Factors Associated with Burnout in Clinical Year Medical Students in Terengganu, Malaysia

Norwati Daud†, Ahmad Fuad Abdul Rahim‡, Anisa Ahmad‡, Mohamad Najib Mat Pa‡, Nurulhuda Mat Hassan†

†Medical Education Unit, Faculty of Medicine, Universiti Sultan Zainal Abidin, Kuala Terengganu, Terengganu, Malaysia
‡Department of Medical Education, School of Medical Sciences, Universiti Sains Malaysia Health Campus, Kelantan, Malaysia

*norwatidaud@unisza.edu.my

Abstract

Many studies have shown that burnout has a detrimental effect on the well-being of medical students. In medical students, the prevalence of burnout increased as the year progressed. The objective of the study was to identify factors associated with burnout in clinical year medical students in a public medical school in Terengganu. There were 120 clinical year medical students selected for this study using proportionate simple random sampling. Students’ demographics, academic data, Copenhagen Burnout Inventory (CBI) and USM emotional intelligence Inventory (USMEQ-i) in Google Forms were distributed using WhatsApp application. Data collected included entry CGPA, whether they made the correct decision to do medicine and ever thought of dropping out. The response was in the form of ‘Yes/No’. Burnout was categorised into ‘Significant’ and ‘Non-significant’ burnout based on the mean CBI score. Each factor was categorized into two categories and was analysed using a Chi-Square test. Further analysis was done using multiple logistic regression. There were 105 responses. The percentage of students categorised as having significant burnout was 41.0% (95% CI 31.5-50.1). Associated factors for burnout were having average or low emotional intelligence (odds ratio 3.14; 95% CI 1.32-7.94; p=0.001), making incorrect decision to do medicine (odds ratio 6.06; 95% CI 1.01-33.35; p=0.038) and ever thought of dropping out (odds ratio 3.06; 95% CI 1.23-7.63; p=0.016). As a conclusion, correct decision to do medicine and emotional intelligence were important factors associated with burnout in clinical year medical students. Interest in medicine may be considered as an important factor to be looked into during student selection interview. Emotional intelligence development may be included in the curriculum to prevent and help medical students cope with burnout.

Keywords: Burnout, medical students, emotional intelligence.

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Introduction

Burn-out is a syndrome which results from chronic workplace stress that has not been successfully managed [1]. It is characterized by three dimensions which are feelings of energy depletion or exhaustion, increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job and reduced professional efficacy. Burnout has been increasingly recognised as among the major issues in medical students. Studies on burnout among medical students started to emerge in early 2000 and becoming more frequently studied in the past 10 years.

Studies in a few countries showed a high prevalence of burnout among medical students. It can be as high as 91.1% and 99.2% in Iran [2,3] and 79.9% in Egypt. In medical students, the prevalence of burnout increased as the year progressed [4,5]. High burnout, especially towards the final year, was contributed mainly by academic stressors such as examinations, high content load and academic expectations [7].

Many studies have shown that burnout had a detrimental effect on the well-being of medical students. Dyrybe et al., (2008) did a study on 2248 medical students from a few medical schools in the United States [8]. They found that 49.6% had burnout. The study also showed, the higher the degree of burnout, the higher the risk of suicidal ideation.

The prediction of suicidal ideation in students with burnout was dose-related. An increase of 1-point of emotional exhaustion score of Maslach Burnout Inventory (MBI) will increase the suicidal ideation risk by 5%. A decrease of 1-point of personal accomplishment score will increase the suicidal ideation risk by 6%. Another study showed that students who had burnout were also more likely to have alcohol abuse/dependence [9].

Since previous studies showed that there was a high prevalence of burnout especially among the clinical year students, this study aimed to provide another evidence of burnout among medical students in clinical years and its associated factors.

Methodology

Sample size and sampling method

This study was a cross-sectional study involving 120 clinical year medical students in a new public medical school in Terengganu, Malaysia. The sample size was calculated using PS Software sample size calculator [10]. Sample size was calculated for all the objectives with 80% power and the largest sample size was taken as the final sample size for this study. The largest sample size of 98 was obtained from the determination of the association between year of study and burnout. Considering a 20% drop out, the final sample size was approximately 120 subjects.

The clinical year medical students were selected using proportionate simple random sampling to represent the composition of the students based on year, sex and race. There were 60 students in each clinical year, from year three to year five. There were three main races of students which were Malay, Indian and Chinese. Since 120 subjects were required, an equal number of subjects were selected from each year, i.e. 40 subjects from each year.

Study instrument

There were two instruments used in this study which were the Copenhagen Burnout Inventory (CBI) to measure burnout and USM Emotional Quotient Inventory (USMEQ-i) to measure emotional intelligence. The domains of CBI are personal burnout, work-related burnout and client-related burnout. For the purpose of this study, only the personal burnout and work-related burnout were included and the client-related scale was dropped as it did not apply to medical students. There are 6 items under personal burnout, 7 items under work-related burnout. Personal burnout is defined as ‘The degree of physical and psychological fatigue and exhaustion experienced by the person’. The items under this domain enquire about the personal experience of tiredness, worn out, exhaustion, both physical and emotion and the implication of these symptoms related to susceptibility to illness and feeling of inability to cope. Work-related burnout is defined as ‘The degree of physical and psychological fatigue and exhaustion that is perceived by the person as related to his/her work’. Items under this domain focus on the implication of work on his/her feelings of worn-out, exhaustion, tiredness, lack of energy for social relationship, burnt-out and frustration. From the original study, the Cronbach alpha value for personal burnout was 0.87 and work-related burnout, 0.87 [11].

CBI has five response categories with two formats according to the type of questions. One format is according to frequency from ‘Always’ to ‘Never’. The other format is from ‘A very high degree’ to ‘A very low degree’. The scoring for frequency is from ‘100’ to ‘0’. In this study, the words ‘working/work’ in the original CBI were replaced with ‘study/academic activities’ to suit the study population. A cut-off mean score of 50-points or more was used to indicate ‘Significant burnout’ and its two domains based on two previous studies that used the same cut-off point [12,13].

USMEQ-i was initially developed by Yusoff et al., (2011) to measure emotional intelligence (EI) in medical students in a Malaysian setting [14]. It was later revised by Arifin and Yusoff, (2016) [15]. Confirmatory Factor Analysis (CFA) of USMEQ-i done by Arifin and Yusoff (2016) showed that the final model of two domains and 13 items
had satisfactory fit indices (Comparative Fit Index (CFI); 0.957, Root Mean Square Error of Approximation (RMSEA); 0.058). The two domains are Personal Competence (10 items) and Social Competence (3 items). Personal competence domain contains items which ask on how one deals with his/her own emotions in various situations while social competence domain asks on how one deals with other people’s emotion.

The responses in USMEQ-i were measured using Likert scale of 0 to 4; 0 = ‘Not like me’, 1 = ‘A bit like me’, 2 = ‘Quite like me’, 3 = ‘A lot like me’ and 4 = ‘Totally like me’. The final score is the mean score of each item (13 total item score/13). The USMEQ-i scores are interpreted based on the recommended guidelines provided in the USMEQ-i manual [16]. The original authors decided that the results can be interpreted either in mean where a high mean score indicates a high level of EI or in three categories; low (mean score of 0-1.2), average (mean score of 1.21 to 2.80) and high (mean score of 2.81 to 4.00) [16].

The questionnaire contained basic personal data, entry CGPA, CBI items, USMEQ-i items and additional questions which were “Do you think you have made the correct decision to do medicine?” and “Have you ever thought of quitting the course?”. The study questionnaire was distributed in Google Forms format using the WhatsApp application.

**Data collection procedure**

The timing of the data collection was scheduled so that it would not be within 2 weeks prior or after any examination to avoid bias in the results. Prior to data collection, students were assured that participation in this study was entirely voluntary and would have no academic implication from the study.

**Data analysis**

Data were analyzed using the IBM SPSS® (Statistical Package for the Social Sciences) software version 20. Burnout was categorized into ‘Significant burnout’ and ‘Non-significant burnout’ based on the cut-off mean score of 50-points. Descriptive statistics were used to generate the prevalence of significant burnout. Each factor was categorized into two categories and analyzed using a Chi-Square test to determine its association with burnout. Further analysis to determine the significant associated factors for burnout was done using multiple logistic regression.

**Ethics approval**

This research was approved by Universiti Sultan Zainal Abidin Human Research Ethics Committee on 21st October 2019 (UniSZA.C/2/UHREC/628-23Jld 2(14)).

### Results

The number of participants who consented and responded to the online questionnaire was 105. The percentage of response was 88.0%. The socio-demographics of the participants are presented in Table 1.

**Table 1. Participant demographics (n=105)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>28 (26.7)</td>
</tr>
<tr>
<td>Female</td>
<td>77 (73.3)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>65 (61.9)</td>
</tr>
<tr>
<td>Non-Malay</td>
<td>40 (38.1)</td>
</tr>
<tr>
<td>Type of secondary school</td>
<td></td>
</tr>
<tr>
<td>Normal school</td>
<td>69 (65.7)</td>
</tr>
<tr>
<td>Boarding school</td>
<td>36 (34.3)</td>
</tr>
<tr>
<td>Entry CGPA</td>
<td></td>
</tr>
<tr>
<td>4.00</td>
<td>66 (62.9)</td>
</tr>
<tr>
<td>3.6 to 3.99</td>
<td>39 (37.1)</td>
</tr>
<tr>
<td>Made the correct decision in choosing medical course</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>92 (87.6)</td>
</tr>
<tr>
<td>No</td>
<td>13 (12.4)</td>
</tr>
<tr>
<td>Thinking of dropping out</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>43 (41.0)</td>
</tr>
<tr>
<td>No</td>
<td>62 (59.0)</td>
</tr>
<tr>
<td>Emotional intelligence</td>
<td></td>
</tr>
<tr>
<td>High (&gt;2.80)</td>
<td>58 (55.2)</td>
</tr>
<tr>
<td>Average &amp; low (&lt;2.80)</td>
<td>47 (44.8)</td>
</tr>
</tbody>
</table>

The majority of the participants were female, Malay, from normal school, of perfect entry CGPA score and high emotional intelligence score.

The prevalence of significant burnout, personal burnout and study-related burnout is as shown in Table 2.

**Table 2. Prevalence of burnout**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prevalence (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall burnout</td>
<td>41.0</td>
<td>31.5; 50.1</td>
</tr>
<tr>
<td>Personal burnout</td>
<td>63.8</td>
<td>53.9; 73.0</td>
</tr>
<tr>
<td>Study-related burnout</td>
<td>39.0</td>
<td>29.7; 49.1</td>
</tr>
</tbody>
</table>

The prevalence of personal burnout is higher than that of study-related burnout. Table 3 shows the association between students’ factors with burnout.

**Table 3. Association between students’ factors and burnout (n=105)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prevalence (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
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<td>Male</td>
<td></td>
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<tr>
<td>Female</td>
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<tr>
<td>Race</td>
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<tr>
<td>Malay</td>
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<td>Non-Malay</td>
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<td>Type of secondary school</td>
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<tr>
<td>Entry CGPA</td>
<td></td>
<td></td>
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<tr>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6 to 3.99</td>
<td></td>
<td></td>
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<tr>
<td>Made the correct decision in choosing medical course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
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<tr>
<td>Thinking of dropping out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional intelligence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (&gt;2.80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average &amp; low (&lt;2.80)</td>
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</tbody>
</table>
Correct decision in choosing medical course, thinking of dropping out and emotional intelligence were significantly associated with burnout. Table 4 shows the factors associated with burnout by simple and multiple logistic regression models.

A student with emotional intelligence in the average or low category had 3.24 times higher odds of having burnout. Those who answered “No” for the question “Made a correct decision to do medicine” had 6.06 times higher odds than those who answered “Yes”. Those who had ever thought of dropping out had 3.06 times higher odds to have burnout than who had not.

Discussion

The main findings of this study were that about 41% of clinical year students had burnout and the significant associated factors were not making the correct decision to choose medicine, having thought of dropping out and lower emotional intelligence.

The prevalence of burnout among medical students in general vary from country to country with no specific pattern. Some countries show a low prevalence while some show high prevalence. Erchens et al., (2019) summarised in their systematic literature review and meta-analysis that the prevalence of burnout among medical students was between 7.0% and 75.2%, depending on the instrument and cut off point used [17]. Although studies in Iran showed a high prevalence of burnout among medical students.
students, studies in Saudi Arabia[18] and Oman showed that the prevalence was low[19].

A recent study on burnout was done by Wing et al., (2018) [20]. Their study included varieties of students from many medical schools including abroad with different curriculum and different learning environment. The prevalence of burnout among medical students using CBI was 27.3%, lower than the present study. However, their study showed that the prevalence of burnout in medical students was higher compared to non-medical students.

It is known that clinical years are challenging to medical students not only because they are exposed to a new clinical environment but also because of the increased duration of teaching and learning time. A few studies supported the higher prevalence of burnout during clinical years [21–23]. When medical students were followed up from year one to final year, the prevalence of burnout increasingly higher as the year progressed [24]. Not only the prevalence of burnout is higher in clinical year students, the severity of burnout is also higher among clinical year students [25]. Among the main sources of stressors that lead to burnout in the clinical year students were issues related to their clinical skills, fear of harming patients, parental expectations and fear of future career [25].

Another important factor that was found to be associated with a higher prevalence of burnout in clinical year students was increased workload [26]. Mazurkiewicz et al., (2012) found that burnout started to emerge at the start of clinical years and was associated with sleep deprivation and lack of confidence in clinical knowledge and skills [27].

Although many studies showed the higher prevalence of burnout during clinical years, in contrast, a study by Muzafar et al., (2015) showed that the prevalence was lower in clinical year students [27],

In the current study, the prevalence of burnout was higher in the personal burnout domain than the study-related domain. The higher prevalence of personal burnout compared to study-related burnout was similar to that of a study done at another Malaysian public medical school using the same instrument [28]. Personal burnout is related to the perception of burnout of oneself while study-related burnout is related to the feeling of burnout due to academic activities. Personal burnout may be contributed by non-academic factors such as psychosocial support (family, peers, faculty members), physical support (financial, study essentials such as a computer, books, internet, transport), inadequate rest or time for extracurricular activities or leisure, personality, resilience and coping skills. On the other hand, study-related burnout may be contributed by factors such as the nature of the curriculum, expectations from patients and teachers or the competitive nature in medical schools.

Specifically, to the medical students involved in this study, their teaching and learning activities were typically started at 8 a.m. and finished at 5 p.m. Twice to Three times a week they were expected to follow night duties which were from 6 p.m to 12 midnights. The high teaching and learning hours for these students compared to those in the pre-clinical years may have contributed to the physical and emotional exhaustion, lack of sleep and lack of time for social activities such as exercise and extracurricular activities. Social activities such as listening to music was associated with lower burnout level while physical exercise was associated with reduced stress as stress was shown to be a strong predictor for burnout [29,30].

Our study showed that there was no significant difference in the prevalence of burnout between male and female. Similarly, other studies also showed that sex has no significant difference in burnout prevalence [6,20,31]. A study by Cecil et al., (2014) on 356 medical students at the University of St Andrews and Manchester UK, gender and year of study were not significantly associated with burnout [5]. However, Altunmir et al., (2019) showed that female has a significantly higher burnout than male with odd ratio of 4.34 compared to male [18]. A study by Kristensen et al., (2005) showed that occupations of which the majority are females scored high in both personal and work-related burnout [11]. A study in Brazil also supported that female had a higher prevalence of burnout [32]. In the original study by Maslach and Jackson (1981), female had a statistically significant higher score of emotional exhaustion than male [33].

The higher prevalence of burnout among female is probably due to the higher tendency of female to develop stress. Previous studies have shown that there is a relationship between stress and burnout. Female was shown to have more life stressors and perceived stress more than male [34]. Amr et al., (2008) showed that depression and neurotic personality was related to burnout and depression and neuroticism personality was also found to be higher in female medical students [35]. Although women tend to have a higher risk of burnout than men, women were more prone to emotional exhaustion while men were more prone to depersonalisation [36]. The same findings were found by Maslach and Jackson (1981) [33].

Our study showed that entry CGPA was not significantly associated with burnout although the percentage of burnout was shown to be higher in the low CGPA group. In this study, CGPA results were retrospective performance, therefore the relationship might not be seen. There are not many studies showing the relationship between previous academic performance and burnout. However, a few studies have shown the relationship between current academic performance and burnout. A study by Balogun et al., (1996) showed no relationship between academic burnout and academic performance. However, a more recent study among university students showed a negative relationship between burnout and...
academic performance [38]. Not only burnout affected academic performance, it also affected the students’ physical health. Few other studies also supported the negative relationship between burnout and academic performance [39–43]. A study by Galbraith and Merill (2014) showed that burnout among university students not only affect their academic performance but also their work performance during training [42].

In our study, 8% of students stated that they did not make the correct decision to do medicine. The result was similar to the findings in the study done by DeWitt et al., (2016) in a study involving five medical schools in Australia where about 10% of students did not think that they have made the correct decision to do medicine [43]. In the study, about 50% of their students experienced burnout. A study by Costa et al., (2012) found that factors associated with burnout among medical students included the thought of dropping out and dissatisfaction with the course activities [44]. Interest in subjects was an important factor in choosing a career or programme to pursue [45]. Lack of interest in the subject may lead to demotivation, dropping out and failed career.

Emotional Intelligence was associated with lower levels of anxiety, stress, burnout and higher levels of satisfaction with life in undergraduate students [46]. Among non-medical students, EI was consistently showed to have a negative relationship with burnout. A negative relationship was shown among student nurses in Korea, Iranian university students, architecture students and student teachers in Iran[47–50]. Swami et al., (2013) studied 46 resident doctors at an institution in India to look at the relationship between stress, burnout and EI [51]. They found that perceived stress was positively correlated with burnout while EI was negatively correlated with burnout. They also hypothesized that perceived stress has a mediator effect between EI and burnout. The way how EI can prevent burnout is by how one controls his/her emotions [52]. This skill is very important in a doctor and as a worker who involves in managing human beings in general. EI can help an individual interpret and respond to a situation that might lead to a stress response in the brain [53]. EI helps to control this stress response. EI also modifies how an individual responds to negative emotions such as anger, sadness, anxiety and being scared [54]. Excessive negative response will lead to burnout. One of the main keys in EI is understanding the emotion of self. This includes the ability of an individual to interpret his/her feelings and know when to take action or help, for example to prevent burnout [55]. This is one of the ways how EI can prevent burnout.

Conclusion and recommendation

The prevalence of burnout is quite high among clinical year medical students. Incorrect decision to do medicine, the thought of dropping out and emotional intelligence were associated with burnout. Interest in medicine and emotional intelligence may be considered in students’ selection into medical school to prevent burnout among medical students. In addition, emotional intelligence development may be recommended to be included in the medical curriculum, whether formally or informally.

Conflict of Interest

The authors would like to declare that there was no conflict of interest in this study. The study did not receive any source of funding.

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