

Anxiety, depression, and associated factors among 12th-grade students at Trung Vuong High School, Ho Chi Minh city

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Abstract

Background: Anxiety and depression are important contributors that hinder adolescents' academic functioning, limit their capacity to develop social relationships, and are associated with reduced quality of life.

Methods: A cross-sectional study involving 626 12th-grade students at Trung Vuong High School was conducted to determine the prevalence of anxiety and depression and to examine associated factors. The 21-item Depression, Anxiety and Stress Scale (DASS-21) was used to assess symptoms of anxiety and depression.

Results: The prevalence of students exhibiting symptoms of anxiety and depression was 64.4% and 54.6%, respectively. Factors associated with anxiety and depression included family conflict, frequency of being compared with other peers by parent(s), excessively high parental expectations, frequency of self-perceived academic pressure, frequency of pre-examination stress, frequency of pressure to gain university admission, difficulties in peer relationships, and feelings of inferiority compared with peers.

Conclusions: Schools and parents should provide ongoing encouragement and support for twelfth-grade students' learning, while minimizing undue pressure and social comparison, particularly in the period preceding the National High School Graduation Examination.

Keywords: Mental health, anxiety, depression, associated factors, students.

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1. BACKGROUND

Anxiety is defined as a state of persistent worry or fear that fails to remit and may progressively worsen over time [1]. In contrast, depression is a common mental disorder characterized by persistent sadness and a loss of interest or pleasure in daily activities [2]. Anxiety and depression are among the most prevalent mental health disorders in young people, with estimated prevalence rates of approximately 14.0% for anxiety and 4.9% for depression among adolescents aged 10–19 years [3]. Several studies have indicated that anxiety and depression among students may impair concentration, reduce

academic performance, and limit daily communication [4],[5].

In Viet Nam, 12th-grade students face the university entrance examination and substantial pressure from families, schools, and society, as well as self-imposed expectations, which may exacerbate anxiety and depressive symptoms. A study by Nguyen Danh Lam and colleagues (2022) involving 482 high school students in Yen Dinh District, Thanh Hoa Province reported prevalence rates of stress, anxiety, and depression of 41.7%, 49.0%, and 43.6%, respectively. More than 30% of students reported self-harm ideation and 10% reported engaging in self-harm; 25%

reported suicidal ideation and 1.4% reported a non-fatal suicide attempt [6].

12th-grade students at Trung Vuong High School have a demanding academic schedule with consecutive tests and examinations, and they often experience substantial pressure to compete for academic achievement [7], this may be associated with an increased risk of anxiety and depression; however, no studies to date have examined these conditions in this population. Therefore, this study was conducted to determine the prevalence of anxiety and depression and their associated factors among 12th-grade students at Trung Vuong High School in Ho Chi Minh City in the 2024-2025 academic year. The findings will provide evidence to inform the development of interventions and mental health support programs for students, thereby contributing to a safe school environment and improving students' physical and mental well-being.

2. MATERIALS AND METHODS

2.1. Study participants

12th-grade students enrolled at Trung Vuong High School during the 2024–2025 academic year.

2.2. Study design

A cross-sectional study conducted from April 2025 to August 2025.

2.3. Sample size and sampling technique

A census sampling approach was used to include all 651 12th-grade students enrolled at Trung Vuong High School in the 2024–2025 academic year. In total, 626 students participated and completed the questionnaire.

2.4. Study variables

Anxiety and depression among 12th-grade students were assessed using the validated Depression, Anxiety and Stress Scale–21 items (DASS-21) [8].

Anxiety status: Defined as the presence or absence of anxiety symptoms. The DASS-21 anxiety subscale score (items 2, 4, 7, 9, 15, 19, and 20) was summed and multiplied by 2. Total score of 0–7 indicated no anxiety symptoms, whereas total score ≥ 8 indicated anxiety symptoms (binary variable). Within the group exhibiting anxiety symptoms, severity was classified as follows: 8–9 (mild), 10–14 (moderate), 15–19 (severe), and ≥ 20 (extremely severe).

Depression status: Defined as the presence or absence of depressive symptoms. The DASS-21 depression subscale score (items 3, 5, 10, 13, 16, 17, and 21) was summed and multiplied by 2. Total score of 0–9 indicated no depressive symptoms, whereas total score ≥ 10 indicated depressive symptoms (binary variable). Within the group exhibiting depressive symptoms, severity was classified as follows: 10–13 (mild), 14–20 (moderate), 21–27 (severe), and ≥ 28 (extremely severe).

Independent variables included family characteristics (co-residence status, household economic status, family conflict, frequency of being compared with other peers by parent(s), and excessively high parental expectations); academic characteristics (academic performance, number of extra classes, frequency of self-perceived academic pressure, frequency of pre-examination stress, and frequency of pressure to gain university admission); and peer-related characteristics (difficulties in peer relationships and feelings of inferiority compared with peers).

2.5. Data collection

Data collection was conducted from 6 May 2025 to 12 May 2025. The study used a self-administered questionnaire for data collection. Questionnaires were distributed in classrooms and completed by students under the guidance of data collectors.

2.6. Data processing and analysis

Survey data were manually entered from paper forms into Microsoft Excel 2016 and cleaned, then exported to SPSS version 20.0 for analysis.

Descriptive statistics: Frequencies and percentages (%) were used to summarize categorical variables.

Analytical statistics: The chi-square test (two-sided; significance level $p < 0.05$) was used to examine associations between anxiety/depression status and categorical independent variables. Fisher's exact test was applied when more than 20% of cells had expected counts < 5 . Prevalence ratios (PR) with 95% confidence intervals (95% CI) were reported to quantify associations.

2.7. Ethical considerations

The study was approved by the Ethics Committee for Biomedical Research of Pham Ngoc Thach University of Medicine (Decision No. 1313/TĐHYKPNT-HĐĐĐ)

and by the School Administration of Trung Vuong High School.

3. RESULTS

A total of 626 12th-grade students at Trung Vuong High School completed the survey, yielding a response rate of 96.2%; the remaining non-participation was attributable to parental refusal to allow students to participate and student absences during the data collection period. Females accounted for 54.6% of participants; most students were of Kinh ethnicity (96.0%) and reported no religious affiliation (52.6%). The majority lived with their parents (90.4%) and reported a middle-to-affluent household economic status (95.8%). Most students reported good (54.8%) or fairly good (42.8%) academic performance; however, 43.5% reported feelings of inferiority relative to peers, and 60.8% attended extra classes in more than two subjects after regular school hours.

3.1. Anxiety and depression status among 12th-grade students at Trung Vuong High School

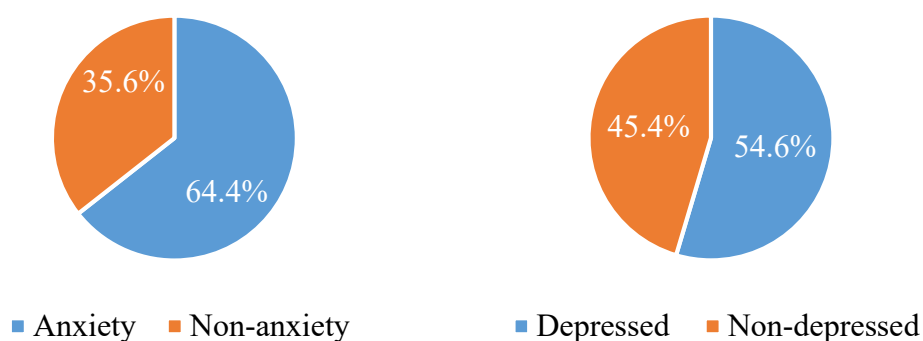


Figure 1. Prevalence of anxiety (left) and depression (right) among 12th-grade students at Trung Vuong High School (n = 626)

Based on the DASS-21, 64.4% of 12th-grade students at Trung Vuong High School had anxiety symptoms; the proportions with mild, moderate, severe, and extremely severe anxiety were 8.1%, 25.1%, 13.1%, and 18.1%, respectively. 54.6% of participants had depressive symptoms; the proportions with mild, moderate, severe, and extremely severe depression were 18.7%, 22.7%, 5.4%, and 7.8%, respectively. Notably, 13.9% of participants had comorbid symptoms of anxiety and depression, whereas only 15.5% had neither condition.

3.2. Factors associated with anxiety symptoms among 12th-grade students at Trung Vuong High School

Table 1. Association between family characteristics and anxiety symptoms (n = 626)

Characteristics	Anxiety n (%)	Non-anxiety n (%)	P value*	PR (95% CI)
Co-residence status				
Living with relatives/others	39 (65.0)	21 (35.0)	0.827	1.01 (0.83 – 1.23)
Living with parents	364 (64.3)	202 (35.7)		1
Household economic status				
Poor/Near-poor	5 (50.0)	5 (50.0)	0.497**	0.83 (0.44 – 1.57)
Middle-income	268 (67.2)	131 (32.8)	0.056	1.12 (0.99 – 1.28)
Affluent/Wealthy	130 (59.9)	87 (40.1)		1
Family conflict				
Yes	89 (79.5)	23 (20.5)	0.001	1.30 (1.16 – 1.46)
No	314 (61.1)	200 (38.9)		1
Frequency of being compared with other peers by parent(s)				
Most of the time (5–7 days per week)	39 (86.7)	6 (13.3)	<0.001	1.43 (1.23 – 1.67)
Frequently (3–4 days per week)	67 (74.4)	23 (25.6)	0.018	1.23 (1.05 – 1.44)
Occasionally (1–2 days per week)	152 (60.6)	99 (39.4)	0.975	1.00 (0.87 – 1.16)
Never	145 (60.4)	95 (39.6)		1
Excessively high parental expectations				
Yes	120 (74.5)	41 (25.5)	0.002	1.23 (1.10 – 1.36)
No	283 (60.9)	182 (39.1)		1

*Chi-square test

** Fisher's exact test

Students who reported family conflict had a 1.30-fold higher prevalence of anxiety symptoms than those without family conflict (PR = 1.30; 95% CI: 1.16–1.46; $p < 0.01$). In addition, students who were compared with others by their parents most of the time or frequently had a 1.43-fold (PR = 1.43; 95% CI: 1.23–1.67; $p < 0.001$) and 1.23-fold (PR = 1.23; 95% CI: 1.05–1.44; $p < 0.02$) higher prevalence of anxiety symptoms, respectively, compared with students who were never compared with others by their parents. Students who reported excessively high parental expectations had a 1.23-fold higher prevalence of anxiety symptoms than those who did not report excessively high parental expectations (PR = 1.23; 95% CI: 1.10–1.36; $p < 0.01$).

Table 2. Association between academic characteristics and anxiety symptoms (n = 626)

Characteristics	Anxiety n (%)	Non-anxiety n (%)	P value*	PR (95% CI)
Academic performance				
Pass	10 (66.7)	5 (33.3)	0.353**	1.03 (0.71 – 1.48)
Good	170 (63.4)	98 (36.6)	0.467	0.98 (0.87 – 1.10)
Fairly good	223 (65.0)	120 (35.0)		1
Number of extra classes				
> 2 classes	255 (66.9)	126 (33.1)	0.272	1.07 (0.84 – 1.36)
1-2 classes	121 (59.9)	81 (40.1)	0.234	0.95 (0.74 – 1.23)
No extra classes	27 (62.8)	16 (37.2)		1
Frequency of self-perceived academic pressure				
Most of the time (5–7 days per week)	138 (77.5)	40 (22.5)	<0.001	2.25 (1.56 – 3.23)
Frequently (3–4 days per week)	142 (66.0)	73 (34.0)	<0.001	1.92 (1.33 – 2.77)
Occasionally (1–2 days per week)	103 (58.9)	72 (41.1)	0.001	1.71 (1.17 – 2.49)
Never	20 (34.5)	38 (65.5)		1
Frequency of pre-examination stress				
Most of the time (5–7 days per week)	195 (78.9)	52 (21.1)	<0.001	1.94 (1.42 – 2.66)
Frequently (3–4 days per week)	119 (63.3)	69 (36.7)	0.002	1.56 (1.12 – 2.16)
Occasionally (1–2 days per week)	65 (49.2)	67 (50.8)	0.273	1.21 (0.85 – 1.72)
Never	24 (40.7)	35 (59.3)		1
Frequency of pressure to gain university admission				
Most of the time (5–7 days per week)	249 (75.7)	80 (24.3)	<0.001	2.00 (1.32 – 3.04)
Frequently (3–4 days per week)	87 (60.4)	57 (39.6)	0.013	1.60 (1.03 – 2.46)
Occasionally (1–2 days per week)	53 (45.7)	63 (54.3)	0.402	1.21 (0.76 – 1.91)
Never	14 (37.8)	23 (62.2)		1

*Chi-square test

** Fisher's exact test

Students who reported self-perceived academic pressure most of the time, frequently, or occasionally had a higher prevalence of anxiety symptoms than those who never reported academic pressure, with PRs of 2.25 (PR = 2.25; 95% CI: 1.56–3.23; $p < 0.001$), 1.92 (PR = 1.92; 95% CI: 1.33–2.77; $p < 0.001$), and 1.71 (PR = 1.71; 95% CI: 1.17–2.49; $p < 0.01$), respectively. Students who reported pre-examination stress most of the time or frequently had a 1.94-fold (PR = 1.94; 95% CI: 1.42–2.66; $p < 0.001$) and 1.56-fold (PR = 1.56; 95% CI: 1.12–2.16; $p < 0.01$) higher prevalence of anxiety symptoms, respectively, compared with those who never reported pre-examination stress. Students who reported pressure to gain university admission most of the time or frequently had a 2.00-fold (PR = 2.00; 95% CI: 1.32–3.04; $p < 0.001$) and 1.60-fold (PR = 1.60; 95% CI: 1.03–2.46; $p < 0.02$) higher prevalence of anxiety symptoms, respectively, compared with those who never reported such pressure.

Table 3. Association between peer-related characteristics and anxiety symptoms (n = 626)

Characteristics	Anxiety n (%)	Non-anxiety n (%)	P value*	PR (95% CI)
Peer relationships				
Not good	17 (68.0)	8 (32.0)	0.51	1.13 (0.85 – 1.49)
Average	148 (71.5)	59 (28.5)	0.007	1.18 (1.05 – 1.33)
Good	238 (60.4)	156 (39.6)		1
Feelings of inferiority compared with peers				
Yes	196 (72.1)	76 (27.9)	<0.001	1.23 (1.10 – 1.38)
No	207 (58.5)	147 (41.5)		1

*Chi-square test

Students who reported average peer relationships had a 1.18-fold higher prevalence of anxiety symptoms than those who reported good peer relationships (PR = 1.18; 95% CI: 1.05–1.33; p < 0.01). Students who reported feelings of inferiority relative to peers had a 1.23-fold higher prevalence of anxiety symptoms than those who did not report such feelings (PR = 1.23; 95% CI: 1.10–1.38; p < 0.001).

3.3. Factors associated with depressive symptoms among 12th-grade students at Trung Vuong High School

Table 4. Association between family characteristics and depressive symptoms (n = 626)

Characteristics	Depressed n (%)	Non-depressed n (%)	P value*	PR (95% CI)
Co-residence status				
Living with relatives/others	36 (60.0)	24 (40.0)	0.681	1.11 (0.89 – 1.38)
Living with parents	306 (54.1)	260 (45.9)		1
Household economic status				
Poor/Near-poor	5 (50.0)	5 (50.0)	0.917**	0.99 (0.52 – 1.86)
Middle-income	227 (56.9)	172 (43.1)	0.239	1.12 (0.96 – 1.31)
Affluent/Wealthy	110 (50.7)	107 (49.3)		1
Family conflict				
Yes	80 (71.4)	32 (28.6)	<0.001	1.40 (1.21 – 1.62)
No	262 (51.0)	252 (49.0)		1
Frequency of being compared with other peers by parent(s)				
Most of the time (5–7 days per week)	32 (71.1)	13 (28.9)	0.006	1.46 (1.16 – 1.83)
Frequently (3–4 days per week)	68 (75.6)	22 (24.4)	<0.001	1.55 (1.30 – 1.85)
Occasionally (1–2 days per week)	125 (49.8)	126 (50.2)	0.816	1.02 (0.86 – 1.22)
Never	117 (48.8)	123 (51.2)		1
Excessively high parental expectations				
Yes	109 (67.7)	52 (32.3)	<0.001	1.35 (1.18 – 1.55)
No	233 (50.1)	232 (49.9)		1

*Chi-square test

** Fisher's exact test

Students who reported family conflict had a 1.40-fold higher prevalence of depressive symptoms than those without family conflict (PR = 1.40; 95% CI: 1.21–1.62; $p < 0.001$). Students who were compared with others by their parents most of the time or frequently had a 1.46-fold (PR = 1.46; 95% CI: 1.16–1.83; $p < 0.01$) and 1.55-fold (PR = 1.55; 95% CI: 1.30–1.85; $p < 0.001$) higher prevalence of depressive symptoms, respectively, compared with students who were never compared with others by their parents. Students who reported excessively high parental expectations had a 1.35-fold higher prevalence of depressive symptoms than those who did not report excessively high parental expectations (PR = 1.35; 95% CI: 1.18–1.55; $p < 0.001$).

Table 5. Association between academic characteristics and depressive symptoms (n = 626)

Characteristics	Depressed n (%)	Non-depressed n (%)	P value*	PR (95% CI)
Academic performance				
Pass	9 (60.0)	6 (40.0)	0.460**	1.14 (0.74 – 1.74)
Good	152 (56.7)	116 (43.3)	0.451	1.07 (0.93 – 1.24)
Fairly good	181 (52.8)	162 (47.2)		1
Number of extra classes				
> 2 classes	212 (55.6)	169 (44.4)	0.678	1.14 (0.83 – 1.57)
1-2 classes	109 (54.0)	93 (46.0)	0.454	1.10 (0.79 – 1.54)
No extra classes	21 (48.8)	22 (51.2)		1
Frequency of self-perceived academic pressure				
Most of the time (5–7 days per week)	131 (73.6)	47 (26.4)	<0.001	2.37 (1.60 – 3.52)
Frequently (3–4 days per week)	120 (55.8)	95 (44.2)	0.001	1.80 (1.20 – 2.69)
Occasionally (1–2 days per week)	73 (41.7)	102 (58.3)	0.149	1.34 (0.88 – 2.05)
Never	18 (31.0)	40 (69.0)		1
Frequency of pre-examination stress				
Most of the time (5–7 days per week)	161 (65.2)	86 (34.8)	<0.001	2.14 (1.44 – 3.17)
Frequently (3–4 days per week)	95 (50.5)	93 (49.5)	0.007	1.66 (1.10 – 2.50)
Occasionally (1–2 days per week)	68 (51.5)	64 (48.5)	0.007	1.69 (1.11 – 2.57)
Never	18 (30.5)	41 (69.5)		1
Frequency of pressure to gain university admission				
Most of the time (5–7 days per week)	220 (66.9)	109 (33.1)	<0.001	2.25 (1.36 – 3.71)
Frequently (3–4 days per week)	68 (47.2)	76 (52.8)	0.056	1.59 (0.94 – 2.68)
Occasionally (1–2 days per week)	43 (37.1)	73 (62.9)	0.416	1.25 (0.72 – 2.16)
Never	11 (29.7)	26 (70.3)		1

*Chi-square test

** Fisher's exact test

Students who reported self-perceived academic pressure most of the time or frequently had a higher prevalence of depressive symptoms than those who never reported academic pressure, with PRs of 2.14 (PR = 2.14; 95% CI: 1.44–3.17; $p < 0.001$) and 1.66 (PR = 1.66; 95% CI: 1.10–2.50; $p < 0.01$), respectively. The prevalence of depressive symptoms among students who reported pre-examination stress most of the time, frequently, or occasionally was 2.14-fold (PR = 2.14; 95% CI: 1.44–3.17; $p < 0.001$), 1.66-fold (PR = 1.66; 95% CI: 1.10–2.50; $p < 0.01$), and 1.69-fold (PR = 1.69; 95% CI: 1.11–2.57; $p < 0.01$) higher, respectively, than among those who never reported pre-examination stress. Students who reported pressure to gain university admission most of the time had a 2.25-fold higher prevalence of depressive symptoms than those who never reported such pressure (PR = 2.25; 95% CI: 1.36–3.71; $p < 0.001$).

Table 6. Association between peer-related characteristics and depressive symptoms (n = 626)

Characteristics	Depressed n (%)	Non-depressed n (%)	P value*	PR (95% CI)
Peer relationships				
Not good	13 (52.0)	12 (48.0)	0.714	1.08 (0.73 – 1.59)
Average	139 (67.1)	68 (32.9)	<0.001	1.39 (1.21 – 1.60)
Good	190 (48.2)	204 (51.8)		1
Feelings of inferiority compared with peers				
Yes	186 (68.4)	86 (31.6)	<0.001	1.55 (1.35 – 1.79)
No	156 (41.1)	198 (55.9)		1

*Chi-square test

Students who reported average peer relationships had a 1.39-fold higher prevalence of depressive symptoms than those who reported good peer relationships (PR = 1.39; 95% CI: 1.21–1.60; $p < 0.001$). Students who reported feelings of inferiority relative to peers had a 1.55-fold higher prevalence of depressive symptoms than those who did not report such feelings (PR = 1.55; 95% CI: 1.35–1.79; $p < 0.001$).

4. DISCUSSION

The prevalence of anxiety and depressive symptoms among 12th-grade students at Trung Vuong High School was higher than that reported in the study by Nguyen Danh Lam and colleagues (2022) in Thanh Hoa [6], and the study by Ngo Van Manh and colleagues (2020) in Thai Binh [9]. This discrepancy may be attributable to the timing of data collection. The two aforementioned studies collected data in October–November 2020 and September 2021, respectively, which coincided with the first semester of the academic year. In

contrast, the present study was conducted in May 2025, immediately preceding the National High School Graduation Examination, a period when students are likely to experience heightened stress and, consequently, a greater burden of anxiety and depressive symptoms. Nevertheless, across studies, the prevalence of anxiety and depressive symptoms among 12th-grade students remains consistently high, underscoring an urgent need for interventions, school-based psychological support services, and emotional skills education for high school students,

particularly during the final year of secondary school.

This study found that family conflict was associated with anxiety and depressive symptoms among 12th-grade students. Family discord may create a stressful home environment and adversely affect students' mental health. In particular, when parents compare their children with others most of the time, this may contribute to feelings of inferiority among students. A study by Nguyen Yen Ngoc and colleagues (2021) in Quang Binh [10] also reported that parental expectations exceeding students' capacity were associated with increased anxiety and depressive symptoms among final-year students. Therefore, parents should provide ongoing encouragement and support throughout their children's learning process, while minimizing undue pressure and social comparison, to foster a positive environment during the 12th-grade year.

Regarding academic characteristics of 12th-grade students, this study found that reporting self-perceived academic pressure most of the time, pre-examination stress frequently, and pressure to gain university admission frequently was associated with anxiety and depressive symptoms. Similar associations were reported by Danh Thanh Tin and colleagues (2021) in Hau Giang [11] and by Tran Ho Vinh Loc and colleagues (2024) in Ho Chi Minh City [12] these findings highlight the importance of developing school-based psychological support services and emotional skills education programs for 12th-grade students to help mitigate academic-related stress during the learning process.

In addition, this study found that average peer relationships and feelings of inferiority relative to peers were associated with anxiety and depressive symptoms among 12th-grade students. Beyond the family context, peers represent a key social

relationship for students, as much of their time at school involves interacting with classmates. Difficulties in peer relationships or perceived inferiority compared with peers may contribute to low self-esteem and social withdrawal. Therefore, schools and teachers should monitor students' psychosocial well-being and provide timely counseling and appropriate support to enhance students' motivation and adjustment.

5. CONCLUSIONS

The prevalence of students exhibiting symptoms of anxiety and depression was 64.4% and 54.6%, respectively. Factors associated with anxiety and depression included family conflict, frequency of being compared with other peers by parent(s), excessively high parental expectations, frequency of self-perceived academic pressure, frequency of pre-examination stress, frequency of pressure to gain university admission, difficulties in peer relationships, and feelings of inferiority compared with peers.

Schools and parents should provide ongoing encouragement and support for twelfth-grade students' learning, while minimizing undue pressure and social comparison, particularly in the period preceding the National High School Graduation Examination.

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