
Mental Health Status and Influencing Factors of Middle School Students in Haikou City

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Abstract: This study focuses on the mental health status of middle school students in Haikou City and also explores psychosocial factors related to mental health risk. A questionnaire survey was done among 310 students, about symptoms related to depression, anxiety, and self-harm, as well as factors such as individual vulnerability, family environment, parenting style, social relationships, and emotional and behavioral responses. We used statistical methods like t-tests, ANOVA, and logistic regression to study the relationships between variables. The results showed students different levels of mental health risk, with some students in the medium or high risk group. Female students had higher average scores in several areas, and most age differences were not significant. Although no significant predictors were identified, psychosocial factors showed some possible relationships with mental health results. These this study suggests it is important to focus on adolescent mental health from different aspects.

Keywords: middle school students; Haikou City; mental health; psychosocial factors

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1. Introduction

According to the World Health Organization (WHO), mental health is a state of well-being, and the negative effect on cognition, emotion and behavioral conditions is considered a mental health risk. On a global scale, approximately one in seven adolescents aged 10–19 experience mental health disorders (mental disorder), accounting for 15% of the global burden of disease at this age^[1]. Mental health problems are affected by a variety of factors. Greater exposure to risk factors may increase the likelihood of mental health problems. Adolescents are influenced by several factors, such as rapid physical growth, better understanding of themselves, and changes in the external environment. These changes make them more emotionally sensitive and less stable. Therefore, they may be more sensitive to interpersonal interactions, strong emotions, and sometimes have trouble controlling their emotions. When adolescents experience setbacks or environmental changes, they may feel confused and stressed, experience negative emotions and may become more rebellious. These feelings can lead to anxiety, depression and a series of mental health problems. Mental health problems are becoming more important as national development has led to improvements in quality of life. This may partly reflect the increased salience of infectious diseases, nutrition, and sexual and reproductive health problems as they have declined^[2, 3]. The factors that

affect adolescent mental health can be divided into three areas: the vulnerability of individuals, family environment and Social relationships, which include: These factors include individual characteristics (e.g., self-esteem), family factors (e.g., parenting style and family relationships), and social factors (e.g., peer relationships and school climate)^[4]. Although family factors have been recognized as one of the important factors affecting adolescent mental health problems, for middle school students, academic pressure and peer relationships are also important. The anxiety and depression levels of senior three students are higher than those of senior one student and are the highest among all students^[5]. In addition, some studies show that gender, race and poverty also are risk factors for psychological health problems, the diversity of students, faculty and staff groups is viewed as a school culture elements influence students' mental health^[6].

Unfortunately, as part of school and family problems, most of China's urban middle school students do not fully understand their own mental health. Students do not have enough understanding of mental health, and the information about mental illness is also limited. They may ignore some symptoms, may not really understand the causes, and sometimes have behaviors like somatization, labeling, or stigma. Because of limited information, they may not realize that "many others have similar experiences," which can lead to feelings of loneliness and self-doubt. This study aims to look at the mental health status of students. This study uses a questionnaire to explore students mental health, its distribution, and recovery patterns, and to better know their real psychological state.. It also helps identify gaps, understand students' knowledge of mental health, and examine the level of stigma toward mental illness. In addition, it explores possible reasons and identifies which factors are most important in affecting the mental health of middle school students (such as academic, family, social, and sleep factors).

Based on the data analysis, this study provides specific and feasible suggestions for schools, families, and peers.

2. Objects and Methods

2.1. Survey

In total 338 questionnaires were distributed to middle school students in Haikou City. A total of 331 questionnaires were returned, and 21 were removed because they were incomplete or not valid. Finally, 310 valid questionnaires were used in the analysis. All participants were junior or senior high school students in Haikou City, Hainan Province, China. We received permission from both students and their parents, and the survey took place in October 2025.

2.2. Methods

The questionnaire was designed from several key parts of the Patient Health Questionnaire-9 (PHQ-9), the Generalized Anxiety Disorder-7 (GAD-7), together with a mental health scale for Chinese middle school students. It included questions about depression, anxiety, and some related factors in emotional, behavioral, academic, and interpersonal areas. In total, the questionnaire included 46 items, and the scoring method was similar to PHQ-9 and GAD-7. Mental health risk was measured by using some key symptom items related to depression, anxiety, and self-harm. These items were designed to reflect common mental health problems among students.

To make sure the content validity, the questionnaire was designed to cover multiple relevant dimensions. The influencing factors were divided into five dimensions: individual vulnerability, family environment, parenting style, social relationships, and emotional and behavioral responses. Individual vulnerability means a person may be more likely to feel stress or have low confidence. The other factors are about family, friends, and how students deal with problems in daily life. These dimensions help us better understand different aspects of students' mental health. The questionnaire showed that it was reliable for exploratory analysis.

2.3. Statistical treatment

Statistical analysis was done using SPSS 26.0. Continuous data were shown as mean \pm standard deviation ($\bar{x} \pm s$). We used independent sample t-tests to compare two groups, and one-way ANOVA to compare more than two groups. Categorical

data were shown as percentages. Logistic regression analysis was done using R software to study factors that may be related to mental health risk. A two-sided $P < 0.05$ was considered statistically significant.

3. Results

3.1. General situation

In total 310 valid questionnaires were included in this study. More girls than boys took part in the survey, and most students were in the middle and older age groups. The detailed information is shown in **Table 1**.

Table 1. Demographic Characteristics of Participants (N = 310)

x	n	%
Gender male	103	33.2
Gender female	207	66.8
Age Group 1	23	7.4
Age group 2	20	6.5
Age group 3	27	8.7
Age group 4	85	27.4
Age group 5	103	33.2
Age group 6	35	11.3
Age group 7	17	5.5

(Note: Participants aged 13 to 19 are age groups 1 to 7, respectively)

3.2. Comparison of mental health scores of middle school students of different genders

When comparing mental health scores between genders, we found female students had higher average scores in several areas, such as emotional well-being, study stress, interpersonal relationships, self-image, and behavioral responses. This may mean that female students feel more stress, but we should be careful when explaining this.

Table 2. Comparison of Mental Health Scores by Gender ($\bar{x} \pm s$)

Characteristics	Male ($\bar{x} \pm s$)	Female ($\bar{x} \pm s$)
Total average score	2.44 ± 0.90	2.64 ± 0.74
Emotional well-being	2.51 ± 0.96	2.77 ± 0.81
Study stress	2.65 ± 1.03	2.90 ± 0.85
Relationships	2.36 ± 1.02	2.52 ± 0.83
Self-image	2.47 ± 1.06	2.69 ± 0.96
Behavior and coping	2.21 ± 0.94	2.33 ± 0.84

4. Comparison of mental health scores of middle school students at different ages

When comparing different age groups, we found some differences in average mental health scores. Most of these differences were not significant, but self-image showed a significant difference ($P = 0.046$). This may mean age has some effect, but more research is needed.

Table 3. Comparison of Mental Health Scores Across Age Groups ($\bar{x} \pm s$)

Characteristics	Age group 1 ($\bar{x} \pm s$)	Age group 2 ($\bar{x} \pm s$)	Age group 3 ($\bar{x} \pm s$)	Age group 4 ($\bar{x} \pm s$)	Age group 5 ($\bar{x} \pm s$)	Age group 6 ($\bar{x} \pm s$)	Age group 7 ($\bar{x} \pm s$)	F-score	P-value
Total mean score	2.34 ± 0.99	2.38 ± 0.92	2.52 ± 0.91	2.59 ± 0.67	2.73 ± 0.77	2.43 ± 0.82	2.57 ± 0.83	1.5	0.179
Mood health	2.56 ± 1.16	2.43 ± 0.86	2.56 ± 0.96	2.67 ± 0.72	2.87 ± 0.86	2.55 ± 0.92	2.61 ± 0.89	1.46	0.19
study stress	2.49 ± 1.13	2.69 ± 1.09	2.81 ± 1.08	2.90 ± 0.78	2.94 ± 0.88	2.68 ± 0.95	2.66 ± 0.85	1.28	0.266
Interpersonal relationships	2.32 ± 1.04	2.43 ± 1.08	2.42 ± 1.04	2.48 ± 0.73	2.59 ± 0.91	2.36 ± 0.92	2.26 ± 0.85	0.73	0.629
Self image	2.16 ± 1.26	2.28 ± 1.03	2.59 ± 1.11	2.66 ± 0.91	2.80 ± 0.91	2.49 ± 1.01	2.77 ± 1.11	2.16	0.046
Behavior and coping	2.16 ± 1.01	2.09 ± 0.98	2.23 ± 0.83	2.26 ± 0.79	2.45 ± 0.89	2.07 ± 0.83	2.54 ± 0.95	1.58	0.151

5. The distribution of mental health risk levels of middle school students

The results show that most students were at low mental health risk, in this study, most students were at low mental health risk, but some students were still at medium or high risk, which means we should pay attention to their mental health (see **Table 4**).

Table 4. Distribution of Mental Health Risk Levels (N = 310)

Risk level	Determination criteria	n	%
Low risk	< 4 points on all key questions	188	60.6
Medium risk	Score ≥ 4 on 1-2 key questions	83	26.8
High risk	≥ 3 key questions ≥ 4 points or containing NSSI items	39	12.6

(Key items included: sadness/hopelessness; excessive worry; loss of interest; inability to control anxiety; self-harm or worthlessness.)

6. Scores of different mental health factors in middle school students

From the data, we can see that each factor showed that middle school students had different levels of risk in individual vulnerability, family environment, parenting style, social relationships, and emotional and behavioral reactions, some of these factors had higher scores, which may mean that these factors are related to students' mental health (see **Table 5**).

Table 5. Average Scores of Psychosocial Factors ($\bar{x} \pm s$)

Dimensions	Mean ± SD
Individual vulnerability	2.60 ± 0.82
Family environment	2.41 ± 0.91
Parenting style	2.36 ± 0.83
Social relationships	2.17 ± 0.87
Emotional and behavioral responses	2.64 ± 1.00

7. Univariate analysis of mental health risks

There were no significant differences between the high-risk and non-high-risk groups in any of the factors (all $P > 0.05$). However, the average scores were slightly different, which may show some possible patterns between the groups.

Table 6. Univariate Analysis of Factors Associated with Mental Health Risk ($\bar{x} \pm s$)

Variables	High-risk group ($\bar{x} \pm s$)	Low-risk group ($\bar{x} \pm s$)	t value	P-value
Individual vulnerability	2.58 \pm 0.79	2.62 \pm 0.84	-0.42	0.678
Family environment	2.41 \pm 0.91	2.41 \pm 0.92	-0.08	0.935
Parenting style	2.41 \pm 0.84	2.33 \pm 0.83	0.83	0.409
Social relationships	2.16 \pm 0.83	2.17 \pm 0.90	-0.08	0.933
Emotional and behavioral responses	2.59 \pm 0.91	2.67 \pm 1.05	-0.70	0.487

(High-risk group: at least one key question ≥ 4 points; non-high-risk group: all key questions < 4 points)

8. Multivariate logistic regression analysis of mental health risk factors

Multivariate logistic regression analysis showed that none of the variables were significant (all $P > 0.05$). Although no clear predictors were found, these factors may still be associated with mental health risk and these factors may still affect mental health in other ways.

Table 7. Multivariate Logistic Regression Analysis of Factors Associated with Mental Health Risk

Variables	OR	95% CI	P-value
Individual vulnerability	0.935	0.597 1.465	0.77
Family environment	0.851	0.544 1.331	0.479
Parenting style	1.466	0.924 2.326	0.104
Social relations	1.049	0.707 1.555	0.812
Emotional and behavioral responses	0.846	0.569 1.259	0.411

9. Discussion

The results of this survey showed that there were different degrees of mental health risks among middle school students, and mental health risk appeared to be related to multiple factors. We should take action from different levels, including individuals, family, school, and society. Improving mental health education, improving family support environment and improving social support system are helpful to reduce the mental health risk of middle school students and help students grow in a healthy way^[7].

There are still a certain proportion of middle school students with different degrees of mental health problems, suggesting that the mental health problems of middle school students are common. Middle school is an important stage for students' psychological and social development. Students are not mature in emotional regulation, self-awareness and stress coping, and are easily affected by multiple factors such as academic burden, family environment and social relations, which increase the risk of mental health problems^[8].

When we compared gender and age, we found that female students had higher average scores than male students in several areas of mental health. In addition, some areas were different across age groups, although most differences were not significant. This may mean that adolescent mental health is affected by gender and age, but more research is needed to

be sure.

The results showed that the influencing factor analysis showed that adolescent mental health may be related to multiple psychosocial factors, including individual vulnerability, family environment, parenting style, social relationships, and emotional and behavioral responses. Although no clear predictors were found, the observed patterns suggest that these factors may still affect mental health.

Based on the results of this study, we should use different kinds of support to improve the mental health of middle school students. Schools should improve mental health education to find and support students at high risk in time. Families should care more about parent-child communication and create a supportive family environment. Society should also provide psychological support to promote the development of physical and mental health of middle school students. There are still some limitations of this study, such as: the sample is from one region, the study is cross-sectional, and some factors were not included. Follow-up studies can check these results by expanding the sample size and using a longitudinal research design.

Disclosure statement

The author declares no conflict of interest.

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