnout.

Variable	Risk of burnout	Univariate		
		P value	OR	95%CI
Gender				
Female	68 (34.00)	0.32	0.72	0.38-1.37
Male	20 (41.67)			
Age		0.626	1.04	0.90-1.20
Year of resident training				
3rd year	31 (32.98)	0.020	0.48	0.26-0.89
2nd year	18 (23.38)	0.001	0.30	0.15-0.59
1st year	39 (50.65)			
Marital status				
Married	6 (35.29)	0.573	0.74	0.26-2.11
In relationship	23 (25.00)	0.007	0.45	0.25-0.81
Single	59 (42.44)			
Have children				
Yes	2 (40.00)	0.831	1.22	0.20-7.42
No	86 (35.39)			
Underlying disease				
Yes	8 (53.33)	0.144	2.19	0.77-6.24
No	80 (34.33)			
Psychological disease				
Yes	2 (40.00)	0.831	1.22	0.20-7.42
No	86 (35.39)			
Smoking				
No	88 (35.77)	0.540		
Yes	0 (0.00)			
Alcohol drinking				
Yes	44 (34.38)	0.706	0.9	0.54-1.52
No	44 (36.67)			
Exercise				
Sometimes	49 (39.20)	0.140	1.51	0.87-2.61
Regular	7 (43.75)	0.272	1.82	0.62-5.32
No	32 (29.90)			
Income				
Not enough	5 (62.50)	0.056	4.18	0.96-18.21
Enough for spending	36 (48.00)	0.004	2.32	1.32-4.08
Enough for saving	47 (28.48)			
Official working hours per month (hour)				
>160	58 (48.74)	0.017	12.36	1.57-97.51
128-160	29 (25.22)	0.163	4.38	0.55-34.99
80-120	1 (7.14)			

TABLE 2. Univariate analysis for factors associated with burnout. (Continue)

Variable	Risk of burnout	Univariate		
		P value	OR	95%CI
Shift hours per month				
>160	4 (30.77)	0.851	1.19	0.20-6.99
128-160	14 (25.93)	0.926	0.93	0.22-4.02
88-120	19 (26.03)	0.930	0.94	0.23-3.91
40-80	48 (49.48)	0.174	2.61	
<40	3 (27.27)			
Sleeping time (hour)				
<5	20 (64.52)	<0.001	6.91	2.51-19.03
5-6	58 (34.32)	0.079	1.99	0.92-4.27
7-8	10 (20.83)			
Resource for working				
Not enough	21 (55.26)	0.003	3.18	1.50-6.77
Enough but not easy to use	34 (36.96)	0.167	1.51	0.84-2.71
Enough and easy to use	33 (27.97)			
Consultation				
No consultation	20 (64.52)	<0.001	4.71	2.04-10.85
Not enough	34 (35.79)	0.213	1.44	0.81-2.57
Enough	34 (27.87)			
Satisfaction with resident training				
Dissatisfy	46 (74.19)	<0.001	9.86	5.07-19.16
Satisfy	42 (22.58)			
Having thought about discontinuing training				
Yes	66 (57.89)	<0.001	6.94	3.85-12.51
No	22 (16.54)			
Job support at home				
No support	3 (42.86)	0.769	1.26	0.27-5.77
Not enough	11 (25.58)	0.146	0.58	0.27-1.21
Enough	74 (37.37)			
Job support at work				
No support	14 (70.00)	<0.001	12.25	3.92-38.24
Not enough	62 (40.52)	<0.001	3.58	1.78-7.18
Enough	12 (16.00)			

CI = confidence interval, OR = odds ratio, significant at P ≤0.0, risk of burnout are presented as number (%)

and job satisfaction among obstetrics and gynecology residents.[19] Factors contributing to job satisfaction are influenced by various details. Unfortunately, our questionnaire did not explore the specific reasons behind residents' dissatisfaction or desire to discontinue training. Further research is needed to investigate these causes for improvement in training programs.

Regarding other factors related to burnout, some previous studies have reported factors to be associated with an increased risk of burnout, such as younger age[20-22], female gender[8,20], marital status[21], having children[22], high alcohol consumption[8], lack of job support[7,21], and high workload.[7-9,22] Conversely, having sufficient work resources has been found to decrease the risk of burnout[9].

TABLE 3. Multivariable logistic regression analysis for factors associated with burnout.

Associated factors	Multivariable analysis		
	OD	95%CI	P value
Year of resident training			
1st year			
2nd year	0.32	0.134-0.76	0.009
3rd year	0.54	0.25-1.17	0.17
Sleeping time (hour)			
<5	6.88	1.90-24.93	0.003
5-6	3.68	1.40-9.68	0.008
7-8			
Satisfaction with resident training			
Dissatisfy	8.38	3.65-19.25	0.00
Satisfy			
Thought of discontinuing training			
Yes	3.112	1.57-6.18	0.001
No			

CI = confidence interval, OR = odds ratio, significant at P ≤0.05

However, our investigation yielded no significant association between these factors and burnout, which is consistent with findings from several other studies that reported no association between burnout and female gender[21,22] or marital status.[8] Regarding workload, we did not find a significantly increased risk of burnout, despite the association reported in many studies. One possible explanation could be the way the question was asked, which separated official work hours and shift hours per month, rather than capturing all the working hours per week. This might have made it challenging to accurately estimate the exact workload per week and could have influenced the results.

The present study has several limitations. Firstly, the study relied on self-reported data, which introduces the possibility of social desirability bias. Secondly, the sample size was lower than the calculated sample size. This could have affected the generalizability of the findings. The smaller sample size could also have limited the statistical power to detect significant associations. Thirdly, the unclear wording of questions regarding working hours may adversely impact the result. Lastly, the study did not explore certain potential risk factors in depth, such as the quality of sleep or the specific reasons for dissatisfaction with the training program. Future research could be conducted to explore the factors contributing to burnout. This research would help in developing suitable support measures to support residents.

In conclusion, the prevalence of burnout among Thai anesthesiology residents was high. Sleeping less than 7 hours, experiencing dissatisfaction, and contemplating discontinuation of training were identified associated with a higher risk of burnout, while being a second-year resident lowered the risk.

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Conflict of interest statement

The authors declare no conflict of interest

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