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Original Article

Navigating Academic Burnout: Insights from Health Information Technology Students at Shiraz University of Medical Sciences in 2023

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Abstract

Introduction: Academic burnout impacts students' mental health, academic achievement, and involvement in education. This research aimed to evaluate academic burnout among health information technology students and identify its associated factors. The results could guide interventions to decrease burnout and enhance students' well-being.

Methods: In this cross-sectional study conducted in 2023, students studying health information technology at Shiraz University of Medical Sciences were invited to fill out a 22-item questionnaire (6 demographic items and 15-item Maslach et al.'s academic burnout questionnaire). Data were collected through a census method and analyzed via SPSS software (version 26). Bivariate analyses were conducted using the Kruskal-Wallis and Mann-Whitney U tests, with a significance level set at a P-value below 0.05.

Results: In total, 99 health information technology students with a mean age of 22.28± 4.4 years participated in this study. BSc students had the highest total academic burnout score (61.34±11.22), significantly exceeding those of MSc (53.50±3.17) and PhD students (52.20±2.04). Furthermore, academic burnout scores for students enrolled from 2019 to 2021 were higher than those of students who enrolled in 2022. The average academic burnout score across all students was 60.17±10.76, indicating a moderate level of burnout. Furthermore, age, marital status, residence in the university location, educational level, and the year of enrollment were significantly associated with the total mean score of academic burnout.

Conclusion: Given the moderate level of academic burnout among health information technology students, policymakers are recommended to implement immediate interventions to create a supportive educational environment for them.

Keywords: Academic burnout, Health information technology, Health information management, Students, Iran

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Introduction

Academic burnout (AB) has emerged as a critical problem for students across various fields (1).

It adversely affects their performance and overall well-being, leading to diminished learning outcomes, increased dropout rates, wasted resources, and numerous challenges within the educational system (1).

Academic burnout, characterized by persistent physical, emotional, and mental fatigue due to prolonged academic stress, comprises three main

dimensions: emotional exhaustion, cynicism, and reduced personal accomplishment (2-5). Other symptoms may include diminished creativity, frequent illnesses, and heightened feelings of anxiety or depression (2-5). It has also been shown to have lasting effects, as research indicates that students who experience burnout during their education are more likely to be less effective in their future careers and have a greater chance of quitting their jobs or being dismissed after being hired (6-10).

Recent studies have highlighted the alarming prevalence of academic burnout among health sciences students, particularly in medical and allied health fields. A systematic review by Almutairi et al. (2024) reported that burnout prevalence among medical students ranges from 5.6% to 88%, with significant variations by gender and academic stage. For instance, in Iran, 80.7% of female medical students reported experiencing burnout, compared to 56.2% of male students in southern Saudi Arabia. Additionally, burnout is more prevalent among clinical-year students than pre-clinical students, with rates of 8.3% versus 2.8% in Mexico and 35% versus 26% in Ireland (11). These findings underscore the urgent need to address academic burnout in health sciences education to safeguard students' mental health and academic success.

Further research has identified predictors and protective factors for academic burnout. A 2024 study by Hill et al. described burnout as a "vicious cycle" of busyness and stress without self-awareness, leading to personality changes, exhaustion, and "brain fog" among early-year medical students. Systemic factors, such as fast-paced curricula, stigma around mental health in medical professions, and isolation due to peers' perceived success, were identified as key drivers. A reflection-based intervention in this study improved students' awareness of burnout and encouraged them to adopt management strategies, highlighting the value of integrating such interventions into curricula (12). Additionally, a 2023 study by Liu et al. found that 59.9% of university students in China experienced academic burnout, with higher rates among male students and those in later academic years. Predictors included monthly living expenses, smoking, parental education levels, academic and life pressures, and lack of interest in professional knowledge, while protective factors such as social and emotional support, access to counseling services, and physical exercise mitigated burnout symptoms (13).

According to the evidence, several factors contribute to this phenomenon, which can be categorized into five domains: educational and institutional factors, individual characteristics, social and emotional factors, home and family environment, and lifestyle choices (14). While much of the literature focuses on medical students, the pressures and stressors in other health sciences disciplines, such as Health Information Technology (HIT), are comparable due to the challenging curriculum that integrates biological sciences, computer systems, and healthcare management. However, there remains a significant gap in the literature regarding academic burnout among HIT students. This should be given a higher level of importance, among healthcare students, especially those in the Health Information Technology (HIT) program, as this field plays a vital role in enhancing patient care, increasing efficiency, and lowering costs within healthcare systems, ultimately leading to improved outcomes for future health services. Assessing the students' burnout in this discipline and pinpointing its contributing factors can assist policymakers and decision-makers in developing targeted strategies to address the issue and fostering a healthier learning environment that supports academic achievement. Therefore, this study aimed to evaluate AB and the various factors contributing to it among all students in the HIT program at Shiraz University of Medical Sciences (SUMS). The following research questions are posed:

1- What is the total mean score of AB and its dimensions among HIT students at SUMS?

2- Do HIT students with a higher level of education attain higher AB scores compared with those with lower levels of education?

3- In which enrollment years did HIT students achieve higher AB scores?

4- What demographic factors are associated with AB and its dimensions among HIT students at SUMS?

Methods

Setting and Participants

This analytical cross-sectional study which conducted between 2022 and 2023 targeted all 99 HIT students at SUMS enrolled between 2019

and 2022; we used a census method for data collection. Initially, the researchers received a contact list of HIT students from the academic affairs administration of SUMS. They utilized this list to reach out to the students, providing them with an explanation of the study objectives. All individuals who were contacted agreed to participate, resulting in no exclusion from the study.

Data Collection

Data were collected using a 22-item questionnaire comprising two sections: seven demographic questions (covering age, gender, marital status, employment status, educational level, residence in the university location, and year of enrollment) and the 15-item Maslach Burnout Inventory (MBI) adapted for students (12). The MBI, previously validated in its Farsi translation, measures three dimensions of academic burnout: emotional exhaustion (items 1–5), cynicism (items 6–9), and reduced personal accomplishment (items 10–15). The reliability of the Farsi version was re-evaluated in this study, yielding a Cronbach's alpha of 0.767. The questionnaire was administered in Persian using a paper-based format and distributed in person to all 99 Health Information Technology (HIT) students at Shiraz University of Medical Sciences (SUMS). Researchers provided participants with clear instructions and ensured anonymity during data collection. All participants completed and returned the questionnaires during in-person sessions, resulting in a 100% response rate.

Data Analysis

Data analysis was conducted using IBM SPSS Statistics software (version 26). Descriptive statistics regarding AB and its dimensions are displayed in Table 1. The Shapiro-Wilk Test was used to assess whether the data followed a normal distribution. The outcome showed a significance level below 0.05, suggesting that non-parametric statistical tests should be employed. Then, bivariate analysis was conducted using the Kruskal-Wallis and Mann-Whitney U tests. Both tests were two-sided, with a $P<0.05$ considered as statistically significant. Additionally, two figures and tables were used to illustrate the mean scores of students' AB across three dimensions, as well as the total amount, categorized by their level of education and year of enrollment.

Ethical Considerations

The study proposal received approval from the Ethics Committee affiliated with SUMS, Shiraz, Iran, under the reference code of IR.SUMS.NUMIMMG.REC.1402.110. Designing an anonymous questionnaire, ensuring researcher access, and upholding participants' privacy and confidentiality, along with the principles outlined in the Declaration of Helsinki, were carefully adhered to in this study. Furthermore, the study highlighted the importance of voluntary participation, ensuring that written informed consent was obtained from each individual. Participants were also informed that they could withdraw from the study at any time they wished without any consequences.

Results

In this study, 99 students from HIT, with a mean age of 22.28 years (SD=4.4), participated. The demographic breakdown revealed that 25 students (25.3%) were male, 88 students (88.9%) were single, 20 students (20.2%) were employed, and 41 students (41.4%) were local to the university location. Additionally, 82 students (82.8%) were pursuing Bachelor's degrees, while 12 students (12.1%) were enrolled in Master's programs, and 5 students (5.1%) were working towards their PhDs. Furthermore, considering the year of enrollment, 5 students (5.1%) began their studies at SUMS in the year 2019, 30 (30.3%) in 2020, 28 (28.3%) in 2021, and 36 (36.3%) in 2022.

The participants' responses to this questionnaire are detailed and displayed in Table 1.

As to the second research question of this study, the following Figure and Table illustrate a comparison of the mean scores of students' AB across various dimensions, along with the total scores, categorized by the students' educational levels. Considering the education levels of the participants, students pursuing a Bachelor's degree recorded the highest mean score in total AB, with Master's and PhD candidates following behind. In addition, within all three dimensions of AB, the mean score for the third dimension exceeded those of the other two at each educational level. Importantly, the total mean AB score for students across all educational levels varied between 45 and 75, indicating a moderate level of AB among them (Table 2, Figure 1).

Table 1: Participants' responses to the Maslach et al.'s AB questionnaire (n = 99)

Question number	Question	Never N (%)	Rarely N (%)	Sometimes N (%)	Neutral N (%)	Often N (%)	Very often N (%)	Always N (%)
Emotional exhaustion								
Q1	I feel that I am exhausted due to the activities related to education.	24 (24.)	19 (19.2)	8 (8.1)	30 (30.3)	15 (15.2)	1 (15)	2 (15)
Q2	Since enrolling in the university, I have lost interest in the courses.	18 (18.2)	29 (29.3)	18 (18.2)	11 (11.1)	7 (7.1)	10 (10.1)	6 (6.1)
Q3	I can solve problems that arise in study-related activities.	4 (4)	8 (8.1)	12 (12.1)	4 (4)	23 (23.2)	38 (38.4)	10 (10.1)
Q4	At the end of a school day at my school I feel tired and exhausted.	11 (11.1)	13 (13.1)	5 (5.1)	15 (15.2)	24 (24.2)	19 (19.2)	12 (12.1)
Q5	My enthusiasm for lessons has decreased.	13 (13.1)	26 (26.3)	16 (16.2)	21 (21.2)	9 (9.1)	10 (10.1)	4 (4)
Emotional indifference								
Q6	I believe that I have an effective participation and contribution in the classes I attend.	7 (7.1)	15 (15.2)	11 (11.1)	17 (17.2)	16 (16.2)	23 (23.2)	10 (10.1)
Q7	Studying or attending class makes me feel exhausted.	16 (16.2)	29 (29.3)	4 (4)	14 (14.1)	20 (20.2)	15 (15.2)	1 (15)
Q8	I think I am a good student	0 (0)	4 (4)	10 (10.1)	26 (26.3)	24 (24.2)	23 (23.2)	12 (12.1)
Q9	I have learned many interesting things in the course of studying my lessons.	0 (0)	7 (7.1)	9 (9.1)	24 (24.2)	33 (33.3)	17 (17.2)	9 (9.1)
Emotional inefficiency								
Q10	When I wake up in the morning and have to spend another day at my place of study, I feel bored and tired.	20 (20.2)	15 (15.2)	8 (8.1)	28 (28.3)	9 (9.1)	12 (12.1)	7 (7.1)
Q11	I have become very pessimistic about the usefulness and potential benefit of my lessons.	22 (22.2)	17 (17.2)	4 (4)	29 (29.3)	15 (15.2)	8 (8.1)	4 (4)
Q12	When I achieve my academic goals, I feel excited.	4 (4)	1 (15)	2 (15)	22 (2.2)	25 (25.3)	25 (25.3)	20(20.2)
Q13	Studying or attending class really puts pressure on me.	0 (0)	35 (35.4)	10 (10.1)	34 (34.3)	8 (8.1)	6 (6.1)	6 (6.1)
Q14	I have doubts about the importance of my lessons.	12 (12.1)	9 (9.1)	22 (22.2)	27 (27.3)	18 (18.2)	6 (6.1)	5 (5.1)
Q15	I am sure that I am effective in doing the activities in the class.	1 (15)	9 (9.1)	9 (9.1)	24 (24.2)	24 (24.2)	23 (23.2)	9 (9.1)

Table 2: The AB Scores and its Dimensions by the Students' Level of Education

Level of education	Emotional Exhaustion Mean±SD	Emotional indifference Mean±SD	Emotional Inefficiency Mean±SD	Total AB Mean±SD
BSc	19.32±6.19	17.47±4.11	24.82±4.62	61.34±11.22
MSc	16.33±2.34	16.50±1.31	20.66±2.83	53.50±3.17
PhD	15.20±2.16	17.0±1.0	20.0±2.73	52.20±2.04
All	18.75±5.84	17.33±3.78	24.08±4.64	60.17±10.76

A similar figure was also designed to answer the third research question of this study. It illustrates a comparison of the mean scores of students' AB across different dimensions and in total, categorized by their year of enrollment. According to the figure below, students who enrolled between 2019 and 2021 achieved significantly higher AB scores than those who enrolled in 2022. The total mean scores of AB across years were in a moderate range, namely between 45 and 75. Additionally, among the three dimensions of AB, the mean score of the third dimension was the highest, followed by the first and the second dimensions, regardless of the students' enrollment year (Table 3, Figure 2).

Table 4 indicates that age, employment status, education level, and year of enrollment are significantly associated with the emotional exhaustion score (first dimension), ($P<0.05$).

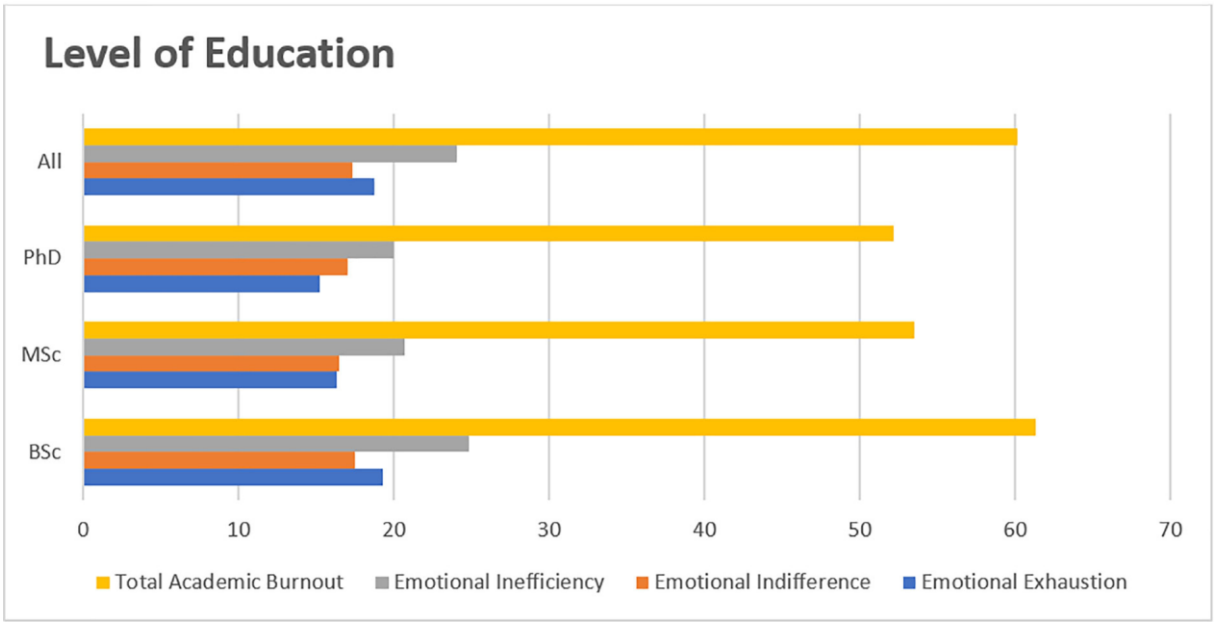

Figure 1: The AB Scores and its Dimensions by the Students' Level of Education

Table 3: The AB Scores and its Dimensions by the Year of Enrollment (2019-2022)

Year of Enrollment	Emotional Exhaustion Mean±SD	Emotional indifference Mean±SD	Emotional Inefficiency Mean±SD	Total AB Mean±SD
2019	22.40±4.61	18.20±2.04	24.60±3.91	65.20±5.93
2020	19.36±5.35	18.00±3.03	25.46±4.91	62.83±10.81
2021	20.64±5.45	18.10±5.13	25.60±4.68	64.35±8.85
2022	16.27±5.92	16.05±3.00	21.66±3.49	54.00±10.02
All the above years	18.75±5.84	17.33±3.78	24.08±4.64	60.17±10.76

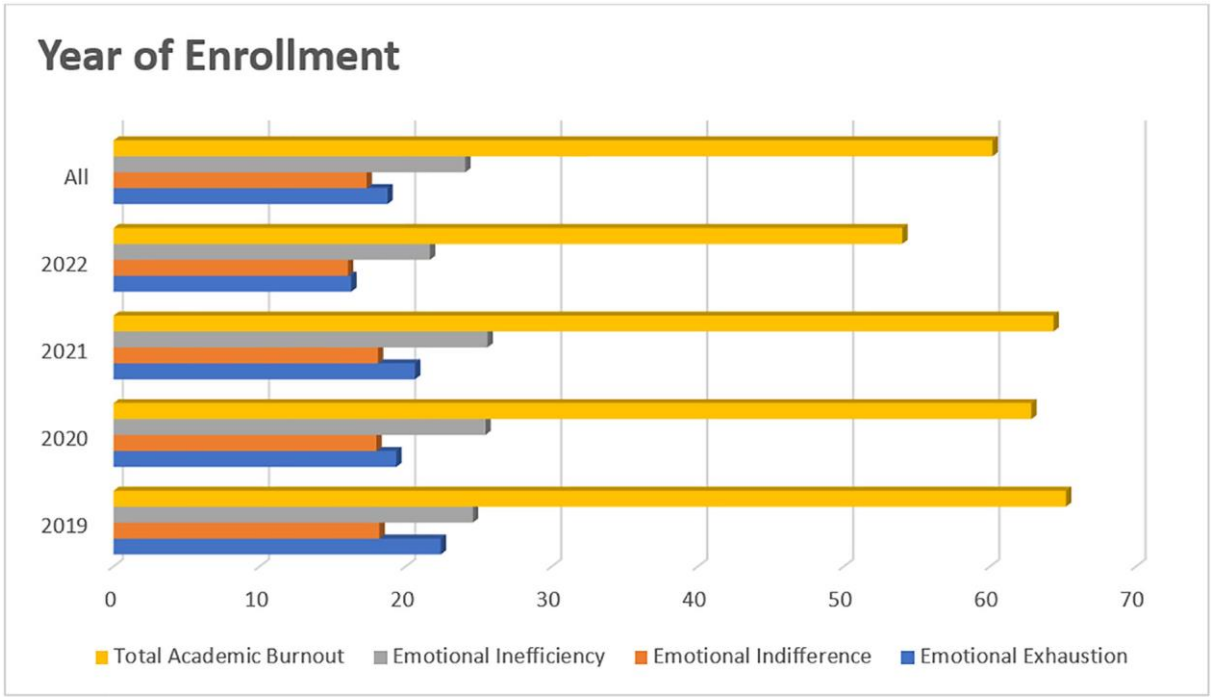

Figure 2: The AB Scores and its Dimensions by the Year of Enrollment (2019-2022)

Table 4: Bivariate Analysis of Demographic Determinants of AB

Demographic variables	AB dimensions						Total AB	
	Emotional exhaustion		Emotional indifference		Emotional inefficiency			
	Mean±SD	P value	Mean±SD	P value	Mean±SD	P value	Mean±SD	P value
Age (year)		0.042†		0.824†		0.001†		**0.013**†
<25	19.32±6.1		17.47±4.11		24.82±4.62		61.63±11.22	
25-35	16.00±2.36		16.62±1.25		20.31±2.75		52.93±2.88	
>35	16.10±2.12		17.00±3.31		23.22±1.9		56.13±2.14	
Gender		0.385¶		0.169¶		0.239¶		0.303¶
Male	17.28±7.40		18.88±5.94		25.36±5.00		61.52±15.56	
Female	19.25±5.17		16.81±2.55		23.64±4.47		59.71±8.67	
Marital status		0.061¶		0.290¶		0.057¶		**0.020**¶
Single	18.47±6.02		17.14±3.78		23.78±4.59		59.40±10.82	
Married	21.00±3.60		18.81±3.12		26.45±4.54		66.27±8.41	
Employment status		0.014¶		0.788¶		0.061¶		0.060¶
Employed	15.65±7.30		17.95±6.21		22.60±6.01		56.20±16.69	
Unemployed	19.54±5.17		17.17±2.90		24.45±4.19		61.17±8.53	
Being a local of university location		0.210 ¶		0.052¶		0.000¶		**0.001**¶
Yes	17.51±6.02		16.24±2.77		22.21±4.18		55.97±10.96	
No	19.63±5.59		18.10±4.21		25.39±4.54		63.13±9.66	
Education Level		0.037†		0.817†		0.001†		**0.003**†
BSc	19.32±6.19		17.47±4.11		24.82±4.62		61.63±11.22	
MSc	16.33±2.34		16.50±1.31		20.66±2.83		53.50±3.17	
PhD	15.20±2.16		17.12±1.85		20.00±2.73		52.20±4.05	
Year of enrolment		0.011†		0.287†		0.001†		**0.000**†
2019	22.40±4.61		18.20±2.04		24.60±3.91		65.20±5.93	
2020	19.36±5.35		18.00±3.03		25.46±4.91		62.83±10.81	
2021	20.64±5.45		18.10±5.13		25.60±4.68		64.35±8.85	
2022	16.27±3.83		16.05±4.15		21.66±3.17		54.00±2.95	

†Kruskal-Wallis test; Mann-Whitney test; Significant values (Pvalue<0.05) are in bold.

No factor had a significant association with the score ofemotionalin difference (second dimension) (P<0.05). Additionally, age, employment status, residence in the university location, education level, and the year of enrollment were significantly associated with the score of emotional inefficiency (third dimension) (P<0.05). Finally, age, marital status, residence in the university location, education level, and the year of enrollment showed a significant association with the total mean score of AB (P<0.05).

Discussion

The research showed that HIT students displayed a moderate level of AB. BSc students suffered from a higher level of AB than MSc and PhD students. Also, students who began their studies between 2019 and 2021 obtained significantly higher AB scores than those who enrolled in 2022. Additionally, age, marital status, residence in the university location, education level, and the year of enrollment were significantly associated with the students' AB scores.

Academic burnoutisasignificantissue for healthcare students, especially in HIT program (15,16), due to its challenging blend of biological sciences, computer systems, and healthcare management. Its complex subject matter, rapid technological advancements, and the need for precision have made this major demanding for students enrolled in this program, placing substantial psychological demands on students that may result in academic burnout (17, 18). Therefore, lack of sufficient support can lead to students' burnout, which negatively affects their learning, academic performance, and overall physical and mental well-being as well (19, 20).

Our research shows that students at HIT demonstrate a moderate level of AB, with a mean AB score of 60.17. Similarly, a study by Askaripoor

et al. found that health sciences students at four Iranian universities had a moderate level of AB, with a score of 57.85 (21). Also, Rezaei et al. reported a mean AB score of 60.88 among students at Kurdistan University, Iran (22). Additionally, research by Obregon et al. indicated that medical students from the University of Illinois College of Medicine (Classes 2019-2022) had a mean AB score of 62.48 (23). The moderate level of AB among health and medical students is a significant concern for medical education. This problem arises from various factors such as a demanding curriculum, heavy workload, and high expectations from professors and peers, creating a stressful environment. The pressure to excel in studies, exams, and secure competitive internships can result in burnout. Addressing these issues is crucial in preventing burnout from becoming a significant threat to the medical education system.

According to our results, the students' education level was significantly associated with their AB score and BSc students scored higher in AB compared to those in MSc and PhD programs. Likewise, a systematic review by Mirzaie Feiz Abadi et al. found that early-year medical students were more susceptible to burnout than those in their final years (24). In contrast, a 2017 study by Rezaei et al. found no significant association between students' education level and their AB (20). A potential reason for the increased AB among undergraduates may be greater workload and pressure they experience while navigating their studies, compared to more senior students in graduate programs who are further along.

Our study indicates a significant association between students' AB levels and their year of enrollment. Specifically, students who began their university studies between 2019 and 2021 reported higher levels of AB than those who enrolled in 2022. The reason may be considerable stressors brought about by the COVID-19 pandemic during those years. These stressors included increased academic workloads, challenges and unfamiliarity with online learning, and social isolation, all of which contributed to greater emotional exhaustion and a diminished sense of personal achievement compared to students who enrolled in 2022 when the pandemic conditions began to stabilize (25-28). Similarly, a systematic review by Abraham et al. demonstrated that those who started their university education during the pandemic faced unique challenges that exacerbated feelings of burnout compared to later cohorts (29).

Our research revealed a significant association between students' AB levels and their age, showing that younger students exhibit higher levels of AB. In a similar vein, a study conducted by Liu et al. on Chinese college students found that older students experienced lower burnout scores compared to their younger counterparts (13). Conversely, Sayadinia et al. conducted a review of Iranian articles on AB among Iranian medical students, revealing that the number of studies indicating no significant association was nearly twice that of those showing a significant relationship (30). This could be due to various factors; for example, younger students might not be as prepared to cope with the stress and demands of their academic responsibilities as older students. Additionally, they may lack the experience and coping strategies necessary to manage their stress effectively, resulting in increased levels of burnout.

Our findings show a significant relationship between students' AB levels and their marital status, revealing that married students tend to have higher AB levels. Conversely, Sayadinia et al. in a review of studies on AB among Iranian medical students found that the number of studies reporting no significant association between marital status and AB level was nearly five times that of those indicating a significant relationship (30). Additionally, two studies by Rahmatpour et al. and Aghagari et al. demonstrated that married students experienced lower levels of AB compared to their single classmates (31, 32). Various reasons may explain these contrasting results. Previous research suggested that single students may experience more AB due to feelings of loneliness and lack of emotional support, while the current study indicates that married students may be more prone to burnout due to financial burdens associated with marriage, leading to conflicts and potentially divorce (33).

Our study indicated a significant association between students' AB levels and residence in the university location, with non-local students demonstrating higher AB levels. Similarly, a study conducted by Sharififard et al. indicated that the residence status of students was a significant factor influencing their AB, with those living in dormitories experiencing higher levels of burnout

(34). In contrast, a study by Rezaei et al. found no significant association between the students' place of residence and their AB (22). The roots of our result could lie in several factors, including differences in social support networks, cultural adjustment, homesickness, financial stress, and lack of familial support for non-local students compared to local students.

Based on our findings, there was no significant association between such factors as gender, and employment status with students' AB. These results are not consistent with those of some studies (22, 35-37), which highlight the complex nature of student burnout and the importance of considering various factors when studying this phenomenon.

Limitations and Recommendations

Given that only 99 participants from Shiraz University of Medical Sciences (SUMS) were involved in this study, it may be difficult to generalize the findings to a larger population of HIT students. Furthermore, the study was conducted exclusively among HIT students at SUMS during 2022–2023, a period potentially influenced by post-COVID-19 academic adjustments, which may limit the applicability of results to other institutions, disciplines, or timeframes. Using a census method instead of random sampling could lead to selection bias since it may only include students willing to participate. However, this approach was necessary due to the small number of target population. Additionally, the reliance on self-reported data introduces the risk of response bias, as participants may underreport or exaggerate their burnout levels. These limitations underscore the need for caution when interpreting the findings beyond the specific context of HIT students at SUMS.

Future studies are recommended to explore all potential factors that could contribute to AB, such as personal stressors, financial difficulties, and support systems, across diverse populations and settings. Furthermore, it is recommended that a longitudinal study should be conducted to better understand how burnout changes over time and to evaluate the effectiveness of interventions.

Conclusion

Given the moderate level of academic burnout among Health Information Technology (HIT) students at Shiraz University of Medical Sciences (SUMS) in 2022–2023, policymakers are recommended to implement immediate interventions to create a supportive educational environment for them. However, as this study was limited to 99 HIT students at SUMS during a specific timeframe (2022–2023), caution should be exercised when generalizing findings to other disciplines, institutions, or time periods. Nevertheless, these results provide valuable insights that can inform targeted interventions, such as peer-support programs and mental health resources, to enhance student well-being in similar academic settings. Future research is needed to explore burnout across diverse populations and timeframes to develop more comprehensive strategies.

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None declared.

Conflict of Interest

There are no conflicts of interest.

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