

Psychological Distress Among High School Students in Northeastern Thailand: A Study from Nakhon Ratchasima

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Abstract:

Objective: To investigate the prevalence of stress and depression among senior high school students in Nakhon Ratchasima Province and to identify associated individual, social, and economic determinants.

Material and Methods: This cross-sectional study was conducted among 902 students studying in Grades 10–12 at secondary schools in Nakhon Ratchasima Province, Thailand. Multistage sampling was used to select the participants. A systematic self-administered questionnaire comprising four components was used to collect the following data: demographic information, stress levels, depressive symptoms, and coping strategies. Multivariable logistic regression analysis and descriptive statistics were used to investigate the relationships between independent factors and outcomes related to mental health.

Results: The study results revealed that 20.7% of senior high school students exhibited moderate to severe depressive symptoms, while 78.5% expressed moderate to high levels of stress. Multivariable logistic regression analysis identified several significant predictors of stress, including gender, income sufficiency, and emotion-focused coping strategies. The significant factors associated with depression included gender, academic program, religious affiliation, parental status, income sufficiency, stress levels, and family history of depression.

Conclusion: The findings indicate that mental health problems among senior high school students are associated with a range of psychological, familial, social, economic, and academic factors. These results provide epidemiological evidence that may help inform future school-based mental health screening and support strategies for adolescents.

Keywords: adolescents, depression, mental health, risk factors, secondary school students, stress

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Introduction

Adolescence is a crucial developmental period that is marked by intricate biological, psychological, and social changes. Nowadays, teenagers in Thailand face increasing pressures from social interactions, academic obligations, and future life preparation. Factors such as competitive learning environments, evolving digital lifestyles, and rapid societal changes add to these stressors. Thailand's Department of Mental Health describes stress as a physical and emotional reaction to perceived pressures or dangers. Adolescents' inability to cope with such stressors can lead to long-term psychological effects, such as academic burnout, emotional dysfunction, or even suicidal thoughts¹. Recent national data highlights the criticality of addressing adolescent mental health issues. Thailand's Department of Mental Health reports that 28% of Thai teenagers under 20 years have high levels of stress, 32% are at risk of depression, and 22% are at risk of suicide². Although stress is a common aspect of adolescence, prolonged or unaddressed stress can lead to more serious mental health issues like depression. Depression is a common mental illness that often presents alongside elevated stress levels. It impairs behavior, emotional control, cognitive function, and general quality of life. Hormonal changes, brain development, and evolving societal expectations make adolescents especially vulnerable to stress. Psychosocial stressors including interpersonal conflict, familial instability, and a lack of emotional support can exacerbate these hormonal changes. The severity of adolescent depression is often underestimated. Symptoms of depression, such as exhaustion, mood swings, anger, and social disengagement, are often misconstrued as typical teenage behavior. Therefore, prompt action and early detection are essential. In school settings, screening tools such as the Department of Mental Health's 9Q questionnaire³ can be used for identifying pupils who are at risk of stress and extending

proactive mental health support. In addition to personal and familial issues, demographic and behavioral factors can also contribute to teenage stress and depression. Studies by Sreekanth P, et al. discovered that stress levels of high school students were highly impacted by their gender, academic performance, and family income⁴. Sawasdisutha and Hongsanguansri noted gender variations in coping mechanisms. They found that while male students suffering from depressive symptoms preferred to avoid difficulties or suppress emotions, their female counterparts were more likely to adopt problem-solving and help-seeking tactics⁵. Such maladaptive behaviors can reduce emotional resilience over the long term and exacerbate ongoing mental health issues.

In Nakhon Ratchasima—the largest province in the northeast and the second most populated in Thailand—where over 37,000 students are currently enrolled in upper secondary school, the situation is especially alarming⁶. Over the past decade, the province has recorded 69 cases of adolescent suicide attempts requiring hospitalization⁷. Despite an increase in research on teenage stress and depression in Thailand, there are only a few analytical studies that adequately consider the unique sociocultural context of the northeastern region—particularly Nakhon Ratchasima, which is distinguished by its cultural identity and large population. The current study investigated the prevalence of stress and depression among senior high school students in Nakhon Ratchasima Province, as well as the related psychosocial, familial, and demographic factors associated with these mental health issues. The study also examines the coping strategies employed by students and their relationship to mental health outcomes. The findings are expected to inform the development of effective school-based mental health programs and screening systems that enhance emotional resilience and reduce the long-term psychological impact of stress on Thai adolescents.

Material and Methods

Participants and sample size

The study's target population comprised students studying in Grades 10–12 enrolled in senior high schools located in Thailand's Nakhon Ratchasima Province (nine secondary schools in Mueang District: seven public, two private, and two additional public schools from other districts). A multistage sampling method was applied. In the first stage, secondary schools were selected using cluster sampling. In the second stage, classrooms within each selected school were randomly chosen. In the final stage, all eligible students within the selected classrooms were invited to participate. A flowchart illustrating the multistage sampling procedure has been added as Figure 1. The sample size was calculated using a prevalence-based formula with a 95% confidence level, following standard methodological approaches for cross-sectional studies⁸. The necessary minimum sample size was determined as 381 participants, based on a total population of 37,511 students. Students were eligible for inclusion if they were enrolled in Grades 10–12 at participating schools, were present during the data collection period, and provided informed consent to participate. Students who declined participation or submitted incomplete questionnaires were excluded from the analysis. Participants were allowed to withdraw from the study at any time without any academic or personal consequences. Over the course of two weeks during November 2024, data were collected online using Google Forms, and 902 valid responses were acquired and included in the final analysis.

The research protocol was approved by the Human Research Ethics Committee of the Research and Development Institute, Bansomdejchaopraya Rajabhat University (REC-BSRU COA No. 671002).

Data collection and assessment

Data were collected using a structured, self-administered online questionnaire distributed via Google

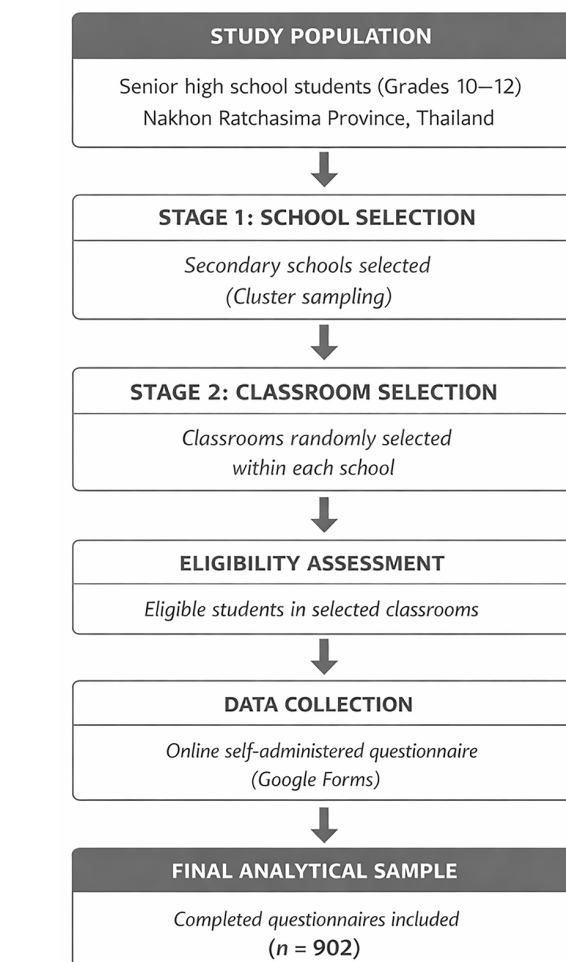


Figure 1 Multistage Sampling Flowchart

Forms. School representatives shared the questionnaire link with students through the LINE application. The questionnaire consisted of four sections:

Demographic Information

Information was gathered about gender, age, academic program, grade level, parental status, perceived economic adequacy, type of residence, and personal and family history of mental or physical illness.

Stress Assessment

The Suan Prung Stress Test (SPST-20)¹ was used to measure the stress levels in the participants over the six months preceding the study. The Department of Mental

Health reports that this instrument, which consists of 20 items intended to evaluate stress symptoms, is indicated by a Cronbach's alpha coefficient greater than 0.7. For analytical purposes, the stress scores were categorized into two groups:

Score <41: low stress

Score $\geq$ 42: high stress

Depression Screening

The 9-item Depression Screening Questionnaire (9Q) was used to measure depressive symptoms in the participants over the two weeks preceding the study. Severity of depression was categorized into four levels based on the total score derived from responses to items on a 4-point Likert scale. To facilitate inferential analysis, the scores were categorized in the following way:

Total score <12: Low-level depression

Total score $\geq$ 13: Moderate to severe depression

Coping Strategies Assessment

To assess coping behaviors, a 5-point Likert scale with options ranging from "very low" to "very high" was used. This section consisted of a total of 30 items, of which 13 evaluated emotion-focused coping and 16 evaluated problem-focused coping. Adapted from Sornmanee⁹, this tool showed a Cronbach's alpha coefficient of 0.748.

Statistical analysis

To summarize the demographics, stress levels, severity of depression, and coping mechanisms, descriptive statistics were employed. The study utilized inferential statistics to investigate the relationship between stress, depression, and associated elements like coping mechanisms and demographic characteristics. Additionally, logistic regression procedures were utilized to compute the odds ratio (OR) for potential factors associated with stress and depression. Statistical analyses were conducted using licensed IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, Version 28.0 (IBM Corp.,

Released 2019, Armonk, NY, USA). A significance level was defined as a p -value <0.05.

Results

Sociodemographic data

The study included a total of 902 senior high school students from Nakhon Ratchasima Province. Among them, 45.2% were male and 54.8% were female. Most students were in Grade 11 (56.2%), and the majority of the students were pursuing academic programs in the Science-Mathematics track (72.5%). The largest proportion of students was aged 16 (40.4%), followed by those aged 17 (38.8%). The majority of students were studying in urban schools (78.2%), while 197 students (21.8%) were from rural schools. Buddhism was the most popular religion (96.5%), while only a small percentage identified themselves as Christian, Muslim, or unaffiliated (3.5%). Some students reported divorced parents (26.2%), married but not cohabiting parents (6.2%), or one or both parents deceased (6.3%). In addition, 9.5% of students reported insufficient money, while 31.7% said that their family income was just occasionally enough. With regard to family history of depression, 18.5% of students were unsure, 74.5% claimed no family history of depression, and 7.0% indicated a favorable family history (Table 1).

With regard to depression levels as assessed using the 9Q questionnaire, 20.7% of students were identified as having moderate to severe depressive symptoms.

Analysis of factors related to stress and depression

The study findings revealed that senior high school students' mental health outcomes and a number of other indicators were significantly correlated. Moderate-to-severe depression (26.72% vs. 13.48%) and high levels of stress (84.62% vs. 71.08%) were substantially more common among female students than male students (p -value <0.001).

Table 1 Study findings on stress and depression and their associated factors among high school students

Variable	Percentage of stress		p-value	Percentage of depression		p-value
	Low to Moderate	High to severe		Normal to low	Moderate to severe	
Gender						
Male	28.92	71.08	<0.001*	86.52	13.48	<0.001*
Female	15.38	84.62		73.28	26.72	
Age (Years)						
15	23.86	76.14	0.249	79.55	20.45	0.148
16	19.51	80.49		79.67	20.33	
17	21.14	78.86		79.43	20.57	
18	29.67	70.33		80.22	19.78	
>18	11.11	88.89		44.44	55.56	
Grade Level						
Grade 10	23.02	76.98	0.766	78.97	21.03	0.084
Grade 11	20.71	79.29		81.26	18.74	
Grade 12	21.68	78.32		72.73	27.27	
School Location						
Urban	23.40	76.60	0.011*	79.01	20.99	0.766
Rural	14.72	85.28		80.20	19.80	
Academic Program						
Science-Math	22.17	77.83	0.726	79.97	20.03	0.012*
Arts	19.69	80.31		81.35	18.65	
Others	20.00	80.00		63.64	36.36	
Religion						
Buddhist	21.72	78.28	0.923	80.00	20.00	0.019**
Christian	17.39	82.61		52.17	47.83	
Islam	0.00	100.00		100.00	0.00	
Other/None	12.50	87.50		75.00	25.00	
Parental Status						
Married	24.59	75.41	0.054	83.36	16.64	0.001*
Married (Not living together)	16.07	83.93		67.86	32.14	
Divorced	16.53	83.47		75.42	24.58	
Both parents deceased	0.00	100.00		83.33	16.67	
One parent deceased	19.61	80.39		64.71	35.29	
Income Sufficiency						
Insufficient	11.63	88.37	<0.001*	66.28	33.72	<0.001*
Sometimes sufficient	14.34	85.66		74.48	25.52	
Sufficient	23.55	76.45		83.43	16.57	
Sufficient with savings	33.33	66.67		84.95	15.05	
Family history of depression						
Yes	14.29	85.71	<0.001*	57.14	42.86	<0.001*
No	25.30	74.70		84.82	15.18	
Unknown	8.98	91.02		65.27	34.73	
Problem-focused coping						
Very Low	0.00	100.00	<0.001*	50.00	50.00	0.167
Low	33.33	66.67		81.08	18.92	
Moderate	13.55	86.45		76.64	23.36	
High	24.57	75.43		80.62	19.38	
Very High	38.89	61.11		87.50	12.50	

Table 1 (continued)

Variable	Percentage of stress		p-value	Percentage of depression		p-value
	Low to Moderate	High to severe		Normal to low	Moderate to severe	
Emotion-focused coping						
Low	45.95	54.05	<0.001*	81.08	18.92	0.044*
Moderate	15.18	84.82		75.13	24.87	
High	20.65	79.35		81.84	18.16	
Very high	43.18	56.82		88.64	11.36	

*Statistic significantly by Chi-square test (p-value<0.05), **Statistic significantly by Fisher's Exact test (p-value<0.05)

Although the prevalence of depression was similar across regions, students from rural areas reported higher levels of stress than their urban counterparts (85.28% vs. 76.60%, p-value=0.011). A significant association was observed between mental health and income sufficiency. Moderate-to-severe depression (33.72%) and significant stress (88.37%) were most common among students hailing from low-income homes (p-value<0.001). Students with a family history of depression reported significantly higher rates of stress (85.71%) and depression (42.86%) than those without a family history of depression, who reported lower rates of stress and depression (74.70% and 15.18%, respectively) (p-value<0.001). Depression was significantly correlated with academic program (p-value=0.012); the highest prevalence was found among students pursuing non-mainstream programs (36.36%). Depression was significantly associated with religious affiliation (p-value=0.019), with higher prevalence observed among Christian students (47.83%) compared with Buddhist students (20.00%). In terms of coping mechanisms, emotion-focused coping was significantly related to depression (p-value=0.044) and stress (p-value<0.001). Compared to students who had very high coping levels (stress: 56.82%; depression: 11.36%), those with low emotion-focused coping exhibited greater levels of stress (45.95%) and depression (18.92%).

Factors associated with stress are presented in Table 2. Multivariable logistic regression analysis identified

several statistically significant predictors of stress among the participants. One significant and reliable influence was gender. In both the unadjusted (crude OR=2.24, 95% CI: 1.62–3.09, p-value<0.001) and adjusted (adjusted OR=2.09, 95% CI: 1.48–2.95, p-value<0.001) models, female students were more than twice as likely as male students to experience stress. In the unadjusted model, stress was found to be substantially correlated with the location of the school. The probability of stress was higher for students in rural areas than for those in urban settings (crude OR=1.77, 95% CI: 1.15–2.72, p-value=0.009). But when other factors were considered, this relationship ceased to exist. Income sufficiency was observed to have a protective impact with respect to socioeconomic status. Students hailing from families with sufficient income had a significantly lower risk of stress compared to those with insufficient income (adjusted OR=0.36, 95% CI: 0.17–0.76, p-value=0.008), and those from households with sufficient income and savings had an even lower risk (adjusted OR=0.27, 95% CI: 0.13–0.59, p-value=0.001). In terms of psychological coping strategies, emotion-focused coping was a significant predictor of stress. Compared to students with low levels of emotion-focused coping, those with moderate coping had almost four times the possibility of experiencing stress (adjusted OR=3.89, 95% CI: 1.94–7.82, p-value<0.001), and those with high coping had more than three times the possibility (adjusted OR=3.37, 95% CI: 1.58–7.18, p-value=0.002). Examined

altogether, these findings highlight gender, income security, and coping mechanisms—particularly emotion-focused coping—as the key factors influencing stress in adolescents. (Figure 2 and Table 2).

Factors associated with depression are presented in Table 3. A multivariable logistic regression analysis was used to identify variables independently related to depression in high school students. A number of factors were found to be substantially connected with depression symptoms after controlling for all pertinent confounders. Depression was more common in female students than in male students (adjusted OR=2.19, 95% CI: 1.44–3.12, p -value<0.001). Compared to students pursuing the Science–Mathematics program, individuals enrolled in other academic programs, such as vocational courses, had significantly greater chances of depression (adjusted OR=2.23, 95% CI: 1.15–4.33, p -value=0.018). The risks of depression were also higher among students who identified as non-Buddhist or those who did not identify as religious

(adjusted OR=3.09, 95% CI: 1.37–6.98, p -value=0.006). Students who had lost one or both parents were much more likely to have depression due to family background (adjusted OR=1.98, 95% CI: 1.02–3.85, p -value=0.045). Students with adequate income were less likely to experience depression than those with inadequate income (adjusted OR=0.51, 95% CI: 0.28–0.91, p -value=0.022). Students without a family history of depression were significantly less likely to suffer from depressive symptoms (adjusted OR=0.24, 95% CI: 0.13–0.43, p -value<0.001). Among them, students who experienced high to severe stress had significantly higher risks of depression (adjusted OR=47.74, 95% CI: 6.59–345.68, p -value<0.001), even after adjusting for all other variables. Despite the statistical significance of this relationship, the wide confidence interval suggests variability in the estimate, potentially stemming from group imbalance or volatility within subgroups. Figure 2 and Table 3 illustrate the crucial significance that psychological stress plays in the mental health of adolescents.

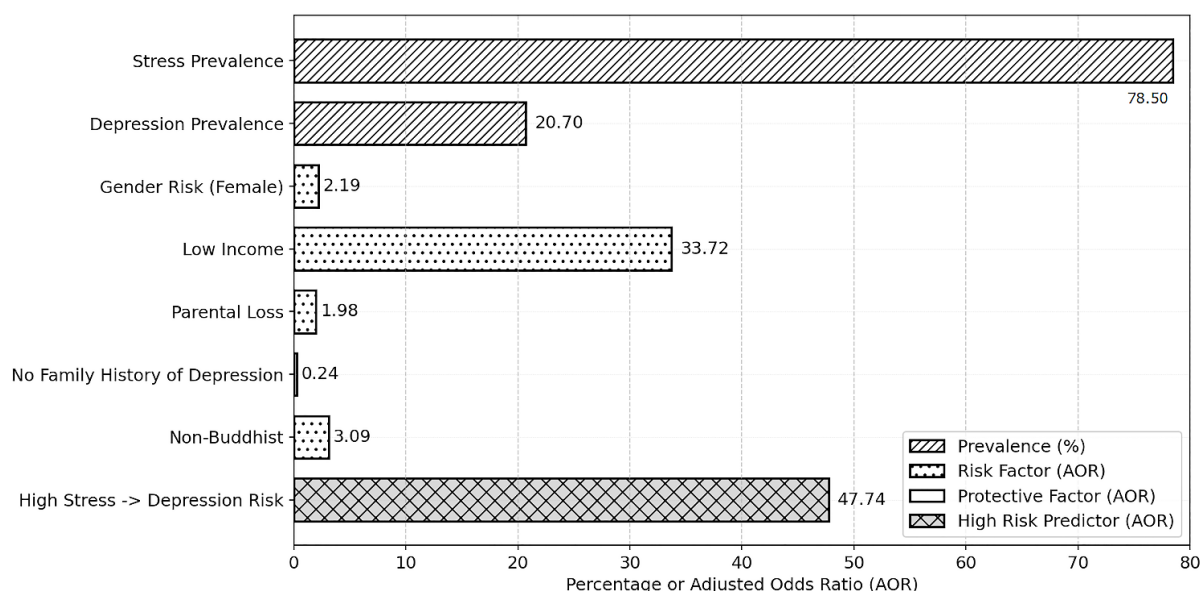


Figure 2 Key risk factors and prevalence of stress and depression in high school students

Table 2 The association between variable factors and stress among high school students

Variable	n	%	Stress					
			Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Gender								
Male	408	45.2	1	Reference	–	1	Reference	–
Female	494	54.8	2.24	(1.62–3.09)	<0.001*	2.09	(1.48–2.95)	<0.001*
School location								
Urban	705	78.2	1	Reference	–	–	–	–
Rural	197	21.8	1.77	(1.15–2.72)	0.009*	–	–	–
Academic program								
Science-math	654	72.5	1	Reference	–	–	–	–
Arts	193	21.4	1.16	(0.78–1.73)	0.462	–	–	–
Others	55	6.1	1.13	(0.57–2.26)	0.709	–	–	–
Parental status								
Married	553	61.3	1	Reference	–	–	–	–
Married (Not living together)	56	6.2	1.7	(0.81–3.57)	0.158	–	–	–
Divorced	236	26.2	1.65	(1.11–2.44)	0.013*	–	–	–
One/both parents deceased	57	6.3	1.53	(0.75–3.12)	0.238	–	–	–
Income sufficiency								
Insufficient	86	9.5	1	Reference	–	1	Reference	–
Sometimes sufficient	286	31.7	0.79	(0.38–1.64)	0.523	0.61	(0.28–1.33)	0.212
Sufficient	344	38.1	0.43	(0.21–0.86)	0.018*	0.36	(0.17–0.76)	0.008*
Sufficient with savings	186	20.6	0.26	(0.13–0.54)	<0.001*	0.27	(0.13–0.59)	0.001*
Family history of depression								
Yes	63	7	1	Reference	–	–	–	–
No	672	74.5	0.49	(0.24–1.02)	0.056	–	–	–
Unknown	167	18.5	1.69	(0.69–4.08)	0.245	–	–	–
Problem-focused coping								
Low	113	12.5	1	Reference	–	–	–	–
Moderate	428	47.5	3.11	(1.92–5.02)	<0.001*	–	–	–
High	289	26.2	1.49	(0.29–2.41)	0.098	–	–	–
Very high	57	6.3	0.77	(0.41–1.41)	0.394	–	–	–
Emotion-focused coping								
Low	74	8.2	1	Reference	–	1	Reference	–
Moderate	382	42.4	4.75	(2.78–8.11)	<0.001*	3.89	(1.94–7.82)	<0.001*
High	402	44.6	3.27	(1.95–5.48)	<0.001	3.37	(1.58–7.18)	0.002*
Very high	44	4.9	1.12	(0.53–2.37)	0.770	1.76	(0.62–4.95)	0.288

*Statistic significantly (p-value<0.05), OR=odds ratio, CI=confidence interval

Discussion

The current study findings report that a significant percentage of senior high school students in Nakhon Ratchasima Province suffer from psychological discomfort, with 20.7% reporting moderate-to-severe depressive symptoms and 78.5% reporting moderate-to-high levels of

stress. According to national statistics, 22%–28% of Thai teenagers are at risk for depression or suicidal thoughts; however, studies reveal that these percentages are higher in reality¹⁰. The elevated numbers observed in this study, particularly in Northeastern Thailand, where access to mental health resources and services is restricted to date,

Table 3 The association between variable factors and depression among high school students

Variable	n	%	Depression					
			Crude OR	95% CI	p-value	Adjusted OR	95% CI	p-value
Gender								
Male	408	45.2	1	Reference	–	1	Reference	–
Female	494	54.8	2.34	(1.65–3.31)	<0.001*	2.19	(1.44–3.12)	<0.001*
Age (years)								
15	88	9.8	1	Reference	–	–	–	–
16	364	40.4	0.99	(0.56–1.77)	0.979	–	–	–
17	350	38.8	1.01	(0.56–1.79)	0.981	–	–	–
18	91	10.1	0.959	(0.46–1.99)	0.91	–	–	–
>18	9	1	4.86	(1.18–19.97)	0.028*	–	–	–
School location								
Urban	705	78.2	1	Reference	–	–	–	–
Rural	197	21.8	0.93	(0.63–1.38)	0.714	–	–	–
Academic program								
Science–math	654	72.5	1	Reference	–	1	Reference	–
Arts	193	21.4	0.92	(0.61–1.38)	0.673	0.86	(0.55–1.36)	0.518
Others	55	6.1	2.28	(1.28–4.08)	0.005*	2.23	(1.15–4.33)	0.018*
Religion								
Buddhist	870	96.5	1	Reference	–	1	Reference	–
Other/none	32	3.5	2.74	(1.33–5.65)	0.006*	3.09	(1.37–6.98)	0.006*
Parental status								
Married	553	61.3	1	Reference	–	1	Reference	–
Married (Not living together)	56	6.2	2.37	(1.29–4.34)	0.005*	1.88	(0.96–3.68)	0.065
Divorced	236	26.2	1.63	(1.13–2.37)	0.1*	1.17	(0.77–1.77)	0.459
One/both parents deceased	57	6.3	2.51	(1.38–4.54)	0.002*	1.98	(1.02–3.85)	0.045*
Income sufficiency								
Insufficient	86	9.5	1	Reference	–	1	Reference	–
Sometimes sufficient	286	31.7	0.67	(0.40–1.33)	0.137	0.72	(0.41–1.29)	0.270
Sufficient	344	38.1	0.39	(0.23–0.66)	0.001*	0.51	(0.28–0.91)	0.022*
Sufficient with savings	186	20.6	0.35	(0.19–0.64)	0.001*	0.55	(0.28–1.08)	0.082
Family history of depression								
Yes	63	7	1	Reference	–	1	Reference	–
No	672	74.5	0.24	(0.14–0.41)	<0.001*	0.24	(0.13–0.43)	<0.001*
Unknown	167	18.5	0.71	(0.39–1.28)	0.256	0.59	(0.31–1.13)	0.112
Level of stress								
Low to moderate	194	21.5	1	Reference	–	1	Reference	–
High to severe	708	78.5	68.77	(9.57–494.19)	<0.001*	47.74	(6.59–345.68)	<0.001*
Problem–focused coping								
Low	113	12.5	1	Reference	–	–	–	–
Moderate	428	47.5	1.26	(0.75–2.11)	0.379	–	–	–
High	289	32	0.99	(0.57–1.72)	0.994	–	–	–
Very high	72	8	0.59	(0.26–1.37)	0.219	–	–	–
Emotion–focused coping								
Low	74	8.2	1	Reference	–	–	–	–
Moderate	382	42.4	1.42	(0.76–2.65)	0.274	–	–	–
High	402	44.6	0.95	(0.50–1.79)	0.877	–	–	–
Very high	44	4.9	0.55	(0.18–1.65)	0.285	–	–	–

*Statistic significantly (p-value<0.05), OR=odds ratio, CI=confidence interval

might reflect regional and contextual differences in mental health. The study also revealed that gender is a major predictor of sadness and stress. Stress (adjusted OR=2.09, 95% CI: 1.48–2.95) and depression (adjusted OR=2.19, 95% CI: 1.44–3.12) were found to be substantially more common among female students than male students. This finding is consistent with regional literature indicating that hormonal fluctuations, internalized stress, and societal influences make adolescent girls more susceptible to depression^{11,12}. Psychological consequences were also highly correlated with socioeconomic status. Moderate-to-severe depression (33.72%) and high stress (88.37%) were most common among students from low-income homes, whereas students from households with adequate income and savings reported far lower rates (depression: 15.05%, stress: 66.67%). Students with sufficient income had an adjusted OR of 0.51 (95% CI: 0.28–0.91) for depression, which supports previous research conducted in low- to middle-income nations that found financial uncertainty to be a significant contributor to teenage psychological distress^{4,13}. Family structure was also a significant factor contributing to adolescent stress. In line with previous research reporting that parental loss significantly raises the risk of emotional dysregulation and depressive symptoms in adolescents, students who had lost one or both parents had almost double the possibility of having depression (adjusted OR=1.98, 95% CI: 1.02–3.85). Owing to both genetic and environmental protective factors, students without a family history of depression had significantly lower odds of stress and depression (AOR=0.24, 95% CI: 0.13–0.43), potentially reflecting reduced familial vulnerability^{14,15}. Additionally, there was a substantial correlation between depression and religious affiliation. With an adjusted OR of 3.09 (95% CI: 1.37–6.98), students who identified as non-Buddhist or with no religious affiliation reported a higher prevalence of depression (47.83%) than Buddhist students (20.00%) (p -value=0.019). This result is consistent with previous

research showing the protective effect of religion on teenage mental health, which is frequently mediated by improved social integration, spiritual coping mechanisms, and a decrease in risky behavior^{16,17}. In multivariate models, coping techniques lost their importance despite being significantly related to depression in bivariate analysis. This indicates that when faced with structural stressors like family instability and financial difficulty, human coping strategies cannot provide much protection. Similar findings were observed by Zhou et al. among Chinese teenagers who mostly used avoidant coping methods, which did not effectively reduce academic stress¹⁸. Although the coping tool employed in this investigation showed adequate internal consistency (Cronbach's α =0.748), future studies could benefit from including culturally appropriate tests that reflect regional resilience mechanisms more accurately. Most importantly, stress level was found to be the best indicator of depression. The adjusted OR of 47.74 (95% CI: 6.59–345.68) for students reporting high-to-severe stress underscores the strong association between chronic stress exposure and adolescent depression, consistent with evidence from systematic reviews¹⁹.

Limited availability of adolescent mental health services, low awareness of existing services, and persistent stigma surrounding mental health problems may further contribute to underdiagnosis and delayed care among adolescents in this region. Previous evidence from Thailand indicates that even when psychological distress is identified, help-seeking and utilization of mental health services among young people remain low, partly due to parental consent requirements and concerns related to child protection regulations²⁰. Given the strong association between stress and depression, collaborative approaches that extend beyond schools may be beneficial. Integration between school-based identification efforts and primary healthcare services, including collaboration with community-based actors, such as village health volunteers, may facilitate

early detection, referral, and continuity of care, particularly in resource-limited settings²¹. In addition, teachers may play a critical role in early psychosocial support by recognizing early signs of distress and fostering protective factors such as emotional coping skills and meaning in life. Prior research suggests that meaning in life and related psychosocial resources are associated with reduced self-harm risk among individuals with depressive symptoms, underscoring the potential value of strengthening such competencies within school environments²².

Conclusion

This study identifies the major factors that contribute to depression in Thai teenagers, including stress, socioeconomic status, gender, family history, academic track, and religious affiliation. School-based screening, in conjunction with culturally relevant interventions, may serve as an initial approach for identifying high-risk adolescents and facilitating timely mental health support. Comprehensive adolescent mental health solutions in Thailand should be built on the foundations of fostering emotional resilience and incorporating academic support.

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Authors' contributions

NN: Conceptualized the study, performed statistical analysis, drafted the manuscript, and supervised the overall research process. LTe and LTr: Collected data and contributed to statistical analysis. All authors have read and agreed to the final version of the manuscript.

Conflict of interest

The authors declare that there are no conflicts of interest regarding the publication of this study.

Availability of data and materials

Data used in the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

The research protocol was approved by the Human Research Ethics Committee of the Research and Development Institute, Bansomdejchaopraya Rajabhat University (REC-BSRU COA No. 671002).

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