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# BURN OUT AND ITS ASSOCIATION WITH EMOTIONAL INTELLIGENCE AMONG MEDICAL STUDENTS AT HITEC-IMS TAXILA

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## ABSTRACT

**Introduction** Burnout(BO) commonly threatens the mental health of medical students and Emotional Intelligence (EI) enhances an individual's capacity to navigate through environmental challenges, particularly burnout. This study is aimed to explore the relationship between burnout and emotional intelligence among medical students.

**Methodology.** From Dec- July 2023 a cross sectional study was conducted at HITEC-IMS. The sample size calculated by the Rao Soft calculator was 218. Data was collected from 223 medical students selected by random sampling. Diagnosed cases of any psychiatric illness and recently migrated students were excluded from the study. Validated questionnaires (BEIS10 and CBI) were administered to measure emotional intelligence and burnout respectively. Data was analyzed by SPSS version 23.

**Results** Out of 223 students 113(50.7%) were male and 167(74.9%) were hostellite. The mean age was 21.37$\pm$ 1.806. The mean Emotional intelligence score was 3.58$\pm$0.705, which was in the high category (>3). Mean Burnout score was 51.71 $\pm$ 12. Good Emotional intelligence was observed among 196(87.9%) medical students. Moderate to high Burnout was found in 123(55%). Female students were significantly more emotionally intelligent than males (p=0.03) and BO was more among females as well (p=.01). Emotional intelligence decreased with the increase in study year but the BO increased vice versa (p=0.00 &0.04). Analysis revealed that EI had significant and negative impact on BO. (r =-0.27, p-value =0.00).

**Conclusion** The study highlights significance of EI among medical students and its negative association to burnout. Upgradation of Program to improve EI of the students will help them to withstand workload and stress. Provision of favorable environment can help in reduction of burn out.

**Keywords:** Burnout, emotional intelligence, stress, medical students, medical education.

## INTRODUCTION

The World Health Organization (WHO) has defined the term "burnout", as long-standing work-related stress. Burnout is now becoming well known in the medical field, as the incidence rates of burnout among doctors is exceeding those of non-physician. (1) Burnout is a psychological syndrome which can be described as an extreme consequence of continued stress exposure at work, which arise as a result of unbalance between professional demands and personal capacities over a long period of time. (2) We can hypothesize burnout as a disorder of emotional exhaustion, depersonalization, and a low sense of personal achievement that eventually leads to destructive consequences to mental health and psychological function. (2,3) It is mostly found in professionals interacting with people, such as medical staff, lawyers, and teachers. The higher prevalence of psychological distress among medical students than the general population is the most probable reason of alarming situation of burnout among them. (2)

One out of every two medical students suffers from burnout, even before residency (2). The medical course spans a five-year time frame. It is not unbeknownst to even the common man that medical students are overburdened which inevitably comes with burnout. Moreover, the ever-growing population is imposing an inescapable burden on the health sector and, resultantly, on doctors. This adds more to medical students' sense of responsibility, anxiety, and stress, which is a one-way route to burnout. (2) The prevalence of burnout among medical students during medical training is high, approximately 43.3% are suffering from burnout and 35-45% were identified with high emotional exhaustion, high depersonalization was experienced by 26–38% and 45–56% were having symptoms suggestive of burnout. (4) Burnout potentially has decisive professional and personal concerns, such as the increased frequency of medical errors, lapses in professionalism, delayed learning, problematic alcohol use, depression, anxiety, and suicidal ideation. (2)

Emotional intelligence (EI), has been defined as the ability to monitor, understand, and guide one's thinking and actions. Emotional intelligence is a set of non-cognitive skills that proliferates an individual's ability to come upon environmental complications, predominantly burnout (2). Emotional intelligence, therefore, is an essential component of one's mental health. EI enables an individual to understand his/her feelings that might generate a stress response in the brain and know when to take step to prevent burnout. (6) EI is an important protective factor against burnout. EI also equips an individual to respond to negative emotions such as anger, sadness, anxiety and scare. (2,6) Emotional Intelligence or EI depends on various factors including emotional self-awareness, self-control, adaptability, empathy, teamwork, leadership, and social awareness; these have been cited as essential constructs for individual professional development and decision-making. (1) Emotional intelligence is consistent with better adaptation and success in academic circumstances. Furthermore, prominent levels of emotional intelligence are related to higher levels of satisfaction with life and lower levels of anxiety, stress, and burnout. (2) Consequently, emotional intelligence is suggested as a foremost, personality-level predictor of burnout dimensions and satisfaction with life. (2)

EI is considered important in the medical field as well as in medical education because the learning and working environment involves socializing with variety of people from patients to colleagues and administrators. Empathy is the utmost important virtue in medical field, so for medical personnel to be empathic, firstly they need to understand their own as well as others' emotions. This is why EI is important. (6) EI and burnout go hand in hand with one another. (4) The method by which EI can prevent burnout is how one controls his/her emotions. (1). Emotional intelligence can be recognized as a subtype of social intelligence as it involves observation and do the analyses of emotions which helps to guide thoughts and actions. Emotional intelligence is now being recognized as an important life skill of medical students and healthcare providers. (7) Emotional intelligence also has a momentous role in academic situations, including burnout, academic adjustment and satisfaction with life. (8)

EI skills are becoming a top priority for institutions seeking maximum productivity and efficiency. Working environment, interpersonal communication and dealing with patients improves with EI. Despite this, EI has not been considered a vital component in the medical training of physicians.

Studies on the relationship between EI and burnout among medical students at HITEC-IMS are lacking till date. Early identification of burnout among the students can help in developing timely interventions to prevent the long term negative impacts on the mental health and academic performance of the medical students. It is anticipated that the findings of this study will benefit both students and medical institutions. Insights from this research can inform the development of curricula that include emotional intelligence training, promoting resilience and well-being among students. Enhancing emotional intelligence in medical students can improve their communication skills, empathy and patient care, leading to better professional competence and patient outcomes. The findings can also guide policymakers in creating supportive educational environments and mental health resources tailored to the needs of medical students. This study was conducted with the aim to determine the prevalence of burnout, assess the level of EI and to determine the association of EI and BO among medical students of HITEC-IMS Taxila. We hypothesize that medical students with higher EI skills experience lower levels of burnout.

## METHODOLOGY

The study was conducted at HITEC-IMS Taxila, for 8 months, between December 2022 to July 2023. It was a cross-sectional study involving the MBBS students of HITEC-IMS Taxila, with a sample size of 218, calculated by using Rao soft calculator. 500 medical students as the population, 95% as a confidence interval, 5% chance and an anticipated frequency of 50%. Students of MBBS studying at HITEC-IMS Taxila were included in the study with the exception of the students diagnosed with any psychiatric illness. Students migrated from other medical institutes during the last six months were also excluded. A cluster sampling technique was used to collect data. Five years of MBBS were identified as 5 clusters. A random sample was taken from all the five years of the study.

Two validated questionnaires for emotional intelligence and Burn Out were used for the collection of data respectively. The Brief Emotional Intelligence Scale 10 is a valid and reliable measurement tool that has particular utility in situations where brevity is important. (Cronbach's α 0.81)[9]. The BEIS-10 is a useful tool for measuring the EI quickly while retaining adequate psychometric properties. 10 Items on the Brief Emotional Intelligence Scale are based on five factors e.g. Appraisal of own emotions, Appraisal of others 'emotions, regulation of own emotions, regulation of other's emotions and utilization of emotions. Each item is rated on a 5-point Likert scale of 1 = "Strongly Disagree" to 5 = "Strongly Agree."(9,10,11) Copenhagen Burnout Inventory (CBI) was used to calculate burnout in our study sample. Copenhagen Burnout Inventory (CBI) consists of 19 items. It is a public domain tool developed to assess the core features of burnout (fatigue and exhaustion) concerning personal life (personal burnout), work (work-related burnout), and service to clients (client-related burnout. (Cronbach's alpha 0.83 to 0.872).(12,) We included personal burnout and work-related burnout in our study. SIX items concerning personal burnout were on response categories: Always, Often, Sometimes, Seldom, Never/almost never. The first Three Items concerning work-related burnout were in a response category of: To a very high degree, To a high degree, Somewhat, To a low degree, To a very low degree. And Last four items were in a response category of: Always, Often, Sometimes, Seldom, Never/almost never. If less than four questions were answered in any section, the respondent were classified as a non-responder.

Data was collected through google forms. It was analyzed by using SPSS version 23. Frequency and percentages were calculated for qualitative variables. Mean scores with standard deviation were calculated for Emotional Intelligence and burnout. The relationship between EI and burnout was analyzed by using the Pearson correlation. Further analysis using simple linear regression was done to determine a significant linear relationship between EI and burnout with a predetermined alpha value of 0.05. High scores of CBI and BEIS indicated high levels of burnout and emotional intelligence respectively. The minimum score of BEIS 10. is 1 and the maximum score is 5. Students Scoring < 3 were considered to have compromised emotional intelligence and those scoring > 3 were considered as having good emotional intelligence. The minimum score of CBI is 0

and the maximum score is 100. Students scoring 50 were labelled as having high levels of burnout. (6)

**Ethical consideration**: The study was approved by HITEC-IMS Institutional Review Board (IRB) project number 32-2024 dated 11th march 2024. Brief description of the study was given with google form links. Participants were informed through mails that participation in the research is voluntarily and completion of the study forms constituted consent. All participant consent and data were collected in complete confidence throughout the study without any delay.

## RESULTS

### Demographic Characteristics of Medical Students:

A total of 223 medical students from all five years of MBBS participated in the study. Each year had almost an equivalent number of the participants except 3rd year. Male students were 113(50.7%) while female students were 110 (49.3). The sample comprised of167(74.9%) hostellite and 56(25.1%) day scholars. Participants in the study were in the age range of 18-27 years. The mean age was 21.37± 1.806. The Detailed demographics of the participants of the study are given below in Table 1

**Table 1: Frequency Distribution of the Medical Students according to Gender and Living status (n=223)**

| Year of the study | | Gender | | Residential status | |
|---|---|---|---|---|---|
| Year | Total selected n(%age) | Male n(%age) | Female n(%age) | Hostellite n(%age) | Day scholar n(%age) |
| 1st | 44(19.7) | 22(19.4) | 22(20) | 37(22.1) | 7(12.5) |
| 2nd | 55(24.7) | 29(25.6) | 26(23.6) | 46(29.3) | 9(1.6) |
| 3rd | 36(16.1) | 13(11.5) | 23(20.9) | 21(12.5) | 15(26.7) |
| 4th | 43(19.1) | 19(16.8) | 24(21.8) | 30(17.9) | 13(23) |
| 5th | 45(20.3) | 30(26.5) | 15(13.6) | 33)19.7) | 12(21.4) |
| Total | 223(100) | 113 | 110 | 167 | 56 |

### The Level of EI and Burnout Among Medical Students

Mean Emotional intelligence scores of all the five domains of EI calculated by BEIS 10 were in the high category (>3). The mean score of EI with SD was 3.588 ±0.7055 and the mean score of the utilization of emotions was the highest amongst all scores (3.84±.878). The overall Mean Burnout score and the burnout score of personal and work-related domains were calculated by CBI and were slightly in the higher range (>50). The mean Burnout score was 51.71 ± 12. A large proportion of the medical students 196(87.9%) were identified as having good Emotional Intelligence. Significant prevalence of moderate to high burnout was observed among medical students. Out of 223 students 123 (55%) were detected with moderate to high level of burnout. The prevalence was notably higher among females, with 68 (61.8%) experiencing moderate to high levels of burnout, compared to 55 males (48.6%). Burnout levels varied significantly across different years of the MBBS program. In the first year, 19 students (43.18%) exhibited moderate to high burnout, while among second year prevalence was comparatively higher than first year affected 32 (58.18%) students. The pre-clinical years showed a greater prevalence of burnout than the basic years, with 24 third-year students (66.66%) and 28 fourth-year students (65.11%) affected. In contrast, 20 final-year students (44.44%) experienced moderate to high burnout. Among hostellite and day scholars, the prevalence of moderate to high burnout was nearly identical, with 92 hostellite (55.08%) and 31 day scholars (55.35%) affected, indicating no significant difference between these groups. The detailed results of EI and Burnout Scores are given in table 2 &3

**Table 2: EI Scores of the Medical Students (n=223)**

| Variable | n(%age ) | Mean (SD) |
|---|---|---|
| **Overall EI** | | 3.58±.705 |
| **EI domains** | | |
| Appraisal of own emotions | | 3.5404±.90950 |
| Appraisal of other's emotions | | 3.6435±.91511 |
| Regulation of own emotions | | 3.4462±.92599 |
| Regulation of other's emotion | | 3.4686±.94864 |
| Utilization of emotions | | 3.8453± .87871 |
| **EI Level Category (n =223)** | | |
| **Level Category** | **n** | **%age** |
| Compromised EI | 27 | 12.1 |
| Good EI | 196 | 87.9 |

**Table 3: BO Scores of the Medical Students (n=223)**

| Variable | N | Mean (SD) |
|---|---|---|
| Overall BO | 223 | 51.7166±12.08963 |
| **BO Domains** | | |
| Personal BO | | 54.3550±17.71107 |
| Work-related BO | | 51.7166 ± 12.08963 |
| **BO Level Category** | | |
| Level of BO | N | %age |
| Low level of BO | 100 | 44 |
| Moderate / High BO | 123 | 55 |

The mean EI (SD) and BO scores by sex, residential status and year of the study are presented in Table 4

**Table 4: Mean EI and BO scores of the MBBS students by gender, residential status and year of the study (n=223)**

| Variable | Mean score(SD) | | P-Value | |
|---|---|---|---|---|
| | EI Score | BO Score | EI | BO |
| **Gender** | | | | |
| **Male(n=113)** | 3.4531±.78627 | 49.6834± 10.6294 | | |
| **Female(n=110)** | 3.7282±.58312 | 53.8052±13.14930 | 0.003 | 0.011 |
| **Residential Status** | | | | |
| **Hostellite (n=167)** | 3.5928±.67445 | 51.0739±12.20270 | 0.88 | 0.16 |
| Day scholar (n=56) | 3.5768± .79772 | 53.6333±11.64181 | | |
| **Year of the study** | | | | |
| **1st year** | 3.8545±.46077 | | | |
| **2nd year** | 3.6564±.67406 | 47.3185±15.36277 | | |
| | | 51.9264±9.66687 | 0.00 | 0.048 |
| **3rd year** | 3.7556±.52013 | 54.4312±9.83952 | | |
| | | 54.1833±11.99635 | | |
| **4th year** | 3.5419±.65728 | 51.2317±12.08735 | | |
| **5th year** | 3.1578±.90992 | | | |

**The Relationship of Burnout with EI Among the Medical Students:**

The Pearson correlation analysis between emotional intelligence (EI) and burnout revealed a very low but statistically significant negative correlation ($p < 0.001$), as shown in Table 5. This indicates that as emotional intelligence increases, burnout tends to decrease.

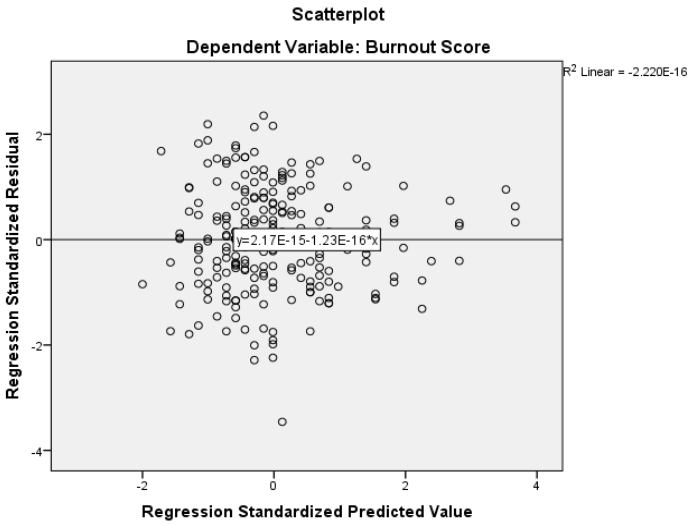
**Table 5: Correlation between EI and burnout**

| Variable | Level of EI | |
|---|---|---|
| **Level of BO** | **r** | **P-value** |
| | -0.279 | 0.00 |

Further analysis using linear regression demonstrated a significant linear relationship between emotional intelligence (EI) and burnout. EI was found to be a significant predictor of burnout, with the model showing $F(1, 29916) = 18.696$, $p < 0.001$. The results, detailed in Table 6, reveal that EI has a significant negative impact on burnout. Specifically, an increase of 1 unit in the EI score corresponds to a decrease of 0.78 units in the burnout score ($p = 0.00$).

**Table 6: Relationship between EI and burnout**

| Variable | b(95% CI) | T statistics | P-value | $r^2$ |
|---|---|---|---|---|
| EI mean score | -4.785 (-6.966,-2.604_ | -4.324 | 0.00 | 0.78 |




## DISCUSSION

In this study, conducted among 223 medical students at HITEC-IMS Taxila, we explored the prevalence of burnout and its association with emotional intelligence (EI). Moderate to high burnout was found in most of the medical students and it was observed that prevalence was highest among students of pre-clinical years (3rd & 4th Year MBBS) followed by the students of final year and first year. This could be due to the intense academic pressure and the transition from theoretical knowledge to more practical and clinical applications among students of pre-clinical and clinical years which might be overwhelming for students at this stage. Among first year students the challenges of adjustment to a rigorous medical curriculum and the demands of medical education can be the most possible factor leading to burnout among them. Interestingly, the second-year students exhibited a comparatively lower prevalence of burnout. This might be attributed to a period of academic adjustment and a relatively balanced workload before the more demanding pre-clinical years. But a study conducted at Shifa College of Medicine, Islamabad reported contradictory results in that the stress or the burnout was similar in all academic years (13). Such contradiction in results may be due to different course periods allotted to each year, variation in the academic environment or cultural factors. Whereas a cross-sectional study in Cyprus reported similar results to our study

that students in clinical years (4th and above) experienced significantly more burnout than the students in non-clinical years (1st to 3rd) (12). In our study burnout levels were found to be similar among day scholars and hostellite however, a study conducted at Shifa College of Medicine reported a higher rate of burnout in day scholars (13). This discrepancy in results could be attributed to the disproportionate sample size we use and the difference in the academic environment.

The study also revealed that burnout was more prevalent among female students than male students, suggesting that gender-specific stressors and greater emotional demands may play a role in the development of burnout. This finding aligns with other researchers indicating that female medical students experience higher levels of burnout. (2,4,10, 13, 15,14)

The mean emotional intelligence scores calculated by BEIS-10 were in the high category. Majority of the students were having high emotional intelligence. Another study conducted in Malaysia also reported an overall EI score just above the high category and more than half were in the high EI category (2). These results are also consistent with another study conducted in Saudi Arabia in which the results revealed that medical students have a moderate to high level of emotional intelligence (16).

A negative correlation was found between emotional intelligence and burnout. An increase in EI scores leads to a decrease in burnout scores. The hypothesis of the study- that medical students with higher EI skills experience lower levels of burnout- hence is supported by our data. Emotionally intelligent people understand how to manage their own and others' emotions, and being able to manage emotions successfully makes them less prone to burnout. A similar association between EI and burnout was found among residency and fellowship program directors that those with high EI experienced lower levels of burnout in a study conducted in Pennsylvania (1). In another study, medical students with higher scores of emotional intelligence experienced lower inefficiency and academic burnout (2). In our study, an increase in 1 unit of EI score will decrease the burnout score by 0.78 units (P-value 0.00), whereas in the same Iranian research done on medical students increase in one score of emotional intelligence decreased burnout by 0.366 scores (P-value < 0.001) (2). Another study showed a significant negative correlation between emotional intelligence and burnout (6).

Based on the findings of this research, it is recommended that medical schools should integrate emotional intelligence (EI) training into their curricula to help students manage stress and reduce burnout. Regular mental health assessments should be implemented to identify at-risk students early, allowing for timely interventions such as counseling and stress management programs. Additionally, fostering a supportive learning environment where students feel comfortable seeking help is crucial in mitigating burnout. Special attention should be given to addressing gender-specific challenges, particularly for female students who may face unique stressors. Encouraging a healthy work-life balance through time management strategies and manageable academic workloads is also essential. Further research is recommended to explore the specific factors contributing to burnout, leading to the development of targeted policies and interventions.

The limitations of this research include its focus on a single institution, which may limit the generalizability of the findings to other medical schools with different academic environments, cultures or student demographics. Additionally, the disproportionate sample sizes from different academic years and genders could introduce bias, potentially skewing the results and making it difficult to draw definitive conclusions about burnout prevalence and its association with emotional intelligence across all groups. These factors may affect the overall reliability of the study, highlighting the need for more diverse and representative sampling in future research.

## CONCLUSION:

The study highlights the significance of emotional intelligence (EI) among medical students. EI is a protective mechanism against the negative outcomes associated with burnout among medical students. The study depicts that students with high EI are at low risk of burnout. These findings underscore the importance of incorporating EI training and mental health support into medical

education to help mitigate burnout and improve the overall well-being of students. The role of better working environment and supporting culture can be studied to prevent burnout.

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