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Original Paper

Effect of the COVID-19 on University Students' Mental Health: A Longitudinal Study

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Abstract

In order to understand the effect of COVID-19 on the mental health status of college students, The Symptomatological Check List-90 (SCL-90) was used to conduct 2 psychological tests on 537 college students enrolled in a college at the 8th and 20th month after the naming of COVID-19. The results of the study showed that: 1) 1st psychological test: 98 students (18.25%) had abnormal total scores (GSI≥160) and 35 students (6.5%) had GSI ≥200; 119 students (22.16%) had abnormal number of positive items (≥43). 2nd test: 66 (12.29%) students with abnormal total score (GSI ≥160), 18 (3.35%) students with GSI ≥200; 77 (14.34%) students with abnormal number of positive items (≥43). (ii) The number of students with factor scores ≥2 on the 2nd test decreased from the 1st, with the factor with the largest decrease in scores being anxiety, with a decrease ratio of 48.53%. The order was psychoticism 45.71%, paranoia 41.03%, terror 37.10%, depression 35.44%, and compulsion 34.36%. (iii) Levene's test, independent samples t-test and comparison of means were performed on the scores of boys and girls on the 10 factors in the 1st test, and there was no statistically significant difference in all factor scores. (iv) Independent samples t-test was conducted on the 1st test for only children and non-only children, and there was a statistically significant difference in the 3 factors of obsessive-compulsive symptoms, interpersonal sensitivity, and depressive symptoms, and the scores of non-only children were higher than those of only children.

Keywords

COVID-19, mental health, university students

1. Introduction

Public health emergencies are major infectious disease outbreaks and other events that occur suddenly and cause, or are likely to cause, serious damage to public health (Cai, Chen et al., 2020). COVID-19 was not only a public health emergency, but also a psychological stress event, which had a serious impact on the mind and psychology (Zhu, Shen et al., 2020). As these events were often beyond the individual's coping capacity, individuals were exposed to great risk and stress, which can lead to a state of psychological imbalance (Zhang, Wang et al., 2023). Research had shown that when people faced major stressful events, they would have abnormal psychological and behavioral manifestations, such as physical discomfort, anxiety, depression, sleep disorders, etc. (Chen, Peng et al., 2000). College students, as a transition group from adolescence to adulthood, are less able to cope with emergencies (Yao, 2019). An online survey of Chinese citizens has found that young people between the ages of 21-40 were more psychologically vulnerable and experienced more prominent mental health problems during the COVID-19 (Ahmed et al., 2020). In recent years, the mental health of college students has received increasing attention and research (Nahal et al., 2021). The importance of mental health is becoming more and more prominent, a good mental state will have a positive energy to the study, life and even physical condition of college students.

Recent research suggests that the COVID-19 pandemic and its effects will lead to widespread emotional distress and increased mental health problems (Li & Xu, 2022). Although there were many studies on mental health during COVID-19, most of these were cross-sectional (Felipe et al., 2022). Few longitudinal studies have documented changes in mental health problems. To understand changes in college students' mental health status after COVID-19, in this longitudinal study based on a population of college students, we tracked changes in mental health status after COVID-19. The anxiety, obsessive-compulsive, and depression states of college students after COVID-19 were measured, so as to provide data support and reference basis for mental health work and psychological parenting strategies in different periods after public health emergencies.

2. Method

2.1 Participants

A random sample of 537 students enrolled in a particular grade was taken from a college. The students completed the scale quiz centrally through their cell phones at a fixed time period. Administered 2 times, at months 8 and 20 after COVID-19 naming, 537 contained 220 male and 117 female students.

2.2 Materials

The Symptomatological Check List-90 (SCL-90) questionnaire has 90 items on a 5-levels scale (1 to 5), where "1" means Not at all, "2" means very mild, "3" indicates moderate, "4" indicates severe symptoms, and "5" indicates extremely severe. The scale covers from feeling, emotion, thinking, consciousness, behavior to living habits, diet, sleep, interpersonal relationship, etc. (Derogatis et al., 1974). It can accurately delineate the subject's self-perceived symptoms and better reflect the subject's

problems and their severity and changes, and it is one of the most widely used self-assessment scales for the study of neurosis and for in-patient or psychological counseling clinics of the general hospitals at present. There are 10 factors: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, terror, paranoia, psychoticism, and other items.

2.3 Data Analysis

The data were exported and organized using EXCEL and statistically analyzed using the statistical analysis software SPSS24.0. Measurement values using "M ± SD" for visual descriptive statistics. Descriptive statistics were specifically the total score (Global Severity Index, GSI) more than 160 scores and more than 200 scores of the number of people and the rate; the number of positive items (how many of the items in which the subjects presented "symptomatic") exceeded 43 items; the number and rate of subjects with factor scores greater than or equal to 2 or 3 scores; and a description of the specifics of each factor score.

Levene's test, independent samples t-test (T-scores), and mean comparisons were performed for scores on the 10 factors for gender (male, female), and only child (yes, no); analysis of variance (ANOVA) was used for family structure (multigenerational, single-deceased, double-deceased, divorced, common, and other), and post hoc LSD two-by-two comparisons were performed for statistically significant differences.

3. Result

3.1 Descriptive Statistics

The profile of those with abnormal results on the 1st scl-90 psychometric test after COVID-19 was as follows: 98 (18.25%) students with abnormal total scores (GSI≥160) and 35 (6.5%) students with GSI ≥200; 119 (22.16%) with abnormal number of positive items (≥43).

The profile of those with abnormal results on the 2nd scl-90 psychometric test after COVID-19 was as follows: 66 (12.29%) students with abnormal total scores (GSI≥160), 18 (3.35%) with GSI≥200; 77 (14.34%) with abnormal number of positive items (≥43).

The details of students with positive psychological symptoms (factor score ≥2) and moderate positivity (factor score ≥3) are shown in Tables 1 and 2. The high rates of symptom factors detected in the 2 tests were obsessive-compulsive symptoms, interpersonal sensitivity, depressive symptoms, paranoia, hostility, and anxiety. Comparing the factor scores of the 2 tests, it was found that the number of people with factor scores ≥2 decreased, and the factor with the largest decrease in scores was anxiety, with a decrease ratio of 48.53%, followed by psychoticism 45.71%, paranoia 41.03%, hostility 37.10%, depression 35.44%, and obsessive-compulsive 34.36%.

Table 1. Number and Detection Rate of 2 SCL-90 Factor Scores ≥2 after COVID-19 (N=537)

Factor	Number of 1st	1st detection rate	Number of 2nd	2nd detection rate
Somatization	35	6.52%	31	5.77%
Obsessive-compulsive	163	30.35%	107	19.93%
Interpersonal Sensitivity	106	19.74%	75	13.97%
Depression	79	14.71%	51	9.50%
Anxiety	68	12.66%	35	6.52%
Hostility	63	11.73%	44	8.19%
Terror	62	11.55%	39	7.26%
Paranoia	78	14.53%	46	8.57%
Psychoticism	70	13.04%	38	7.08%
Other items	70	13.04%	13	2.42%

Table 2. Number and Detection Rate of 2 SCL-90 Factor Scores ≥3 after COVID-19 (N=537)

Factor	Number of 1st	1st detection rate	Number of 2nd	2nd detection rate
Somatization	2	0.37%	2	0.37%
Obsessive-compulsive	23	4.28%	9	1.68%
Interpersonal Sensitivity	17	3.17%	7	1.30%
Depression	9	1.68%	5	0.93%
Anxiety	10	1.86%	5	0.93%
Hostility	8	1.49%	6	1.12%
Terror	8	1.49%	4	0.74%
Paranoia	7	1.30%	6	1.12%
Psychoticism	6	1.12%	6	1.12%
Other items	8	1.49%	6	1.12%

3.2 T-test of Factor Scores by Gender

We tried to explore the scores of each factor among college students of different genders of men and women, and Levene's test, t-test, and comparison of means were performed on the 1st data. Levene's test: Somatization ($F = 3.481$, $P = 0.063$), Obsessive-compulsive ($F = 1.45$, $P = 0.23$), Interpersonal relationship ($F = 0.58$, $P = 0.45$), Depression ($F = 0.21$, $P = 0.65$), anxiety ($F = 4.66$, $P = 0.03$), hostility ($F = 8.74$, $P = 0.003$), terror ($F = 3.97$, $P = 0.047$), paranoia ($F = 7.25$, $P = 0.007$), psychoticism ($F = 5.97$, $P = 0.015$), and other ($F = 3.34$, $P = 0.068$), where anxiety, hostility, terror, The t-test for anxiety, hostility, terror, and paranoia was conducted by assuming unequal variances, while the t-test for the rest of the factors was conducted by assuming equal variances. The results showed that there was no statistically significant difference in the scores of all factors.

3.3 T-test of Factor Scores for Only and Non-only Children

Levene's test, t-test, and comparison of means were conducted on the scores of only-child and non-only-child college students on each factor in the first test, t-test was conducted by "assuming unequal variances" for the horror in Levene's test (F=4.574, P=0.03) with a P-value of less than 0.05 and t-tests were conducted by "assuming unequal variances" for the rest of the items. The t-test for the rest of the items was conducted with the "assumption of equal variance". The results showed that there were statistically significant differences in the three factors of obsessive-compulsive symptoms, interpersonal sensitivity, and depressive symptoms, and the scores of non-only children were higher than those of only children. See Table3 for details.

Table 3. Test 1 Differences between Only Children and Non-only Children (x ±s)

Factor	an only child (n=93)	non-only children (n=444)	t	P
Somatization	1.20±0.32	1.24±0.38	-0.849	0.396
Obsessive-compulsive	1.52±0.56	1.72±0.63	-2.872	0.004*
Interpersonal Sensitivity	1.40±0.55	1.55±0.60	-2.329	0.02*
Depression	1.32±0.45	1.44±0.54	-2.041	0.04*
Anxiety	1.27±0.41	1.37±0.50	-1.846	0.065
Hostility	1.28±0.45	1.34±0.48	-1.107	0.269
Terror	1.26±0.38	1.34±0.50	-1.758	0.08
Paranoia	1.30±0.52	1.35±0.48	-0.915	0.361
Psychoticism	1.29±0.45	1.37±0.48	-1.572	0.116
Other items	1.29±0.48	1.38±0.48	-1.624	0.105

*P<0.05, Significantly different

4. Discussion

According to the results of the Chinese norm, GSI than 160 scores, or the number of positive items is more than 43, or any factor score is more than 2 scores, can be considered as positive. From the results of this study, it can be seen that the rate of students with different degrees of mental health problems in the year after COVID-19 is high. The positive detection rate is high for obsessive-compulsive symptoms, interpersonal sensitivity, depressive symptoms, paranoia, psychoticism, other factors (sleep and diet), and anxiety. This is generally consistent with the results of other studies. After a public health emergency, college students are psychologically stressed and test abnormalities are detected at a higher rate than in the past, and the unknown information and worry about their own bodies make the factor scores of obsessive-compulsive, anxiety, depression, diet and sleep and other factor scores related to worrying about emotions high. The susceptibility to contagiousness of public health events reduces interpersonal interactions, and the number of students with the interpersonal sensitivity factor increases.

There was a significant drop in students with mental health problems on the 2nd test, with the number of positive items over 43 dropping from 22.16% to 14.34%. There was also a decline in both total scores over 160 and 200. There is evidence that after the initial stress of a pandemic, people begin to adjust and cope, consistent with the pattern of "recovery" typically observed in response to stressful or traumatic life events (Michael et al., 2022). In addition, after COVID-19, schools targeted different approaches and methods from those of previous mental health education when conducting mental health education, carrying out pandemic psychological lectures, group counseling activities, psychological scenarios, psychological microfilms, psychological development, psychological sand trays, and other activities, which effectively alleviated depression, interpersonal sensitivity, and other psychological problems.

In addition, the present study found no significant difference between the scores of female college students on the 10 factors in the 1st test male college students, which is inconsistent with the results of existing studies. There was a statistically significant difference between only children and non-only children on the 3 factors of obsessive-compulsive symptoms, interpersonal sensitivity, and depressive symptoms, and the scores of non-only children were higher than those of only children. This is inconsistent with the results of previous studies, and the exact reasons for this need to be further investigated.

The limitation of this study is that the factors that produced the changes were not analyzed, and the amount of indicators and sample size were too small. In future studies, indicators such as place of origin analysis, social support, and parental relationship need to be included in order to gain a more comprehensive understanding of the impact on the mental health of college students, and to provide more data support and reference standards for future psychological parenting work after public health emergencies.

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References

Ahmed, M. Z., Ahmed, O., Zhou, A. B., Hanbin, S., Siyu, L., & Ahmad, A. (2020). Epidemic of COVID-19 in China and associated Psychological Problems. *Asian Journal of Psychiatry*, *51*, 102092. https://doi.org/10.1016/j.ajp.2020.102092

Cai, X., Chen, X., et al. (2020). Application of grid management in nursing team during public health emergencies. *Gansu Medical Journal*, *42*(8), 736-738.

Chen, X., Peng, H., et al. (2020). A study of the relationship between mental stress, social support and angiocardiopathy after disaster. *Health Psychology Journal*, *8*(2), 176-179.

Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behavioral Science*, *19*, 1-15. http://doi.org/10.1002/bs.3830190102

Felipe E. Garc á, Mariela A., et al. (2022). Mental health in Chilean jigher Education Students During the COVID-19 Pandemic: A Longitudinal Study. *Psychological Trauma: Theory, Research, Practice, and Policy*, 1-9. http://dx.doi.org/10.1037/tra0001363

Li, S., & Xu, Q. Y. (2022). Family support as a protective factor for attitudes toward social distancing and in preserving positive mental health during the COVID-19 pandemic. *Journal of Health Psychology*, *27*(4), 858-867. https://doi.org/10.1177/1359105320971697

Michael Daly, Angelina R., &Eric Robinson. (2022). Longitudinal changes in mental health and the COVID-19 pandemic: evidence from the UK Household Longitudinal Study. *Psychological Medicine*, *52*, 2549-2558. https://doi.org/10.1017/S0033291720004432

Nahal, S., Bryan, G., William, T., & Bridget, I. (2021). College Students Mental Health Challenges: Concerns and Considerations in the COVID-19 Pandemic. *Journal of College Student Psychotherapy*, *37*, 1-13. https://doi.org/10.1080/87568225.2021.1890298

Yao, Q. Y. (2019). The construction and practical application of college student' mental health education service system in new era. *Chinese Journal of Health Education*, *35*(7), 669-671.

Zhang, Y., Wang, Y., et al. (2023). The influence of family factors on psychological crisis of college students under major public health events. *Journal of Nanjing Medical University (Social Sciences)*, *115*(2), 112-118.

Zhu, Y., Shen, Y., et al. (2020). A conditional process model of public negative emotions and mental health under the COVID-19: the moderating role of interpersonal alienation. *Journal of Southwest University (Natural Science Edition)*, *42*(5), 1-10.