Original Article

Emotional intelligence and perceived stress among undergraduate students of arts and science colleges in Puducherry, India: A cross-sectional study

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Abstract

Background: The concept of emotional intelligence has gained great popularity in the last few decades. With significant rise in stress and other emotional disturbances among students, it becomes necessary to determine whether high emotional intelligence could help manage perceived stress better. This study aims to assess emotional intelligence and perceived stress among undergraduate students of Arts and Science colleges, to determine the association of emotional intelligence with perceived stress, academic performance, and selected socio-demographic factors. **Methods and Material:** Using multistage sampling, 720 students aged 18 years and above were selected from four colleges in Puducherry. Emotional intelligence and perceived stress were assessed using standard self-administered questionnaires "The Schutte Self-Report Emotional Intelligence Test (SEIT)" and "Perceived Stress Scale (PSS-14)," respectively. **Results:** The median (IQR) Emotional Intelligence score and Perceived Stress score were 127 (114–137) and 43 (39–47), respectively. The study was not able to establish a significant association between emotional intelligence and perceived stress. A weak significant correlation existed between emotional intelligence and academic performance. Multiple variable analysis revealed gender, year of study, volunteering with youth organizations, and mother's occupation to be significantly associated with emotional intelligence ($p < 0.05$). **Conclusions:** Women, final year students and those who volunteered with youth organizations had higher emotional intelligence. Children of mothers who were employed in knowledge-intensive occupations were more emotionally intelligent. Academic performance had a weak positive significant correlation with emotional intelligence.

Keywords: Emotional quotient, mother's occupation, perceived stress scale, women

Introduction

Emotional intelligence (EI) is as important as intelligence quotient (IQ) for an individual's success. The concept of EI has gained popularity as it accounts for successful lives and careers that cannot be explained by IQ alone. Peter Salovey and John Mayer in 1990, defined EI as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions."[1] According to Dr. Daniel Goleman, the components of EI; self-awareness, self-regulation, empathy, and social skill should help one handle stress better. While self-awareness would help a person notice

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that he is becoming stressed, social skill should help him to be more effective in expressing what he is feeling.[2] There is growing evidence that suggests emotional abilities are related to one's health and well-being.[3] Certain mental disorders are characterized by marked deficits in the ability to understand and regulate emotions emphasizing the need to give more attention to emotional information.[4] With increasing competition and stress at every stage of life, it becomes necessary to shift our attention from the conventional methods of measurement of intelligence to the field of emotional intelligence.

College students are exposed to a stressful lifestyle. While some handle it well as a positive reinforcement towards their goals, others suffer from stress-induced physical and psychological symptoms.[5] This might not only affect their academic performance and health but also make them consider suicide.[6] According to Accidental deaths and suicides in India (2015), college students account for 7% of the population who committed suicide.[7]

In India, although the highest number of students are enrolled in Arts (33%) followed by science (17%) courses, surprisingly, almost all EI studies have been performed among students enrolled in medical courses.[8]

The objective of this study is to assess emotional intelligence and determine its relationship with perceived stress, various socio-demographic factors and academic performance among undergraduate students of Arts and Science colleges in Puducherry, India to add to the growing evidence for the necessity of incorporating emotional intelligence in the college curriculum to help students improve their mental and emotional health.

Material and Methods

Study setting and population

This cross-sectional analytical study was conducted in four Arts and Science colleges in Puducherry. Three of the colleges were located in the urban area while the fourth was situated in a rural area. The undergraduate courses provided by each college were for duration of three years, each year of study was further divided into two or more sections. Second and third year students aged 18 years and above were included in the study, those who were absent on the day of data collection were excluded.

Sample size

The sample size was calculated using the formula $N = 4(SD)^2/(d)^2$ based on the mean and standard deviation (SD) of emotional intelligence score of 122.70 and 20.02,[9] with an absolute precision (d) of 2 at 95% confidence level. After considering a design effect of 1.5 and non-response of 20%, the sample size was estimated to be 720.

Sampling technique

Multistage sampling was done. In Stage 1, among six government and four government-aided Arts and Science colleges in Puducherry, two were randomly selected from each category. Participants were selected proportionately from each college, based on number of students enrolled. For sampling of students within each college (Stage 2), cluster sampling was used. Each section was considered to be a cluster. The number of clusters selected from each college was calculated by (number of students to be selected from the college)/(average number of students in each cluster). A line list of all sections was obtained from each college; the clusters were selected by simple random sampling using lottery method. All students in each selected cluster were included.

Data collection

After obtaining permission from JIPMER Postgraduate Research Monitoring Committee and Institutional Ethics committee approval obtained on 31/05/2018, The Directorate of Higher and Technical Education, Government of Puducherry and the respective college authorities, data were collected during September and October 2018.

A self-administered, structured questionnaire was used to obtain data on socio-demography which included age, gender, type of family, type of accommodation, type of schooling, occupation of parents, socio-economic status, involvement in extracurricular activities, volunteering with youth organizations, and sources of stress. The Schutte Self-Report Emotional Intelligence Test (SEIT)[10] a 33-item validated self-report questionnaire was used to determine EI. The questionnaire has four subscales: "perception of emotion," "managing own emotions," "managing others' emotions," and "utilization of emotion." Respondents rate themselves on the items using a five-point scale. Scores range from 33 to 165, higher scores indicating higher emotional intelligence. The SEIT has an internal consistency (Crohnbach's alpha) of 0.90 and a two-week test-retest reliability of 0.78. The Perceived Stress Scale (PSS-14)[11], a 14-item validated stress assessment instrument was used to determine perceived stress of the participants. The questions ask about feelings and thoughts during the last month. Individual scores on the PSS range from 0 to 56 higher scores indicating higher perceived stress. The PSS has an internal consistency (Crohnbach's alpha) of 0.85 and test-retest reliability of 0.85 for two-day interval. The Schutte Self-Report Emotional Intelligence Test and Perceived Stress Scale have both been used in South Indian population, previously.[9,12]

The questionnaire was translated into Tamil using translation—back translation method and pilot tested among 10 respondents. They were asked to explain their understanding of the questionnaire, to make sure that the original and the translated version had the same meaning. The students' academic performance in their previous semester was obtained from academic registers maintained by the departments.

After class arrangement, the study procedure was explained to the students, and written informed consent was obtained from

them. The questionnaire was distributed to all students at a single point of time, the investigator was present to clarify any queries and check for completeness of the questionnaire.

Study variables and analysis

Data was entered using Epidata Entry Client version 4.2. Analysis was done using SPSSsoftware version 19 and Stata software version 11.0 (STATA, Texas). The outcome variables, emotional intelligence score and perceived stress score were summarized as median (IQR) based on distribution of data and also mean (SD) to ensure comparability with other studies. Categorical variables were summarized as proportion. Occupation of parents was classified into three categories. Category 1 included knowledge-intensive occupations (doctor, nurse, teacher, government or private company employee, businessman, and accountant). Occupations not requiring educational qualification (driving, daily wage labor, carpenter, peon, watchman, and domestic help) were classified as category 2. Category 3 included homemakers and those who were unemployed. For analytical purpose, subjects were grouped using the median emotional intelligence score. Those with EI score ≤127 were categorized as having low EI and those with EI score >127 were considered as high EI. Strength of association was given by prevalence ratio, and Chi square test was used to test the significance of association of emotional intelligence with gender, socio demographic variable, year of study, type of family, type of accommodation, occupation of parents, course of study, socio-economic condition, and type of schooling. Total semester marks were converted into z-scores, significance of association of emotional intelligence with perceived stress, academic performance was tested using Spearman's correlation. A *P* value of less than 0.05 was considered to be statistically significant. Multivariable regression analysis was done; independent variables which were significant in the univariate analysis were included.

Results

A total of 720 students were selected, out of whom 641 students returned the questionnaire completely filled giving an overall response rate of 89%. The mean age of the participants was 19 years, a higher proportion (66%, n = 421) were women. Almost equal percentages were enrolled in Arts (36%, n = 230) and Science (35%, n = 225) stream, and 29% (n = 186) were students of Commerce. More than half of the participants (70%, n = 447) were in their third year of study. Participants who completed their school education from government institutions were more in number (75%, n = 479) and almost half the students (n = 320) had studied in gender segregated schools. Around 71% (n = 453) did not participate in extracurricular activities and 82% (n = 527) did not volunteer with any youth organization [Table 1].

Table 1: Educational characteristics of students of arts and science college, Puducherry, India (*n*=641)

Characteristics	Frequency	(%)
Age in years*	19.3*	(0.8)*
Gender		
Men	220	(34.3)
Women	421	(65.7)
Type of school attended based on financial support		
Government	479	(74.7)
Private	160	(25.0)
Missing data	2	(0.3)
Type of school attended based on gender		
Gender segregated education	320	(49.9)
Coeducation	301	(47.0)
Missing data	20	(3.1)
Extracurricular activities		
Yes	182	(28.4)
No	453	(70.7)
Missing data	6	(0.9)
Volunteering with youth organizations		
Yes	94	(14.7)
No	527	(82.2)
Missing data	20	(3.1)

*Mean (SD)

Most of the students belonged to nuclear families (71%, n = 456), majority (88%, n = 564) had a sibling, almost all (96%, n = 614) stayed at home and more than half (59%, n = 376) belonged to below poverty line. Most of the students' fathers (66%, n = 422) belonged to Category 2 occupation (as described in methods) and majority of the mothers (73%, n = 469) were homemakers [Table 2].

Among factors considered stressful by students, around 25% (n = 160) considered finance to be a frequent cause of stress, followed by housing (24.8%, n = 158) [Table 3].

The median (IQR) Emotional Intelligence score was found to be 127 (114, 137), and the median (IQR) Perceived Stress Score was 43 (39, 47) [Table 4].

No association between total emotional intelligence and perceived stress was observed on conducting a linear regression. However, a positive correlation (r = 0.82) was present between factor perception of emotion and perceived stress and was statistically significant (p = 0.04).

A weak positive correlation (r = 0.09) which was statistically significant (p = 0.02) was observed between emotional intelligence and academic performance.

The variables which showed statistical significance ($p < 0.05$) were analyzed using multivariable regression analysis. Women, third year students and those who volunteered with youth organizations had higher emotional intelligence. Children of mothers who were employed in knowledge-intensive occupations (Category 1) were more emotionally intelligent [Table 5].

Discussion

The current study revealed mean emotional intelligence score of participants to be 124.0 ± 17.5 which was comparable to

Table 2: Social and personal characteristics of students of arts and science college, Puducherry, India (*n*=641)

Characteristics	Frequency	(%)
Type of family		
Nuclear	456	(71.1)
Joint	141	(22.0)
Single parent	43	(6.7)
Missing data	1	(0.2)
Presence of sibling		
Yes	564	(88.0)
No	75	(11.7)
Missing data	2	(0.3)
Place of residence		
Day-scholar	614	(95.8)
Hostel	2	(0.3)
Other	23	(3.6)
Missing data	2	(0.3)
Socio-economic status*		
BPL (Red)	376	(58.7)
APL (Yellow)	230	(35.9)
Don't know	33	(5.1)
Missing data	2	(0.3)
Father's occupation		
Category 1	136	(21.2)
Category 2	422	(65.8)
Category 3	37	(5.8)
Missing	46	(7.2)
Mother's occupation		
Category 1	22	(3.4)
Category 2	121	(18.9)
Category 3	469	(73.2)
Missing	29	(4.5)

*Based on ration card color, APL - Above poverty line, BPL- Below poverty line, Category 1- knowledge-intensive occupations Category 2- occupations not requiring educational qualification, Category 3- unemployed/homemaker

Table 3: Factors considered stressful by students of arts and science college, Puducherry, India (*n*=638)*

Factors	Never *n* (%)	Occasionally *n* (%)	Frequently *n* (%)
Finance	249 (39.0)	229 (35.9)	160 (25.1)
Housing	312 (48.9)	168 (26.3)	158 (24.8)
Transport	264 (41.4)	222 (34.8)	152 (23.8)
Career	279 (43.7)	215 (33.7)	144 (22.6)
Family	249 (39.0)	256 (40.1)	133 (20.8)
Health	270 (42.3)	240 (37.6)	128 (20.1)
College	321 (50.3)	222 (34.8)	95 (14.9)
Friends	463 (72.6)	132 (20.7)	43 (6.7)

*Missing responses were excluded

other studies which used The Schutte Self-Report Emotional Intelligence Test (SEIT) questionnaire to assess emotional intelligence.[9,13-16] EI was significantly associated with gender, where women had higher emotional intelligence compared to men, which is in agreement with previous reports from across the world.[17-21] It has been speculated that this gender-based difference in EI may be attributed to differences in child raising pattern, resulting in a heightened ability to perceive, comprehend, and express emotions by girls.[22,23] Third year students had

Table 4: Score of emotional intelligence and perceived stress of students of arts and science college, Puducherry, India (*n*=641)

Scales	Score range	Mean (SD)	Median (IQR)
Total EI	33-165	124.0 (17.5)	127 (114-137)
EI factors:			
Perception of emotion	10-50	35.8 (5.5)	36 (32-40)
Managing own emotions	9-45	34.9 (6.1)	36 (31-40)
Managing others' emotions	8-40	29.9 (5.5)	31 (26-34)
Utilization of emotion	6-36	23.4 (4.3)	24 (20-27)
PSS	14-70	42.9 (6.2)	43 (39-47)

EI=Emotional intelligence, PSS=Perceived stress score, SD=Standard Deviation, IQR=Interquartile range

Table 5: Multivariable regression analysis* for association between emotional intelligence and different variables (*n*=594)†

Variable	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	*P*‡
Gender			
Men	Reference		
Women	1.42 (1.17-1.73)	1.31 (1.07-.1.60)	0.010
Year of study			
2nd year	Reference		
3rd year	1.50 (1.22-1.85)	1.42 (1.14-1.76)	0.002
Volunteering with youth organizations			
No	Reference		
Yes	1.32 (1.10-1.60)	1.45 (1.20-1.75)	<0.001
Mother's occupation			
Category 1	Reference		
Category 2	0.58 (0.44-0.78)	0.66 (0.49-0.89)	0.006
Category 3	0.61 (0.48-0.77)	0.68 (0.53-0.87)	0.002

EI=Emotional intelligence, PR=Prevalence Ratio, CI=Confidence Interval, *Logistic regression, †Missing responses were excluded, ‡significant at $P<0.05$.

higher EI which could be ascribed to age-related maturity and increased empathy honed by life experience. Studies in Malaysia and India reported similar results where final year students displayed higher emotional intelligence when compared to other years of study.[24-26] However, contradicting results stating year of study is not associated with emotional intelligence have also been reported.[18,27]

Interestingly, this study showed that the mother's occupation was significantly associated with their offspring's EI. Specifically, children of mothers employed in knowledge intensive jobs (category 1) had higher emotional intelligence as compared to the other groups. The Expansionist theory suggests that multiple roles (which include the worker role of women) are beneficial as it improves relationships and promotes physical and psychological wellbeing.[28] In agreement with this theory, a study in United States reported that employed mothers scored higher in parenting skills compared to those who were not. Indeed, employment was determined to enhance supportive parenting, provide greater life satisfaction, improve problem-solving capacities and reduce financial stress.[29] Another study suggested that employed mothers when satisfied with their job positively

influenced their children, in contrast to mothers who were unemployed or dissatisfied with their employment.[30] A second explanation that could also rationalize the significance of the mother's occupation may be attributed to the extent of their education, because, in this study, occupations classified as category 1 require a higher level of educational qualification as compared to category 2. It has also been reported that maternal education shows significant positive correlation with emotional intelligence.[31] However, it should be noted that the association between parents' education and EI was not assessed during the course of this study.

In addition, it was determined that EI was not significantly dependent upon participation in extracurricular activities. This is in partial agreement to a previous report based on medical undergraduates in Sri Lanka, which suggested that involvement in aesthetic activities improve EI while participation in athletic activities have no significant effect.[32] In contrast, a number of studies in India and abroad have reported that active participation in physical exercise, extracurricular pursuits, and recreational activities leads to significantly higher EI.[18-20] However, it should be noted that neither the type nor the duration of extracurricular activities were considered in this study, which might have contributed to the lack of a significant association.

Interestingly, it was observed that candidates who volunteered at youth organizations possessed higher EI. It can be speculated that engagement in community service and structured activities provide positive emotional experiences.[33]

In this study, analysis revealed that the mean perceived stress score was 42.9, SD = 6.2, which was comparatively higher than the perceived stress levels reported by other studies conducted in India.[12,34] It can be speculated that this increased score could be attributed to high financial stress,[35] more than half of the participants in this present study were economically disadvantaged, with income below the poverty line, and approximately two-thirds reported the presence of frequent or occasional financial stress.

Unlike a number of other studies, which reported a negative correlation between total EI and perceived stress; this investigation determined that they were not significantly associated.[17,27,36-38] A comparable study conducted among nursing students in Damanhur, Egypt reported a mild negative correlation between EI and perceived stress, which was determined to be not significant upon multivariate analysis.[39] Similarly, another study carried out among psychology students in the United States, which aimed at studying the influence of personality traits on the relationship between EI and stress, did not find any association between the two, across all participants. However, after taking personality traits (such as intensity, clarity and attention) into consideration, the authors concluded that emotional intelligence predicts stress in some people, not all.[40] The current study identified that the ability to perceive emotions correlated positively with perceived stress, thereby indicating that emotionally perceptive people are more proficient in recognizing stress. Similar results were obtained in a study based in Australia where emotionally perceptive people were found to display increased response to stress in contrast to people with lower emotional perception.[41]

A weak positive correlation was observed between academic performance and EI. Literature provides conflicting evidence regarding emotional intelligence being a predictor of academic performance. While some studies conclude EI does not predict academic success[42-45] others report a positive correlation.[18,19,21,32,46]

The large sample size of participants and their exceptional response rates primarily contributed to the robustness of this study. In addition, recruitment of candidates from four colleges assured the representation of a diverse population. Recall bias was thoroughly avoided by recording semester results from the students' college records. However, social desirability bias due to the use of self-reporting measures to determine emotional intelligence and perceived stress could be a limiting factor in this study. Furthermore, because of the exclusion of private colleges in this study, a comparison of participants from public versus private institutions was not possible.

In this study, women, final year students, youth organization volunteers, and those whose mother were employed in knowledge-intensive occupations had higher emotional intelligence. Academic performance had a weak positive significant correlation with emotional intelligence. The results suggest that, while training for EI, special attention is required by men, the younger age group, and those not volunteering with youth organizations. Although no significant association was observed between perceived stress and EI, the ability to perceive emotions correlated positively with perceived stress in the current study. The ability to recognize emotions together with tools empowering students to manage such emotions may help to cope with perceived stress. There's also a need to conduct prospective studies to ascertain the impact of incorporating training in the curriculum to enhance emotional intelligence focusing on all aspects of identifying and managing emotions. With mental health issues on the rise, EI may be used as a supporting strategy to help people improve their mental and emotional health. Further studies should consider type, duration of extracurricular activities, and the moderating effect of personality traits while studying association of emotional intelligence with extracurricular activities and perceived stress, respectively.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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