IJBMC International Journal of Body, Mind and Culture

Volume 13, Issue 6, Article e2026-1432
DOI: 10.61838/ijbmc.v13i6.1432

Article type:
Review Article

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Biopsychosocial and Contextual Risk Factors for Adolescent Depressive Symptoms in Thailand: A Systematic Review

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Article history:

Received 17 Mar 2026
Revised 22 Apr 2026
Accepted 01 May 2026
Published online 01 June 2026

How to cite this article:
Yotthongdi, N., Intaput, P., Kansri, J., Introntakun, K., & Jantarapakdee, R. (2026). Biopsychosocial and Contextual Risk Factors for Adolescent Depressive Symptoms in Thailand: A Systematic Review. International Journal of Body, Mind and Culture, 13(6), Article e2026-1432. https://doi.org/10.61838/ijbmc.v13i6.1432

ABSTRACT

Objective: This systematic review aimed to synthesize evidence on biopsychosocial and contextual factors associated with depressive symptoms among Thai adolescents.

Methods and Materials: A systematic review was conducted following PRISMA 2020 guidelines. Four electronic databases, including CINAHL, PubMed, Thai Journal Citation Index Center, and Thai Journal Online, were searched for studies published between 2015 and 2025. Eligible studies were cross-sectional studies examining factors associated with depressive symptoms among Thai adolescents aged 10–19 years using validated screening instruments. The review protocol was registered in PROSPERO (CRD420251047610). Methodological quality was assessed using the adapted Newcastle–Ottawa Scale. Due to heterogeneity in populations, instruments, and reported effect measures, findings were synthesized narratively.

Findings: From 308 identified records, 21 cross-sectional studies involving 19,119 adolescents were included. Six studies were rated as very good quality, 14 as good quality, and one as satisfactory. Depressive symptoms were assessed mainly using PHQ-9, CES-D, CDI, and TMHQ. Repeatedly reported biological factors included female sex, obesity, low health-related behaviors, and substance use. Psychological factors included stress, bullying victimization, low self-esteem, low resilience, maladaptive coping, internet or game addiction, social comparison, and interpersonal distress. Social-contextual factors included low family support, domestic violence, parental divorce or separation, childhood maltreatment, low household income, parental psychiatric history, family-related stress, peer problems, friendship or romantic stress, and limited peer support.

Conclusion: Depressive symptoms among Thai adolescents were associated with multiple interacting biological, psychological, familial, and social-contextual factors. Because all included studies were cross-sectional, causal relationships cannot be inferred.

Keywords: Adolescent, Depressive Symptoms, Risk Factors, Thailand, Biopsychosocial Factors, Systematic Review.

Introduction

Adolescent depressive symptoms have become an increasingly important global mental health concern. The World Health Organization (2025) reported increasing rates of depressive symptoms among adolescents aged 10 –14 years and 15–19 years, with potential long-term consequences, including an elevated risk of suicidal behavior in adulthood. In the United States, many adolescents experiencing depressive symptoms received professional counseling or treatment between 2021 and 2023, and female adolescents were more likely than males to report depressive symptoms and seek treatment (National Center for Health Statistics, 2025). In Thailand, the prevalence of depressive symptoms among adolescents aged 15–19 years has also increased, reaching 10.72% (Department of Mental Health, 2025). Adolescence is a critical developmental period, and depressive symptoms during this stage may negatively affect academic functioning, interpersonal relationships, and social adjustment, while also being associated with increased risks of substance use, self-harm, and suicidal behaviors.

Existing literature suggests that factors associated with adolescent depressive symptoms can be broadly categorized into biological, psychological, and social domains. Biological factors identified in previous studies include sex, physical health conditions, obesity, and substance use behaviors (Kongachewakit, 2023; Laksaneeyanawin & Wattanaburanon, 2022; Laopratai et al., 2023; Patanavanich et al., 2022; Reangsing et al., 2023; Surawan, 2021; Thiamsaeng, 2023). Psychological factors encompass emotional regulation, self-esteem, coping patterns, and cognitive vulnerabilities (Boonprathum et al., 2017; Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Choychod et al., 2023; Inmai et al., 2022; Intasuwan et al., 2019; Laksaneeyanawin & Wattanaburanon, 2022; Maneewong, 2022; Moonsorn et al., 2023; Sangon et al., 2018; Satra et al., 2024; Seangsanaoh et al., 2017; Srijan et al., 2020; Suthiprapa & Doungkumjun, 2024). Social-contextual factors include family relationships, peer interactions, academic environments, and socioeconomic conditions (Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Kongachewakit, 2023; Maneenil et al., 2022; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020). These domains interact dynamically and may contribute to adolescents' vulnerability to depressive symptoms.

Despite the growing body of research, evidence regarding adolescent depressive symptoms in Thailand remains methodologically fragmented and largely based on cross-sectional studies. Most existing studies examine isolated correlates rather than integrated patterns of psychosocial risk, limiting understanding of how multiple factors interact within Thai adolescent contexts. In addition, the lack of longitudinal and causally informative evidence constrains the development of comprehensive and contextually appropriate prevention strategies. A systematic synthesis of available evidence is therefore needed to clarify repeatedly observed factors associated with depressive symptoms among Thai adolescents.

This systematic review was informed by the biopsychosocial model Bolton (2023), which conceptualizes mental health as involving interactions among biological, psychological, and social factors. An ecological perspective was also used to situate adolescent experiences within broader familial and social contexts. These frameworks provided a conceptual basis for organizing and interpreting the included evidence.

In this review, the biopsychosocial framework informed the categorization and narrative synthesis of identified factors into biological, psychological, and social-contextual domains, while the ecological perspective was used to interpret how adolescent experiences may be shaped by broader relational and environmental contexts.

Methods and Materials

Study Design

A systematic search was conducted across four electronic databases (CINAHL, PubMed, Thai Journal Citation Index Center [TCI], and Thai Journal Online [ThaiJO]) for studies published between 2015 and 2025, following PRISMA guidelines. The review protocol was registered with PROSPERO (CRD420251047610, 9 May, 2025) and was reported following the Preferred Reporting for Items of Systematic Reviews and Meta Analyses - PRISMA 2020 (Page et al., 2021).

Search Strategy

The search syntax was developed to identify studies examining factors associated with depressive symptoms among Thai adolescents. The search terms included combinations of keywords and Boolean operators related to adolescent populations, depressive symptoms, and associated risk factors as follows: ("Adolescent" OR "Adolescents" OR "Teenager" OR "Youth" OR "Young people") AND ("Depression" OR "Depressive symptoms" OR "Depressive disorder" OR "Mental health") AND ("Risk factor" OR "Associated factors" OR "Correlates" OR "Determinants" OR "Predictors" OR "Psychosocial factors" OR "Association") AND ("Thailand" OR "Thai"). The search strategy was adapted appropriately for each database.

Inclusion and exclusion criteria

Eligible participants were Thai adolescents aged 10–19 years (American Academy of Pediatrics, 2019). Included studies were non-experimental, cross-sectional studies examining factors associated with depressive symptoms assessed using standardized and validated screening instruments. Studies published in English or Thai between 2015 and 2025 were included. Studies were excluded if the full text was unavailable, if participants were adults or older populations, or if the publication type was a literature review, case report, dissertation, or pilot study.

Information Sources

Searching was conducted across four databases: CINAHL, PubMed, Thai Journal Citation Index Center (TCI) and Thai Journal Online (ThaiJO). An initial computer-based search was performed in November 2024 and updated in July 2025.

Study Selection Process

The study selection was conducted in two sequential phases in accordance with predefined eligibility criteria. A total of 308 records were imported into EndNote 21, and 68 duplicates were removed, leaving 240 records for title and abstract screening. Two reviewers independently screened all records for eligibility. Following title and abstract screening, potentially relevant studies underwent full-text assessment independently by the same reviewers. Full-text articles were excluded if they did not focus on depressive symptoms, included non-adolescent populations, reported prevalence without examining associated factors, or were pilot studies, case reports, dissertations, or unavailable in full text. Ultimately, 21 studies met the inclusion criteria and were included in the review. Disagreements at any stage were resolved through discussion and consensus; when necessary, consultation with a third reviewer (Figure 1)

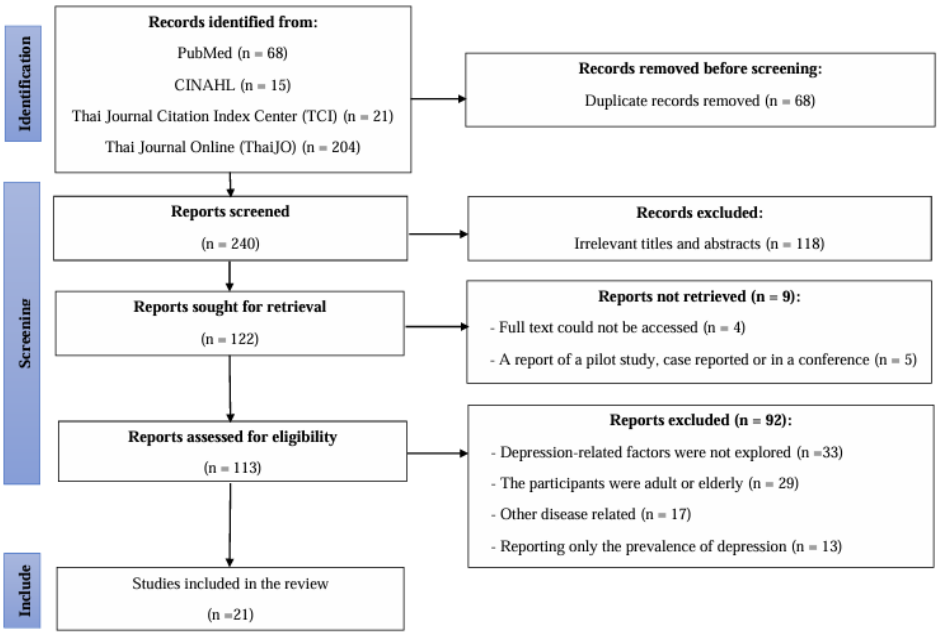

Figure 1

The PRISMA flow diagram of studies included in the systematic review

Data Collection Process

Two reviewers independently screened titles and abstracts for eligibility following removal of duplicates. Full texts of potentially relevant studies were subsequently assessed independently by the same reviewers according to the predefined inclusion and exclusion criteria. Discrepancies at any stage of the screening process were resolved through discussion and consensus, and when necessary, consultation with a third reviewer. Data were independently extracted from each included study using a standardized data extraction form developed by the research team. Extracted information included study characteristics (author, year, setting, sample size), participant characteristics, measurement instruments for depressive symptoms, and reported risk factors with corresponding statistical estimates.

Study Risk of Bias Assessment

The methodological quality of the included studies was assessed independently by two reviewers using the Newcastle-Ottawa Scale (NOS) adapted for cross-sectional studies (Herzog et al., 2013; Wells et al., 2000). The adapted NOS has been commonly applied in systematic reviews of observational and cross-sectional research. The scale assigns a maximum score of 9 points across three domains: selection of study participants (4 points), comparability between groups (2 points), and outcome assessment (3 points). Higher scores indicate lower risk of bias. Studies scoring 8–9 points were classified as very good quality, 6–7 as good quality, 4–5 as satisfactory quality, and below 4 as unsatisfactory quality (Wells et al., 2000). Disagreements between reviewers were resolved through discussion and consultation with a third reviewer when necessary.

Effect Measures

As this review included cross-sectional studies with methodological heterogeneity, a meta-analysis was not performed. Effect estimates were extracted as reported in the original studies. The primary effect measures included odds ratios (ORs) and adjusted odds ratios (AORs) derived from logistic regression analyses. Several studies also reported standardized or unstandardized regression coefficients (β) from multivariable analyses. Corresponding 95% confidence intervals (CIs) and p-values were extracted where available to assess the direction, magnitude, and statistical significance of associations. Findings were synthesized narratively according to the consistency and strength of reported associations across studies.

Synthesis Methods

Following data extraction, two authors independently analyzed the findings to identify factors associated with depressive symptoms, and the categorization was subsequently reviewed by two additional authors. Disagreements were resolved through discussion and consensus with a fifth author when necessary. A meta-analysis was not conducted because of substantial heterogeneity in participant characteristics, study settings, depressive symptoms screening instruments, and reported effect measures across the included studies. Therefore, findings were synthesized narratively in accordance with the *Synthesis Without Meta-analysis (SWiM)* reporting guidelines (Campbell et al., 2020). The identified factors were categorized into biological, psychological, and social-contextual domains to facilitate interpretation of repeatedly reported associations and inconsistencies across studies. A structured summary table was developed to improve clarity and comparability of findings.

Risk of Bias Summary

The methodological quality assessment of the included studies, indicating that 6 out of 21 were rated as very good quality, 14 were rated as good quality, and 1 was classified as satisfactory (Table 1).

Table 1

Risk of bias assessment of each included study (n = 21)

Authors (year)	Selection					Comparability		Outcome				Total
	Q1	Q2	Q3	Q4		Q1		Q1	Q2	Q3		
Boonprathum et al. (2017)	a	a	a	a	4	ab	2	a	a	b	2	8
Buesa et al. (2024)	b	a	b	a	2	ab	2	a	a	b	2	6
Chaisuwannarak & Thommachot (2020)	a	a	a	a	4	ab	2	a	a	a	3	9
Choychod et al. (2023)	a	a	b	a	3	ab	2	a	a	b	2	7
Inmai et al. (2022)	a	a	a	a	4	a	1	a	b	b	1	6
Intasuwan et al. (2019)	a	a	a	b	3	ab	2	a	b	b	1	6
Kongachewakit (2023)	a	a	b	a	3	ab	2	a	a	b	2	7
Laksaneeyanawin & Wattanaburanon (2022)	a	a	b	a	3	ab	2	a	a	b	2	7
Laopratai et al. (2023)	a	b	a	a	3	ab	2	a	b	a	2	7
Maneenil et al. (2022)	a	b	a	a	3	ab	2	a	a	b	2	7
Maneewong (2022)	a	a	b	a	3	ab	2	a	b	b	1	6
Moonsorn et al. (2023)	a	b	a	a	3	a	1	a	b	b	1	5
Patanavanich et al. (2022)	a	a	a	a	4	ab	2	a	a	b	2	8
Rukkiat & Panitrat (2024)	a	a	b	a	3	ab	2	a	a	b	2	7
Sangon et al. (2018)	a	a	a	a	4	ab	2	a	a	b	2	8
Satra et al. (2024)	b	a	a	a	3	ab	2	a	b	b	1	6
Seangsanaoh et al. (2017)	a	a	a	a	4	ab	2	a	b	a	2	8
Srijan et al. (2020)	a	a	b	a	3	ab	2	a	b	b	1	6
Surawan (2021)	a	a	a	a	4	ab	2	a	a	b	2	8
Suthiprapa & Doungkumjun (2024)	b	a	a	a	3	ab	2	a	a	b	2	7
Thiamsaeng (2023)	a	a	a	a	4	a	1	a	a	b	2	7

Findings and Results

Demographic Characteristics

A total of 21 cross-sectional studies were included in this review (Table 1). Most studies were conducted among high school students in Grades 7–12 (n = 15), while four studies were community-based and one study was conducted in foster homes. Sample sizes varied substantially, ranging from 100 to 4,237 participants, with reported mean ages between 13.5 and 16.9 years. School-based studies primarily included adolescents aged 12–18 years, whereas community-based studies involved slightly broader age ranges extending to 19 or 20 years.

Depressive symptoms were assessed using four validated screening instruments. The Patient Health Questionnaire-9 (PHQ-9) was the most frequently used instrument (n = 9), followed by the Center for Epidemiologic Studies Depression Scale (CES-D) (n = 6), the Children's Depression Inventory (CDI) (n = 5), and the Thai Mental Health Questionnaire (TMHQ) (n = 1).

The included studies demonstrated substantial heterogeneity in participant characteristics, age ranges, study settings, and depressive symptoms screening instruments (Table 2). In addition, the screening tools differed in underlying constructs and cut-off criteria. Therefore, findings should be interpreted cautiously, particularly when comparing the consistency and strength of associations across studies.

Table 2

Characteristics of included studies (n =21)

Authors (year)	Population setting	Sample size	Age range (Mean, SD)	Measurement Of depressive symptoms
Boonprathum et al. (2017)	High School (Grade 7-9)	289	NR (13.50, ± NR)	CDI
Buesa et al. (2024)	Community	200	15-19 years (16.94, ± NR)	PHQ-9
Chaisuwannarak & Thommachot (2020)	High School (Grade 8-9)	210	NR (13.92, ± 0.79)	CDI
Choychod et al. (2023)	Community	4,089	11- 16 years (14.41, ± NR)	PHQ-9
Inmai et al. (2022)	High School (Grade 7-12)	1,210	12-20 years (14.83, ± NR)	PHQ-9
Intasuwan et al. (2019)	High School (Grade 7-9)	200	13-15 years (NR)	CDI
Kongachewakit (2023)	Community	370	15-18 years (16.96, ± 0.80)	PHQ-9
Laksaneeyanawin & Wattanaburanon (2022)	High School (Grade 10-12)	387	15-18 years (NR)	CES-D
Laopratai et al. (2023)	High School (Grade 7-9)	352	12-15 years NR	PHQ-9
Maneenil et al. (2022)	High School (Grade 10-12)	160	NR (16.57, ± 0.76)	CES-D
Maneewong (2022)	High School (Grade 7-9)	1,282	NR (NR)	PHQ-9
Moonsorn et al. (2023)	Community	370	15-18 years (16.96, ± 0.80)	CES-D
Patanavanich et al. (2022)	Community	4,237	10-19 years (14.6, ± NR)	CES-D
Rukkiat & Panitrat (2024)	High School (Grade 7-9)	508	12- 17 years (13.79, ± NR)	PHQ-9
Sangon et al. (2018)	High School (Grade 7-12)	399	12-20 years (14.96, ± 1.84)	TMHQ
Satra et al. (2024)	High School (Grade 10-12)	466	15-18 years (16.3, ± NR)	CES-D
Seangsanaoh et al. (2017)	High School (Grade 10-12)	265	15-19 years (16, ± NR)	CES-D
Srijan et al. (2020)	Foster homes	100	10-19 years (13.97, ± NR)	CDI
Surawan (2021)	High School (Grade 7-9)	357	12-19 years (13.94± 0.82)	CDI
Suthiprapa & Doungkumjun (2024)	High School (Grade 7-12)	250	12-19 years (14.9± 1.8)	PHQ-9
Thiamsaeng (2023)	High School (Grade 10-12)	3,418	12-18 years (15.3± 1.5)	PHQ-9

Biopsychosocial and Contextual Risk Factors

This study found that depressive symptoms among Thai adolescents is influenced by multiple factors, encompassing biological, psychological, and sociological domains (Table 3).

Biological factors

Female sex was more frequently associated with higher depressive symptoms across several included studies (Kongachewakit, 2023; Laksaneeyanawin & Wattanaburanon, 2022; Laopratai et al., 2023; Patanavanich et al., 2022; Reangsing et al., 2023; Surawan, 2021; Thiamsaeng, 2023). However, one study reported higher depressive symptoms among males Maneewong (2022), suggesting that sex-related associations may vary across study contexts. The included studies did not clearly distinguish between biological and gender-related social mechanisms underlying these findings. Only one included study identified older age as being associated with higher depressive symptoms (Kongachewakit, 2023). This finding should be interpreted cautiously, as variation across study designs, sampling approaches, and

measurement methods may have contributed to inconsistent findings regarding age-related associations. In addition, Obesity Patanavanich et al., (2022) and low engagement in health-related behaviors Kongachewakit (2023) were also associated with higher depressive symptoms among Thai adolescents. These findings are consistent with previous literature reporting associations between physical health conditions and depressive symptoms in adolescent populations (Blasco et al., 2020). Substance use, particularly alcohol consumption and cigarette smoking, was also associated with higher depressive symptoms among adolescents (Patanavanich et al., 2022). Similar associations between substance use and depressive symptoms have been reported in previous adolescent mental health research (Trucco et al., 2018).

Psychological factors

Psychological factors were consistently associated with depressive symptoms among Thai adolescents across the included studies. These factors included stress-related experiences, self-related cognitive and emotional, interpersonal difficulties, maladaptive coping behavior, and addictive behaviors (Boonprathum et al., 2017; Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Choychod et al., 2023; Inmai et al., 2022; Intasuwan et al., 2019; Laksaneeyanawin & Wattanaburanon, 2022; Maneewong, 2022; Moonsorn et al., 2023; Sangon et al., 2018; Satra et al., 2024; Seangsanaoh et al., 2017; Srijan et al., 2020; Suthiprapa & Doungkumjun, 2024). Stress-related experiences, including general stress, bullying victimization, personal distress, and stressful life event, were frequently associated with higher depressive symptoms among adolescents. (Choychod et al., 2023; Rukkiat & Panitrat, 2024; Surawan, 2021; Suthiprapa & Doungkumjun, 2024). Several studies also reported associations between depressive symptoms and low self-esteem, low resilience, and addictive behaviors (Chaisuwannarak & Thommachot, 2020; Inmai et al., 2022; Intasuwan et al., 2019; Laksaneeyanawin & Wattanaburanon, 2022; Maneewong, 2022; Moonsorn et al., 2023; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020; Surawan, 2021; Suthiprapa & Doungkumjun, 2024).

Interpersonal difficulties, including attachment-related difficulties, upward social comparison and experiences of sexual harassment, were also associated with depressive symptoms among adolescents (Boonprathum et al., 2017; Buesa et al., 2024; Moonsorn et al., 2023; Satra et al., 2024; Surawan, 2021). In addition, some studies identified maladaptive coping behaviors as being associated with depressive symptoms (Boonprathum et al., 2017; Buesa et al., 2024)

Some included studies discussed emotional suppression and interpersonal expectations within Thai sociocultural contexts. However, these interpretations were contextual in nature, as cultural variables were not systematically measured across the included studies. Suicidal ideation and suicide attempts were reported in association with depressive symptoms in some studies (Choychod et al., 2023). However, because all included studies were cross-sectional, the temporal and causal relationships among these psychological factors could not be determined.

Social-contextual factors

Social-contextual factors were consistently associated with depressive symptoms among Thai adolescents across the included studies. These factors included parent and family relationship problems, family socioeconomic and health-related conditions, and peer relationship difficulties.

Parent and family relationship problems were frequently associated with depressive symptoms. These included low family support, domestic violence, parental divorce or family separation, and childhood maltreatment or abuse (Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Kongachewakit, 2023; Laksaneeyanawin & Wattanaburanon, 2022; Laopratai et al., 2023; Maneenil et al., 2022; Rukkiat & Panitrat, 2024; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020; Surawan, 2021; Thiamsaeng, 2023). Some studies additionally discussed family expectations and interpersonal obligations within Thai sociocultural contexts (Sangsawang et al., 2022). However, these interpretations were contextual in nature, as sociocultural variables were not systematically measured across the included studies.

Several studies reported associations between depressive symptoms and family socioeconomic and health-related conditions, including parental educational level, low household income, parental psychiatric history, family-related stress, and chronic illnesses among family members (Buesa et al., 2024; Choychod et al., 2023; Kongachewakit, 2023; Patanavanich et al., 2022; Rukkiat & Panitrat, 2024;

Surawan, 2021; Suthiprapa & Doungkumjun, 2024; Thiamsaeng, 2023). These conditions were consistently associated with higher depressive symptoms among adolescents across several included studies.

Several studies also identified peer-related difficulties as being associated with higher depressive symptoms among adolescents. These factors included peer problems, friendship- and romantic relationship-related stress, experiences of violence by peers, low friendship intimacy, and limited peer support (Buesa et al., 2024; Rukkiat & Panitrat, 2024; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020; Surawan, 2021; Thiamsaeng, 2023).

Table 3

Summary of risk factors of depressive symptoms among Thai adolescents

Factors	Authors/ Year																				
	Boonprathum et al. (2017)	Buesa et al. (2024)	Chaisuwannarak & Thommachot (2020)	Choychod et al. (2023)	Inmai et al. (2022)	Intasuwan et al. (2019)	Kongachewakit (2023)	Laksaneeyanawin & Wattanaburanon (2022)	Laopratai et al. (2023)	Maneenil et al. (2022)	Maneewong (2022)	Moonsorn et al. (2023)	Patanavanich et al. (2022)	Rukkiat & Panitrat (2024)	Sangon et al. (2018)	Satra et al. (2024)	Seangsanaoh et al. (2017)	Srijan et al. (2020)	Surawan (2021)	Suthiprapa & Doungkumjun (2024)	Thiamsaeng (2023)
Biological factors																					
Sex																					
Male											+										
Female				+			+	+	+				+						+		+
Health Status																					
Obesity													+								
Age							+														
Low health behavior							+														
History of substance use																					
Current alcohol drinking													+								
Cigarette/E-cigarette user													+								
Psychological factors																					
Stress-related experiences																					
General stress					+										+				+		+
Bullying victimization					+				+	+		+									
Personal distress/stressful life event	+	+					+														

Self-related cognitive and emotional																					
Low self-esteem			+		+						+	+						+		+	
Low resilience						+		+							+						
Low self-image																			+		
Low spiritual intelligence																	+				
Interpersonal difficulties																					
Attachment-related difficulties	+	+																			
Upward social comparison																+					
Experiences of sexual harassment													+						+		
Maladaptive coping behaviors																					
Negative automatic thought	+																				
Behavior control		+																			
Suicidal thoughts				+																	
Suicide attempts				+																	
Addictive behaviors																					
Game/Internet addiction						+		+			+						+				
Social-contextual factors																					
Parent and family relationships problems																					
Low family support		+	+				+			+					+		+	+			
Domestic violence									+												
Parental divorce/family separation								+						+							+
Childhood maltreatment or abuse									+									+		+	
Family socioeconomic and health-related conditions																					
Parental educational level													+								
Low household income				+										+					+		
Parental psychiatric history							+														

Family-related stress	+								+
Chronic illnesses of family members								+	
Peer relationships difficulties									
Peer problems			+						
Friendship-romantic-related stress									+
Experiences of violence by peers								+	
Low friendship intimacy					+	+			
Limited peer support		+		+	+		+		

(+) Increase the risk of depressive symptoms

Discussion and Conclusion

This systematic review synthesized evidence from 21 cross-sectional studies involving 19,119 participants and examined factors associated with depressive symptoms among Thai adolescents. The findings suggest that depressive symptoms among Thai adolescents are associated with multiple biological, psychological, and social-contextual factors rather than a single isolated domain. Frequently reported psychological factors included stress, low self-esteem, bullying victimization, and internet or game addiction (Boonprathum et al., 2017; Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Choychod et al., 2023; Inmai et al., 2022; Intasuwan et al., 2019; Laksaneeyanawin & Wattanaburanon, 2022; Laopratai et al., 2023; Maneewong, 2022; Moonsorn et al., 2023; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020; Surawan, 2021; Suthiprapa & Doungkumjun, 2024 and Thiamsaeng, 2023), while commonly identified social-contextual factors included family relationship problems, family socioeconomic and health-related conditions, and peer difficulties (Buesa et al., 2024; Chaisuwannarak & Thommachot, 2020; Kongachewakit 2023; Laksaneeyanawin & Wattanaburanon, 2022; Laopratai et al., 2023; Maneenil et al., 2022; Rukkiat & Panitrat, 2024; Sangon et al., 2018; Seangsanaoh et al., 2017; Srijan et al., 2020; Surawan, 2021; Thiamsaeng, 2023). These findings support the relevance of biopsychosocial perspectives in understanding depressive symptoms among adolescents. However, because all included studies were cross-sectional, causal and temporal relationships among these factors could not be established.

Some included studies discussed family expectations, academic pressure, emotional restraint, and interpersonal obligations within Thai sociocultural contexts (Chaisuwannarak & Thommachot, 2020; Sangsawang et al., 2022). These interpretations may provide useful contextual perspectives for understanding adolescent depressive symptoms in Thailand. However, cultural variables were not systematically measured across the included studies, and therefore these interpretations should be considered contextual rather than direct empirical findings. In addition, several studies reported associations between depressive symptoms and peer rejection, bullying, social comparison, and stressful academic environments, particularly within online and social media contexts (Patanavanich et al., 2022).

The findings of this review suggest that interventions addressing depressive symptoms among Thai adolescents may benefit from incorporating psychological, family-related, school-based, and peer-support components. Several included studies highlighted the potential importance of family support, social relationships, and coping-related factors, suggesting that preventive and supportive mental health strategies should extend beyond symptom-focused approaches alone (Eisendrath et al., 2016; Korczak et al., 2023). In addition, culturally responsive mental health programs and school-based support systems may help improve accessibility and responsiveness to adolescents' social and emotional needs (Campos-Paino et al., 2023; Raes et al., 2013). However, further longitudinal and intervention-based research is needed to evaluate the effectiveness of such approaches within Thai adolescent populations.

This review also highlights several limitations in the existing literature. Most included studies employed cross-sectional designs, limiting the ability to infer causal relationships between associated factors and depressive symptoms. Variability in measurement tools and study populations may contribute to inconsistencies across findings. These limitations underscore the need for more rigorous and longitudinal research to better understand the temporal relationships among factors associated with depressive symptoms. In addition, most included studies were school-based and relied on screening instruments such as the PHQ-9, CES-D, CDI, and TMHQ to assess depressive symptoms rather than clinically diagnosed depressive disorders. Therefore, the findings may not be generalizable to adolescents outside school settings or to clinically diagnosed populations.

This systematic review suggests that depressive symptoms among Thai adolescents are associated with multiple psychological, familial, and social-contextual factors that should be interpreted within Thai sociocultural contexts. The findings highlight the potential value of integrative and biopsychosocial approaches to adolescent mental health care. Future interventions may benefit from incorporating culturally responsive, family-related, school-based, and peer-

support components that address both individual and environmental factors associated with depressive symptoms. In addition, further longitudinal and interdisciplinary research is needed to strengthen understanding of temporal relationships and to inform contextually relevant adolescent mental health policies and practices in Thailand.

Acknowledgments

The authors express their gratitude and appreciation to all participants.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently, with personal funding, and without financial support from any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

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