Section: Community Medicine

Original Research Article

EMOTIONAL INTELLIGENCE AND ITS ASSOCIATED FACTORS AMONG POSTGRADUATE MEDICAL STUDENTS IN A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

Swaminathan Manoj Kumar[1], Vimal M Holambe[2], Ajit S Nagaonkar[3]

[1]*Assistant Professor, Department of Community Medicine, Government Medical College Ramanathapuram, Tamil Nadu, India.*
[2]*Associate Professor, Department of Community Medicine, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, India.*
[3]*Professor & Head, Department of Community Medicine, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, India*

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Corresponding Author:
Dr. Swaminathan Manoj Kumar, Assistant Professor, Department of community Medicine, Government Medical College Ramanathapuram, Tamil Nadu, India.

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ABSTRACT

Background: Emotional intelligence (EI) is associated with prosocial behaviour, academic performance, professional success, empathy, and cognitive functioning. This study assessed EI among postgraduate (PG) medical students and examined its association with selected sociodemographic, residency-related, and lifestyle factors.

Materials and Methods: A cross-sectional analytical study was conducted among all 186 PG medical students in a tertiary care teaching hospital. EI was assessed using the Schutte Self-Report Emotional Intelligence Test. Data were analysed using IBM SPSS Version 21. Independent t-test, one-way ANOVA, and multivariable linear regression were used to identify factors associated with EI.

Results: The mean EI score among the participants was 123.70 ± 5.33. Multivariable linear regression demonstrated significant positive associations of EI with female gender (adjusted $\beta = +2.14$, $p < 0.001$), advancing age (adjusted $\beta = +0.41$, $p = 0.008$), year of residency (adjusted $\beta = +2.05$, $p < 0.001$), and leisure-time physical activity (adjusted $\beta = +1.19$, $p = 0.016$). Conversely, EI was negatively associated with weekly working hours (adjusted $\beta = -0.48$, $p = 0.012$) and emergency duty (adjusted $\beta = -1.58$, $p = 0.019$).

Conclusion: EI among PG medical students was positively associated with age, residency experience, female gender, and leisure-time physical activity. Higher workload and emergency duties were associated with lower EI. No significant associations were observed with religion, place of residence, specialty, or past history of trauma. Strategies promoting physical activity and addressing excessive workload and emergency-duty burden may help support emotional well-being and professional functioning among resident doctors.

Keywords: Emotional Intelligence; Postgraduate Medical Students; Resident Doctors; Schutte Self-Report Emotional Intelligence Test; Medical Education.

INTRODUCTION

Emotional intelligence (EI) is the ability to perceive, understand, regulate, and effectively use emotions in oneself and others. It has emerged as an important competency in medical education because it influences communication, empathy, professionalism, leadership, teamwork, stress management, and patient-centred care. Physicians with higher emotional intelligence are better equipped to cope with occupational stress and establish effective therapeutic relationships, thereby improving both physician well-being and patient outcomes.[1-21] Postgraduate residency is a demanding phase of medical training characterized by long working hours, emergency duties, night shifts, academic commitments, and high patient loads. These workplace demands may adversely affect emotional well-being and professional performance. Previous studies have demonstrated

associations between emotional intelligence and factors such as burnout, perceived stress, workload, empathy, and academic performance among medical trainees.[5-18] However, evidence regarding the influence of demographic characteristics, residency-related factors, and lifestyle behaviours remains inconsistent. While some studies have reported higher emotional intelligence among female students and increasing emotional intelligence with advancing years of training, others have found no significant association with gender, age, or specialty.[2,15-22]

Although several studies have evaluated emotional intelligence among medical students, relatively few have focused exclusively on postgraduate medical students. Moreover, most studies have assessed selected variables independently, and limited evidence is available regarding the combined influence of demographic, residency-related, and lifestyle factors using multivariable linear regression analysis.[2,7,16,17] The inconsistent findings across studies indicate that the determinants of emotional intelligence are likely to vary according to institutional environment, workload, and sociocultural context.[10,13,21]

In Indian tertiary care teaching hospitals, postgraduate students are exposed to heavy patient loads, prolonged duty hours, frequent emergency responsibilities, and considerable occupational stress, all of which may influence their emotional intelligence and, consequently, their communication, teamwork, and patient care.[1,3,5,6,8,18] Despite these challenges, there is limited evidence from Indian tertiary care teaching hospitals evaluating emotional intelligence among postgraduate medical students. Furthermore, there are not many published studies that have comprehensively examined emotional intelligence in relation to demographic, residency-related, and lifestyle factors. Understanding these associations in the local context is important for designing targeted interventions to improve resident well-being, resilience, professionalism, and quality of patient care.

Therefore, the present study was undertaken to assess the emotional intelligence of postgraduate medical students in a tertiary care teaching hospital and to determine its association with sociodemographic characteristics, residency-related factors, and lifestyle factors.

MATERIALS AND METHODS

In this cross-sectional analytical study, conducted from August 2023 to February 2024, 186 postgraduate medical students from various departments of a government tertiary care teaching hospital were included. Following approval from the Institutional Ethics Committee and permission from the dean of the institution, a list of all postgraduate medical students enrolled in each department was obtained. All postgraduate medical students enrolled at the institution during the study period were screened for eligibility. The inclusion criterion was all postgraduate medical students who were willing to participate and provided written informed consent. The exclusion criteria comprised postgraduate medical students who were unwilling to participate or did not provide written informed consent, those who were unavailable during the data collection period owing to long-term leave or deputation, and those who submitted incomplete questionnaires. All eligible postgraduate medical students fulfilling the inclusion criterion were invited to participate. As the study aimed to include the entire accessible population of postgraduate medical students, a total enumeration (census sampling) approach was adopted. Consequently, all 186 eligible postgraduate medical students were enrolled in the study. Thus, our study was conducted with the primary objective of assessing the level of emotional intelligence (EI) among postgraduate (PG) medical students in a tertiary care teaching hospital. The secondary objective was to determine the association between emotional intelligence and selected sociodemographic characteristics, residency-related factors, and lifestyle factors among postgraduate medical students and provide recommendations based on the study findings. It was hypothesized that EI among postgraduate medical students is significantly associated with selected sociodemographic characteristics, residency-related factors, and lifestyle factors. Written informed consent was obtained from all participants prior to data collection. Participants were requested to provide complete and accurate information and were assured that all information collected would be treated with strict confidentiality. Data collection was done using the following tools: 1) Demographic data were collected using a pre-tested semi-open-ended questionnaire. 2) Emotional intelligence was assessed using the Schutte Self-Report Emotional Intelligence Test (SSEIT), a standardized and validated self-administered questionnaire developed by Schutte et al. in 1998. The instrument consists of 33 items designed to assess the overall level of emotional intelligence based on the Salovey and Mayer model of emotional intelligence. Responses are recorded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Three negatively worded items (items 5, 28, and 33) are reverse scored. The total score ranges from 33 to 165, with higher scores indicating higher emotional intelligence. The scale assesses four domains of emotional intelligence: emotion perception, utilizing emotions, managing self-relevant emotions, and managing others' emotions. The SSEIT has demonstrated good psychometric properties, with high internal consistency (Cronbach's alpha ≈ 0.87–0.90) and satisfactory construct validity across different populations, including medical students.[9] "Data were compiled, cleaned, and analysed using IBM SPSS Statistics for Windows, Version 21.0. Continuous variables were assessed for normality prior to statistical testing. Normally distributed continuous variables are presented as Mean ±

Standard Deviation (SD), while skewed parameters or variables with severe group size imbalances (e.g., addiction status) are reported as Median (Interquartile Range [IQR]).

Bivariate comparisons of mean Emotional Intelligence (El) scores across demographic, residency-related, and lifestyle factors were conducted using independent-samples t-tests for two-group variables and one-way analysis of variance (ANOVA) for variables with three or more groups. The non-parametric Kruskal-Wallis H-test was utilized to assess differences across highly unbalanced subgroup categories. To identify the independent predictors of emotional intelligence and control for potential confounding variables, factors demonstrating statistically significant or near-significant associations in bivariate analyses were entered into a multivariable linear regression model. Adjusted β-coefficients along with their corresponding standard errors and 95% confidence intervals (95% CI) were calculated. A two-tailed P-value of < 0.05 was considered statistically significant for all analyses."

RESULTS

The mean scores of EI among the study participants were 123.70 with a standard deviation of 5.33, and the distribution of scores for the subscales of EI has been depicted in Table 1 and figure 4. The demographic characteristics of the participants are depicted in Figure 1. The majority of students, 152 (81.7%) were in the age group of 25 – 29 years, with the mean age of the study participants being 28.42 ±2.47 years. Almost 99 (53.2%) of the postgraduate students were female. Most of the participants were single 132 (71%) while the rest were married 54 (29%). The majority of them were Hindus,163 (87.6%) and most of them were from a nuclear family,134 (72%).

Table 1: Emotional Intelligence Scores of Postgraduate Medical Students (Overall Score and Subscales of the Schutte's Self-Report Emotional Intelligence Test) (n = 186)

	Overall score	Perception of emotions	Utilization of emotions	Management of own emotions	Management of others' emotions
Mean Score	123.70	35.70	23.50	35.15	29.35
Standard Deviation	5.33	2.28	1.21	1.76	1.51

Table 2: Association between Emotional Intelligence score and selected factors (n = 186)

Factor	Number (n=186)	Mean EI score with SD/Mdn[IQR]	Test Statistic (t/F)	P Value
Gender			t = - 4.51	0.0010**
Male	87 (46.8%)	121.94 (±4.07)		
Female	99(53.2%)	125.28(± 5.83)		
Age group			F(2,183)=11.84	0.0001**
25-29	152(81.7%)	123.07(±5.02)		
30 - 34	28(15.1%)	127.86(±5.32)		
> 34	6(3.2%)	127.92(±3.55)		
Speciality			F(2,183)=5.56	0.00465**
Clinical	134(72.04%)	122.92(±4.62)		
Para clinical	48(25.80%)	125.83(±5.32)		
Non clinical	4(2.15%)	124(±3.65)		
Year of residency			F(2,183)=96.42	0.0017***
JR I	67(36%)	119.21(±3.25)		
JR 2	64(34.4%)	124.03(±2.93)		
JR 3	55(29.6%)	128.78(±4.78)		
Total working hours /week			F(2,183)=1.35	0.0013**
≤ 48 hours	30(16.1%)	124.13(±6.95)		
48-96 hours	130(69.9%)	123.73(±4.97)		
>96 hours	26(14%)	122.04(±5.07)		
Night duty			t = - 0.71	0.153
yes	165(88.7%)	123.60(±5.01)		
No	21(11.3%)	124.48(±7.50)		
Emergency duty			t = - 0.42	0.003**
yes	151(81.2%)	123.62(±4.91)		
No	35(18.8%)	124.03(±6.94)		
Sleeping hours			t = 3.37	0.004**
7- 8 hours	59(31.7%)	125.59(±6.39)		
< 7 hours	127(68.3%)	122.82(±4.52)		
Leisure-time physical activity /week as per WHO standards.			t = 4.51	0.011*
Yes	80(43%)	125.64(±5.94)		
No	106(57)	122.24(±4.29)		
Addictions			H(2)=3.92	0.135
No	173(93%)	124.09(6.00)		
smoking	2(1.1%)	121.5(5.00)		
Drinking	11(5.9%)	118(4.00)		

Table 3: Multivariable linear regression analysis.

Variable	Adjusted β Coefficient	Standard Error	95% Confidence Interval	p-value
Gender	+2.14	0.72	0.73 to 3.55	<0.001
Age	+0.41	0.15	0.11 to 0.71	0.008
Year of Residency	+2.05	0.43	1.21 to 2.89	<0.001
Weekly Working Hours	−0.48	0.19	−0.85 to −0.11	0.012
Emergency Duty	−1.58	0.67	−2.89 to −0.27	0.019
Leisure-time Physical Activity	+1.19	0.72	0.22 to 2.16	0.016

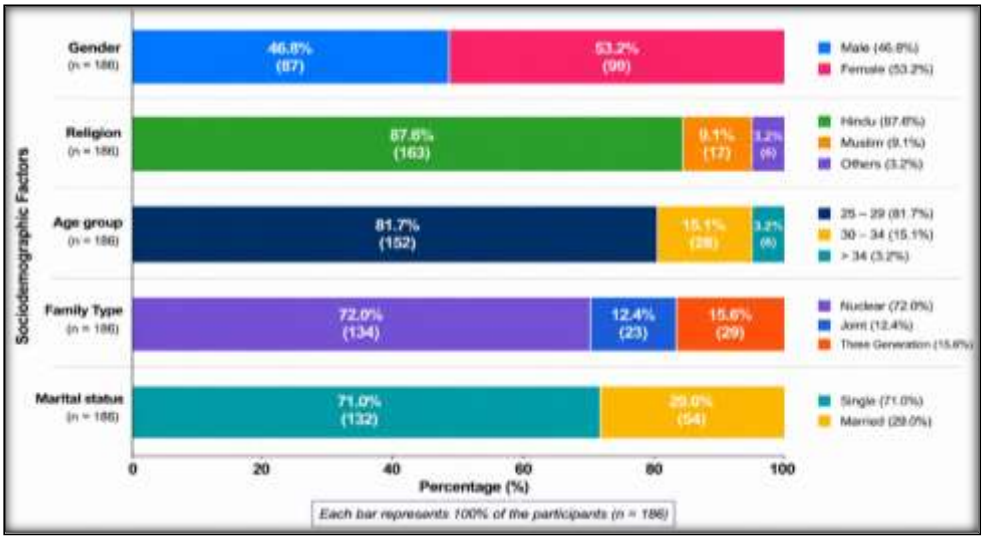

Figure 1: Distribution of participants by Sociodemographic Factors (n=186).

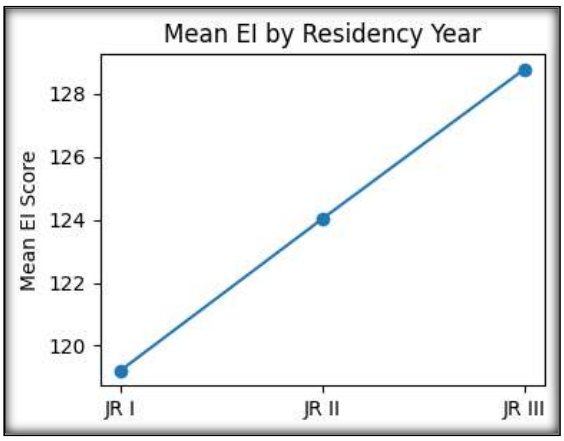

Figure 2: Trend in EI scores across years of residency among PG medical students (n=186).

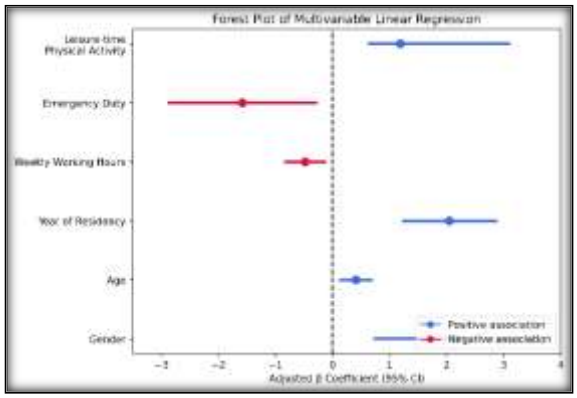

Figure 3: Forest plot of multivariable linear regression analysis showing factors associated with EI among PG medical students (n = 186).

The mean EI scores of selected factors and their association with EI are presented in [Table 2], which shows that female resident doctors had significantly higher mean EI scores (125.28 ± 5.83) than male students (121.94 ± 4.07); p = 0.0010. EI increased significantly with age (p = 0.0001). Clinical students had lower mean EI scores compared to para-clinical and non-clinical students (p = 0.00465). EI increased significantly from the first year of junior residency to the third year (p = 0.0017), as shown in Figure 2. EI decreased with increasing working hours (p = 0.0013). Additionally, students with emergency duties had significantly lower EI scores (p = 0.003).

Students sleeping 7–8 hours had higher EI scores than those sleeping less than 7 hours (p = 0.004). Students meeting WHO recommendations of leisure-time physical activity had significantly higher EI scores (p = 0.011). Following the univariate analysis, a multivariable linear regression analysis was performed to identify factors independently associated with emotional intelligence scores [Table 3], which showed that EI had a significant positive association with female sex, age, year of residency and leisure-time physical activity and a negative association with emergency duty and working hours. (Depicted in [Figure 3]) Thus, our results highlight that, apart from demographic characteristics, several work-related and lifestyle

factors independently influence emotional intelligence, identifying potentially modifiable areas that may be targeted through residency training and institutional wellness initiatives.

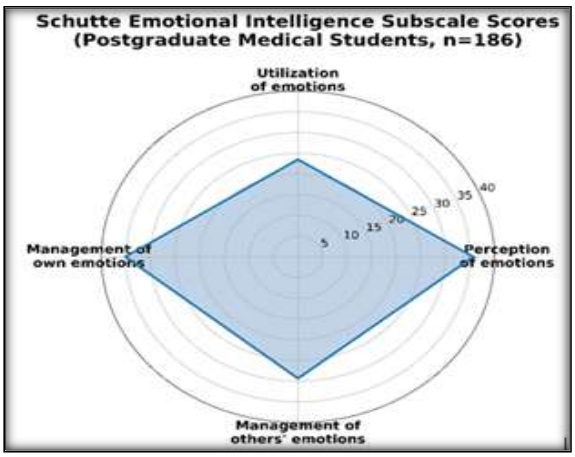

Figure 4: Radar chart showing the mean scores of the Schutte Emotional Intelligence subscales among PG medical students (n = 186).

DISCUSSION

Emotional Intelligence among Postgraduate Medical Students: The present study assessed emotional intelligence (EI) among postgraduate medical students using the Schutte Self-Report Emotional Intelligence Test (SSEIT). The mean EI score observed in our study was comparable to those reported among postgraduate medical trainees in similar Indian studies.[2,7,14,15] Univariate analysis identified several demographic, academic, occupational, and lifestyle factors associated with EI. After adjustment for potential confounders using multivariable linear regression, gender, age, year of residency, weekly working hours, emergency duty, and leisure-time physical activity remained significant independent predictors of emotional intelligence.

EI and Sociodemographic Characteristics: Emotional intelligence increased significantly with age ($p = 0.0001$), and age remained an independent predictor of EI in multivariable linear regression analysis. This finding is consistent with previous studies by Swami et al,[6] Naeem et al,[12] Kumar et al,[15] and Nair et al,[16] suggesting that emotional competencies improve with increasing age because of greater life experience, emotional maturity, and enhanced interpersonal skills. While our study demonstrated a significant increase in emotional intelligence with age, some investigators have reported no significant age-related differences.[19,25] This inconsistency may be explained by the relatively narrow age range of postgraduate students, differences in sample composition, and variations in emotional intelligence assessment tools. Furthermore, residency training itself may have a greater influence on emotional intelligence than chronological age alone.

Female students demonstrated significantly higher emotional intelligence than male students, and this association remained significant after adjusting for age, residency year, workload, emergency duties, and other covariates. This suggests that the observed gender difference was independent of the measured demographic and occupational factors included in the model. One possible explanation could be that female students may be more likely to recognize, express, and regulate emotions effectively, particularly in domains such as empathy, interpersonal communication, and emotional awareness, which contribute substantially to overall emotional intelligence. Similar gender differences have been reported in several studies and systematic reviews.[21,22] However, studies by Nair et al,[16] and Ukey et al,[17] reported higher EI among males, while Tathe et al,[19] found no significant association between EI and either age or gender. These differences may also reflect sociocultural influences, assessment tools, sample characteristics, communication styles, educational experiences, and variations in emotional socialization. The observed gender differences should not be interpreted as fixed biological differences but rather indicate the need to provide equal opportunities for developing emotional competencies among all students through competency-based training programs.

No significant association was observed between emotional intelligence and religion or family type, which is consistent with the findings reported by Ravi Kumar et al,[2] and Swami et al.[6] This suggests that emotional intelligence is more strongly influenced by individual experiences and workplace factors than by these background characteristics.

EI and Residency-related Factors: Year of residency showed a significant positive association with emotional intelligence in both univariate and multivariable analyses, indicating that EI progressively improved with advancing years of residency training. This finding is consistent with reports by Faye et al,[7] Satterfield et al,[11] and Nair et al.[16] who suggested that increasing clinical exposure, patient interactions, and professional responsibilities contribute to the development of emotional competencies.

Although specialty demonstrated a significant association with EI in the univariate analysis, this association was no longer statistically significant after adjustment for other variables in the multivariable model. This finding suggests that the observed differences between specialties may be explained by confounding factors such as year of residency, workload, duty hours, and emergency responsibilities rather than specialty itself. Previous studies have reported lower emotional intelligence among students in clinical specialties due to greater workload and occupational stress.[7,17] In contrast, Nair et al,[16] similar to our study, reported no independent association between specialty and emotional intelligence.

Students working more than 96 hours per week had significantly lower EI scores than those working fewer hours, and weekly working hours remained an independent negative predictor of emotional intelligence in multivariable analysis. This finding suggests that the adverse effect of excessive workload extends beyond physical fatigue. Prolonged working hours are likely to contribute to cumulative mental exhaustion, cognitive overload, sleep deprivation, and chronic occupational stress, all of which may impair emotional self-awareness, emotional regulation, empathy, and interpersonal communication. As emotional intelligence plays a crucial role in effective teamwork, patient-centred communication, conflict resolution, and clinical decision-making, persistent excessive workload may adversely affect not only students' psychological well-being but also the quality and safety of patient care. Similar findings have been reported by Saha et al,[18] Gillani et al,[1] and Burch et al,[5] who observed that increased duty hours and burnout were associated with lower emotional intelligence.

Emergency duty was also independently associated with lower emotional intelligence. Students involved in emergency duties demonstrated significantly lower EI scores than those without emergency responsibilities. These findings may be explained by the high psychological demands, irregular work schedules, sleep disruption, and emotional exhaustion associated with emergency care settings.[5,11,18]

EI and Lifestyle Factors: Students who reported sleeping for 7–8 hours per day had higher mean EI scores than those sleeping for less than 7 hours. Although sleep duration showed a significant association with EI in univariate analysis, it did not remain statistically significant after adjustment for other variables, suggesting that its effect may be mediated through other work-related factors. Nevertheless, previous studies have reported a positive association between adequate sleep and emotional intelligence.[10,11,22,24]

Students meeting the World Health Organization recommendations for leisure-time physical activity demonstrated significantly higher emotional intelligence scores, and physical activity remained an independent positive predictor in multivariable analysis. Regular physical activity may improve emotional regulation through its beneficial effects on psychological well-being, stress reduction, and cognitive function.[5,23]

Although students without addictions had higher mean EI scores than those with smoking or alcohol use, this association was not statistically significant. Similarly, Ibrahim et al,[20] reported higher emotional intelligence among non-smokers. However, the lack of statistical significance in our study may be attributable to the very small number of participants reporting smoking or alcohol consumption, thereby limiting the statistical power to detect meaningful differences.

Limitations: Being a cross-sectional study, causal associations could not be established between factors and EI. The association with other factors, such as stress, was not measured. Other limitations: single-centre study, self-reported instrument, social desirability bias and a small non-clinical subgroup (n=4).

CONCLUSION

The emotional intelligence of postgraduate medical students in a tertiary care hospital has been measured and has been found to increase with age, years of residency, and leisure-time physical activity and was higher among female students. It was also observed that emotional intelligence was negatively affected by an increase in their total working hours and emergency duties. However, it had no significant association with factors such as religion, family type and addictions.

Recommendations: Based on the findings of the present study, it is recommended that emotional intelligence training be incorporated into postgraduate medical education, particularly during the early years of residency. Rationalization of duty hours and emergency postings should be ensured, as increased workload and emergency duties were associated with lower EI. Regular assessment of emotional intelligence using validated tools, structured mentorship and wellness programs should be encouraged to foster emotional resilience and professional competence among postgraduate medical students.

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