

Association between Adverse Childhood Experiences and Prevalent Depressive Symptoms among Secondary School Students in Thailand

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ABSTRACT

Objective: To describe the prevalence of Adverse Childhood Experiences (ACEs) and its association with prevalent depression among Thailand secondary school students.

Material and Methods: We analyzed data from the 5th National School Survey on Alcohol, Tobacco, Substance Use and Health–Risk Behaviors. Univariate descriptive statistics to present general information regarding the sample; such as age, gender, social, economic, and family characteristics and prevalence of ACEs and depressive symptoms was used. Bivariable descriptive statistics and regression analyses assessing extent and association between ACEs and depression was used.

Results: From 23,659 students participating in the survey (n=23,659), there were 7,131 that answered questions regarding ACEs. Students having had experienced at least one ACE had significantly higher odds of prevalent depression compared to those without any adverse experiences (32% vs. 8%; Adjusted OR=4.65; 95% CI=3.94, 5.49). The more types of adverse experiences, the greater the odds of depression; i.e., results suggested a linear relationship between number of ACEs and likelihood of depression.

Conclusion: Significant association between ACEs and prevalent depression among Thailand secondary school students was found, indicating a linear relationship. However, issues; including question comprehension and providing inaccurate answers could have led to under- or over-reporting of ACEs or depressive symptoms. Future studies should consider methods to potentially reduce errors; including conducting face-to-face interviews or online surveys.

Keywords: adolescent; child abuse; depression; mental health; secondary schools

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INTRODUCTION

Adverse Childhood Experiences (ACE) refers to negative experiences encountered by individuals before the age of 18. There are 10 types of ACEs; which include: 1) Physical abuse; 2) Emotional abuse; 3) Sexual abuse; 4) Physical neglect; 5) Emotional neglect; 6) Witnessing domestic violence; 7) Family member with alcohol or substance abuse problems; 8) Family member with mental illness; 9) Parental divorce or separation; and 10) A family member being incarcerated¹. Research has shown that experiencing ACEs can have long-term effects that persist into adulthood. These can contribute to physical health problems, chronic diseases, mental health issues and risky behaviors; such as alcohol abuse, smoking, substance use and sexual risk behaviors. Additionally, the more types of ACEs an individual experiences, the greater the negative impact on their well-being².

Depression is one of the most common mental health issues in adolescents and its prevalence is increasing. Depression is the second leading cause of years lived with disability (YLD) in adolescents aged 15–19³. Furthermore, depression is strongly associated with suicide, which is the second leading cause of death among individuals aged 15–29. It may also co-occur with other mental health conditions; such as substance use disorders, psychotic disorders and mood behavioral disorders⁴.

A study examining the relationship between Adverse Childhood Experiences (ACE) and the prevalence of anxiety and depression in children and adolescents aged 8–17 in the United States, with a sample size of 39,929, found that 4% of children with depression were significantly associated with experiencing ACEs. The study also revealed that children who experienced 4 or more types of ACEs had higher rates of anxiety and depression compared to those whom experienced fewer than 4 types⁵. Similarly, a cross-sectional study investigating the relationship between childhood ACEs and health-related behaviors, chronic diseases, and mental health in adults in Macheng, China, with 1,501 participants, found that 66.2% of participants

reported at least one ACE, and 5.93% reported 4 or more ACEs. An increase in ACE score was associated with a higher risk of alcohol consumption, chronic diseases, depression, and post-traumatic stress disorder (PTSD) in adulthood. The impact of different types of ACEs varied, with notable long-term effects, particularly on mental health in adulthood¹.

Additionally, a study on the relationship between childhood ACEs and early-onset chronic conditions, using data from the Behavioral Risk Factor Surveillance System (BRFSS) for 2011–2012, involving 86,968 participants from 9 states in the United States; representing 32 million adults, found that the youngest age group (18–34 years) experienced family hardships; such as family members with mental illness, illegal drug use, parental separation, family incarceration. Physical, verbal and sexual abuse, were mostly reported in adults aged 35–44 years. This was also the group with the highest report of chronic conditions; including depression, at 20.12%⁶.

In Thailand, there has also been research investigating the relationship or impact of experiencing ACEs. However, the prevalence of each type of ACE (from the 10 types listed earlier) varies across populations, and the influence of each type of ACE may have different levels of association with depression. This data could provide empirical evidence for stakeholders in child and adolescent mental health. The 5th National School Survey on Alcohol Consumption, Substance Use and Other Health-Risk Behaviors; 2020, offered these data for secondary data analysis. The objective of this study is to describe the prevalence of Adverse Childhood Experiences (ACEs) in addition to its association with prevalent depression among Thailand secondary school students.

MATERIAL AND METHODS

Study design and study setting

This research was a Descriptive Study Design; using secondary data from the project: “Fifth National School Survey on Alcohol, Tobacco, Substance Use and

Health–Risk Behaviors”, conducted during the academic year of 2020–2021.

The 5th National School Survey on Alcohol Consumption, Substance Use and Other Health–Risk Behaviors (hence: “the Survey”) was a cross-sectional survey conducted to provide information regarding the magnitude and trend of health risk behaviors among students in Thailand’s formal education system⁷. The Survey was conducted in the 2020 academic year, with the aim to describe the prevalence of health risk behaviors in secondary school students. Investigators collected data from both public and private schools at the lower secondary (Grade 7–9), upper secondary (Grade 10–12), and vocational education levels in both rural and urban areas in the Bangkok Metropolitan Areas, Central, Eastern, Northern, Northeastern and Southern regions of Thailand; covering a total of 21 provinces and 1 district in Bangkok.

Study participants and sample size calculation

Study participants in the Survey included: students at government schools and private schools in both rural and urban areas in Matthayom 1 (Year 7), Matthayom 3 (Year 9), Matthayom 5, or Vocational Certificate Year 2 (Year 11) that were present at the sampled classrooms on the day of data collection. The procedures for the Survey’s sample size calculation have been described elsewhere^{7,8}.

Study variables

Independent variable (adverse childhood experiences): Adverse Childhood Experiences (ACE) refer to negative experiences encountered by individuals before the age of 18. There are 10 types of ACEs. These include: 1) Physical abuse; 2) Emotional abuse; 3) Sexual abuse; 4) Physical neglect; 5) Emotional neglect; 6) Witnessing domestic violence; 7) Family member with alcohol or substance abuse problems; 8) Family member with mental illness; 9) Parental divorce or separation; and 10) A family member being incarcerated. In this Study, Adverse Childhood Experiences (ACEs) were assessed

using a 10-item self-report questionnaire covering domains such as: physical abuse, emotional abuse, sexual abuse, and household dysfunction. The Thai version of this instrument has demonstrated evidence of construct validity in previous research⁹. The investigators considered a participant that answered “Yes” to a given question to have experienced that particular type of ACE. The investigators added: “Refuse to answer,” as an additional option for each question. In our data set, the ACEs questionnaire instrument showed acceptable psychometric properties, with a Cronbach’s alpha of 0.81 (95% CI=0.80, 0.81).

Dependent variable (prevalent depression):

Investigators used the two-item Patient Health Questionnaire–2 (PHQ–2), with a possible range of 0 to 6 points to measure prevalent depressive symptoms in the two weeks preceding the survey. The investigators considered participants with a PHQ–2 score of 3 points or higher as having prevalent depression (Figure 1). The investigators considered participants that did not answer either one of the two questions on the PHQ–2 to have incomplete information. In the data set, the PHQ–2 instrument showed acceptable psychometric properties, with a Cronbach’s alpha of 0.82 (95% CI=0.81, 0.82).

Confounders: The investigator identified age, gender identity, and exposure to violence (in any form) in the 12 months prior to the survey as potential confounders; based on literature review conducted before the analyses¹⁰.

Data collection

A more complete description of the sampling and data collection methodology is available elsewhere⁷. In summary, investigators used multistage clustered sampling to randomly sampled provinces from various education areas, then sampled secondary schools from the list of schools in each sampled province, and sampled classrooms from each sampled school. Investigators then contacted the school administrators, requested permission to collect data

from students. Trained research assistants then presented themselves at the selected classroom, at a designated time and place; usually in the homeroom during the weekly career counseling hour. The research assistants provided all students in the classroom with an information sheet and the study questionnaire, verbally provided information about the study; including the ability for the participants to refuse to answer any question and stop answering the questionnaire at any time. The research assistants then answered any questions the students in the classroom might have, and asked for verbal consent from the participants before asking willing participants to start answering the questionnaire. The research assistants also instructed the participants that had completed the questionnaire to place the questionnaire in a designated locked box.

Data management and analyses

Research assistants forwarded the submitted copies of the study questionnaire to the investigators, who

then forwarded the questionnaires to trained data entry staff. They then performed data entry, using EpiData. Investigators then exported data in various formats from EpiData for data cleaning and analyses. Investigators excluded participants that answered less than 70 percent of all non-skipped questions from the analyses; as per the protocols of previous rounds of the survey^{7,11}.

Investigators used descriptive statistics to present the characteristics of the study participants; including self-reported history of adverse childhood experiences (ACEs) and its association with prevalent depression. In the description of the prevalence of adverse childhood experiences, investigators excluded all participants that did not indicate willingness to answer the measurement questions from the analyses. Investigators then treated all “refuse to answer” responses as missing values. The investigators then calculated ACE scores by summing the answer of participants that answered all ten ACE measurement questions.

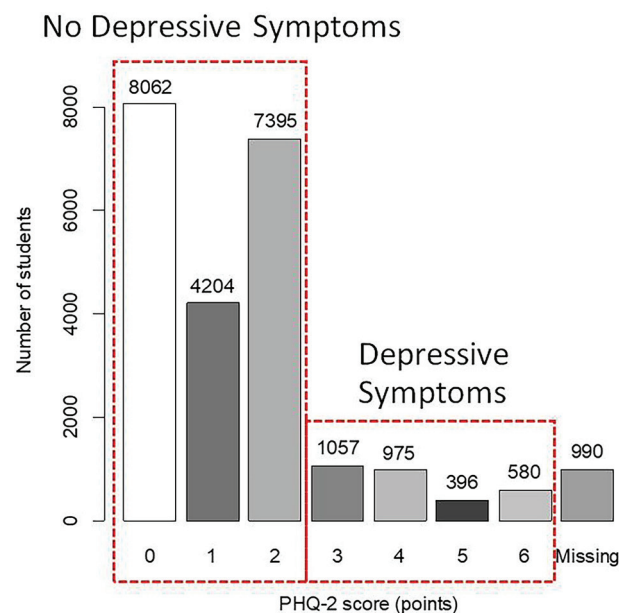


Figure 1 Distributions of the PHQ-2 scores among the study participants and the categorization in our analyses

In the assessment of the association between adverse childhood experiences and prevalent depression, investigators excluded all participants with incomplete information regarding the ten types of adverse childhood experiences or prevalent depression from the analyses. The investigators then performed bivariable and multivariable regression analyses to obtain measures of the association. In multivariable regression analyses, investigators adjusted for age, gender identity, and exposure to violence (any type) in the 12 months prior to the survey. This was due to the investigators deeming these characteristics to be independent predictors of depressive symptoms; based on the findings of a previous study¹⁰.

Ethical considerations

To avoid triggering participants with the sensitive nature of the ACEs questions, in the page preceding the ACEs measurement questions, the investigators included a page that explained the rationale for the measurement of ACEs, the potential triggering nature of the measurement questions, and reminded the participants of their ability to refuse to answer or skip any question as well as their ability stop completing the questionnaire at any time. The investigators also included a question regarding the participant's willingness to answer the ACEs measurement questions. Participants that checked "No" were instructed that this was the end of the survey and to return the questionnaire to the designated locations. Participants that answered "Yes" were then instructed to proceed to the page containing the ACEs measurement questions.

The Survey was approved by the Human Research Ethics Committee of the Faculty of Medicine, Prince of Songkla University (approval number: REC.63-446-18-2). This study, a secondary data analysis, was approved by the Human Research Ethics Committee of the Faculty of Medicine, Prince of Songkla University (approval number: 65-141-18-2).

RESULTS

Overall, a total of 23,659 students answered the study questionnaire (Table 1). The average age of the participants was 15 years, and most students identified as cisgender. Approximately one-third of students reported working to support themselves financially. Nearly one-tenth of all participants reported a history of violence within the past year. Just over 7,000 students answered the adverse childhood experiences (ACEs) measurement questions, among whom one-third reported having experienced at least one type of adverse event; with the most common types being emotional neglect, psychological abuse, and parental divorce. Self-reported depressive symptoms measurement, using the PHQ-2 questionnaire, showed that approximately 13 percent of the participants had a PHQ-2 score of 3 or higher, indicating the presence of depressive symptoms at the time of the interview.

As to the association between experiencing one or more types of adverse childhood experience (ACE) and depression (Table 2), students that reported ACEs had more than 3 times higher prevalence of depression compared to students that did not report ACEs (32% vs. 8%; Crude OR=5.09; 95% CI=4.33, 5.99). After adjusting for age, gender identity and exposure to violence, the association remained statistically significant (Adjusted OR=4.65; 95% CI=3.94, 5.49). The response also appeared to show a dose-response relationship (Table 3), with the most clear difference being that of the prevalence of depression among those having reported three or more ACEs vs. those having reported no ACEs (45% vs. 8%; Crude OR=9.15; 95% CI=7.39, 11.33). The association remained statistically significant after adjusting for potential confounders (Adjusted OR=9.03; 95% CI=7.21, 11.31).

DISCUSSION

In this secondary analysis of a cross-sectional study, we described the prevalence of adverse childhood experiences (ACEs) among Thai school-going adolescents

Table 1 General characteristics of the sample group (students n=23,659)

Characteristics	Frequency (%) or mean±S.D. or median (Q1, Q3)
Age (mean±S.D.)	15.2±1.9
Gender identity	
1) Cis-gender male	9,432 (39.9%)
2) Trans-gender assigned male at birth	50 (0.2%)
3) Non-binary assigned male at birth	321 (1.4%)
4) Questioning assigned male at birth	91 (0.4%)
5) Transgender assigned female at birth	52 (0.2%)
6) Cisgender female	12,158 (51.4%)
7) Non-binary assigned female at birth	388 (1.6%)
8) Questioning assigned female at birth	225 (1.0%)
9) Incomplete data	942 (4.0%)
Accommodation	
Family house/Family flat	20,538 (87.3%)
School dormitory	679 (2.9%)
Dormitory/ Rental House/ Apartment (accommodation not provided by family)	2,100 (8.9%)
Others	199 (0.8%)
Working to earn income (must work)	8,105 (34.4%)
Violence in the 12 months prior to the survey: Experienced physical violence or sexual violence (yes)	1,635 (7.7%)
Self-reported Adverse Childhood Experiences	(n=7,131 Persons)
Emotional abuse	1,163 (17.7%)
Physical abuse	509 (7.5%)
Sexual abuse	480 (7.0%)
Emotional neglect	1,195 (18.0%)
Physical neglect	322 (4.7%)
Family dysfunction – parental separation	1,062 (15.6%)
Family dysfunction – witnessing domestic violence	353 (5.2%)
Family dysfunction – alcohol or substance abuse	907 (13.3%)
Family dysfunction – mental health problems	478 (7%)
Incarcerated family member	455 (6.7%)
Reported at least one type of Adverse Childhood Experience	1,915 (33.7%)
Depressive symptoms at the time of the interview	
PHQ-2 score indicated no depressive symptoms (score <3)	19,661 (86.7%)
PHQ-2 score indicated depressive symptoms (score ≥3)	3,008 (13.3%)

Table 2 Association between experience of at least one type of Adverse Childhood Experience (ACE) and Depression (n=4,982)

	No depression	Depression	Crude OR (95% CI)	Adjusted OR (95% CI)*
No Adverse Childhood Experience (ACE score=0) (n=3324)	2,957 (91.7%)	267 (8.3%)	1 (Reference)	1 (Reference)
At least one type of adverse childhood experience (ACE score=1 or higher) (n=1658)	1,136 (68.5%)	522 (31.5%)	5.09 (4.33,5.99)	4.65 (3.94,5.49)

*Adjusted for age, gender identity, and exposure to violence (any type) in the 12 months prior to the survey. Bold numbers indicate statistically significant relationships (p-value<0.05).

Table 3 Association between Adverse Childhood Experiences and Depression, categorized by the number of adverse events (n=4,982).

	No depression (%)	Depression (%)	Crude OR (95% CI)	Adjusted OR (95% CI)*
No adverse childhood experience (ACE score=0) (n=3,324)	2957 (91.7)	267 (8.3)	1 (Reference)	1 (Reference)
One type of adverse childhood experience (ACE score=1) (n=762)	589 (77.3)	173 (22.7)	3.25 (2.63, 4.02)	3.00 (2.42, 3.71)
Two types of adverse childhood experience (ACE score=2) (n=381)	265 (69.6)	116 (30.4)	4.85 (3.77, 6.23)	4.34 (3.36, 5.62)
Three or more types of adverse childhood experience (ACE score=3 or higher) (n=515)	282 (54.8)	233 (45.2)	9.15 (7.39, 11.33)	9.03 (7.21, 11.31)

*Adjusted for age, gender identity, and exposure to violence (any type) in the 12 months prior to the survey. Bold numbers indicate statistically significant relationships (p-value<0.05). 95% CI=95% confidence interval

and the extent to which ACEs were associated with prevalent depression. It was found that one-third of our participants having answered the ACEs measurement section reported at least one type of ACEs. It also found ACEs to be significantly associated with prevalent depression after adjusting for potential confounders, with a possible dose-response relationship. The findings of this study should be of interest to stakeholders in adolescent mental health, youth development, and mental health in general.

Adverse Childhood Experiences (ACEs) in this study consisted of 10 types, with emotional neglect and psychological abuse being the most common types. However, considering the nature of Asian parenting¹², it is possible that emotional neglect and psychological abuse reported in this study could be subject to inaccuracy and misclassification, or could be a suggestion that previous generations of Asian parenting contains element of abuse that has potential inter-generational consequences. In that regard, adverse childhood experience measurements in this study were intended as broad and somewhat crude measures of the experience. Additionally, they did not include additional details; such as frequency and age of

onset as in other studies¹³. Future studies should consider more detailed measurements accordingly. As those that experience ACEs tend to develop post-traumatic stress disorder (PTSD), stakeholders in adolescent health and mental health should consider group therapy¹⁴ along with other forms of treatment to assist the affected population.

The apparent dose-response relationship between ACEs and depression in this study echoes that of a previous study conducted elsewhere¹⁵. Hence, the findings of this study contributed to the knowledge base regarding ACEs and mental health; particularly in the context of low and middle-income countries, where such data are scarce. Findings from such quantitative studies should be accompanied by future studies, possibly with qualitative methods, on the mechanism of the association, the process of internalization of adverse experiences, how this process then drives mental health and health behaviors¹⁶. One practical implication for practices in public health and social services would be to integrate screening of depression into working with children and adolescents having reported ACEs, and to integrate ACEs screening into child and adolescent mental health.

As this study used secondary data analysis, based on surveys regarding ACEs, there are limitations to consider. These include: potential issues with understanding the questions or providing inaccurate answers, which could lead to discrepancies between the results and reality. For example, there may be over-estimation of the prevalence of behaviors and their association with depression. Furthermore, the study data did not include other forms of potential childhood trauma; such as experience of armed conflict and conflict-associated PTSD, which may be common in certain regions; such as Thailand's deep south provinces¹⁷.

To the best of our knowledge, this study is the first to measure the prevalence of adverse childhood experiences among nationally-representative samples of school-attending Thai adolescents. However, a number of limitations should be considered in the interpretation of our study findings. Firstly, only one-third of our study participants answered the adverse childhood experiences measurement questions, potentially introducing selection bias to the study findings. Secondly, measurement of adverse childhood experiences was by self-reporting and investigators excluded approximately one-quarter of participants that did not provide complete information on both ACEs and depressive symptoms from the analyses; therefore, introducing additional information bias and selection bias to the study findings. Future studies should consider addressing these weaknesses accordingly.

CONCLUSION

In this secondary analysis of cross-sectional study data, we presented the prevalence of adverse childhood experiences and their association with depression among school-going Thai adolescents, and found significant associations. The findings of this study provide basic information to relevant stakeholders. However, limitations regarding potential selection and information biases should be considered in the interpretation of the study findings.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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