Intervention Effect of Cognitive Behavioral Therapy on Postoperative Anxiety and Self-management in Renal Transplant Recipients

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Abstract

Objective. The purpose was to explore the effect of cognitive behavioral therapy (CBT) on postoperative anxiety and self-management in renal transplant recipients. Methods. 30 renal transplant recipients treated in our hospital from October 2019 to April 2020 were selected as the study subject, and divided into control group and test group according to their admission order. The control group patients received 3 weeks of conventional intervention, and the test group patients received 3 weeks of CBT intervention to analyze the psychological status (MSSNS score), sleep index (PSQI score) and self-management ability (CDSMS score and SMAS-30 score) of the two groups of patients after intervention. Results. The MSSNS score of the test group (47.03±8.40) was significantly lower than that of the control group (56.93±11.78), with statistical significance (t=3.23, P=0.00). The PSQI score of the test group (5.83±4.78) was significantly lower than that of the control group (9.32±5.77), with statistical significance (t=1.80, P=0.08). The CDSMS and SMAS-30 scores of the test group (38.43±2.62 and 21.03±3.25) were significantly better than those of the control group (22.31±5.22 and 37.85±5.59), with statistical significance (t=10.69, t=10.07, p=0.00, p=0.00). Conclusion. The implementation of CBT for renal transplant recipients after surgery can reduce unhealthy psychological reactions, improve sleep quality and enhance self-management ability of patients.

Keywords: cognitive behavioral therapy (CBT); renal transplant recipients; postoperative; anxiety; self-management; intervention

Introduction

Renal transplantation is the main current treatment for end-stage renal disease (Steven et al,2020; Mariana and Thaíse,2018; Thomas and Claudio,2020). Compared with dialysis, renal transplantation can effectively prolong the survival of patients and greatly reduce the mortality of end-stage patients. Although the life of renal transplant recipients is prolonged, new problems may arise from the drugs used and trauma produced during the treatment (Maximilian et al,2020; Giulia and Pia,2020; Jung and Dong,2020). Relevant studies have shown that postoperative

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complications and adverse reactions of renal transplant recipients can lead to unhealthy psychology of patients, thus reducing their enthusiasm to participate in daily activities and resulting in complications such as disuse syndrome, which seriously threaten the life and health of patients (Jeffrey et al,2020; Emine and Nimet ,2020; uan and Nibaldo,2019).

Cognitive behavioral therapy (CBT) is a non-pharmacological psychosocial treatment, which has been widely used in the clinical treatment of cancer due to its long duration of action and good clinical efficacy without adverse consequences of addiction (Cemal et al,2019; Adam znd llison,2019;). At present, there are few reports on the CBT application in renal transplant recipients. In order to improve the adverse psychological status and life quality of renal transplant recipients, 30 renal transplant recipients treated in our hospital from October 2019 to April 2020 were selected as the study subject to provide

important reference for the prognostic recovery of transplant recipients, specifically reported as follows.

1. Materials and Methods
1.1 General Information
30 renal transplant recipients treated in our hospital from October 2019 to April 2020 were selected as the study subject, and divided into control group and test group according to their admission order. There was no significant difference between the two groups of patients in general clinical data such as age and gender (P>0.05), which was comparable, as shown in Table 1.

Table 1. **General Clinical Data of Two Groups of Patients**

Factors		Control group （n=15）	Test group （n=15）
Gender	Male	8	7
	Female	7	8
Average age (years old)		35.42±9.04	35.44±9.05
Marital status	Unmarried	10	11
	Married	5	4
Average monthly income (yuan)	Below 1000	1	1
	1000-2999	3	4
	3000-4999	7	7
	Above 5000	4	3
Religion	Yes	9	10
	No	6	5
Medicare	Yes	8	9
	No	7	6
Smoking	Yes	10	11
	No	5	4
Drinking	Yes	9	10
	No	6	5
Transplant type	DCD kidney transplant	12	11
	Living relative kidney transplantation (LRKT)	3	4
DGF occurrence	Yes	1	1
	No	14	14

1.2 Inclusion/Exclusion Criteria
Inclusion criteria.
(1) All the patients were equal to or more than 18 years old.
(2) The patients had no serious complications and infections after surgery.
(3) All patients received allograft renal transplantation for the first time
(4) The patients had clear consciousness.
(5) The study was approved by the hospital ethics committee.
(6) The patients and family members know the treatment and sign a consent.

Exclusion criteria.
(1) Patients had hearing, language and behavioral impairments.
(2) Patients had severe lung, brain, spleen, heart and other major tissue and organ diseases.
(3) Patients had a history of severe mental illness.

1.3 Methods
1.3.1 Intervention Time
Both groups of patients received intervention for 3 weeks from the first day to the 21st day after surgery.

1.3.2 Preparation
Before intervention, a research team was established to formulate relevant process and measures, and to implement training as follows. (1) A research team was established based on the needs of patients, which consisted of 1 nurse with more than 10 years of nursing experience in the renal transplantation ward and 3 masters of clinical nursing. Expert advisory team consisted of 1 chief nurse and 1 deputy chief nurse, in which the deputy chief nurse had more than 10 years of nursing experience in the renal transplantation ward and was a national psychological counselor of level 2. (2) The intervention was completed by a fixed person trained by a psychologist, and 2 nurses were arranged for daily guidance and supervision to

ensure the intervention quality and the patients' treatment compliance. (3) The expert advisory team provided effective training for the intervention staff, including cognitive behavioral therapy and self-management therapy to intervene the postoperative adverse psychology of the renal transplant recipients.

1.3.3 Interventions

Patients in the control group received conventional intervention, including postoperative vital signs detection, dietary care, medication guidance, aerosol inhalation and other measures.

Patients in the test group received CBT intervention on the basis of conventional intervention, with specific contents as follow.

(1) Cognitive intervention. Speech debate and rational analysis were used to change the patients' cognition, and timely adjust patients' negative emotions and behavior. The intervention mainly included four stages of psychological diagnosis, comprehension, mastery and re-education.

(2) Relaxation training. First, the training process was explained to the patients. They were advised to eliminate distractions and concentrate on the training process to conduct progressive muscle relaxation. The patients were instructed to lie flat on the bed with hands on both sides of the body, clench their fists slowly when inhaling, relax their fists slowly when exhaling, and breathe repeatedly several times with 10s each time so that the patients could transform between relaxation and tension. Then they were instructed to relax the forearms, head, face, neck and other body parts in turn. During the training, each muscle of the patients should be relaxed.

(3) Behavioral intervention. The patients' attitude, psychology and thoughts about treatment were understood through communication with them. The positive effect of good behavior on the prognosis of limb recovery should be explained to the patients to build up their confidence in recovery. They were encouraged to carry out activities according to their recovery and instructed to take medicine on time with proper dosage. Their bad daily habits were corrected to develop good habits. Their family members gave them spiritual and life support to cultivate the healthy lifestyle of the patients.

1.4 Evaluation Indexes

After intervention, the psychological status, sleep index and self-management ability of the patients in two groups were analyzed.

MSSNS (mental status scale in non-psychiatric settings) was used to assess the psychological status, including depression, anxiety, loneliness and anger, with a total score of 152 points. The higher the scores were, the more serious the negative emotions were.

PSQI (Pittsburgh sleep quality index) was used to assess the sleep indexes, including 7 aspects of daytime dysfunction, sleep quality, sleep efficiency, hypnotic drug, sleep latency, sleep disturbance and sleep time, with a total of 21 points. The higher the scores, the worse the sleep quality of patients.

CDSMS (Chronic Disease Self-Management Study Measures) and SMAS-30 (Self-Management Ability Scale-30) were used to assess self-management ability. CDSMS had a total of 42 points, and the higher the score was, the better the patients' self-management ability was. SMAS-30 had a total of 60 points, and the lower the score was, the better the patients' self-management ability was.

1.5 Statistical Processing

The data in this study were processed and analyzed by SPSS20.0 software. The measurement data were measured by t test, expressed by ($\bar{x}\pm s$), and the count data were tested by X^2, expressed by [n (%)]. The difference was statistically significant when $p < 0.05$.

2. Results
2.1 Analysis of MSSNS Scores in Two Groups of Patients

Analysis of MSSNS scores found that the anxiety score (15.45±2.86), depression score (12.65±2.08) and anger score (8.05±1.24) of the test group patients were significantly lower than (19.68±4.12), (14.95±2.01) and (11.42±3.41) of the control group patients, with statistical significance (t=3.27, t=3.08, t=3.60, p=0.00, p=0.00, p=0.00). There was no significant difference in loneliness score between the test group patients (10.88±2.22) and the control group patients (10.87±2.24), with t=0.01, P=0.99. Analysis of MSSNS scores showed that MSSNS score of the test group (47.03±8.40) was significantly lower than that of the control group (56.93 ±11.78), with statistical significance (t=3.23, p=0.00), as shown in Figure 1.

2.2 Analysis of PSQI Scores in Two Groups of Patients

Analysis of PSQI scores found that the sleep quality score (1.13±0.58), sleep latency score (1.31±0.92), sleep efficiency score (0.44±0.90) and sleep time score (0.81±0.92) of the test group were significantly lower than (1.68±0.75), (1.98±0.56), (1.19±1.16) and (1.78±1.05) of the control group, with statistical significance (t=2.25, t=2.41, t=2.34, t=2.69, p=0.03, p=0.02, p=0.03, p=0.01). There were

no significant differences in daytime dysfunction, hypnotic drug, and sleep disturbance scores between the test group patients (0.97±0.97, 0 and 1.17±0.49 respectively) and the control group patients (1.22±1.16, 0.08±0.57 and 1.39±0.52 respectively), with t=0.62, t=0.54, t=1.19, p=0.54, p=0.59, p=0.24.

Analysis of the PSQI scores showed that the PSQI score of the test group patients (5.83±4.78) was significantly lower than that of the control group patients (9.32±5.77), with statistical significance (t=1.80, p=0.08), as shown in Figure 2.
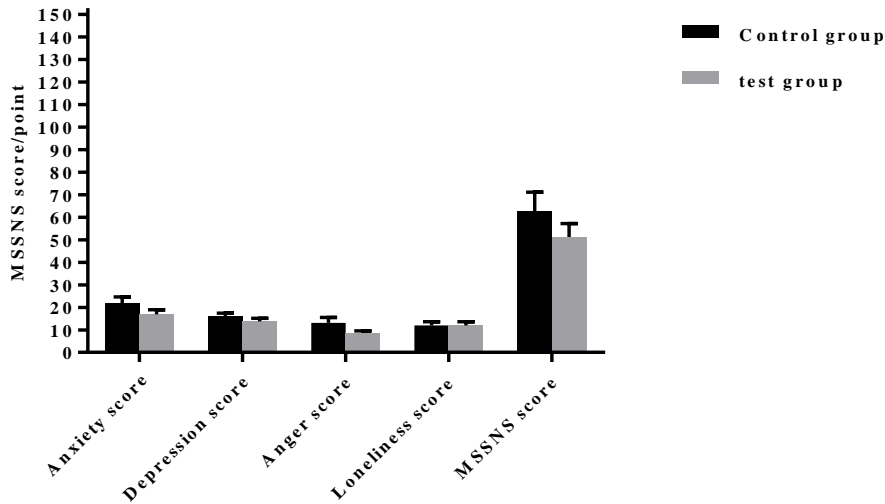

Figure 1. **MSSNS Scores of Patients in Two Groups**

Note: In Figure 1, the abscissa from left to right represented anxiety score, depression score, anger score, loneliness score and MSSNS score, and the ordinate represented MSSNS score. As shown in Figure 1, anxiety, depression, anger and MSSNS scores of the test group were significantly lower than those of the control group. Unit: points.
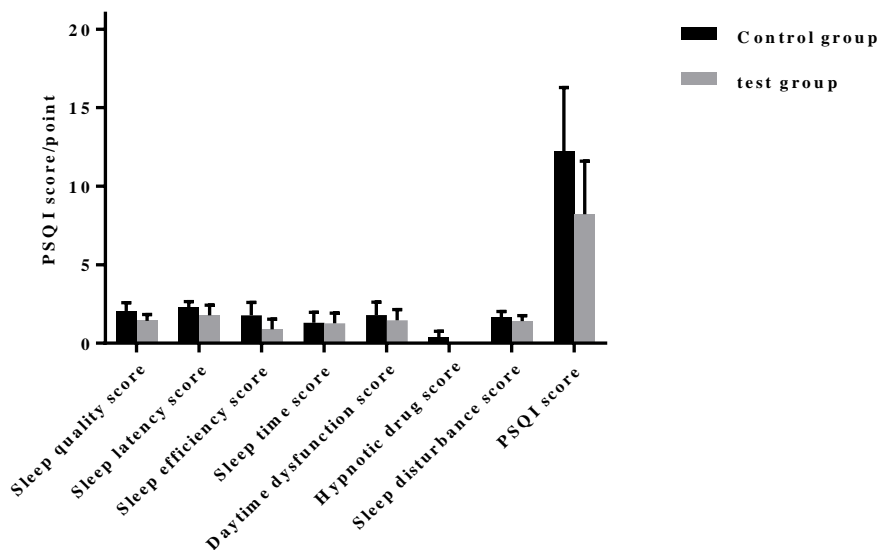
Figure 2. **PSQI Scores of Patients in Two Groups**

Note: In Figure 2, the abscissa from left to right represented sleep quality score, sleep latency score, sleep efficiency score, sleep time score, daytime dysfunction score, hypnotic drug score, sleep disturbance score and PSQI score, and the ordinate represented PSQI score. As shown in Figure 2, the sleep quality, sleep latency, sleep efficiency and sleep time scores of the test group were significantly lower than those of the control group. Unit: points.

2.3 Analysis of CDSMS and SMAS-30 Scores in Two Groups of Patients

Before intervention, there were no significant differences in CDSMS score and SMAS-30 score between the test group patients (18.65±3.12 and 52.43±2.14 respectively) and the control group patients (18.55±3.42 and 52.38±2.21 respectively), with t=0.02, t=0.06, p=0.98, p=0.95. After intervention, the CDSMS score of the test group patients (38.43±2.62) was significantly higher than that of the control group patients (22.31±5.22), with statistical significance (t=10.69, p=0.00). The SMAS-30 score of the test group (21.03±3.25) was significantly lower than that of the control group (37.85±5.59), with statistical significance (t=10.07, p=0.00), as shown in Figures 3-4.
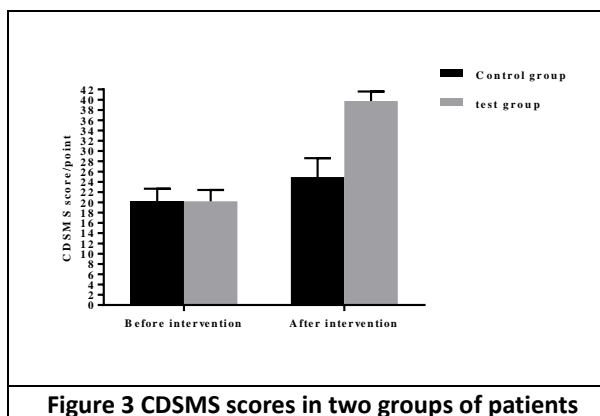

Figure 3 CDSMS scores in two groups of patients

Figure 4 SMAS-30 score in two groups of patients

Note: In Figure 3, the abscissa represented before intervention and after intervention, and the ordinate represented the CDSMS score. As shown in Figure 3, the CDSMS score of the test group was higher than that of the control group after intervention. Unit: points.

In Figure 4, the abscissa represented before intervention and after intervention, and the ordinate represented the SMAS-30 score. As shown in Figure 4, the SMAS-30 score of the test group was lower than that of the control group after intervention. Unit: points.

3. Discussion

With the continuous improvement of medical level, renal transplantation technology has improved constantly, which has become the most effective clinical treatment for renal failure (Luigi et al,2019; Tiffany and Anne,2019). Due to the use of immunosuppressive agents for a long time after surgery, renal transplant recipients will have adverse reactions, suffer from intense pain and are prone to complications, which seriously affect the prognosis of patients. Therefore, it is particularly important to implement intervention for renal transplant recipients after surgery.

Cognitive behavioral therapy (CBT) is a psychotherapeutic modality affecting the behavior and mood of patients, which originates from psychological therapy and has been widely applied in clinical treatment (Han et al,2019). It is mainly to increase patients' cognition to the disease, correct their wrong cognition and life habits, instruct them to conduct relaxation training and enable them to receive treatment with a positive psychological attitude, correct cognition and a healthy lifestyle, which has a positive effect on improving their adverse psychological status, reducing complications and improving prognosis. In order to explore the intervention effect of CBT on anxiety and self-management of renal transplant recipients in this study, the test group received CBT intervention and the control group received conventional intervention. Comparison of the two groups showed that the scores of anxiety, depression, anger and other adverse psychology in the test group were significantly lower than those of the control group, and the MSSNS score was significantly lower than that of the control group, with statistical significance (P<0.05), indicating that CBT played an active role in improving the postoperative anxiety, depression, anger and other adverse psychology of renal transplant recipients. According to the research of Natale P (Natale et al,2019)et al., the implementation of CBT for patients with end-stage renal disease treated by dialysis was conducive to the improvement of patients' anxiety, depression and other adverse psychology, thus indicating that CBT had a positive effect on improving the postoperative anxiety and other adverse emotions of renal transplant recipients.

Renal transplant recipients often have sleep disturbance after surgery, which causes cognitive distortions in patients. CBT can improve their sleep through correction of their sleep cognition. The subjects of this study were all renal transplant recipients with sleep disturbance. Implementation of CBT in patients of the test group confirmed the effect of CBT in sleep intervention. However, the results of this study were not completely consistent with the conclusions of WuYT (Wu et al,2019) et al. who applied CBT to patients with chronic insomnia, and found that CBT had a positive effect on improving the sleep latency, sleep efficiency and sleep time of patients without indicating that CBT could improve the sleep quality of patients. But this study found that CBT improved sleep quality, sleep latency, sleep efficiency and sleep time of patients. The reason may be related to the fact that WuYT et al. studied chronic insomnia patients while the study subjects of this study were renal transplant recipients. With different study objects, the results of WuYT et al. and this study may be different in sleep quality. It could be seen from the research results of Picariello F (Picariello et al,2018) et al. that CBT had a positive effect on improving patients' sleep quality, sleep latency, sleep efficiency and sleep time. Based on the study of Picariello F et al. and this study, it could be seen that CBT improved patients' sleep time and sleep quality by shortening patients' sleep latency and improving sleep efficiency.

Relevant studies have shown that the prognostic effect of renal transplant recipients is related to their self-management ability. CBT can improve patients' cognition of their own disease and improve their self-management ability. The more knowledge and skills patients master about self-care, the higher their self-management ability will be. Relevant scholars point out that the stronger the self-management ability of renal transplant recipients, the better their postoperative rehabilitation and life quality of the patients. At present, the success indicators of renal transplantation not only include survival rate. The psychological status and life quality of patients after surgery have gradually received widespread attention. Nowadays, the life quality and psychological status of renal transplant recipients have become one of the key research issues in the medical field. In this study, the CDSMS score and SMAS-30 score of the test group were significantly better than those of the control group, with statistical significance (P<0.05). According to the research of LinMY (Lin et al,2017) et al., the implementation of CBT in patients with renal disease effectively improves the self-management

ability of patients and has a positive effect on the clinical recovery of patients. Their research confirms that CBT has a positive effect on improving patients' self-management ability and promoting their clinical recovery.

In conclusion, the implementation of CBT for renal transplant recipients after surgery can reduce unhealthy psychological reactions, improve sleep quality and enhance self-management ability of patients.

Acknowledgement

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