ORIGINAL ARTICLE

Association between emotional intelligence and mental health status based on sex differences among undergraduates in Vietnam

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ABSTRACT

Public health concerns about mental health problems have recently received attention, particularly since the COVID-19 pandemic. Emotional intelligence (EI) is a significant factor linked to mental health status, including depression, anxiety, and stress (DAS), with sex playing a significant role in both DAS and EI status. This study aimed to describe DAS and EI status and assess sex differences in the associations between EI and DAS among undergraduate students. A cross-sectional study was conducted across three educational institutions in Dong Thap province, southern Vietnam, using the validated Schutte Self-Report Emotional Intelligence Test (SSEIT) and the 21-item Depression, Anxiety, and Stress Scale (DASS-21). Spearman correlation analysis was used to identify correlations between DAS and EI, and the sex differences in the associations between DAS and the four SSEIT constructs - emotion perception (EP), utilizing emotion (UE), managing self-relevant emotion (MSE), and managing others' emotion (MOE) - were examined using linear regression models. Among the 674 participants, 51.6% experienced mental health problems (64.1% for females, 35.9% for males), 47.0% experienced anxiety, 32.5% experienced depression, and 27.4% experienced stress. The average EI score was 119.3 ± 18.9 (120.0 ± 19.1 for females, 118.0 ± 18.5 for males), with 58.9% of participants having normal EI, while 29.2% and 11.9% had low and high EI, respectively. Negative correlations were observed between EI scores and depression (R=-0.16, p<0.001) and anxiety (R=-0.09, p=0.020), especially among females. Findings indicated that MSE showed significant associations with DAS, especially in females (all β<-0.318, all p<0.001). Our study highlights the importance of considering sex in mental health prevention programs targeting EI skills to manage students' self-relevant emotions better.

Key words:
anxiety; depression; emotional intelligence; stress; undergraduates

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INTRODUCTION

Mental health disorders have become an increasingly important public health concern, especially after the COVID-19 pandemic.[1-4] During the peak of the COVID-19 outbreak in the USA, 71% of students indicated increased stress and anxiety.[5] The issues regarding the prevention and control of COVID-19 have caused unprecedented challenges across all age groups, including students. Problems regarding health concerns, social isolation, and disruptions to education have led to increased levels of mental health disorders among students.[5] A recent Chinese nationwide study surveyed a total of 746,217 students and revealed that 45.0% of them experienced mental health problems, with varying levels of stress (34.9%), depression (21.1%), and anxiety (11.0%).[6] Fear and worry about their health and that of their loved ones, difficulty in concentrating, disruption of sleeping, social distancing, and concern for academic performance were the factors associated with mental health status among students.[5, 6]

As a psychological factor, emotional intelligence (EI) was initially described by Mayer and Salovey (1990) as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use the information to guide one's thinking and actions".[7] Numerous instruments have been developed and validated for measuring EI.[8] For the evaluation of students' emotional competency across cultural barriers, the Schutte Self-Report Emotional Intelligence Test (SSEIT) is a very reliable instrument, based on the subscale reflection of different aspects of emotion perception (EP), utilizing emotion (UE), managing self-relevant emotion (MSE), and managing others' emotion (MOE).[9,10] Aspects of SSEIT are correlated with depression, anxiety, and stress, indicating that psychosocial factors could be responsible for a variety of mental health problems. Higher levels of EI have been found to be associated with psychological well-being among students.[11, 12] Better mental health outcomes are more likely to occur in those with greater EI than in those with lower EI.[1, 13-16] Individuals who possess higher levels of EI are better able to regulate their emotions and manage stress, leading to better mental health outcomes.[16]

Previous studies in Vietnam have indicated that undergraduate students exhibit distinct rates of depression, anxiety, and stress. A recent study of 9,120 respondents from eight universities in Ha Noi reported that 21.0% reported mental health problems.[17] Another survey of students from various disciplines in Ho Chi Minh City revealed that students experienced 57.4%, 80.4%, and 58.6% for depression, anxiety, and stress, respectively.[18] Among various methods used to validate the mental health status in Vietnam, DASS-21 was used in many studies based on its suitable application in the Vietnamese context.[4, 19] Significantly, the association between mental health problems and EI among students has also been reported in a previous Vietnamese study. A recent study in Ho Chi Minh City found that EI levels of mild, normal, and high were 3.8%, 70.7%, and 25.5%, respectively, and were associated with mental health problems among undergraduates.[20]

Sex is recognized as a critical factor associated with mental health problems and EI status.[21, 22] Recent studies have also shown that females generally have higher levels of EI, and DASS than males.[21, 23, 24] However, a previous study suggested that females tend to experience higher levels of mental health issues than males because females are more likely to exhibit signs of distress and negative feelings.[25] Higher levels of EI are associated with improved emotional regulation, leading to better mental health outcomes. Therefore, the hypothesis that sex mediates the effects of EI levels on mental health status arises.

Additionally, examining the constructs of SSEIT, including four subscales (EP, UE, MSE, and MOE) may provide insights into the impact of different aspects of EI on undergraduate students' mental health problems. Thus, our study aimed to (1) describe the prevalence and levels of EI and mental health among Vietnamese undergraduates measured by the SSEIT and the DASS-21 scale, and (2) assess the associations between EI and mental health issues based on sex differences among Vietnamese undergraduates.

METHODS

Study design

The study was a cross-sectional investigation conducted between March and October 2023 in Dong Thap province of the Mekong Delta of Vietnam. This province is home to a population of 1.6 million, ranking fourth in population size among the 13 provinces in the Mekong Delta.[26] Three educational institutions within Dong Thap province offer undergraduate education. The University of Dong Thap specializes in pedagogy, political science, law, finance, and economics. The Dong Thap Medical College focuses on health sciences, nursing, and medical technology. The Dong Thap Community College also has leading majors in engineering and agriculture. At the time of the survey, the total student population across institutions was 9,485. Eligible participants were individuals aged 18 or older who had not been previously diagnosed with any mental health disorder by a psychiatrist.

The sample size was determined based on a reported prevalence of depression, anxiety, and stress (DAS) among medical students in Dong Thap province, which was 54% according to a previous study.[27] Using the total student population (N = 9,485) and a margin of error (d = 0.04) with a confidence interval of 95% (CI 95%), the required sample size was calculated to be 562 participants. To account for potential dropouts during the survey and missing data, an additional 20% of participants were included, totaling 674 students selected for the study.

The sampling method employed stratified sampling based on the proportions of students currently studying in the three educational institutions, including 471 students from the University of Dong Thap, 95 students from Dong Thap Medical College, and 108 students from Dong Thap Community College (a total of 674 students). Convenience sampling was employed during breaks between courses. With the permission of the educational institutions, a research team was stationed in the lobby of the lecture buildings. As the students took breaks and moved between classes, the research team invited them to participate in the survey. Data collection at each educational institution was completed once a sufficient number of participants became available.

Study measures

The DASS-21 scale can be applied as a cumulative score or as three distinct subscales for the assessment of depression, anxiety, and stress.[28] Responding to statements on how often they had experienced any of the symptoms in the previous week was required from the participants. The following response sets and corresponding scoring values were used on a 4-point Likert scale: (0) did not apply to me at all, (1) applied to me to some degree, or some of the time, (2) applied to me a considerable degree or a good part of the time, (3) applied to me very much or most of the time. Each scale contained seven items, with scores ranging from 0 to 21. The final score for each item group was multiplied by two. When a participant's scores on these subscales were greater than 9, 7, or 14, they were considered depressed,

anxious, or stressed, respectively. The DASS-21 was validated in Vietnam with a Cronbach's alpha of 0.88, while the subscales of depression, anxiety, and stress have internal reliability values of 0.77, 0.7, and 0.72, respectively.[19]

The SSEIT was used to measure four forms of EI: EP, UE, MSE, and MOE. The SSEIT includes a 33-item self-report questionnaire that uses a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). Among the 33 items, 10, 6, 9, and 8 were for EP, UE, MSE, and MOE, respectively. Based on the EI scores, the individuals are categorized as having a low EI level when the score is below 111, and a high EI level if the score is above 137.[29] Cronbach's alpha for the full subscales was validated in the university setting of Vietnam with a satisfactory level of 0.83.[30]

Data collection

The data collection was conducted by three researchers with the assistance of staff working at the Offices of Student Affairs at three educational institutions in Dong Thap province. Before conducting the survey, all three interviewers in the research team underwent training on the survey's objectives and content, survey tools, question structures, and use of Google Forms. All the ethical issues related to this study were thoroughly managed. The interviewers were explicitly instructed to avoid providing leading answers that could bias respondents. The interviews, lasting approximately 30 min each, were conducted during breaks between courses, with the student's agreement to participate in the survey. An online Google Form in Vietnamese was used to record the respondents' answers. The students consulted research team members throughout the interviews for clarification.

Data analysis

Descriptive analysis aimed to characterize the data, including means, standard deviations (SD), and proportions (%) of mental health status and EI scores. Differences between mental health conditions (depression, anxiety, and stress - yes/no) and sex (male/female) were assessed using a Chi-squared test. A non-parametric test (the Wilcoxon test) was conducted to investigate sex differences in EI scores. Additionally, Spearman's correlation analysis was used to examine the associations between DASS-21 scores, indicating mental health status, and EI scores. Before the analyses, all continuous variables were checked for normality using the Shapiro-Wilk normality test.

Linear regression models were constructed by classifying the sex variable into male and female models. The outcome variables were depression, anxiety, and stress scores on the DASS-21, and the explanatory variables included EP, UE, MSE, MOE, and total EI scores. Model selection was performed using the Akaike's Information Criterion (AIC), with the variables contributing to the lowest AIC value selected for inclusion in the final multivariable models. All significant values of variables ($p < 0.05$) in the final models were identified as factors associated with mental health status. The interactions between pairs of explanatory variables were examined to identify potential confounding effects.

All statistical analyses were performed using the R statistical program. The "stats" package was used for descriptive analyses, the "lme4" package to construct statistical models, the "MASS" package to test the deviance (AIC) of models, and the "ggplot2" package was used for data visualization.

Ethical considerations

The study was approved by the Ethics Committee in Biomedical Research of the University of Medicine and Pharmacy at Ho Chi Minh City (No 294/HĐĐĐ-HĐ 09-03-2023). All participants were provided with a clear explanation of the study's objectives.

Before the survey, all the students provided written informed consent with their signatures to participate in this study.

RESULTS

Study participants' characteristics

Among the 674 participants, female students accounted for 64.1% (*n*=432), whereas male students accounted for only 35.9% (*n*=242). The average age of students was 20 years (SD ± 1.61), with an average age of male students of 20 years (SD ± 1.62), and female students of 20 years (SD ± 1.61). The number of female students was higher at the University of Dong Thap (326/471) and Dong Thap Medical College (72/95), while the number of male students was higher at Dong Thap Community College (74/108).

Sex differences in scores of DASS-21 and SSEIT

Of the 674 participants, 219 (32.5%) had depression, 317 (47.0%) had anxiety, and 185 (27.4%) had stress. These mental health conditions ranged from mild to extremely severe in all participants, as detailed in **Table 1**. Among students with mental health status, 348 (51.6%) experienced mental health issues such as depression, anxiety, or stress, while 134 (19.9%) experienced all three conditions concurrently. Regarding mental health status by sex, female students exhibited a higher proportion of mental health issues than males, with rates of depression for females and males at 20.9% and 11.6%, respectively, anxiety at 31.5% for females and 15.6% for males, and stress at 18.7% for females and 8.8% for males. However, no significant difference in mental health status was observed based on sex (Chi-square test with $\chi 2 = 0.673$, $p = 0.714$).

Table 1. Levels of depression, anxiety and stress among study participants by sex.

Levels	Total (n=674) (100%)			Male (n=242) (35.9%)			Female (n=432) (64.1%)		
	Depression n (%)	Anxiety n (%)	Stress n (%)	Depression n (%)	Anxiety n (%)	Stress n (%)	Depression n (%)	Anxiety n (%)	Stress n (%)
No (*Normal*)	455 (67.5)	357 (53.0)	489 (72.6)	164 (24.3)	137 (20.3)	183 (27.2)	291 (43.2)	220 (32.6)	306 (45.4)
Yes	219 (32.5)	317 (47.0)	185 (27.4)	78 (11.6)	105 (15.6)	59 (8.8)	141 (20.9)	212 (31.5)	126 (18.7)
Mild	70 (10.4)	47 (7.0)	61 (9.1)	22 (3.3)	14 (2.1)	17 (2.5)	48 (7.1)	33 (4.9)	44 (6.5)
Moderate	83 (12.3)	135 (20.0)	65 (9.6)	28 (4.2)	46 (6.8)	21 (3.1)	55 (8.2)	89 (13.2)	44 (6.5)
Severe	37 (5.5)	49 (7.3)	35 (5.2)	15 (2.2)	16 (2.4)	8 (1.2)	22 (3.3)	33 (4.9)	27 (4.0)
Extremely severe	29 (4.3)	86 (12.8)	24 (3.6)	13 (1.9)	29 (4.3)	13 (1.9)	16 (2.4)	57 (8.5)	11 (1.6)

(Chi-square test with $\chi 2 = 0.673$, $p = 0.714$)

The average EI score was 119.3±18.9 among 674 undergraduates. The highest average EI scores by different subscales were found in EP (35.4 ±5.9), followed by MSE (32.9 ±5.5), MOE (28.6 ±5.0), and UE (22.4±4.0). Based on the classifications of EI status as low, normal, and high, 397 participants (58.9%) had normal EI, while 197 (29.2%) had low EI, and 80 (11.9%) had high EI. A full description of the EI scores on the four subscales is presented in **Table 2**

Table 2. Levels of emotional intelligence status among study participants.

SSEIT	Emotional intelligence scores (Mean ± SD)			
	Low (n=197) (29.2%)	**Normal (n=397) (58.9%)**	**High (n=80) (11.9%)**	**Total (n = 674) (100%)**
Total scores	98.2 ± 13.1	123.1 ± 7.1	152.1 ± 9.9	119.3 ± 18.9
EP	29.7 ± 4.1	36.3 ± 3.0	45.4 ± 4.1	35.4 ± 5.9
UE	18.0 ± 3.0	23.2 ± 2.1	28.6 ± 1.8	22.4 ± 4.0
MSE	27.0 ± 4.2	34.1 ± 2.7	41.6 ± 3.1	32.9 ± 5.5
MOE	23.5 ± 3.5	29.5 ± 2.8	36.6 ± 3.1	28.6 ± 5.0

In EI scores by sex, the average EI score was higher for females (120.0 ± 19.1) than for males (118.0 ± 18.5). When comparing the average scores by subscale, higher average scores were observed in females than males for all four subscales (**Figure 1**). However, no significant difference was detected in the EI scores of male and female students (Wilcoxon test, all $p > 0.141$).

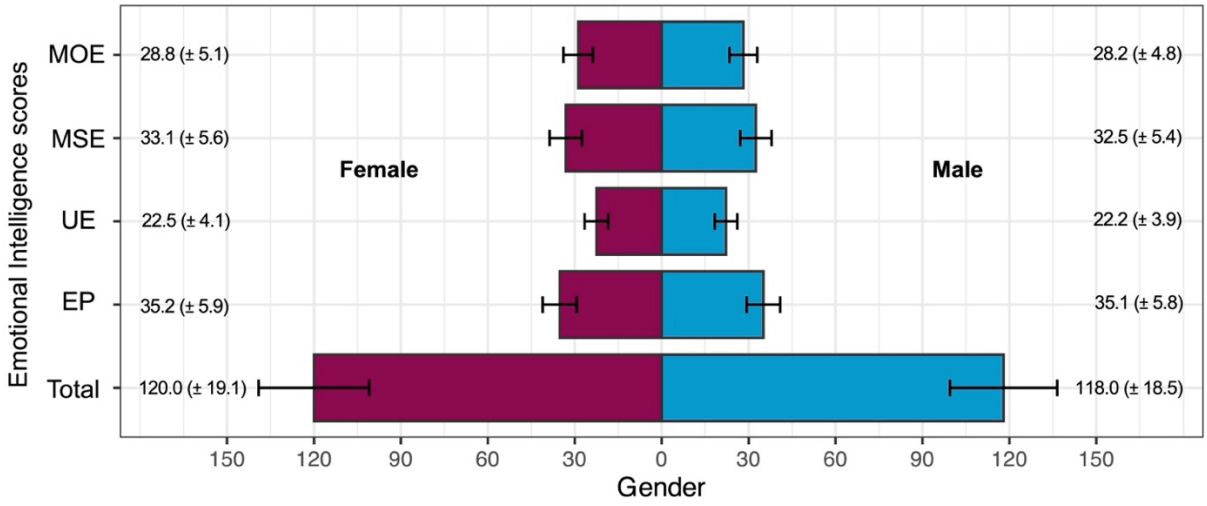

Figure 1. Levels of emotional intelligence status by sex

Matrix of score correlations of depression, anxiety, and stress and emotional intelligence status among study participants

The correlations between mental health status and EI are presented in **Figure 2**. Significant negative correlations were observed between mental health status and EI among undergraduates, particularly apparent in the negative correlations between EI and depression scores (R = -0.16, $p < 0.001$) and anxiety (R = -0.09, p = 0.020). Upon sex stratification, this negative correlation was more noticeable among females than males. Specifically, among females, significant negative correlations between EI and depression, anxiety, and stress were observed at R = -0.18, R = -0.17, and R = -0.12 (all $p \leq 0.016$), respectively. Among males, a significant correlation was found solely between EI and depression (R = -0.14, p = 0.033), with no significant correlations observed between anxiety, stress, and EI scores

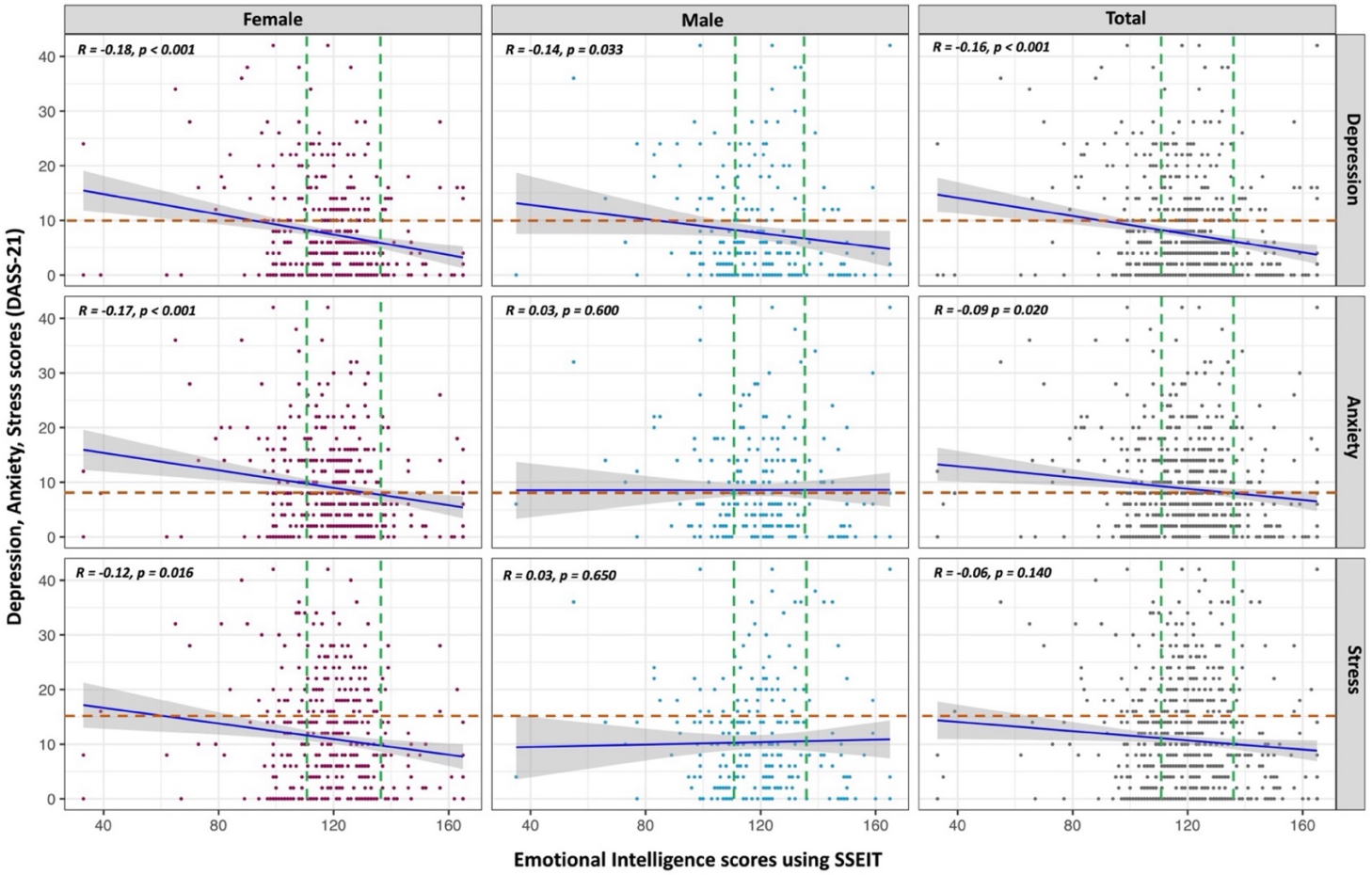

Figure 2. Correlation between depression, anxiety, stress and emotional intelligence among undergraduate students using DASS-21 and SSEIT. Green dashed lines illustrate the cut-offs of EI scores with low EI (score < 111), normal EI (score: 111-137), and high EI (score > 137). Brown dashed lines indicate the cut-offs of depression (score ≥ 10), anxiety (score ≥ 8), and stress (score ≥ 15)

Modeling

Linear regression models were constructed by classifying the sex variable into male and female models. Among males, multivariable models revealed that nearly all explanatory variables of EI scores were deemed non-significant in relation to mental health status, except for the variable of MSE, which showed a significant association with depression (β = -0.246, p = 0.033). The variables UE and MOE became non-significant since they were confounded by MSE, with a significantly positive correlation found among MSE, UE, and MOE (all $R > 0.76$, $p < 0.001$). Conversely, among females, almost all variables exhibited significance in univariable models across all three mental health conditions of depression, anxiety, and stress. However, in multivariable models, variables remained significant in association with depression, including MSE (β = -0.670, $p < 0.001$) and EP (β = -0.330, p = 0.005); with anxiety, including only MSE (β = -0.318, $p < 0.001$); and with stress, including MSE (β = -0.620, p < 0.001) and UE (β = -0.501, p = 0.013). The variables UE and MOE in model of depression; variables EP, UE, and MOE in the anxiety model, and EP and MOE in the stress model became non-significant in the final models because they were confounded by MSE. The correlation between MSE and these variables was significantly positive (all $R > 0.75$, $p < 0.001$). The details of the linear regression models are presented in **Table 3**.

Table 3. Linear regression model used to investigate the EI factors associated with depression, anxiety, stress among participants by sex.

Models	Univariable models			Multivariable model*		
	β	95% CI	p-value	β	95% CI	p-value
Male						
Depression						
EP	-0.113	(-0.32 - 0.10)	0.296			
UE	-0.334	(-0.64 - -0.02)	0.035			
MSE	-0.246	(-0.47 - -0.02)	0.033	-0.246	(-0.47 - -0.02)	0.033
MOE	-0.261	(-0.52 - -0.00)	0.047			
Total EI scores	-0.064	(-0.13 - 0.00)	0.056			
Anxiety						
EP	0.064	(-0.13 - 0.26)	0.526			
UE	-0.066	(-0.36 - 0.23)	0.657			
MSE	-0.018	(-0.23 - 0.19)	0.869			
MOE	-0.015	(-0.26 - 0.23)	0.905			
Total EI scores	0.001	(-0.06 - 0.06)	0.980			
Stress						
EP	0.094	(-0.13 - 0.32)	0.404			
UE	0.025	(-0.30 - 0.35)	0.879			
MSE	-0.028	(-0.27 - 0.21)	0.819			
MOE	0.048	(-0.22 - 0.32)	0.728			
Total EI scores	0.011	(-0.06 - 0.08)	0.752			

Models	Univariable models			Multivariable model*		
	β	95% CI	p-value	β	95% CI	p-value
Female						
Depression						
EP	-0.192	(-0.33 - -0.06)	0.006	-0.330	(-0.56 - -0.10)	0.005
UE	-0.433	(-0.63 - -0.24)	< 0.001			
MSE	-0.383	(-0.52 - -0.24)	< 0.001	-0.670	(-0.91 - -0.43)	< 0.001
MOE	-0.320	(-0.47 - -0.17)	< 0.001			
Total EI scores	-0.093	(-0.13 - -0.05)	< 0.001			
Anxiety						
EP	-0.189	(-0.32 - -0.05)	0.007			
UE	-0.331	(-0.53 - -0.13)	0.001			
MSE	-0.318	(-0.46 - -0.18)	< 0.001	-0.318	(-0.46 - -0.18)	< 0.001
MOE	-0.284	(-0.44 - -0.13)	< 0.001			
Total EI scores	-0.080	(-0.12 - -0.04)	< 0.001			
Stress						
EP	-0.184	(-0.34 - -0.03)	0.018			
UE	-0.210	(-0.43 - 0.01)	0.063	-0.501	(-0.89 - -0.10)	0.013
MSE	-0.314	(-0.47 - -0.15)	< 0.001	-0.620	(-0.91 - -0.33)	< 0.001
MOE	-0.257	(-0.43 - -0.08)	0.004			
Total EI scores	-0.072	(-0.12 - -0.02)	0.003			

DISCUSSION

Our study used the DASS-21 and SSEIT to assess depression, anxiety, stress and EI among undergraduate students. These instruments have undergone rigorous reliability evaluations in previous research,[19, 28-30] affirming their suitability for diverse cultural contexts and populations, particularly for the undergraduates in our study. Our findings revealed several notable results: (1) the high levels of depression, anxiety, and stress among undergraduates; (2) a significant negative correlation between mental health status and EI levels; (3) a more explicit association between mental health and EI among female students compared to males; and (4) among the constructs of the EI scale, the significance of the MSE factor on mental health status was observed, especially among females.

The results of our study indicated that 51.6% of the undergraduates had mental health issues, including depression (32.5%), anxiety (47.0%), and stress (27.4%). Our findings were consistent with those of recent studies using similar instruments conducted in Vietnam, indicating elevated occurrence of DAS among undergraduates, especially since COVID-19 pandemic.[18, 27, 31] Compared to other countries, abnormal levels of depression, anxiety, and stress were found at 60.6%, 66.8%, and 42.6%, respectively, among undergraduates in Malaysia.[1] The typical pressures of being a student, such as adjusting to the training, completion of assignments, targeting better academic performance, and timely graduation during the COVID-19 pandemic, were indicated.[1, 32] In addition, our findings showed 29.2% of participants with a low level of EI scores, and mean scores of 119.3 ± 18.9 were observed. According to a Slovenian longitudinal study, students' mean SSEIT scores were 93.26 (95% CI: 67.9 – 118.2).[33] Similar findings were obtained from investigations that used the same SSEIT assessment among Scottish and Australian students.[34, 35] Students may also develop and mature over the study course, although other factors such as sex may affect the results.[34, 35]

The findings of our study revealed significant negative correlations between depression, anxiety, and stress scores using the DASS-21 and EI scores using the SSEIT.

These results are consistent with those of previous studies that have examined the relationship between mental health and EI. For instance, a study conducted among undergraduate dental students in Malaysia, utilizing the same measures as our study, reported significant negative correlations between DASS and EI scores .[1] Similarly, a survey of 268 medical students in the USA found negative correlations between EI and depression, anxiety, and stress (all $R \leq 0.286$, all $p < 0.001$).[14] Individuals with high EI demonstrate diverse emotional and social competencies, allowing them to effectively manage mental health problems.[36.] Consequently, it can be inferred that EI serves as a coping mechanism and may act as a protective factor against stress, depression, and anxiety.[37]

Our study observed that while female students exhibited slightly higher levels of DAS than male students, the difference was not statistically significant. These findings diverged from previous research indicating a higher risk of mental health issues among females.[1, 4, 14, 30] We also found no significant associations between sex and EI levels. As mentioned previously, our study revealed a significant negative association between DAS and EI. However, upon introducing sex as a variable, we observed a distinct correlation between EI and DAS, particularly among females. This suggests that females exhibit a more explicit relationship between mental health and EI than males. Consequently, sex may be a potential confounder in the association between EI and DAS among undergraduates. In females, our findings suggest that higher EI levels correspond to lower mental health issues. Thus, exploring alternative intervention methods that utilize EI scores to improve the mental health status of female undergraduate students may be beneficial. Conversely, further investigation into additional contributing factors to DAS is recommended to facilitate the development of targeted interventions to improve mental health outcomes among male students.

In the linear regression model, female students were negatively associated with all constructs of the SSEIT in relation to depression, anxiety and stress measured by the DASS-21. Regarding the EI and mental health symptoms of undergraduates, the MSE construct of the SSEIT was significantly associated with all constructs of the DASS-21 scale for all students. However, two SSEIT constructs, EP and UE, were only positively associated with depression and stress among female students, respectively. The remaining MOE construct of the SSEIT showed no correlations with depression, anxiety, or stress in either males and females. It is generally acknowledged that sex is one of the main risk stressors because women have been associated with higher rates of mental health issues.[21, 22] Likewise, there is a higher likelihood of discomfort and negative emotions in female students.[25] Conversely, men are frequently associated with the failure of EP, improper action, and poor interactions with others.[33] Such cognitive appraisal particularly accounts for the sex disparity in DAS symptoms. Moreover, since women are more likely than men to be socialized to express their stress and emotions verbally,[38] female students might not have the necessary coping resources, such as a strong sense of self-management, or effective coping mechanisms for dealing with DAS.[39, 40] Regretfully, former studies elucidating the disparity in anxiety levels between sexes remains inconclusive.[41, 42]

This study has several limitations. First, although efforts were made to include multiple disciplines across three educational institutions, the study was limited to a single province in southern Vietnam, potentially limiting the generalizability of the findings to all

Vietnamese undergraduate students. Second, the study's cross-sectional design and one-time data collection restricted the ability to draw firm conclusions about causation. Therefore, future investigations, particularly case-control studies, are recommended to identify the factors associated with mental health status and EI, especially among male students. Third, since the study was conducted using convenience sampling during the breaks between courses, the number and unequal sex distribution of students who participated in this study might have affected the findings of our research on the association between DAS and EI by sex. Finally, cultural factors may have influenced the accuracy of the respondents' reporting, as depression, anxiety, and stress are considered sensitive subjects in Vietnamese culture. Future research could employ more extensive and representative samples of college students and explore diverse perspectives on the demographic characteristics, family backgrounds, and study-related circumstances affecting undergraduate students.

RECOMMENDATIONS

Vietnamese undergraduates exhibited high levels of depression, anxiety, and stress. Additionally, individuals with higher EI had reduced DAS levels, suggesting that EI may serve as a coping resource for reducing mental health issues. Significantly, the MSE construct of the SSEIT emerged as a protective factor that was considerably associated with DAS across all participants. Significant associations between increased EP and lower depression, higher UE, and reduced stress were observed among female students. These findings highlight the importance of implementing preventive measures and support programs aimed at promoting EI skills to effectively manage self-relevant emotions among individuals experiencing mental health challenges. Further investigations into the role of other contributing factors in the pathway between EI and DAS are required.

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