

Prevalence and Risk Factors of Depressive Symptomatology among Chinese Adolescents

Chenxi Ma

International Department of No.8 High School, Beijing 100053, China

**Author to whom correspondence should be addressed.*

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Abstract: Our study aims to investigate depression symptoms and related predictive factors among adolescents in China. A total of 3109 adolescents completed a survey in May 2025. Bivariate and multivariate logistic regression analyses were used to explore potential factors that might elevate the risks of depression. The prevalence of probable depression was 25.2%. Multivariable logistic regression analyses showed that gender, parent-teacher communication frequency, and parental participation frequency in school activities were significantly associated with depression. These findings suggest that depression is a serious and prevalent mental illness among Chinese adolescents, reminding the public to pay more attention to addressing this issue. Timely and effective measures must be implemented to promote family-school collaboration, such as parent-teacher communication and parental engagement in school activities, which may alleviate this negative trend by protecting adolescents against depression.

Keywords: Prevalence; Depression; Adolescent

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1. Introduction

Nowadays, under the condition of rapid technology development and robust economic growth in China, the demand for outstanding talents in various industries is increasing constantly. Consequently, the cultivation and education of talents and experts become a core issue for sustainable development in future decades. This social tendency exaggerates competition for academic resources, intensifying adolescents' pressure, resulting in an increase in adolescents' psychological vulnerability and indirectly causing the occurrence of different mental illnesses. Among them, depression is the most prevalent and serious one. According to data from Chinese studies conducted between 2005 and 2014, the reported incidence rate of depressive symptoms among middle school students ranges from 22% to 44%, underscoring the persistent and pervasive nature of this public health concern. Depression manifests in a range of symptoms, such as severe insomnia, memory loss, short attention span, unstable moods, and a sense of hopelessness. These clinical manifestations not only severely impair adolescents' academic performance and result in behavioral maladjustment but also increase the risk of self-harm actions, threatening adolescents' lives ^[1]. Historical data among Chinese teenagers showed that depression is a major risk factor for suicide, being the third leading cause of death among young people aged 15- 24, and the sixth leading cause of death among young people aged 5-14 ^[2]. This obviously reminds political institutions and society of the urgent and necessary need to implement timely and effective measures to mitigate this trend and protect adolescents.

Moreover, conducting a deeper and more comprehensive analysis of the causes behind depression is required. Numerous studies have investigated the associations between family-related factors and depressive symptoms among adolescents. A comprehensive review by Sender and McCarty predicts several family-related factors which may serve as potential causes of major depression, such as long-term parental absence, poor parent-child attachment, negative parenting styles, hostile family emotional atmosphere, and inadequate caregiver emotional support^[3]. Moreover, A substantial amount of research has also examined the correlations between school-related factors and adolescents' depressive symptoms. A longitudinal systematic review summarizes all school-level predictors of adolescent depressive symptoms^[4]. For instance, negative school climate, academic pressure, peer victimization, and poor teacher-student bonds can all result in potential risks of developing depression among adolescents. Nevertheless, the communication between family and school also plays a critical role. According to Urie Bronfenbrenner's Ecosystems Theory of Human Development, an individual's development is shaped by the reciprocal interactions between different microsystems, wherein family and schools constitute the two most critical backgrounds for adolescents^[5]. Parent-teacher communication frequency and parental participation frequency in school activities are two substantial indicators of measuring the quality of cooperation. Understanding relationships between these factors and depression in adolescents is essential as it offers vital empirical insights necessary for designing targeted, ecologically valid prevention and intervention protocols in school-based mental health services.

1.1. Procedure and participants

Participants in this sample were students in two junior and senior high schools in Hebei province in May 2025. The surveys were administered in class groups by school teachers serving as investigators. After receiving a detailed explanation of the study, participants provided signed informed consent and completed the questionnaire. This study was approved by the Institutional Review Board of the Institute. The final sample consisted of 3,153 students (53.2 % girls and 46.8 % boys), ranging in age from 13 to 19 years (mean = 14.3 years, SD = 1.4).

1.2. Measures

We used the 9-item Patient Health Questionnaire (PHQ-9) to measure depression symptoms in this study. The items of the PHQ-9 were rated using a 4-point Likert scale ranging from 0 (Not at all) to 3 (Extremely)^[6]. A cutoff of 10 for the PHQ-9 to detect possible depressed cases has been recommended in previous studies. The Chinese version of the PHQ-9 has demonstrated good psychometric properties in adolescent samples^[7,8]. Cronbach's α for the PHQ-9 was 0.87 in the current sample.

Parent-teacher communication frequency and parental participation frequency in school activities were assessed using two items: "To your knowledge, how frequently do your parents communicate with your homeroom teacher or other teachers?" and "How frequently do your parents participate in school activities (e.g., parent-teacher meetings, sports days, arts performances, or parent volunteer activities)?" respectively. Responses were dichotomized into high- and low-frequency categories for further analysis.

1.3. Statistical analysis

All statistics were performed with SPSS 22.0. Descriptive statistics were computed for depression symptoms. Bivariate associations between probable depression and each of the predictors (e.g., gender, parent-teacher communication frequency, and parental participation frequency in school activities) were tested with regression analyses. Variables with a significance level of $p < 0.05$ were further submitted to the simultaneous multivariable regression model to identify significant correlates of probable depression.

2. Results

According to the 9-item Patient Health Questionnaire, 31.9 percent of the students report that they did not have symptoms of depression, 42.9 percent of the students report having mild symptoms of depression, and 25.2% of the students report

having moderate depressive symptoms. This suggests that the prevalence of probable depression was 25.2%. Results of bivariate associations showed that gender, parent-teacher communication frequency, and parental participation frequency in school activities were significantly associated with depression (all $p < 0.05$). See **Figure 1**.

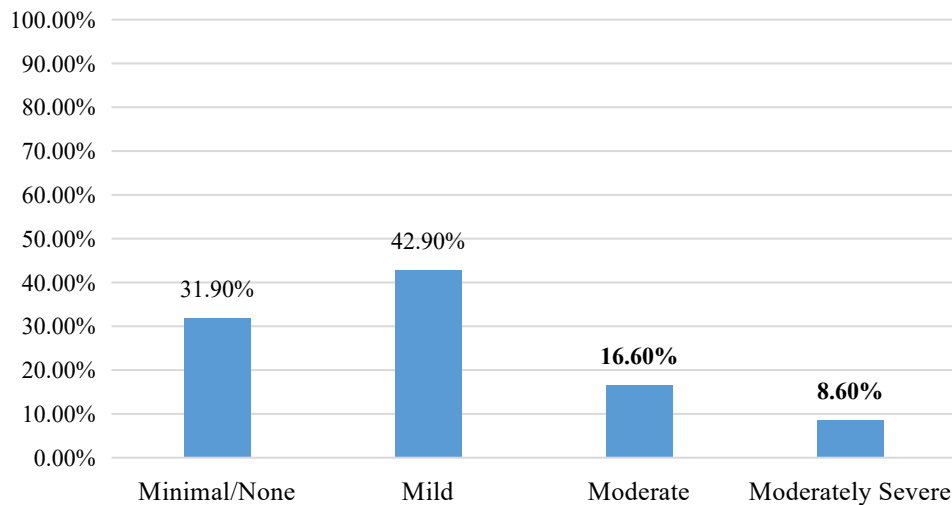


Figure 1. Distribution of Depression Severity Levels

In order to determine the correlation of each independent variable with depression among teenagers, significant variables identified in bivariate analyses were included in simultaneous logistic multivariable regression models. The multivariable regression analysis results are presented in **Table 1**. As shown in Table 1, three variables remained significant in the multivariate logistic regression model. Compared with male students, female students had 1.37 times higher odds of probable depression (OR = 1.372, 95% CI = 1.160–1.622, $p < 0.01$). Relative to students with high parent-teacher communication frequency, those with low communication frequency had 1.29 times higher odds of depression (OR = 1.286, 95% CI = 1.057–1.566, $p < 0.05$). In addition, students with low parental participation in school activities were 1.64 times more likely to report probable depression than those with high participation (OR = 1.639, 95% CI = 1.344–1.999, $p < 0.01$). The results showed that females, low parent-teacher communication frequency, and low parental participation frequency in school activities were significantly associated with a higher probability of depression.

Table 1. Multivariate analysis of effects of gender, parent-teacher communication frequency and parental participation frequency in school activities on odds of prevalence of probable depression

Variables	Total		Depression	
	n	%	OR	95% CI
Gender				
Male	1455	20.6	-	-
Female	1654	79.4	1.372**	1.160–1.622
Parent-Teacher Communication Frequency				
High (reference)	2448	79.4	-	-
Low	637	20.6	1.286*	1.057–1.566
Parental Participation Frequency in School Activities				
High (reference)	2502	80.9	-	-
Low	589	19.1	1.639**	1.344–1.999

Notes: * $p < 0.05$, ** $p < 0.01$.

3. Discussion

This study investigated the prevalence of depression among adolescents. Our findings revealed a notable prevalence of probable depression at 25.2% within the sampled group. Furthermore, multivariate logistic regression analyses proved that adolescent depression is significantly associated with gender-based vulnerabilities and home-school relational factors, specifically parent-teacher communication frequency and school-based parental factors. The identified 25.2% depression prevalence rate among adolescents represents a substantial public mental health challenge and requires immediate attention from health institutions. This data is consistent with recent large-scale meta-analyses of Chinese and global adolescent populations^[9,10]. The former indicates that the prevalence of depression symptoms among Chinese adolescents is 26.17%, while the latter indicates that the global prevalence of depression symptoms among adolescents is 25.2%. Taken together, these similar findings all demonstrate that approximately one-quarter of the adolescent population, both domestically and globally, experiences depressive symptoms or exhibits high vulnerability to affective disorder. This also highlights the urgent and important need to institute timely methods to aid teenagers in alleviating their psychological stress and improve the accuracy of identifying depression among adolescents, as well as improve treatment effectiveness.

Corresponding with substantial research, our analysis revealed a manifest gender disparity, with female adolescents exhibiting a significantly higher risk of probable depression than males. Our finding is congruent with a cross-national meta-analysis spanning 90 countries; the odds ratio is 1.95 for gender differences in diagnoses of major depression, and $d = 0.27$, which means that the occurrence rate of depression in women is 1.95 times that of men^[11]. Moreover, it shows that the gender disparity peaked in adolescence (OR = 3.02 for ages 13–15, and $d = 0.47$ for age 16). This female susceptibility can be attributed to a complex interplay of neurobiological and psychosocial functions^[12]. During adolescence, the rapid increase and variation of estrogen and progesterone will affect numerous neurotransmitter systems and neural receptors, thereby increasing vulnerability to mood disorders. This physiological susceptibility, combined with psychosocial factors such as increased interpersonal stress and rumination tendencies, may explain why females in this study were at greater risk of depression compared with males.

The associations between parent-teacher interaction and adolescent depression are consistent with Bronfenbrenner's Ecological Systems Theory^[13]. According to the ecosystem theory proposed by Bronfenbrenner, the communication between parents and teachers constitutes the mesosystem that connects the microsystems of the family and the school; if the connection between these two environments is insufficient, it will increase the susceptibility of adolescents to depression. Our findings further corroborate the meta-analytic evidence from Barger et al, suggesting that school-based parental involvement serves as a robust protective factor against internalizing problems^[14]. A lack of mesosystemic synergy, characterized by infrequent communication and limited school-based involvement, may result in a fragmented support network. Conversely, robust home-school linkages may function as a protective buffer, facilitating consistent cross-contextual support that mitigates depressive risks.

These findings provide ideas and guidance for the intervention and treatment of adolescent depression. First of all, enhancing the communication and interaction between schools and homes is a crucial and effective measure. Specifically, schools and policymakers are encouraged to establish flexible communication channels and diversify opportunities for parental involvement, such as volunteering or participation in school events. By improving both the frequency and quality of these interactions, stakeholders can reinforce protective factors for vulnerable students and cultivate a more supportive developmental environment.

In addition, schools and policymakers should implement psychological care programs aimed at preventing depression in female teenagers. For instance, regular psychological health assessments for female students should be conducted, and additional extracurricular activities focused on mental health should be arranged to alleviate academic pressure. Governments must promote the significance of protecting the mental health of adolescent girls in society and encourage social media platforms to spread the message. This will enable more parents to realize the psychological vulnerability of adolescent girls, thereby paying more attention to the mental health of girls and providing more protection and support.

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The authors declare no conflict of interest.

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