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Prevalence of burnout among chiropractic students in Malaysia

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ABSTRACT

Objective: To investigate the prevalence of burnout among chiropractic students in Malaysia, using the Maslach Burnout Inventory-General Survey for Students (MBI-GS[S]).

Methods: A quantitative cross-sectional study was conducted at IMU University with 219 chiropractic students from semester 1 through semester 8. The MBI-GS(S) was utilized to assess burnout across 3 subscales: Exhaustion, Cynicism, and Professional Efficacy. Data were analyzed using descriptive statistics, Kruskal-Wallis tests, and χ^2 tests. Standardized residual analysis was performed as a posthoc step to identify which specific year(s) contributed to any significant χ^2 results.

Results: Of the 219 participants, 2.28% were classified as having a burnout profile under the 2016 method, while 10.04% met the burnout profile under the 2018 method. A χ^2 test revealed no association between year of study and burnout using the 2016 method. In contrast, the 2018 method indicated a significant association ($p = .004$), driven primarily by a higher-than-expected frequency of burnout in Year 1 and a lower-than-expected frequency in Year 2.

Conclusion: Burnout is present among chiropractic students in Malaysia, with estimates differing by classification method. The 2018 method not only yielded a higher overall prevalence but also highlighted an association with year of study. These findings underscore the importance of choosing appropriate classification criteria and emphasize targeted interventions for students most at risk, particularly in their first year.

Key Indexing Terms: Burnout; Chiropractic; Education; Students

J Chiropr Educ 2025;39:eJCE-24-19 DOI 10.7899/JCE-24-19

INTRODUCTION

First introduced by Freudenberger[1] in 1974, burnout has long been a significant subject of research, particularly among health care professionals, given the intense demands of their work environments. Burnout is typically defined by 3 key symptoms: emotional exhaustion, depersonalization, and diminished personal accomplishment.[2,3] Emotional exhaustion involves the draining of emotional resources, depersonalization reflects detachment from one's work and environment, and reduced personal accomplishment indicates a lower sense of efficacy and success.[3] Although previous studies have investigated burnout among chiropractic students globally, there remains a noticeable gap in research specific to Southeast Asia, where chiropractic education is relatively new and faces distinct challenges.[4]

Chiropractic, a health care discipline dedicated to diagnosing, treating, and preventing neuromusculoskeletal disorders, with an emphasis on manual techniques like spinal manipulation,[5] is classified in Malaysia under traditional and complementary medicine (T&CM), alongside practices such as traditional Chinese medicine and homeopathy.[6] The IMU University in Malaysia stands as the sole institution in Southeast Asia offering an accredited chiropractic program,[7] making it an important site for studying student burnout.

Burnout among students in demanding health care programs has increasingly become a concern.[8] A study of European chiropractic colleges reported that 26.4% of students experienced high emotional exhaustion, 18.2% high cynicism, and 43.8% low academic efficacy.[9] Similarly, another study highlighted that stress levels among chiropractic students are highest during their fourth year, often due to workload and financial pressures.[10] The impact of unique events, such as the COVID-19 pandemic, has also been explored, with findings

This paper is a second prize winner of the Chiropractic Educators Research Forum/World Federation of Chiropractic Alan Adams Education Research Award presented at the 12th World Federation of Chiropractic Global Education Conference, November 2, 2024. The award is funded in part by sponsorships from NCMIC, ChiroHealth USA, Clinical Compass, World Federation of Chiropractic, and Brighthall. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by these sponsors.

suggesting reduced stress but increased cynicism among chiropractic students during lockdown.[11] The challenges posed by academic performance, clinical training, and the pressures of maintaining a high level of professionalism can be daunting.[12] These difficulties are often compounded by personal issues, such as financial burdens, family obligations, and social isolation.[13]

On a global scale, the prevalence of burnout among health care workers and students is well-documented, with significant variation depending on region, educational system, and field of study.[14] The review by Kaggwa et al[4] found burnout rates of 30% to 60% among university students in low- and middle-income countries, with health care students at higher risk due to training demands. Similarly, research shows that burnout rates among health care professionals can vary widely, often between 30% and 70%, depending on the context and population examined.[15,16] In Malaysia, Woon et al[17] found that 17.5% of health care employees at a Malaysian hospital experienced personal burnout, 13.9% reported work-related burnout, and 6.0% faced client-related burnout. These findings indicate that burnout is a significant concern not only among students but also among practicing professionals, further emphasizing the importance of early intervention during training.

Among medical students, burnout is particularly common, affecting between 45% and 71%, with emotional exhaustion often the most frequent symptom.[18,19] In Malaysia, a study reported that 27.3% of medical students experience burnout, highlighting the significant impact of academic stress on their well-being.[8] Another study found that 28.3% of medical students experience moderate burnout, while 13.9% experience high burnout,[20] though neither study specifically defines the thresholds for these categories. A cross-sectional study by Rank et al[3] across 4 European chiropractic schools found that 26.4% of students reported high levels of emotional exhaustion, 43.8% reported reduced academic achievement, and 18.2% reported depersonalization. These findings suggest that institutional culture, curriculum design, and support systems play crucial roles in moderating burnout.

Burnout has extensive consequences, affecting academic performance, increasing dropout rates, and worsening mental health issues such as depression and anxiety.[21] In health care, student burnout can extend into professional life, resulting in suboptimal patient care, lower job satisfaction, and early career departure.[22]

Burnout in health care students can be attributed to various individual, academic, and organizational factors. Individual factors include age, gender, personality traits, and coping mechanisms. For instance, younger students and those with perfectionist tendencies are more susceptible to burnout.[23] Students who rely on maladaptive coping strategies, such as substance use or avoidance, are at higher risk of burnout.[24] Academic factors refer to the demands of the educational program, including the intensity of the curriculum and the pressure to perform well academically.[25] Health care students often face long hours of study, frequent examinations, and the need to balance theoretical learning with practical training, all of which contribute to burnout.[26–28] Organizational factors encompass the wider institutional environment, including the availability of support systems, the quality of faculty-student interactions, and the overall culture within the institution. When institutions fail to provide sufficient support for students, they may inadvertently heighten the risk of burnout.[29,30]

The repercussions of burnout among chiropractic students are profound. It can result in lower academic performance, increased dropout rates, and mental health issues like depression and anxiety.[21] For those training to become health care professionals, experiencing burnout during their education can lead to diminished patient care quality, reduced job satisfaction, and early career departure.[22]

This study employs the Maslach Burnout Inventory-General Survey for Students (MBI-GS[S]), an adaptation of the widely used Maslach Burnout Inventory,[31–33] to assess emotional exhaustion, depersonalization, and reduced personal accomplishment in chiropractic students.

METHODS

Study Design

This quantitative cross-sectional study assess the prevalence of burnout among chiropractic students at a single point in time. This approach identifies burnout levels across different semesters, providing insights into mental well-being within the student population.

Setting, Population, and Sample

This study was conducted at the IMU University, Kuala Lumpur, Malaysia among active chiropractic students from semester 1 through semester 8, with a total population size of approximately 350 students. The period of data collection was from May to July 2023.

To determine the required sample size, the standard formula for calculating sample sizes for proportions was used. This formula incorporates the following parameters: a confidence level of 95% ($z = 1.96$), a margin of error of 5% ($e = 0.05$), a population size of 350 (N), and an expected proportion (p) of 50%, assuming maximum variability to yield the largest required sample size. The formula is:

$$n = \frac{N \cdot z^2 \cdot p(1-p)}{e^2 \cdot (N-1) + z^2 \cdot p(1=p)}$$

This yielded a required sample size of 184 students. To accommodate a 10% dropout rate, the final target was adjusted to 203 students.

Selection Criteria

Students were included if currently enrolled in the chiropractic program at IMU, from semester 1 through semester 8 and voluntarily agreed to participate in the study and provided informed consent. Students were excluded if they had repeated any semester within the chiropractic program, were not present during the data collection period, or did not complete the entire questionnaire.

Data Collection and Ethical Considerations

The 264th Joint-Committee on Research and Ethics of the IMU University reviewed and approved the current study (Project ID: BCh I/2023(04)). Participants were recruited during practical class periods, where the study was explained,

and hard copies of the MBI-GS(S) questionnaire were distributed. Participation was voluntary, and students could withdraw at any time without consequences. All responses were anonymous, with only the primary researcher and supervisor having access to the raw data. Informed consent was obtained from all participants.

Instruments

The primary instrument used for data collection was the MBI-GS[S], a validated and widely recognized instrument for measuring burnout in student populations. The MBI-GS(S) assesses 3 key dimensions of burnout: Exhaustion (EX), Cynicism (CY), and Professional Efficacy (PE). EX refers to feelings of emotional fatigue and energy depletion caused by academic stressors. CY captures a sense of detachment or negative attitudes toward one's academic responsibilities, representing a student's emotional withdrawal from their studies. PE measures a student's sense of competence and achievement in their academic role.

The MBI-GS(S) contains 16 items, with responses recorded on a 7-point Likert scale ranging from 0 (Never) to 6 (Every day). The MBI-GS(S) has demonstrated strong reliability, with Cronbach's alpha coefficients for the subscales ranging between 0.85 and 0.89, indicating high internal consistency.[34,35] The validity of the MBI-GS(S) has been supported by confirmatory factor analysis (CFA), which consistently upholds the 3-factor structure across various student populations and cultural contexts.[34,35]

The MBI manual emphasizes that these subscales should be analyzed independently, as each dimension contributes uniquely to the burnout syndrome. This 3-dimensional model ensures a comprehensive understanding of burnout symptoms and their impact on students' well-being.

Methods of Burnout Classification

To ensure a comprehensive analysis, 2 methods for interpreting burnout profiles were employed, reflecting updates in the MBI manuals from 2016 and 2018.

Method 1: 2016 Version[36]

This approach categorizes burnout levels using cutoff scores for each subscale. These cutoffs, derived from normative data in the 2016 manual, provide a structured framework to classify burnout into Low, Moderate, and High levels:

- EX: Low ($\leq$11.25), Moderate (11.26–24.71), High ($\geq$24.72)
- CY: Low ($\leq$7.18), Moderate (7.19–18.96), High ($\geq$18.97)
- PE: Low ($\leq$17.07), Moderate (17.08–31.03), High ($\geq$31.04)

The manual explains that these thresholds are derived from normative sample scores, allowing researchers to classify participants into predefined burnout profiles based on combinations of subscale scores:

- Engaged: Low EX, Low CY, High PE
- Ineffective: Low to Moderate EX, Low to Moderate CY, Low PE
- Overextended: High EX, Low to Moderate CY, Low to Moderate PE
- Disengaged: Low to Moderate EX, High CY, Low to Moderate PE
- Burnout: High EX, High CY, Low PE
- Uncategorized: Profiles that do not fit any of the above classifications will be left unclassified, allowing for the identification of students whose burnout symptoms may not align with predefined profile types.

This method provides a categorical framework for analyzing burnout prevalence, ensuring consistency with earlier research while maintaining alignment with normative data interpretation.

Method 2: 2018 Version[31]

The 2018 manual introduces a shift from rigid categories to a continuum-based interpretation of burnout, reflecting the complexity of burnout symptoms. Instead of fixed cutoffs, this approach utilizes relative thresholds, calculated using standardized scores (z-scores) based on the sample's mean and SD. The suggested critical boundaries for each subscale are:

- EX: Mean + (SD $\times$ 0.5)
- CY: Mean + (SD $\times$ 1.25)
- PE: Mean + (SD $\times$ 0.1)

This method enables a more understanding of burnout profiles and allows for greater flexibility in capturing subtle variations in burnout symptoms. While categories can still be derived using these thresholds, the emphasis is on the spectrum of experiences within the population.

This approach provides a more nuanced understanding of burnout, accommodating variability within and between individuals. The emphasis shifts from rigid categorizations to exploring burnout as a spectrum. Nevertheless, profiles can still be identified based on the critical boundaries:

- Engaged: EX $\leq$ 21.35; CY $\leq$ 20.43; PE $>$ 24.75
- Ineffective: EX $\leq$ 21.35; CY $\leq$ 20.43; PE $\leq$ 24.75
- Overextended: EX $>$ 21.35; CY $\leq$ 20.43
- Disengaged: EX $\leq$ 21.35; CY $>$ 20.43
- Burnout: EX $>$ 21.35; CY $>$ 20.43

This approach allows for greater flexibility in capturing subtle variations in burnout symptoms and reflects a deeper understanding of burnout dynamics. The 2018 manual emphasizes the need for future research to explore how burnout profiles evolve over time and respond to different interventions, offering insights into their real-world applications.

Data Analysis

Data were analysis using IBM SPSS Statistics version 26 (IBM Corp). Responses from the MBI-GS(S) were initially entered into Microsoft Excel (Microsoft Corp), where they were cleaned and then imported into SPSS for statistical analysis. Descriptive statistics, including frequencies, means, and SDs, were calculated to summarize the data. The prevalence of burnout was analyzed using 2 methods of classification:

Table 1 - Prevalence of Burnout Subscale Scores (Exhaustion, Cynicism, and Professional Efficacy) by Year of Study Among Respondents Using 2016 Version

	Exhaustion			Cynicism			Professional Efficacy		
Year	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Year 1	7 (16.28%)	43 (31.85%)	22 (53.66%)	12 (26.66%)	37 (29.37%)	23 (47.92%)	7 (21.88%)	59 (37.11%)	6 (21.43%)
Year 2	9 (20.93%)	36 (26.67%)	7 (17.07%)	12 (26.66%)	33 (26.19%)	7 (14.58%)	7 (21.88%)	37 (23.27%)	8 (28.57%)
Year 3	8 (18.60%)	29 (21.48%)	9 (21.95%)	9 (20.02%)	26 (20.63%)	11 (22.92%)	9 (28.12%)	33 (20.75%)	4 (14.29%)
Year 4	19 (44.19%)	27 (20.00%)	3 (7.32%)	12 (26.66%)	30 (23.81%)	7 (14.58%)	9 (28.12%)	30 (18.87%)	10 (35.71%)
Total	43 (100.00%)	135 (100.00%)	41 (100.00%)	45 (100.00%)	126 (100.00%)	48 (100.00%)	32 (100.00%)	159 (100.00%)	28 (100.00%)

Method 1 (2016 version) employed fixed cutoff scores derived from normative data to categorize respondents into high, moderate, and low levels for the EX, CY, and PE subscales. Method 2 (2018 version) utilized critical boundary scores calculated using standardized thresholds based on the sample's mean and SD, reflecting burnout as a continuum rather than rigid categories.

The choice of method influenced the prevalence rates and profile assignments. The results from each method provided complementary insights into burnout prevalence and its distribution within the population, highlighting the differences in interpretation based on categorical vs continuum-based frameworks.

Given the non-normal distribution of the data, as confirmed by the Shapiro-Wilk normality test, non-parametric tests were utilized. The Kruskal-Wallis test was applied to assess whether there were statistically significant differences in burnout subscale scores (EX, CY, and PE) across different years of study. χ^2 tests of independence were conducted to explore the associations between demographic variables, such as year of study, and burnout profiles (for both methods of categorizing burnout).

In Method 2, after a χ^2 test revealed a significant association between year of study and burnout profile, a standardized residual analysis was performed. Standardized residuals exceeding 2 ($|z| \geq 2$) were considered to indicate a significantly higher or lower-than-expected count within a given cell (year $\times$ burnout). This additional posthoc analysis identifies which specific cells drive the significant χ^2 result, thereby explaining how particular years differ from expectation.

RESULTS

Demographic Characteristics

The respondents comprised chiropractic students from semester 1 through semester 8 at IMU University, with a total of 219 individuals included in the analysis, resulting in an overall response rate of 80.51%. Among these respondents, Year 1 had a response rate of 92.31%, contributing 72 individuals (32.88%). Year 2 had a response rate of 72.22%, with 52 individuals (23.74%) participating. Year 3 achieved a response rate of 80.70%, contributing 46 individuals (21.01%), while Year 4 had a response rate of 75.38%, with 49 individuals (22.37%) participating. This distribution provides a comprehensive overview of burnout profiles and experiences across different academic levels within the chiropractic program.

Burnout Scores and Prevalence of Burnout Subscales

The results from the MBI-GS(S) offered key insights into burnout levels among the respondents, with analysis conducted using two distinct methods reflecting the approaches outlined in the 2016 and 2018 MBI manuals.

Method 1: 2016 Version (High, Moderate, and Low Levels)

Using the 2016 approach, burnout levels were categorized into high, moderate, and low classifications based on fixed cutoff scores for each subscale.

For the EX subscale, 41 respondents (18.72%) were classified as having high levels of exhaustion, indicating significant emotional fatigue. A further 135 respondents (61.64%) were categorized in the moderate range, while 43 respondents (19.64%) reported low levels of exhaustion.

In the CY subscale, 48 respondents (21.92%) exhibited high levels of cynicism, reflecting a more detached or negative attitude toward their academic responsibilities. The majority, 126 respondents (57.53%), fell into the moderate category, while 45 respondents (20.55%) were classified as having low cynicism.

Regarding the PE subscale, 28 respondents (12.79%) demonstrated high levels of professional efficacy, indicating a strong sense of competence. However, the majority of respondents, 159 (72.60%), were in the moderate category, and 32 respondents (14.61%) exhibited low levels of professional efficacy.

A further breakdown of the prevalence of burnout subscales by the year of study is presented in Table 1. These findings highlight the distribution of exhaustion, cynicism, and professional efficacy across the different years of study.

Method 2: 2018 Version (Mean and SD Thresholds)

The 2018 method treated burnout as a continuum and calculated thresholds using the sample's mean and SD scores. The average scores were as follows: EX = 17.98 (SD = 6.73), CY = 13.07 (SD = 5.89), and PE = 24.05 (SD = 6.98). A further breakdown of the mean burnout subscale scores by year of study is presented in Table 2. This method provides an understanding of burnout symptoms by emphasizing variability within the population, rather than fixed categories.

Table 2 - Mean Burnout Subscale Scores (Exhaustion, Cynicism, and Professional Efficacy) by Year of Study Among Respondents Using 2018 Version

Year	Exhaustion Mean (SD)	Cynicism Mean (SD)	Professional Efficacy Mean (SD)
Year 1	20.58 (5.85)	14.74 (6.45)	23.81 (6.13)
Year 2	17.75 (6.39)	12.00 (5.12)	24.19 (7.36)
Year 3	17.98 (6.26)	13.33 (5.47)	23.72 (7.16)
Year 4	14.39 (6.68)	11.51 (5.69)	24.59 (7.73)

Profile Types

Method 1: 2016 Version (High, Moderate, and Low Levels)

The analysis of profile types using the fixed cutoff scores from the 2016 method revealed a distribution across several categories. Out of the total respondents, 5 respondents (2.28%) were classified as "Engaged," indicating low levels of exhaustion and cynicism with high professional efficacy. A total of 22 respondents (10.05%) fell into the "Ineffective" category, characterized by low or moderate levels of exhaustion and cynicism but low professional efficacy. Sixteen respondents (7.31%) were identified as "Overextended," reflecting high exhaustion with low or moderate cynicism and professional efficacy. Twenty-four respondents (10.96%) were categorized as "Disengaged," with low or moderate exhaustion but high cynicism and low or moderate professional efficacy. Additionally, 5 respondents (2.28%) were classified as experiencing "Burnout," displaying high exhaustion and cynicism with low professional efficacy. Lastly, 147 respondents (67.12%) did not fit into any predefined categories and were thus labeled as "Uncategorized." These findings underscore the varied profile types among chiropractic students.

Method 2: 2018 Version (Mean and SD Thresholds)

Using the 2018 method, which applies critical boundary scores derived from the sample's mean and SD, the distribution of profile types was as follows. A total of 69 participants (31.51%) were identified as "Engaged." An equal number of participants, 69 (31.51%), were classified under the "Ineffective" profile. The "Overextended" profile accounted for 54 participants (24.66%). A smaller group of 5 participants (2.28%) were categorized as "Disengaged." Lastly, 22 participants (10.04%) were assigned to the "Burnout" profile. This method conceptualizes burnout as a continuum rather than discrete categories in each subscale, thereby capturing a better understanding of variations in profile types among the respondents. Unlike the 2016 method, the 2018 approach provides a more integrated view of the burnout-engagement continuum.

Tables 3 and 4 present the distribution of profile types across different years of study, analyzed using two distinct methods. Table 3 illustrates how the 2016 approach categorizes burnout into low, moderate, and high levels, offering a structured perspective on how these classifications evolve as students progress through the chiropractic program. Table 4 complements this by presenting the profile type distribution for the 2018 method, which employs thresholds derived from the sample's mean and SD.

Together, these findings provide complementary insights: the 2016 method delivers structured clarity in predefined categories, while the 2018 method captures a continuum of burnout experiences, revealing nuanced differences in profile trends across academic years.

Associations between Year of Study and Burnout Subscales

The Kruskal-Wallis test was conducted to examine whether statistically significant differences existed in burnout subscale scores (EX, CY, and PE) across different years of study. The choice of this non-parametric test was informed by the results of the Shapiro-Wilk normality test, which indicated that the data were not normally distributed.

For the EX subscale, the analysis yielded a p-value of .392. Since this p-value is greater than the conventional threshold of 0.05, it suggests that there is no statistically significant association between the year of study and levels of exhaustion among respondents.

Similarly, the CY subscale showed no significant differences across the years of study, with a p-value of .392, indicating that cynicism levels do not vary significantly between students in different years of the chiropractic program.

Finally, for the PE subscale, the findings were consistent with the other subscales, with a p-value of .392. As a result, no significant association was found between the year of study and the professional efficacy scores of respondents.

Overall, these results suggest that burnout levels, as measured by the Exhaustion, Cynicism, and Professional Efficacy subscales, do not differ significantly based on the year of study among respondents in this sample.

Table 3 - Distribution of Profile Types by Year of Study Among Respondents Using 2016 Version

Profile Type	Year 1 *n* (%)	Year 2 *n* (%)	Year 3 *n* (%)	Year 4 *n* (%)	Total *n* (%)
Engaged	0 (0.00)	2 (3.85)	1 (2.17)	2 (4.08)	5 (2.28)
Ineffective	2 (2.78)	6 (11.54)	7 (15.22)	7 (14.29)	22 (10.05)
Overextended	9 (12.50)	4 (7.69)	3 (6.52)	0 (0.00)	16 (7.31)
Disengaged	10 (13.89)	5 (9.61)	5 (10.87)	4 (8.16)	24 (10.96)
Burnout	4 (5.55)	0 (0.00)	0 (0.00)	1 (2.04)	5 (2.28)
Uncategorized	47 (65.28)	35 (67.31)	30 (65.22)	35 (71.43)	147 (67.12)
Total	72 (100.00)	52 (100.00)	46 (100.00)	49 (100.00)	219 (100.00)

Table 4 - Distribution of Profile Types by Year of Study Among Respondents Using 2018 Version

Profile Type	Year 1 *n* (%)	Year 2 *n* (%)	Year 3 *n* (%)	Year 4 *n* (%)	Total *n* (%)
Engaged	17 (23.61)	13 (25.00)	16 (34.78)	23 (46.94)	69 (31.51)
Ineffective	18 (25.00)	21 (40.38)	13 (28.26)	17 (34.69)	69 (31.51)
Overextended	21 (29.17)	16 (30.77)	12 (26.09)	5 (10.21)	54 (24.66)
Disengaged	2 (2.78)	2 (3.85)	0 (0.00)	1 (2.04)	5 (2.28)
Burnout	14 (19.44)	0 (0.00)	5 (10.87)	3 (6.12)	22 (10.04)
Total	72 (100.00)	52 (100.00)	46 (100.00)	49 (100.00)	219 (100.00)

Associations between Year of Study and Burnout Profile

Method 1: 2016 Version (High, Moderate, and Low Levels)

The relationship between the year of study and the presence of burnout was examined by grouping the burnout profile into 2 categories: "Yes" for respondents classified as experiencing the burnout profile and "No" for all other profiles (Engaged, Ineffective, Overextended, Disengaged, and Uncategorized). Table 5 shows the distribution of these categories across different years of study.

A χ^2 test of independence was performed to determine whether there was a statistically significant association between the year of study and the presence of burnout. The analysis revealed a *p*-value of .12. Since the *p*-value is greater than .05, this indicates that there is no statistically significant association between the year of study and the presence of burnout among respondents.

Method 2: 2018 Version (Mean and SD Thresholds)

Using the 2018 method, the burnout profile was similarly categorized into "Yes" for respondents classified as experiencing the burnout profile and "No" for all other profiles (Engaged, Ineffective, Overextended, and Disengaged). The distribution of these profiles by the year of study is presented in Table 6.

A χ^2 test of independence revealed a significant association between the year of study and burnout ($p = .004$). Standardized residual analysis indicated that Year 1 had a higher-than-expected frequency of burnout, while Year 2 had a lower-than-expected frequency. By contrast, Years 3 and 4 did not differ significantly from the expected values. These findings suggest that the significant association observed in the χ^2 test was primarily driven by the increased incidence of burnout in Year 1 and the reduced incidence in Year 2.

Overall Prevalence of Burnout

The overall prevalence of burnout among respondents was assessed using two distinct methods, reflecting variations in the criteria for identifying burnout.

Method 1: 2016 Version (High, Moderate, and Low Levels)

Using the 2016 method, burnout was determined based on the fixed criteria of high exhaustion, high cynicism, and low professional efficacy. Out of 219 respondents, 5 participants met these criteria, resulting in a burnout prevalence rate of 2.28%. This relatively low prevalence reflects the stringent categorical thresholds used in this approach.

Method 2: 2018 Version (Mean and SD Thresholds)

Using the 2018 method, which relies on critical boundary scores derived from the sample's mean and SD, the prevalence of burnout was higher. A total of 22 respondents were identified as experiencing burnout, resulting in a prevalence rate of 10.04%. This method reflects burnout as a continuum, capturing a broader spectrum of burnout experiences and providing a more nuanced view of its impact on the population.

These findings demonstrate that the prevalence of burnout varies significantly depending on the method used. While the 2016 method highlights a smaller subset of respondents experiencing full burnout, the 2018 method reveals a higher prevalence, underscoring the importance of considering methodological approaches in burnout research.

DISCUSSION

Burnout, a multifaceted phenomenon characterized by exhaustion, depersonalization, and reduced personal accomplishment, has garnered increasing attention in health care education research because of its potential to undermine both student well-being and clinical competencies.[1,4] Two MBI-GS [S] classification approaches, from 2016 and 2018, revealed

Table 5 - Burnout Profile (Yes/No) by Year of Study Using 2016 Version

Burnout Profile	Year 1 *n* (%)	Year 2 *n* (%)	Year 3 *n* (%)	Year 4 *n* (%)	Total *n* (%)
Yes	4 (80.00)	0 (0.00)	0 (0.00)	1 (20.00)	5 (100.00)
No	68 (31.78)	52 (24.30)	46 (21.49)	48 (22.43)	214 (100.00)

Notes. The "Yes" category includes only respondents classified as experiencing burnout profile (High EX, High CY, Low PE). The "No" category includes all other profiles (Engaged, Ineffective, Overextended, Disengaged, and Uncategorized).

Table 6 - Burnout Profile (Yes/No) by Year of Study Using 2018 Version

Burnout Profile	Year 1 *n* (%)	Year 2 *n* (%)	Year 3 *n* (%)	Year 4 *n* (%)	Total *n* (%)
Yes	14 (63.63)	0 (0.00)	5 (22.73)	3 (13.64)	22 (100.00)
No	58 (29.44)	52 (26.40)	41 (20.81)	46 (23.35)	197 (100.00)

Notes. The "Yes" category includes only respondents classified as experiencing burnout profile. The "No" category includes all other profiles (Engaged, Ineffective, Overextended, Disengaged).

differing burnout prevalence (2.28% vs 10.04%), underscoring how measurement strategies can shape reported rates.[31,33]

Comparison of Burnout Classification Methods

The 2016 method uses normative data to define fixed cutoff points for EX, CY, and PE. It categorizes students into "low," "moderate," or "high" categories.[31] One advantage of this categorical strategy is its alignment with historically established norms, facilitating easier comparisons with legacy data and older studies that employed similar thresholds.[31] When younger or culturally diverse populations are assessed, the original cutoffs might underestimate the number of students exhibiting subclinical or emerging levels of burnout.[3] In the present study, this limitation became clear as the cutoff-based method yielded a notably lower estimate than the continuum-based approach.

The 2018 method treats burnout as a spectrum, with critical boundaries determined by sample-specific means and SDs.[31] Indeed, in this study, 10.04% were classified under the burnout profile with the continuum-based method which is over 4 times higher than the 2016 approach.

Nevertheless, this approach has its own challenges. The reliance on sample-specific statistics reduces direct comparability with other populations assessed using different normative references.[31] The 2018 approach can be more "context-aware," but it sacrifices broad interstudy comparability unless other researchers adopt similar procedures or provide robust norm comparisons.[4,22]

Association With Year of Study

A salient finding in this study was that the 2016 method indicated no association between year of study and burnout, whereas the 2018 method revealed a significant relationship ($p = .004$). Specifically, first-year students exhibited a higher-than-expected frequency of burnout, while second-year students showed a lower-than-expected frequency. This discrepancy highlights how measurement choices can alter the visibility of patterns in the data.[3,33]

Early findings in similar contexts suggest that novices may lack the coping mechanisms and social supports established by more senior students.[26,27] Additionally, the limited public awareness of chiropractic in Malaysia might compound uncertainty among new enrollees, who could feel additional stress regarding future employment prospects.[7,37] By contrast, second-year students might have adapted to academic demands, formed social networks, and accessed institutional resources such as faculty advising or peer mentorship programs, thereby reducing burnout risk.[4,8] Moreover, the elevated burnout among first-year students parallels prior findings that novices are especially vulnerable as they navigate new academic and clinical responsibilities. Additionally, the heightened burnout we detected in first-year students is consistent with other chiropractic studies highlighting the acute stress novice cohorts face as they adapt to rigorous curricula and an evolving professional identity.[26,27] These potential explanations align with broader research in medical and allied health fields showing that adaptation over time often reduces stress.[26]

Cultural and Contextual Influences

Culture plays a defining role in shaping how individuals perceive and respond to academic stress.[12,14] Malaysia's collectivist ethos may foster robust peer support and a sense of communal responsibility, which can mitigate burnout progression, especially if students draw on collective coping strategies.[4,26]

Comparisons to other research in culturally similar contexts underscore that prevalence rates can vary widely, from under 10% to over 60%, depending on the instrument used, the severity threshold, and the institution's support mechanisms.[3,8] Indeed, prior studies in Malaysian contexts have documented a wide range of burnout among health care students, potentially illustrating how local factors (such as familial expectations, institutional resources, and job market perceptions) intersect to shape burnout risk.[8] The disparities between 2 classification methods in this single study thus offer a microcosm of how methodological heterogeneity can produce divergent prevalence rates across the literature.[22,33]

Comparisons With Other Research

Burnout measurement is notoriously variable across studies. Some researchers apply the original Maslach Burnout Inventory (MBI) with strict cutoffs,[33] whereas others adopt sample-specific thresholds or advanced analytic techniques such as latent profile analysis.[3,35] Although cutoff-based approaches facilitate direct, historical comparisons, they risk missing students who are on the path to burnout but have not crossed a designated clinical threshold.[31,33] Conversely, continuum-based or latent-profile methods may capture a fuller spectrum of distress but complicate interpopulation comparisons.[3,35] In medical education, adopting continuum frameworks has unveiled "transitional" burnout states that might otherwise remain invisible, reinforcing the utility of flexible methods for detecting early risk.[22]

Our study provides further evidence that the methodological framework can profoundly influence reported burnout prevalence, a conclusion also supported by meta-analyses documenting wide variations in burnout levels across different settings.[4,14] The results here particularly highlight how the continuum approach can reveal associations (such as year of study differences) that go undetected by a more rigid classification system.

Practical Implications

Despite the divergent prevalence rates, both methods point to the necessity of proactive measures to reduce exhaustion and promote well-being among chiropractic students. Addressing high exhaustion, often cited as the core dimension of burnout,[33,38] should remain a priority for program administrators. Initiatives could range from stress-management workshops to peer-support networks or mentorship programs to scheduling adjustments that lessen excessive academic or clinical loads.[8,28,39]

Given the continuum-based method's finding of heightened burnout in first-year students, special attention may be needed for orientation programs. Early engagement strategies can introduce coping and self-regulation skills, potentially offsetting the uncertainties related to chiropractic's emerging status within Malaysia.[7,37] As students progress, periodic check-ins can ensure that those transitioning from moderate stress to severe burnout receive timely interventions, which might otherwise be missed if only a single, static cutoff is applied.

From a measurement perspective, institutions might benefit from a hybrid strategy. For instance, retaining the 2016 approach for ease of alignment with older literature, while concurrently employing the 2018 approach to capture a continuum-based snapshot of students' relative stress levels, could optimize both historical comparability and local sensitivity.[3,31] Data from both methods can then guide targeted interventions: the cutoff-based approach to identify definitively high-risk students who clearly meet established burnout thresholds, and the continuum-based approach to flag those nearing clinically significant levels of distress.

Limitations

This study employed a cross-sectional design, collecting data from participants at only one point in time. Consequently, it is not possible to make causal inferences about how burnout develops or changes throughout the chiropractic program.[26] In addition, the study relied on self-reported measures, raising concerns about potential bias. Participants might underreport or overreport symptoms due to social desirability or memory inaccuracies.[33]

Another concern is that the sample was drawn from a single institution in Malaysia, limiting the generalizability of the findings to chiropractic programs with distinct educational structures, resource availability, or cultural backgrounds.[7] Lastly, while the MBI-GS(S) is widely used and validated for measuring burnout, it may not capture all facets unique to chiropractic education, especially in areas related to clinical and hands-on training.[3,31]

Future Research and Recommendations

Future investigations should consider longitudinal studies that follow chiropractic students across their academic journey. Identifying these contextual factors could guide the development of tailored strategies to reduce stress.

Researchers should also explore intervention efficacy by conducting randomized or quasi-experimental trials examining counseling sessions, peer-support networks, or workload modifications. This focus on practical solutions would help determine which approaches best mitigate stress for diverse burnout profiles, including Overextended or Disengaged students.[28,39,40]

Finally, refining burnout metrics could enhance measurement accuracy. Because the 2016 and 2018 methods yielded notably different prevalence rates, employing more refined techniques may provide additional insight into how burnout manifests across varying student subgroups.[31,33] These methodological advances would support a more detailed understanding of burnout trajectories and inform evidence-based recommendations that strengthen student well-being and the chiropractic profession as a whole.

CONCLUSION

In summary, chiropractic students in Malaysia do exhibit burnout, but prevalence estimates vary markedly by the classification method used. The continuum-based 2018 method suggests that burnout may be more prevalent than the fixed-cutoff 2016 method indicates, highlighting the role of methodological nuances in burnout research. While year of study did not correlate significantly with burnout under the 2016 method, the 2018 approach linked first-year students to a higher prevalence of burnout and second-year students to a lower one. Longitudinal and comparative studies, along with targeted interventions, will clarify best practices for preserving student welfare while sustaining the growth of chiropractic education in Malaysia.

FUNDING AND CONFLICTS OF INTEREST

This study was supported by a grant for the period between April 1, 2023, and December 31, 2024, by the IMU University, Malaysia with the Research Project No.: BCh I/2023(04). No conflicts of interest were reported for this study.

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