



A Comparative Study on Cognitive Function of College Students with Depression

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Abstract

Objective: To compare the cognitive function of college students with depression.

Methods: A total of 100 patients with depression in colleges and universities were randomly selected. The research time was from January 2018 to January 2020. They were set as the observation group, and 100 students without depression during the same period were selected as the control group. function for comparison. **Results:** Except for the recognition of meaningless images, the scores of the clinical memory scale of the students in the control group were all higher than those in the observation group, and there was a significant difference in the data between the two groups ($P < 0.05$). Significant difference ($P > 0.05$). The total number of WSCOT tests, the number of continuous errors and the number of random errors of the students in the control group were lower than those in the observation group, and the DST scores were higher than those in the observation group, with significant differences between the two groups ($P > 0.05$). **Conclusion:** Depressed students in colleges and universities have obvious cognitive function decline, which is accompanied by memory decline and social function decline, which is very detrimental to students' learning and physical and mental health. Clinical attention should be paid to college students with depression, and more care should be given to them. Promote the healthy development of students.

Keywords

College students; Depression; Cognitive function; Comparative study

College students face heavy academic pressure and interpersonal relationships with classmates. If they cannot handle it well, they may have various negative emotions. If they cannot find a channel to vent, they will become depressed. Over time, depression will form. Especially in today's era, the competition between students is becoming more and more fierce. In addition, contemporary students often have different growth environments and personalities. The collision and communication between different students may also cause conflicts, and even campus bullying incidents, which is particularly detrimental to the physical and mental health development of students. Depression is a common psychiatric disease with a relatively high incidence rate in clinical practice. In particular, the social environment in recent years has led to more and more people suffering from depression. The main manifestations of patients with depression are low mood, decreased appetite, decreased cognitive function, etc., and in severe cases, suicidal tendencies may occur. Depression not only affects students' learning, but also harms their physical and mental health. Therefore, the state and all sectors of society attach great importance to students' mental health and the treatment of students with depression. In order to understand the changes in cognitive function of college students with depression, this study used clinical memory forms, Wisconsin classification cards and digital span tests to understand the changes in cognitive function of students with depression. 100 college students with depression and 100 students without depression from January 2018 to January 2020 were selected for group research. The process is as follows:

1. Materials and Methods

1.1 General information

A total of 100 college students with depression were randomly selected from January 2018 to January 2020 as the observation group, and 100 students without depression during the same period were selected as the control group. All 100 students in the observation group were diagnosed with depression including 49 boys and 51 girls aged 17-23 years old with an average age of 20.88 years old. Among the 100 students in the control group there were 50 boys and 50 girls aged 17-23 years old with an average age of 20.78 years old. There was no significant difference in the general data between the two groups ($P > 0.05$).

Inclusion criteria: (1) voluntarily participating in this study and signing the consent form; (2) having the ability to act independently; (3) taking antidepressants two weeks before the study.

Exclusion criteria: (1) not meeting the inclusion criteria; (2) accompanied by severe physical illness; (3) lack of normal communication ability; (4) epilepsy; (5) schizophrenia and mental retardation.

1.2 Methods

The basic information of the two groups of students was collected, including the age, gender, education time and depression level of the students. The clinical memory scale (set A) was used to measure the cognitive function of the two groups of students to understand the students' memory level. The WCST was used to measure the executive function the total number of tests the number of continuous errors and the number of random errors were measured and the DST was used to measure attention.

1.3 Observation indicators

(1) Clinical memory scales include pointed learning, associative learning, portrait feature recall, image free recall, and meaningless figure recognition.

(2) Compare the WSCT and DSP of the two groups of students. WSCT includes the total number of tests, the number of persistent errors, and the number of random errors.

1.4 Statistical methods

SPSS 24.0 was used for statistical processing. The mean standard deviation (\pm) was used to express the measurement data, and the t test was used to express the counting data. The percentage (%) was used to express the counting data, and the χ^2 test was used. When $P < 0.05$, the difference was considered statistically significant.

2. Results

2.1 Clinical memory scale scores of the two groups

Except for meaningless image recognition the scores of all items of the clinical memory scale of students in the control group were higher than those in the observation group and the difference between the two groups was significant ($P < 0.05$). There was no significant difference in the meaningless image recognition scores between the two groups ($P > 0.05$). See Table 1.

Table 1. Clinical memory scale scores of the two groups (points)

| Group | n | Directed Learning | Associative Learning | Portrait feature recall | Image free recall | Meaningless figure recognition |
|-------------------|-----|-------------------|----------------------|-------------------------|-------------------|--------------------------------|
| Control group | 100 | 21.23 \pm 4.22 | 22.38 \pm 4.02 | 22.19 \pm 3.91 | 23.13 \pm 3.13 | 22.19 \pm 2.03 |
| Observation Group | 100 | 16.28 \pm 4.20 | 14.55 \pm 3.20 | 16.39 \pm 4.01 | 13.19 \pm 3.10 | 20.52 \pm 3.10 |
| χ^2 | | 2.392 | 4.292 | 4.288 | 9.282 | 0.282 |
| P | | 0.000 | 0.000 | 0.000 | 0.000 | 0.090 |

2.2 Comparison of WSCT and DSP between the two groups of students

The number of persistent errors, and the number of random errors of students in the control group were less than those in the observation group and the DST scores were higher than those in the observation group. The data comparison between the two groups showed significant differences ($P > 0.05$). See Table 2.

Table 2. Comparison of WSCT and DSP between the two groups of students

| Group | n | WSCT (times) | | | DST (minute) |
|-------------------|-----|-----------------------|-------------------|---------------------|--------------|
| | | Total number of tests | Continuous Errors | Random Error Number | |
| Control group | 100 | 56.33 ± 4.24 | 16.32 ± 5.41 | 9.28 ± 4.31 | 6.63 ± 1.15 |
| Observation Group | 100 | 74.53 ± 3.44 | 24.56 ± 4.20 | 25.67 ± 3.66 | 4.09 ± 1.22 |
| χ^2 | | 5.333 | 7.322 | 8.281 | 12.231 |
| P | | 0.000 | 0.000 | 0.000 | 0.000 |

3. Discussions

In recent years, due to the influence of the social environment, many students have developed depression tendencies. In addition, due to the fierce competition in learning, students are under great pressure in life. Therefore, depression has become one of the common diseases among college students, which seriously troubles students' normal life and study, and even causes students to drop out of school. It can be seen that the harm of depression to students should not be underestimated. Depression is a mental illness with a high clinical incidence rate. And depression has a high recurrence rate and is a chronic disease, which has caused great adverse harm to people's lives and health. According to relevant surveys, about three-tenths of patients with depression have not achieved ideal results after treatment with antidepressants, resulting in the continuous development of depression and increasing the difficulty of treatment. According to relevant surveys, patients with depression generally have impaired cognitive function, which hinders patients with depression from returning to campus and society. In addition, repeated attacks will further aggravate the patient's cognitive impairment. In colleges and universities, depression has also become a common clinical disease. In college life, most of the time middle school students spend studying, and depression will lead to reduced cognitive function of students, thereby reducing students' adaptability and making it impossible to study effectively. As college health workers and all sectors of society, we should pay full attention to the relevant issues of depression among college students and solve them. At present, clinical attention is paid to the relevant research on the impaired cognitive function of patients with depression and as scholars continue to conduct in-depth research, various different conclusions and opinions have emerged. In the process of studying the cognitive function and attention of patients with depression, domestic scholars found that compared with healthy people without depression patients with depression have difficulty in maintaining continuous concentration and there will be a more obvious decrease in work and short-term memory. The more severe the depression, the more obvious the cognitive impairment and memory decline. Some domestic scholars also selected patients with refractory depression for research and found that compared with healthy people patients with refractory depression have significantly reduced cognitive function and even have comprehensive brain function impairment. There are also many studies in China that can support the views of the above scholars that is, patients with depression have significantly reduced cognitive function and memory compared with normal people.

Since the expansion of college enrollment in 1999, the number of college students has increased dramatically, and the mental health problems of college students have become increasingly prominent. Students have less social experience and are young so they cannot find a suitable way to solve and vent their negative emotions after encountering some setbacks. Over time, they will develop anxiety and depression in their hearts. Especially in recent years, college students are mainly post-00s, who have a unique personality resulting in serious psychological problems, especially depression which has also attracted the attention of all sectors of society. In recent years, due to the frequent occurrence of campus violence and bullying, the incidence of depression has continued to grow on campus, and the occurrence of depression is also affected by many factors including psychological factors and social factors. People with depression mainly show a series of syndromes, including low mood, loss of interest, sadness, lack of self-confidence,

inferiority, slow thinking, inattention, decreased will and behavior sleep disorders, and even suicidal tendencies. Previous studies have shown that patients with depression have varying degrees of cognitive impairment at different times and as the disease progresses, cognitive impairment will continue to increase seriously affecting the patient's daily life and reducing memory and execution. There are many related studies on the cognitive function of patients with depression both abroad and in China. There are two main different viewpoints. One viewpoint is that cognitive impairment is not a state but a trait. Even if the symptoms are relieved, cognitive impairment will exist. This can also explain that the social function of patients with depression will be affected if the symptoms are mild. Another concept is that cognitive dysfunction in patients with depression is both a trait and a state. Relevant domestic studies have treated patients with depression for half a year. The results showed that the symptoms of the patients were significantly relieved after treatment and the cognitive function was improved. This shows that the cognitive function of patients with depression is a trait and a state. However, the color word test showed that there was no obvious difference before and after treatment in patients with mild depression indicating that the attention function has not improved suggesting that patients with severe depression are still accompanied by cognitive impairment during the period of milder illness.

Patients with depression and cognitive dysfunction may show different characteristics the most obvious of which is the impairment of frontal lobe-related executive function. Impaired executive function directly leads to the inability of patients to restore autonomous social function. This study used Wisconsin cards to test the abstract ability selective memory and cognitive process transfer ability of college students with depression and college students without depression hoping to understand the cognitive impairment of students with depression. Among them, frontal lobe function can be reflected by the number of random errors while whether there is brain and frontal lobe damage is usually evaluated by the number of persistent errors. The author found that the total number of tests, the number of persistent errors and the number of random errors of WCST in college patients with depression were at a higher level than those of students without depression, which shows that college students with depression have impaired executive function and are also accompanied by memory impairment. The clinical memory scale is used to reflect neurological memory disorders, which is highly objective and can be measured by quantitative indicators. Among them, learning ability is mainly reflected by associative learning, and pointing memory performance is affected by pathological thinking. These two items belong to language tests while non-language tests include meaningless graphic recognition and free memory through graphic images and portrait characteristics are between the two. The free recall and portrait feature recall scores of the Chinese language test of the college students with depression selected in this study were significantly lower than those of healthy students without depression. There was no significant difference in the recognition scores of meaningless figures, which shows that the actual damage of patients with depression is mainly manifested in word recall and semantics, which is consistent with the results of other related studies in China. This study used the DST back-to-back test to compare the attention maintenance and anti-interference ability of college students with depression and invigilators without depression. It was found that the attention maintenance and anti-infection ability of students with depression were relatively lower, which shows that patients with depression generally have a decreased attention.

The results of this study showed that except for meaningless image recognition the scores of the clinical memory scale of the students in the control group were higher than those in the observation group and the difference between the two groups was significant ($P < 0.05$). There was no significant difference in the meaningless image recognition scores between the two groups ($P > 0.05$). The total number of WSCT tests the number of persistent errors, and the number of random errors of students in the control group were less than those in the observation group and the DST scores were higher than those in the observation group ($P > 0.05$). It can be seen that depressed college students generally have symptoms such as reduced cognitive function decreased memory and inattention. Compared with healthy students without depression their physical and mental health is significantly damaged. However, this study also has some shortcomings. The number of selected research samples is relatively small and the selection scope has certain limitations. If there is relevant research in the future, we hope to increase the number of samples and expand the scope of sample selection, apply more comprehensive cognitive assessment tools, and establish imaging data models at the same time to conduct more scientific research on the impaired cognitive function of college students with depression, and understand the pathogenesis of impaired cognitive function in patients with depression, so as to provide data and theoretical support for clinical related research.

In summary college students with depression all have obvious cognitive impairment accompanied by decreased memory and social function which is very detrimental to students' learning and physical and mental health. Clinical

attention should be paid to college students with depression giving them more care and promoting their healthy development.

References

- Enns, M. W., Cox, B. J., & Borger, S. C. (2021). Correlates of analogue and clinical depression: A further test of the phenomenological continuity hypothesis. *Journal of Affective Disorders, 66*(2), 175.
- Gao, H., Men, B., Yin, Y., Shi, H., Xiao, M., Xu, M., & Weng, X. (2015). Investigation of depression status among college students in a certain university. *Journal of Disease Control, 9*(3), 228-230.
- Ilsley, J. E., Moffoot, A. P. R., & O'Carroll, R. E. (2020). An analysis of memory dysfunction in major depression. *Journal of Affective Disorders, 35*(1), 1.
- Li, Y., & Ji, J. (2020). Rethinking the prognosis of depression. *Foreign Medicine: Psychiatry, 23*(3), 148-152.
- Ma, H., Yan, J., Wang, Z., Liu, T., & Luo, Y. (2020). Investigation of anxiety and depression status of college students under exam stress. *Journal of the Fourth Military Medical University, 26*(3), 261-264.
- Reinherz, H. Z., Paradis, A. D., Giaconia, R. M., et al. (2020). Childhood and adolescent predictors of major depression in the transition to adulthood. *American Journal of Psychiatry, 160*(12), 2141.
- Wang, X., Wang, X., & Ma, H. (1999). Manual of Mental Health Rating Scale. *Chinese Journal of Mental Health, 12*, 217.
- Xiao, W., Zhou, H., Xia, Y., Yuan, J., & Yan, Q. (2016). Study on depression status and risk factors of college students. *Chinese Journal of Behavioral Medical Science, 15*(7), 647-649.