

Short Communication

Burnout and study engagement among medical students during COVID-19 pandemic: A cross-sectional study in Aceh, Indonesia

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Abstract

Medical students are particularly vulnerable to burnout due to the demanding and resource-constrained nature of their training. Burnout negatively impacts academic and personal well-being, potentially impacting future professional practice and patient care. To date, no studies have examined burnout prevalence among medical students in Aceh. The aim of this study was to determine the association between burnout and academic engagement among medical students at Syiah Kuala University, as well as the relationship with age, sex, and year of study. This cross-sectional study was conducted among medical students in Aceh, Indonesia, between October 1, 2021, and March 13, 2022. Total sampling was employed to select study participants. Data were collected using an e-questionnaire using the Oldenburg Burnout Inventory questionnaire adapted for students (OLBI-S) and Utrecht Work Engagement Scale for Students (UWES-S-9) for academic engagement. The total number of participants was 286 students. Most participants were female (n=202, 70.6%), while male students were 84 (29.3%). The prevalence of burnout was 36% (n=102). Gender ($p=0.65$) and study year ($p=0.62$) were not associated with disengagement, a subscale of the OLBI-S. Similarly, exhaustion scores did not differ significantly by gender ($p=0.48$) or study year ($p=0.28$). In conclusion, fewer than half of the medical students experienced burnout during the COVID-19 pandemic, with no association found between burnout and gender or study year.

Keywords: Burnout, study engagement, university student, COVID-19, cross-sectional study

Introduction

At the beginning of the new decade, the World Health Organization (WHO) declared a global public health emergency against the outbreak of coronavirus disease, known as Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-2), which quickly progressed to pandemic status. The initial cases were reported in Wuhan, Hubei Province, China, where individuals presented with flu-like symptoms [1]. The virus primarily spreads through direct contact and airborne droplets, with transmission rates greatly accelerated in crowded places such as universities [2]. Consequently, national and international authorities implemented stringent measures to reduce the risk of transmission, including restrictions on social gatherings [3]. Organizations such as the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the Office of the



United Nations High Commissioner for Human Rights (OHCHR), the International Federation of Red Cross and Red Crescent Societies (IFRC), and the WHO have issued strict guidelines in attempts to get the pandemic under containment through social distancing, travel measures, and a temporary closures of the universities during pandemic disasters, to limit the rapid transmission of the coronavirus disease 2019 (COVID-19). These measures encouraged countries to use online learning as alternative education settings that are well-prepared, acceptable, adaptable, and open to everyone at colleges and universities [4]. This unprecedented disruption and uncertainty in educational modalities and daily life during the COVID-19 pandemic adversely affected mental health, leading to increased symptoms of anxiety, depression, stress, and burnout among the population [5,6].

Generally, burnout is a psychological condition characterized by prolonged exposure to chronic emotional and interpersonal stressors, particularly in the workplace, leading to fatigue, inability to fulfill job demands, and disengagement from others [7]. Burnout is characterized by three key dimensions: emotional exhaustion, enhanced feelings of inefficacy (sometimes referred to as decreased personal accomplishment) and depersonalization (often known as cynicism) [5,8]. Emotional exhaustion is described as a sense of being overburdened and drained of one's emotional resources. Cynicism, also known as depersonalization, is distinguished by a negative, cynical, detached response to other individuals, including classmates, coworkers, patients, or clients [5,8,9]. A reduction in individual accomplishment happens when an individual feels less competent in their profession. Health workers, such as nurses, residents, and specialist doctors, are highly vulnerable to burnout and its consequences, specifically poor well-being and reduced work engagement [9]. Moreover, burnout has negatively impaired both academic performance and the general well-being of medical students. Studies conducted in countries such as Lebanon and Spain have reported that at least 75% of medical students experience burnout at some point throughout their studies, largely due to the huge number of lectures, clinical duties, and limited time [6,10,11]. Additionally, the COVID-19 pandemic introduced further stressors, including stress of staying home during lockdown, online learning, lack of regular social interaction, and fear of infection. These factors qualifies medical students as the most vulnerable to stress, burnout, and psychological problems [5,8,11-13]. Therefore, the aim of this study was to explore the effects of the COVID-19 outbreak on burnout and academic engagement among medical students at the faculty of medicine, Universitas Syiah Kuala.

Methods

Study design and setting

This cross-sectional study was conducted among active third- and fourth-year medical students at Universitas Syiah Kuala, Banda Aceh, Indonesia, from October 1, 2021, to March 13, 2022. Total sampling was used according to the inclusion criteria, resulting in the enrollment of 286 students from the 2021/2022 academic year. Data were collected via a self-administered questionnaire distributed through WhatsApp (WhatsApp Inc., Menlo Park, California, USA) in collaboration with each batch/class leader at the Faculty of Medicine. All participants provided informed consent prior to participation.

Questionnaire and data collection

The respondents were provided with two types of questionnaires: the Oldenburg Burnout Inventory adapted for students (OLBI-S) [14] and Utrecht Work Engagement Scale for Students (UWES-S-9) [15]. The OLBI-S was used to assess participants' burnout levels. This self-report instrument measures academic burnout across two dimensions: exhaustion (resulting from study demands) and disengagement (attitudinal detachment from academic studies). It consists of 16 items (eight in each dimension). Participants were asked to rate each item on a 4-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Scores for each burnout dimension were calculated separately, with cut-off values of 2.25 for exhaustion and 2.10 for disengagement; overall burnout scores were not combined. The UWES-S-9 was used to evaluate study engagement by measuring three-item scales: Vigor (VI), Dedication (DE), and Absorption (AB),

each assessed with three items. Participants rated the frequency of each experience on a scale from 0 (never) to 6 (always).

Data analysis

Descriptive statistics, including frequency counts and percentages, were performed to describe the sample. Characteristics of the participants were defined according to the demographic variables, such as sex, level or grade, and age. Bivariate statistics were conducted using Pearson’s correlation and independent t-tests to compare group differences. All statistical analyses were performed using SPSS version 23 (IBM Corp., New York, USA).

Results

A total of 301 out of 306 medical students responded to the questionnaire, yielding a response rate of 98.3%. The demographic characteristics of the participants are presented in **Table 1**. Fifteen students reported psychological problems (six with depression, and others with insomnia, anxiety, or stress) and were excluded from the study due to not meeting the inclusion criteria, resulting in a final sample of 286 students. Most participants were female (202; 70.6%), while 84 (29.3%) were male. The mean age was 20.6±0.8 years (range: 18–24). Approximately 49.3% (n=141) were fourth-year students, and 50.6% (n=154) were third-year students. Based on the cut-off values of 2.25 for exhaustion and 2.10 for disengagement, none of the respondents fell under the disengaged and exhausted groups. A total of 102 students (36%) were classified as experiencing burnout, while 96 (34%) were categorized as non-burnout.

Table 1. Demographic characteristics, disengagement, and exhaustion of the students (n=286)

Variable	n (%)
Sex	
Male	84 (29.3)
Female	202 (70.6)
Age, mean±SD (years old)	20.64±1.02
Study year	
Third year	141 (49.3)
Fourth year	145 (50.6)
Disengagement score	
Scores <2.1	96 (34)
Scores ≥2.1	190 (66)
Exhaustion score	
Scores <2.25	184 (64)
Scores ≥2.25	102 (36)
Disengaged group	0 (0)
Exhausted group	0 (0)
Non-burnout group	96 (34)
Burnout group	102 (36)

Burnout group: high exhaustion and high disengagement; disengaged group: low exhaustion and high disengagement; exhausted group: high exhaustion and low disengagement; non-burnout group: low exhaustion and low disengagement

The correlations between burnout and study engagement are presented in **Table 2**. No significant associations were observed on vigor ($p=0.94$), dedication ($p=0.94$), absorption ($p=0.58$), and UWES-total score ($p=0.85$) with disengagement. Similarly, vigor ($p=0.39$), dedication ($p=0.41$), absorption ($p=0.29$), and UWES-total score ($p=0.43$) were not significantly associated with exhaustion. Further, vigor ($p=0.84$), dedication ($p=0.86$), absorption ($p=0.55$), and UWES-total score ($p=0.84$) were not associated with OLBI-total score. The associations between burnout and gender and study year were also analyzed, and the results are presented in **Table 3**. The mean disengagement scores were 2.3±0.4 for males and 2.3±0.3 for females, with no significant difference between sexes ($p=0.65$). Similarly, there was no significant difference in exhaustion scores between males and females ($p=0.48$). Disengagement scores were also statistically insignificant between third- and fourth-year students (both 2.3±0.3; $p=0.62$), as were exhaustion scores ($p=0.28$).

Table 2. Correlation between burnout and study engagement

	Disengagement		Exhaustion		OLBI-total	
	r	p-value	r	p-value	r	p-value
Vigor	0.004	0.94	0.017	0.39	0.01	0.84
Dedication	-0.005	0.94	-0.014	0.41	-0.01	0.86
Absorption	-0.033	0.58	-0.033	0.29	-0.03	0.55
UWES-total	-0.012	0.85	-0.011	0.43	-0.01	0.84

OLBI: Oldenburg Burnout Inventory; UWES: Utrecht Work Engagement Scale

Table 3. Comparison of burnout and study engagement

Variables	Disengagement		Exhaustion	
	Mean±SD	p-value	Mean±SD	p-value
Gender				
Male	2.3±0.42	0.65	2.2±0.49	0.48
Female	2.3±0.42		2.2±0.47	
Study year				
Third year	2.3±0.39	0.62	2.2±0.49	0.28
Fourth year	2.3±0.39		2.2±0.40	

Statistical significance was assessed using the independent t-test

Discussion

The prevalence of burnout among undergraduate medical students in this study was relatively low (36%). This number is lower than a previous study comparing the mental health and well-being of 1,729 medical students from 29 medical schools across various regions in Indonesia [16]. It reported high levels of burnout and minor mental health problems among Indonesian medical students [16]. Regional differences in burnout were also explored, revealing that medical students from Sumatra had lower burnout scores compared to all other regions except Sulawesi [16]. In contrast, students from Jakarta and West Java exhibited higher levels of burnout and psychiatric symptoms [16].

The authors concluded that the lower reported stress levels in Sumatra may be associated with the reduced burnout and psychiatric symptoms observed in that group. Similarly, the current study found that respondents from Jakarta and West Java reported more stressors and higher levels of burnout. The lower level of burnout among Sumatran medical students was attributed to their smaller numbers and reduced competition, which may relate to differences in academic expectations, as Sumatran students reported the lowest rates of study-related stress.

The regional variation in the level of burnout may also reflect cultural adjustment challenges. The authors noted, “Many students come from other cities or even different islands in Indonesia to enter university, especially in Jakarta and West Java. For first-year students, cultural differences can be a great shock. Alongside these psychosocial adjustments, academic pressure may also be high”. Shanafelt *et al.* [17] studied the prevalence of burnout among American physicians compared to the general population, finding that 37.9% of physicians experienced symptoms of burnout versus 27.8% of the general population. This aligns with our current findings. Other studies have reported a higher prevalence of burnout than the current results [18-20]. Chen *et al.* [21] found the prevalence of burnout was 55% among medical students, which exceeds the rate observed in the current study.

Well-being and mental health among medical students in Jordan were investigated by Masri *et al.* [22], who reported a high level of exhaustion (91%) and disengagement (87%). They further indicated that 10% of Jordanian medical students develop or are formally diagnosed with a mental illness during their medical education. Similarly, burnout among medical students in Nepal was investigated by Shrestha *et al.* [20] who reported a prevalence of 65.9%. The high prevalence was attributed to the timing of the study during the COVID-19 pandemic, as well as factors such as curriculum differences, instructional methods, available resources, and other institutional and personal factors. Differences in burnout prevalence between studies may also stem from variations in measurements tools and sociocultural contexts.

At Universitas Syiah Kuala, rapid adoption of distance e-learning served as a suitable alternative to traditional learning methods to maintain high-quality medical education. Despite challenges related to infrastructure and institutional strategies, the Faculty of Medicine

successfully implemented computer-base learning, virtual classrooms, recorded lectures, online consultations, and online training for medical skills development. Additionally, the extended family support system common in Aceh may serve as a solid buffer against stress and burnout. These factors may explain the lower burnout prevalence observed at Universitas Syiah Kuala and in Aceh region.

The present study found no association between sex and burnout, consistent with previous reports [23,24]. In contrast, findings by Thun-Hohenstein *et al.* [25] and Fares *et al.* [26] indicated higher burnout rates in females compared to males. This study showed no significant association between burnout and study level because both third and fourth medical students at our institution come through the same learning methods from exams, either lectures or skills laboratories. This aligns with findings reported by Shrestha *et al.* [20]. However, it differs from the results of Fitzpatrick *et al.* [27] and Nteveros *et al.* [28], who observed an increasing trend in the burnout prevalence throughout medical studies. These differences between studies can be attributed to a variety of factors, such as competitiveness, high-stress atmosphere, extra workload, frantic program, and a variety of other personal or institutional reasons.

This study was limited to the third- and fourth-year medical students who had not been assigned to a clerkship in the hospital. Further study is required to investigate the involvement of preclinical and clinical students across Indonesia.

Conclusion

The prevalence of burnout among Universitas Syiah Kuala's medical students during COVID-19 pandemic was 36%. No significant associations were found between burnout and study engagement, sex, or study year. These findings highlight the need for targeted interventions to address burnout among medical students, regardless of demographic or academic variables. Universities should prioritize the development of supportive programs and mental health resources to promote well-being and resilience, especially during times of disruption such as the pandemic. Further research involving a broader student population and longitudinal studies is warranted to better understand burnout dynamics and inform effective prevention strategies.

Ethics approval

Ethical clearance was obtained from the Institutional review board committee (IRB) at Syiah Kuala University, Banda Aceh, Indonesia, IRB number: 398/EA/FK-RSUDZA/2021. All respondents were informed of the intent and objectives of the study by including written informed consent within the questionnaire. Respondents were notified that their participation was voluntary. Participants' confidentiality is ensured.

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Competing interests

Authors have no known conflicts of interest in relation to the publication of this work.

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Underlying data

Data underlying this study can be requested from the corresponding authors upon reasonable requests.

Declaration of artificial intelligence use

We hereby confirm that no artificial intelligence (AI) tools or methodologies were utilized at any stage of this study, including during data collection, analysis, visualization, or manuscript

preparation. All work presented in this study was conducted manually by the authors without the assistance of AI-based tools or systems.

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