ORIGINAL RESEARCH

Mental Health Among University Students, Using the 12-item General Health Questionnaire

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ABSTRACT

Context • To date, researchers have found that poor mental health was common during the COVID-19 epidemic. Even if they had been relatively resistant to suicidal ideation during the first three waves of the pandemic, university students may experience a delayed impact on their mental health.

Objective • The study intended to measure mental health among university students in Wuhu City, China and to identify an effective approach to universities can use to prevent mental-health issues.

Design • The research team performed a cross-sectional study.

Setting • The study took place at Anhui polytechnic university, Wuhu, China.

Participants • Participants were 2371 students at Anhui polytechnic university in Wuhu city, China.

Outcome Measures • The research team used the two-item General Health Questionnaire-12 (GHQ-12) to measure participants' mental health.

Results • Among the 2371 participants, 1727 had poor mental health (72.84%), including 843 males (48.81%) and 884 females (51.19%). Poor mental health was significantly associated with an urban residential location ($P > .01$), the female gender (p>0.01), the second school year ($P > .01$), and the parents' education level of junior high school or below (both $P > .01$).

Conclusions • The current study suggests that poor mental health among university students is common. Being female, from an urban area, and in the second year of school and having parents with an education of junior high school or below had poorer mental health than those who were male, from the countryside, and in the first year of school and who had parents with a higher level of education (*Altern Ther Health Med.* 2023;29(3):116-119).

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The coronavirus disease 2019 (COVID-19) pandemic has caused a significant decline in physical and other meaningful activities, including activities of daily living, leisure, social activity, and education in worldwide.[1-4] A meta-analysis in China found that poor mental health(depression, anxiety, and suicidal ideation) was prevalent in Chinese medical students.[5] Graham and Eloff found that the mental health and well-being of university students declined during the pandemic.[6]

To date, researchers have found that poor mental health was common during the COVID-19 epidemic. Public health agencies commonly use education in an effort to prevent mental-health issues in children and adolescents[7].

Nahidi et al found that symptoms of psychological distress and anxiety were more prevalent among outpatients with COVID-19 than among inpatients at hospitals.[8] Those researchers also found that insomnia can be a potential risk factor for adverse mental health outcomes in those patients.

Jones et al found a trend toward the possibility of a delayed impact on the participants in the study, university students, even if they had been relatively resistant to suicidal ideation during the first three waves of the

pandemic.[9] However, little is known about the prevalence of poor mental health among university students in China. Dynamic monitoring of mental health among university students during the COVID-19 pandemic in China is still necessary.

The current research team hypothesized that mental health may be associated with the circumstances of students' families and with their individual unique circumstances.

The current study intended to measure mental health among university students in Wuhu City, China and to identify an effective approach that universities can use to prevent mental-health issues.

METHODS

Participants

The research team performed a cross-sectional study to explore the relationship between mental health and the characteristic of college students included. The study took place at Wuhu, China. Potential participants were students at Anhui polytechnic university in Wuhu city, China.some member of our research team teached in Anhui polytechnic university.Thus,it is more convenient to select the students for study.

Potential participants were included in the study if they: (1) studying in Anhui polytechnic university; (2) they were health in mental and physical.

Potential participants were excluded from the study if they: (1)Taking medicine for mental diseases. A total of 2371 students were recruited in this study.

All participants agreed to provide their personal information and signed written informed consent forms. Ethics committee of Anhui polytechnic university approve our study's protocols.

Procedures

Participants. The research team used convenience sampling to select participants.

Outcome measures. The participants completed self-administered demographic questionnaires and complete the 12-item General Health Questionnaire (GHQ12)[10] to evaluate their mental-health statuses over the several weeks prior to the study.

Outcome Measures

Demographic characteristics. The participants completed self-administered demographic questionnaires, including information about residential locations, gender, school year, parents' educations, weights, and heights. The research team calculated participants' body mass index (BMI) by reference to their weights and heights.

GHQ12.[10]The GHQ-12 questionnaire provides four possible responses to each of four items, with the scoring for each option being: (1) better than usual = 0; (2) same as usual = 1; (3) worse than usual = 2; and (4) much worse than usual = 3. The higher the total score, the greater the severity of the mental health problem.

Table 1. Demographic Characteristics of Participants (N = 2371)

Characteristic		n (%)
Residential Location	Urban	1763 (74.40)
	Countryside	608 (25.60)
Gender	Male	1243 (52.40)
	Female	1128 (47.60)
School Year	First	1247 (52.60)
	Second	1124 (47.40)
Father's Education	Junior high school and below	502 (21.20)
	High school or secondary school	1572 (66.30)
	College degree or above	297 (12.50)
Mother's Education	Junior high school or below	948 (40.00)
	High school or secondary school	1248 (52.60)
	College degree or above	175 (8.00)
Body Type	Underweight	439 (18.50)
	Normal	1399 (59.00)
	Overweight	533 (22.50)

According to a factor structure analysis that a study of a Japanese adult population performed, the GHQ-12 is a valid scale that mainly evaluates psychological distress and social-dysfunction factors.[11] The individual item scores are summed, giving a total score from 0 to 12. A GHQ-12 score ≥ 4 reflects poor mental health.[12]

Statistical Analysis

The research team analyzed the data using SPSS version 20.0 software (IBM, Chicago, IL, USA). The team used descriptive statistics for participants' demographic questionnaires and GHQ12 scores, expressing them as numbers and percentages (%) and performed the Chi-square test to explore the relationship between students' characteristic and the GHQ-12 scores. $P < .05$ was considered to be statistically significant.

RESULTS

Participants

Table 1 shows participants' demographic characteristics The research team included and analyzed the data of 2371 students, 1243 males (52.40%) and 1128 females (47.60%).

Demographic Characteristics and Mental Health

Table 2 shows the analysis of the relationships between participants' demographic characteristic and mental health. Figure 1 shows the statistical distribution of participants GHQ-12s scores.

Among the 2371 participants, 1727 (72.84%) had poor mental health, a GHQ-12 score ≥ 4, including 843 males (48.81%) and 884 females (51.19%). Poor mental health was significantly associated with an urban residential location ($P > .01$), female gender ($P > .01$), the second school year ($P > .01$), and the parents' education level of junior high school or below (both $P > .01$).

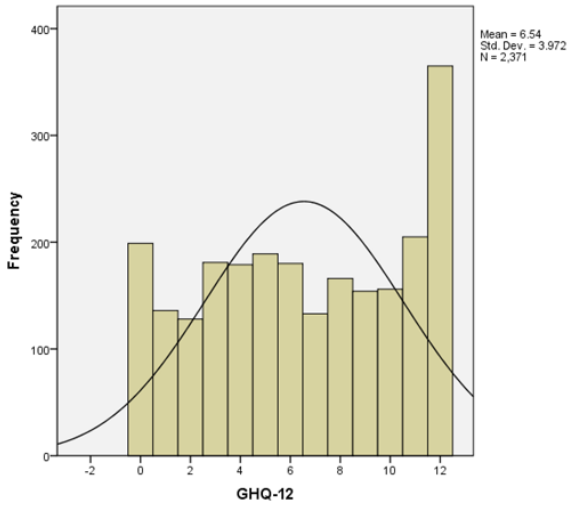
Table 2. Relationship Between Participants' Characteristic and Scores on the GHQ-12 (n = 2371)

Characteristic		GHQ-12 Score <4 n = 644 n (%)	GHQ-12 Score ≥ 4 n = 1727 n (%)	Chi-square	*P* value
Residential Location	Urban	447 (69.41)	1316 (76.20)	11.35	<.01[a]
	Countryside	197 (30.59)	411 (23.80)		
Gender	Male	400 (62.11)	843 (48.81)	33.26	<.01[a]
	Female	244 (37.89)	884 (51.19)		
School Year	First	368 (57.14)	879 (50.90)	7.34	<.01[a]
	Second	276 (42.86)	848 (49.10)		
Father's Education	Junior high school or below	108 (16.77)	394 (22.81)	19.91	<.01[a]
	High school or secondary school	429 (66.62)	1143 (66.18)		
	College degree or above	107 (16.61)	190 (11.01)		
Mother's Education	Junior high school or below	225 (34.94)	723 (41.86)	14.50	<.01[a]
	High school or secondary degree school	355 (55.12)	893 (51.71)		
	College or above	64 (9.94)	111 (6.43)		
Body Type	Underweight	136 (21.12)	303 (17.54)	3.97	.14
	Normal	368 (57.14)	1031 (59.70)		
	Overweight	140 (21.74)	393 (22.76)		

[a]*P* < .05, indicating that poor mental health was significantly associated with an urban residential location, the female gender, the second school year, and a parents' education level of junior high school or below.

Abbreviations: GHQ-12, General Health Questionnaire-12.

Figure 1. Distribution of Participants' GHQ-12 Scores



DISCUSSION

The current study found that the poor mental health was significantly associated with gender, residential locations, school year, and parents' education. Previous study showed that self-regulation and withdrawal coping strategies were both important mediators in the mental health of chinese university students at home and abroad.[13] Additionally, the impact of social support on students' mental health is also defined[14]. the degree of mental health of college students can be improved by way of forming a comprehensive educational environment including campus culture construction, ideological and moral education, and economic assistance system.[14] In future study,we should further explore the risk factor of mental health in university students.

The current study had some limitations. Convenience sampling allowed recruitment bias. Also, a cross-sectional study can't explain the causal relationship between mental health and participants' characteristics. The study's strength was that it offers a possible basis for preventing poor mental health.

CONCLUSIONS

The current study suggests that poor mental health among university students is common. Female university students, students from the countryside, and students whose families with a better education background tended to have poor mental health.

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AUTHORS' DISCLOSURE STATEMENT

The authors have no potential conflicts of interest to disclose.

DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

REFERENCES

1. Tanaka K, Tahara M, Mashizume Y, Takahashi K. Effects of Lifestyle Changes on the Mental Health of Healthcare Workers with Different Sense of Coherence Levels in the Era of COVID-19 Pandemic. *Int J Environ Res Public Health*. 2021;18(6):2801. doi:10.3390/ijerph18062801
2. Park KH, Kim AR, Yang MA, Lim SJ, Park JH. Impact of the COVID-19 pandemic on the lifestyle, mental health, and quality of life of adults in South Korea. *PLoS One*. 2021;16(2):e0247970. doi:10.1371/journal.pone.0247970
3. Nikolaidis A, DeRosa J, Kass M, et al. Heterogeneity in COVID-19 pandemic-induced lifestyle stressors predicts future mental health in adults and children in the US and UK. *J Psychiatr Res*. 2022;147:291-300. doi:10.1016/j.jpsychires.2021.12.058
4. Wang R, He L, Xue B, Wang X, Ye S. Sleep Quality Of College Students During COVID-19 Outbreak In China: A Cross-Sectional Study. *Altern Ther Health Med*. 2022;28(3):58-64.
5. Zeng W, Chen RQ, Wang XY, Zhang Q, Deng W. Prevalence of mental health problems among medical students in China A meta-analysis. *Medicine*. May 2019;98(18):e15337. doi:10.1097/MD.0000000000015337
6. Graham MA, Eloff I. Comparing Mental Health, Wellbeing and Flourishing in Undergraduate Students Pre- and during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2022;19(12):7438. doi:10.3390/ijerph19127438
7. Li J, Liu Y. Intervention Effect of the Video Health Education Model Based on Solution-Focused Theory on Adolescents' Mental Health during the COVID-19 Pandemic. *Iran J Public Health*. 2021;50(11):2202-2210. doi:10.18502/ijph.v50i11.7574
8. Nahidi M, Mokhber N, Sinichi F, et al. Mental Health Outcomes and Sleep Status among Patients with Coronavirus Disease 2019. *Iran J Psychiatry*. 2022;17(3):276-283. doi:10.18502/ijps.v17i3.9727
9. Jones LB, Vereschagin M, Wang AY, et al. Suicidal Ideation Amongst University Students During the COVID-19 Pandemic: Time Trends and Risk Factors. *Can J Psychiatry*. 2022;706743722114037 5:706437221140375. doi:10.1177/07067437221140375
10. Javidi H. Psychometric properties of GHQ-12 in Goa, India. *Asian J Psychiatr*. 2017;30:141. doi:10.1016/j.ajp.2017.08.018
11. Doi Y, Minowa M. Factor structure of the 12-item General Health Questionnaire in the Japanese general adult population. *Psychiatry Clin Neurosci*. 2003;57(4):379-383. doi:10.1046/j.1440-1819.2003.01135.x
12. Kudo Y, Toyoda T, Sugimoto N, Tsutsumi A. Predictors associated with the mental health of Japanese male registered nurses: focusing on environments with many female registered nurses and female patients' refusal to accept nursing services from male registered nurses. *J Rural Med*. 2021;16(4):191-199. doi:10.2185/jrm.2020-051
13. Zhao J, Chapman E, Houghton S. Key Predictive Factors in the Mental Health of Chinese University Students at Home and Abroad. *Int J Environ Res Public Health*. 2022;19(23):16103. doi:10.3390/ijerph192316103
14. Wei P. The impact of social support on students' mental health: A new perspective based on fine art majors. *Front Psychol*. 2022;13:994157. doi:10.3389/fpsyg.2022.994157