

A Comparative Study of Clinical Characteristics of Depressive Disorders among Children and Adolescents at Siriraj Hospital between 2014 and 2022

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Objective: To compare the characteristics and associated factors of depressive disorders in children and adolescents treated at Siriraj Hospital in 2014 and 2022.

Materials and Methods: A retrospective review of medical records was conducted, including 93 patients from 2014 and 172 patients from 2022. Data collected included demographics, diagnoses, comorbidities, and treatment outcomes. Statistical analyses included two-sample t-tests, Pearson's chi-square tests, and Fisher's exact test to compare characteristics of depressive disorders between the two years, and modified Poisson regression to explore factors associated with remission.

Results: The proportion of female patients increased from 49.5% in 2014 to 73.7% in 2022 ($p < 0.001$). Reports of domestic violence rose from 7.5% to 20.3% ($p = 0.006$), suicidal ideation increased from 16.1% to 51.2% ($p < 0.001$), and self-harming behaviors increased from 22.7% to 57.6% ($p < 0.001$). Referrals to psychologists increased from 22.6% to 43.9% ($p < 0.001$), and hospitalization rates within the first year rose from 6.5% to 15.2% ($p = 0.037$). No significant differences were observed in age, family structure, parenting style, psychotic symptoms, comorbidities, medication use, or remission rates. Regression analysis indicated that authoritative parenting was associated with a 1.98-fold higher likelihood of remission ($p = 0.042$).

Conclusion: The prevalence and severity of depressive disorders among female children and adolescents are rising, marked by an increase in suicidal ideation, self-harm, and hospitalization. However, remission rates remain unchanged. Authoritative parenting may improve remission rates. These findings highlight the need for enhanced screening, updated treatment guidelines, and targeted parental counseling.

Keywords: Depression; Child; Adolescent; Self-injurious behavior; Parenting

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Depression in children and adolescents is a growing global concern. In 2021, it was the leading cause of disability-adjusted life years (DALYs) among adolescents in the United States and ranked among the top five causes in Japan and South Korea⁽¹⁾.

The prevalence of depression among children and adolescents has been rising globally. In the U.S., the rate of adolescent depression has increased over recent years⁽²⁾. Similarly, in Thailand, reported cases

have risen, with a significant percentage of children and adolescents at risk⁽³⁾. China has also seen an upward trend in depression rates, while South Korea has experienced a slight decline⁽⁴⁻⁶⁾.

Several factors contribute to depression, including gender, age, symptoms, and external influences. Adolescent females are more prone to depression than males, although a 2019 Chinese study found comparable rates between genders, with males slightly more affected⁽⁵⁾. Symptoms such as suicidal ideation and self-harm are significant in depression. Suicide rates among adolescents have increased worldwide, including in Asia and the U.S., with countries like South Korea showing a rise since 2000^(6,7).

Treatment trends for adolescent depression vary across regions. In the U.S., between 2005 and 2014, mental health care utilization increased, with a rise in specialty care visits, prescription medication use, and inpatient hospitalizations among adolescents⁽⁸⁾. In China, antidepressant prescriptions for adolescents

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increased significantly between 2017 and 2021, alongside growing treatment costs and a shift toward combination therapy. Until 2021, no antidepressants were approved for adolescent depression in China, but fluoxetine has since been approved for children aged 8 years and older⁽⁹⁾. Despite these trends, research on treatment patterns remains limited.

However, data on long-term treatment trends remain limited. The present study examines trends in depression and remission-related factors among children and adolescents treated at Siriraj Hospital in 2014 and 2022 to inform screening and treatment strategies.

MATERIALS AND METHODS

The present study was a cross-sectional retrospective study that analyzed depression trends, contributing factors, and predictors of remission among children and adolescents treated at Siriraj Hospital in 2014 and 2022. Patients diagnosed with depression during these years were included, with sample sizes of 95 in 2014 and 172 in 2022, calculated using the n4Studies software. Systematic sampling was applied for participant selection.

Eligible participants were aged 0 to 18 years at the time of their initial treatment and had a clinical diagnosis of major depressive disorder, persistent depressive disorder, or unspecified depressive disorder, based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria and confirmed by child and adolescent psychiatrists. The inclusion criteria required patients to have received treatment between January and December of either 2014 or 2022, with complete and accessible medical records documenting psychiatric assessments and treatment history. Exclusion criteria included patients who were later diagnosed with bipolar disorder, schizoaffective disorder, or other primary psychiatric conditions, as well as those with incomplete or inaccessible medical records.

Data on demographics, psychiatric history, symptomatology, and treatment outcomes were extracted and analyzed using t-tests, chi-square tests, and modified Poisson regression via IBM SPSS Statistics, version 29.0 (IBM Corp., Armonk, NY, USA) and Stata Statistical Software, version 17 (StataCorp LLC, College Station, TX, USA), with statistical significance set at p-value less than 0.05.

RESULTS

The present study identified significant changes in adolescent depression at Siriraj Hospital in 2014

and 2022. The proportion of female patients increased from 49.5% to 73.7%. Clinical severity worsened over time, with the prevalence of suicidal ideation increasing significantly from 16.1% in 2014 to 51.2% in 2022, and self-harming behaviors rising from 22.7% to 57.6%. Treatment patterns also shifted, with psychotherapy referrals nearly doubling and hospitalization rates increasing from 6.5% to 15.2% (Table 1).

Despite these changes, remission rates remained stable in 2014 and 2022. Before regression analysis, remission was associated with an intact family structure (2.89 times higher likelihood), absence of self-harming behaviors (3.98 times), and the use of monotherapy (2.12 times). However, after adjusting for confounders, only authoritative parenting remained significantly associated with remission (1.98 times higher likelihood). No significant associations were found with treatment year, gender, age, or family history of psychiatric disorders.

DISCUSSION

The present study demonstrated a substantial increase in the proportion of female patients diagnosed with depression. This finding is consistent with the previous research conducted in multiple countries. For instance, a study in the United States reported a marked increase in depression rates among adolescent girls after 2012, which the author attributes to the rise in digital media use⁽¹⁰⁾. This trend aligns with the findings of other study, which showed that adolescent girls in the U.S. have significantly higher rates of depression compared to boys, and these rates have been steadily rising⁽¹¹⁾. Similarly, studies in Asia have shown comparable trends. Study in Yunnan Province, China, found that adolescent girls were more likely to develop depression and tend to experience more severe symptoms than their male counterparts⁽¹²⁾.

The present study also revealed an increase in family violence among patients with depression. However, a review of the literature found no studies directly addressing trends in family violence among children and adolescent depression patients. Still, a study of U.S. adolescents aged 12 to 17 reported that an increase in family violence significantly contributes to the rise in mental health issues among this group⁽¹³⁾.

Regarding the clinical symptoms of depression, the present study found that suicidal ideation and self-harming behavior increased significantly. These findings are in line with earlier study, which reported

Table 1. Comparison of patient characteristics in 2014 and 2022

Factors	2014 (n=93)	2022 (n=172)	p-value
Sex; n (%)			<0.001*
Female	46 (49.5)	126 (73.3)	
Male	47 (50.5)	46 (26.7)	
Age (years); mean±SD	13.1±2.7	13.5±2.5	0.202
Parenting style; n (%)			0.642
Authoritative	31 (33.3)	46 (26.7)	
Authoritarian	17 (18.3)	34 (19.8)	
Neglectful	23 (24.7)	52 (30.2)	
Permissive	5 (5.4)	8 (4.7)	
Missing data	17 (18.3)	32 (18.6)	
Clinical features; n (%)			
Suicidal ideation			<0.001*
• Present	15 (16.1)	88 (51.2)	
• Absent	78 (83.9)	84 (48.8)	
Self-harm behavior			<0.001*
• None	72 (77.4)	73 (42.4)	
• Suicidal intent	6 (6.5)	8 (4.7)	
• Non-suicidal intent	9 (9.6)	35 (20.3)	
• Both	6 (6.5)	56 (32.6)	
Psychotic symptoms			0.505
• Present	10 (10.7)	23 (13.4)	
• Absent	83 (89.3)	146 (84.9)	
• Missing data	0 (0.0)	3 (1.7)	
Medical use; n (%)			0.705
Yes	83 (89.3)	156 (90.7)	
No	10 (10.7)	16 (9.3)	
Adjunctive medication use; n (%)			0.154
Yes	25 (26.9)	61 (35.5)	
No	68 (73.1)	111 (64.5)	
Psychologist consultation; n (%)			<0.001*
Yes	21 (22.6)	75 (43.6)	
No	72 (77.4)	97 (56.4)	
Hospitalization during the first year; n (%)			0.037*
Yes	6 (6.5)	26 (15.1)	
No	87 (93.5)	146 (84.9)	
Treatment outcome; n (%)			0.164
Full remission	23 (24.8)	30 (17.4)	
Partial remission	50 (53.8)	102 (59.3)	
No remission	10 (10.7)	30 (17.4)	
Missing data	10 (10.7)	10 (5.9)	
Treatment resistant; n (%)			0.099
Yes	0 (0.0)	7 (4.1)	
No	83 (89.3)	155 (90)	
Missing data	10 (10.7)	10 (5.9)	

SD=standard deviation

* p<0.05 is considered statistically significant. Quantitative variables analyzed using 2-sample t-test; qualitative variables analyzed using Pearson's chi-square test or Fisher's exact test.

significant increases in suicidal ideation and self-harm among adolescents in the U.S. after 2012, linked to increased smartphone use and social media engagement⁽¹⁰⁾. Study in Brazil also found a rise in suicidal ideation among children and adolescents, with female patients reporting higher rates of suicidal ideation than males, due to a greater tendency to self-blame⁽¹⁴⁾.

In terms of treatment, the study showed a significant increase in referrals to psychologists, as well as an increase in hospitalizations within the first year of treatment. These trends are consistent with research worldwide, as evidenced by studies in England, which reported a significant increase in the number of children and young people admitted to acute medical wards for mental health concerns over a 10-year period⁽¹⁵⁾. Similarly, a six-year study conducted in Singapore from 2013 to 2018 revealed a substantial rise in inpatient ward admissions among youths with depression⁽¹⁶⁾.

Regarding factors affecting remission rates, the study found authoritative parenting had a significant positive effect on full remission. This finding aligns with other studies that have reported the benefits of authoritative parenting in improving mental health outcomes. For instance, King et al. found that authoritative parenting was associated with higher remission rates and lower depression symptoms in U.S. adolescents⁽¹⁷⁾. Likewise, a study in China also indicated that supportive parenting, particularly parental emotional warmth and understanding, was significantly linked to better mental health outcomes among adolescents, whereas parental punishment severity and denial were associated with increased depressive symptoms⁽¹⁸⁾. This reinforces the importance of nurturing care in treating adolescent depression.

However, the present study has limitations. The retrospective cross-sectional design and reliance on medical records limit causal inference and may introduce information bias due to incomplete or inconsistent documentation. The single-center setting at a tertiary referral hospital may reduce the generalizability of the findings to other healthcare settings. In addition, changes in diagnostic awareness, reporting practices, and service availability in 2014 and 2022 may have influenced the observed trends. Missing data in key variables, such as parenting style and treatment outcomes, may have affected the robustness of the analyses, and the sample size for full remission analyses may have been insufficient to detect significant associations. Furthermore,

important unmeasured confounders, including socioeconomic factors, school-related stressors, and digital media exposure, were not assessed.

Future research should consider conducting prospective studies with larger sample sizes and more diverse populations to improve the reliability and applicability of the findings.

CONCLUSION

The findings of the present study demonstrate an increase in depressive disorders, particularly among female adolescents, with notable increases in clinical severity, including suicidal ideation and self-harming behaviors. The rise in psychological referrals and hospitalizations within the first year of treatment underscores the increasing clinical complexity and severity of these conditions. Additionally, the association between authoritative parenting and higher remission rates highlights the importance of promoting supportive parenting styles in the treatment of depression in children and adolescents.

WHAT IS ALREADY KNOWN ABOUT THIS TOPIC?

- Globally, depression is on the rise among children and adolescents, disproportionately affecting females. This increase is accompanied by growing rates of suicidal ideation and self-injurious behaviors.
- Parenting style has a significant impact on the emotional and behavioral well-being of adolescents with depression.
- Many countries have experienced increased utilization of mental health services, including psychotherapy and hospitalization.
- However, specific data regarding these issues in Thailand remains limited.

WHAT DOES THIS STUDY ADD?

- This study provides comparative data from a teaching hospital spanning nine years, revealing a worsening of clinical profiles in children and adolescents diagnosed with depression.
- It demonstrates a significant increase in the number of female patients, as well as in the prevalence of suicidal ideation, self-harming behaviors, and hospitalization rates.
- The findings highlight that remission rates have not improved despite the increasing clinical severity, suggesting a stagnation in treatment effectiveness.
- The study identifies authoritative parenting as the only significant protective factor associated with remission, underscoring the crucial role of caregiver

involvement in the recovery process.

- This research offers vital insights to inform the development of more effective, family-centered mental health policies and interventions for children and adolescents in Thailand.

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AUTHORS' CONTRIBUTIONS

Writing-original draft, NV; Writing-review & editing, NV and WA; Data curation, NV; Conceptualization, NV and WA; Formal analysis, NV; Investigation, NV; Supervision, WA; Project administration, WA; Methodology, WA; Conceptualization, WA; Resources, WA; Validation, WA.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are not publicly available due to ethical and confidentiality restrictions. However, de-identified data may be made available upon reasonable request to the corresponding author, subject to approval by the institutional ethics committee. Secondary data sources, where applicable, are cited in the references section.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The present study was approved by the Institutional Review Board (IRB) of the Faculty of Medicine Siriraj Hospital, Mahidol University (COA SI 065/2024).

CLINICAL TRIAL REGISTRATION

Not applicable. This study was a retrospective study and was not registered as a clinical trial.

USE OF ARTIFICIAL INTELLIGENCE

During the preparation of this manuscript, the authors used Google Gemini 2.5 Pro to improve language and readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the final content for publication.

CONFLICTS OF INTEREST

The research team declares no conflicts of interest related to this study.

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