

A Retrospective Case–Control Study Evaluating Effects of Beck’s Cognitive Therapy on Anxiety in Patients after Breast Reconstruction

ABSTRACT

Objective: To explore the effects of Beck’s cognitive therapy on the anxiety of patients after breast reconstruction.

Methods: This study retrospectively analyzed clinical data of 150 patients with breast cancer undergoing breast reconstruction from June 2020 to June 2021 in our hospital, excluded 5 patients who did not meet the inclusion criteria, divided the remaining cases into an experimental group (EG, n=70, perioperative routine management + Beck’s cognitive therapy intervention) and a reference group (RG, n=75, perioperative routine management) in accordance with different perioperative intervention programs, and compared the emotions of anxiety and depression, sense of social disability, and prognosis quality in both groups.

Results: At 2 months after surgery (T2) and 3 months after surgery (T3), EG had overtly lower Hamilton Anxiety Scale (HAMA) and Beck Depression Inventory (BDI) scores than RG ($P < .05$), with no difference in HAMA and BDI scores at 3 days before surgery (T0) and 1 month after surgery (T1) ($P > .05$). At the T0 stage, both groups were diagnosed as having a social disability, with no overt difference ($P > .05$). At T1 stage, The Social Disability Screening Schedule (SDSS) scores in both groups increased remarkably and fell back at the T2 and T3 stages. At T1-T2 stages, SDSS scores of EG were significantly different from those of RG ($P < .05$), with no significant difference at T3 stage ($P > .05$). The excellent rate of prognosis in EG was 78.57% (55/70), higher than 77.33% (58/75) in RG, with no statistical difference in both groups ($P < .05$).

Conclusion: The implementation of Beck’s cognitive therapy in patients with breast reconstruction effectively improves adverse emotions in patients, which is of great significance for promoting postoperative rehabilitation and is an effective intervention program in the perioperative period.

Keywords: Beck’s cognitive therapy, breast reconstruction, anxiety, retrospective study

Introduction

The incidence of breast cancer is the highest among female malignant tumors, and the mortality is the second highest among cancers in the world.¹ Modified radical mastectomy and breast-conserving surgery are the main clinical surgical treatments for breast cancer.² According to clinical data in China, about 80% of breast cancer patients need to undergo mastectomy,³ which is the most widely used surgical method at present. Although this surgery effectively prolongs the survival period of patients, breast deficiency brings a huge psychological burden to patients. Breast reconstruction, as an important part of comprehensive treatment of breast cancer,^{4,5} can promote patient compliance in follow-up treatment, enhance social adaptability, improve the physical and mental health of patients, and elevate their quality of daily life. However, breast reconstruction causes significant trauma, and patients have high expectations for the surgery,⁶ great psychological pressure and poor compliance with rehabilitative exercise, which can easily lead to poor postoperative rehabilitation effects and adverse emotions.



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Beck's cognitive therapy is a present-centered, problem-oriented, proactive, and guiding treatment method,⁸ that aims to correct patients' irrational cognitive processes and concepts and change their negative emotions and behaviors. This cognitive model proposes that distorted or dysfunctional thoughts are a common phenomenon in various psychological disorders. Realistic evaluation and correction of this belief can improve emotion and behavior, and lasting improvement can correct the patients' false concepts. A study has confirmed that Beck's cognitive therapy is effective in the management of major depression.⁸ Considering that patients with breast reconstruction are mostly anxious and depressed and that few studies in China have confirmed the application effect of Beck's cognitive therapy in patients with breast reconstruction, this study selected patients with breast cancer undergoing breast reconstruction in our hospital as research subjects and comprehensively evaluated the clinical application value of the intervention program.

Material and Methods

General Data

The clinical data of 150 patients with breast cancer undergoing breast reconstruction in Tangshan People's Hospital from June 2020 to June 2021 was retrospectively analyzed, and 145 cases were finally included in the study (Figure 1). According to different intervention schemes, these patients were divided into the experimental group (EG, n=70, perioperative routine management+Beck's cognitive therapy) and the reference group (RG, n=75, perioperative routine management). This study conformed to the principles of the Declaration of Helsinki (2013)⁹ and it has been approved by the Ethical Committee of Tangshan People's Hospital (Approval No: 20200406). As a retrospective study, it is not necessary to obtain informed consent of patients. The technical route is presented in Figure 2.

Inclusion and exclusion criteria

Inclusion Criteria: (1) Patients met the indications for breast reconstruction. (2) Patients were generally in good condition without severe organ dysfunctions. (3) Patients completed adjuvant radiotherapy and chemotherapy in a standardized manner. (4) Patients underwent immediate breast reconstruction or delayed breast reconstruction and finally completed prosthesis implantation.

Exclusion Criteria: (1) Patients were retreated for breast cancer recurrence. (2) Patients had dysfunctions of comprehension, speech expression, hearing, or consciousness. (3) The patients had malignant tumors in other parts. (4) Patients did not complete the surgery or auxiliary treatment as scheduled.

MAIN POINTS

- Beck's cognitive therapy emphasizes the effects of positive thinking and effectively regulates the negative emotions of patients with breast reconstruction.
- Beck's cognitive therapy can not only cultivate patients' positive emotions but also help patients correct maladaptive behaviors and reduce social disability.
- Beck's cognitive therapy combines cognitive change with behavioral training and has a significant effect on clinical intervention for patients with breast reconstruction.

Surgical Procedure

The surgical procedure of breast reconstruction for breast cancer is shown in Figure 3.

Reference group received perioperative routine management, that is, routine skin preparation, food and water fasting, and medication on time before surgery. During the surgery, medical staff should protect patients' privacy. After the surgery, medical staff should divert patients' attention, guide them to have a reasonable diet, closely observe the presence or absence of complications like prosthesis displacement, rupture, and wound bleeding, and take corresponding treatment methods in time.

Beck's Cognitive Therapy

The EG received Beck's cognitive therapy on the basis of the above treatment methods: once a day, 30 minutes/time, and 30 days as a treatment cycle. It was recommended to treat for 3 cycles or more. The patients began to receive Beck's cognitive therapy 3 days before surgery. The specific steps are shown in Table 1.

Observation Indicators

Clinical Data: The clinical data such as age, tumor stages, pathological types, and treatment programs in both groups were collected and compared.

Emotion of Anxiety and Depression: The Hamilton Anxiety Scale (HAMA)¹⁰ was used to evaluate the anxiety of patients. The HAMA was suitable for assessing anxiety disorders in adults, especially the severity of anxiety symptoms, with a reliability coefficient of 0.93 and a validity coefficient of 0.36. The HAMA involved 2 factors, namely somatic anxiety (7-13 items) and mental anxiety (1-6, 14 items), for a total of 14 items. The scale adopted the 5-level scoring method, with a score of 0-28 points for each factor and a total score of 0-56 points. 14 points were the critical value of HAMA to evaluate anxiety. The higher the score, the more serious the anxiety state of patients.

The Beck Depression Inventory (BDI)¹¹ was applied to assess the depression of patients. The BDI was the earliest self-rating depression scale in the United States, which could distinguish the presence and severity of depressive symptoms with a reliability coefficient of 0.87 and a validity coefficient of 0.73. The BDI consisted of 13 items, including depression, pessimism, a sense of failure, a lack of satisfaction, a change in self-image, etc. All the items were 0-3 points and adopted the 4-level scoring method. 0-4 points were no depressive symptoms; 5-7 points were mild depression; 8-15 points were moderate depression; and 16-39 points were severe depression.

Sense of Social Disability: The Social Disability Screening Schedule (SDSS)¹² was used to evaluate the patients' sense of social disability. The SDSS was suitable for assessing social disability in patients with chronic diseases or mental disorders, with a reliability coefficient of 0.91 and an internal consistency of 0.94. There were 10 items in SDSS, and each item was worth 0-2 points and used the 3-level scoring method, with a total score of 0-20 points. A total score of ≥ 2 points indicated that the subjects had a sense of social disability. The higher the score, the more serious the social disability.

Prognosis Quality: The patients were followed up for 3 months after surgery. The complications (hematoma, infection, skin flap necrosis, incision dehiscence, etc.) were observed and recorded during the

auxiliary treatment, and the presence or absence of local recurrence and distant metastasis were observed at the end of the auxiliary treatment. Evaluation criteria for prognosis quality.¹³ (1) High-quality. The size of the reconstructed breast is basically equal to that of the contralateral breast, the position is symmetrical, and the patients were very satisfied with no obvious complications and recurrence. (2) Good. The size and position of the reconstructed breast were similar to those of the contralateral breast; the 2 breasts had no significant difference after dressing; and the patients were satisfied with no serious complications and recurrence. (3) General. The bilateral breasts were obviously asymmetrical; the difference between the 2 breasts could still be seen after dressing, and the patients were not satisfied. In addition, there were certain complications and recurrences. (4) Poor. The reconstructed breast was severely deformed or had serious complications and distant metastasis. Excellent rate = (high-quality + good) ÷ total number of cases × 100%.

Data Acquisition

The HAMA score, BDI score, and SDSS score of patients were collected 3 days before surgery (T0 stage), 1 month after surgery (T1 stage), 2 months after surgery (T2 stage), and 3 months after surgery (T3 stage).

Statistical Analysis

The statistical data involved in this study was statistically analyzed and processed by Statistical Package for the Social Sciences (SPSS) version 26.0 software (IBM SPSS Corp.; Armonk, NY, USA). Figures 1–3

were drawn using Microsoft Office Word (Microsoft Corporation; version: 2019; Redmond, WA, USA), and Figure 4 was drawn using Microsoft Office Excel (manufacturer: Microsoft Corporation; version: 2016; origin: Redmond, WA, USA). The Shapiro–Wilk method was used to test the normal distribution of continuous variables, and the Mann–Whitney *U*-test was used for the data that did not conform to the normal distribution. The categorical variables were expressed as [n(%)] and tested by χ^2 test. *P* < .05 indicated the difference was statistically significant.

Results

Clinical Data

Both groups had no statistically significant difference in general clinical data (*P* > .05), indicating the significance of an in-depth study, as shown in Table 2.

Emotion of Anxiety and Depression

At T2 and T3 stages, EG had significantly lower HAMA and BDI scores than RG (*P* < .05), with no significant difference in HAMA and BDI scores at T0 and T1 stages (*P* > .05), as shown in Table 3.

Sense of Social Disability

At T0 stage, both groups had social disabilities, with no significant difference in SDSS score (*P* > .05). At T1 stage, SDSS scores for the 2 groups increased remarkably and fell back at T2 and T3 stages. At T1-T2 stages, the SDSS scores of the 2 groups were significantly different (*P* < .05), with no significant difference at T3 stage (*P* > .05), as shown in Table 4.

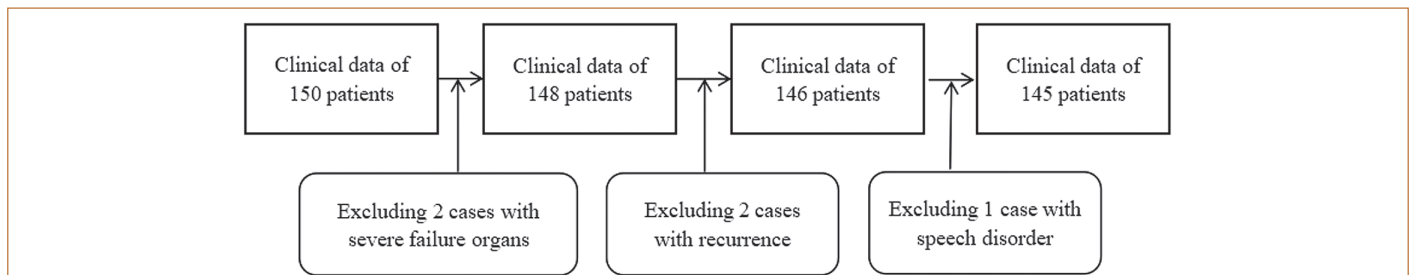


Figure 1. Flowchart of patient screening.

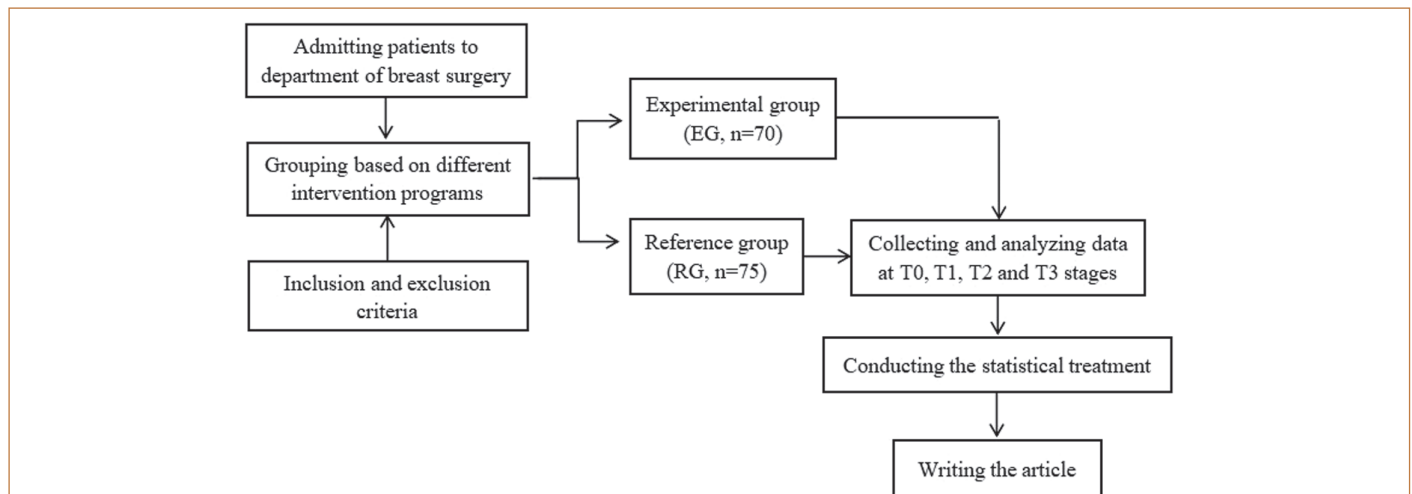


Figure 2. Technical route.

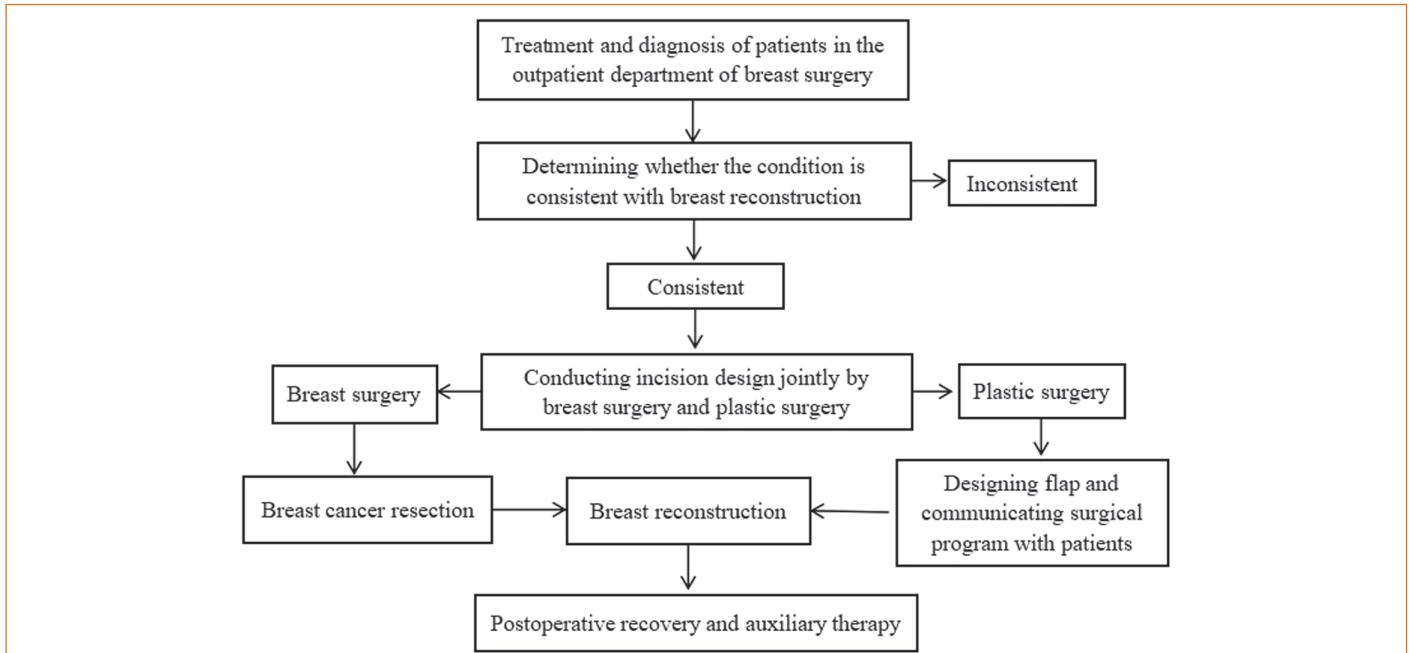


Figure 3. Surgical procedure of breast reconstruction.

Table 1. Implementation Content of Beck's Cognitive Therapy

| Items | Concrete Contents |
|---|--|
| Establishment of therapeutic relationship | A harmonious therapeutic relationship is the premise of cognitive therapy. It is suggested that the therapist choose to adopt a consultative attitude and play the dual role of diagnostician and educator. At the beginning of establishing a therapeutic relationship, patients should reflect on their incorrect ideas over time and improve their ability to actively understand things and solve problems. |
| Determination of treatment target | The treatment target must be determined based on the patients' actual situation, and the treatment target of different patients should be in line with their own psychological and physiological state. Determining the treatment target is equivalent to clarifying the process of correcting misconceptions. Patients change to the correct cognitive style and achieve the treatment purpose through reasonable correction. |
| Identification of problems | Skills of questioning and self-examination. In order to understand patients' cognitive processes and concepts and find incorrect misconceptions, medical staff should first introduce patients to specific problems, raise questions through skills of questioning and self-examination, guide their attention to the level closely related to emotion and behavior, and repeatedly ask some meaningful questions. Self-examination is a way to encourage people to express their views and examine themselves through experience and introspection. |
| Test of superficial misconception | Advice, suggestions, and imitation. The superficial misconception refers to an intuitive and clear interpretation of the patients' own behavior. On this basis, medical staff use counseling techniques to allow patients to engage in behaviors related to their misconceptions in order to verify their correctness. Additionally, medical staff encourage patients to enter real or imagined situations and observe the action and process of superficial misconceptions through demonstration techniques. |
| Semantic analysis technology | Core misconceptions were propositions related to abstract concepts, which must be corrected by abstract technology with a high logical level. |
| Behavior modification techniques | Behavior modification technology links behavior with cognitive processes, forming a virtuous circle. A certain situation or pattern could be designed to make patients produce an emotional experience that was usually neglected, and the emotional experience was strengthened as soon as it appeared. This process was repeated to achieve behavioral correction. |
| Cognitive review | Medical staff assigned corresponding tasks to patients so that patients could strengthen the newly established cognitive process and the correct cognitive concept in real life. |

Prognosis Quality

The follow-up data showed that the excellent rate of prognosis was 78.57% (55/70) in EG and 77.33% (58/75) in RG, with no significant difference in the excellent rate in both groups ($\chi^2=1.763, P=.623$) (see Figure 4).

Discussion

At present, the incidence of breast cancer in China has jumped to second place among female tumors in the world.¹⁴ According to the data, about 13.22% of women in the United States may suffer from

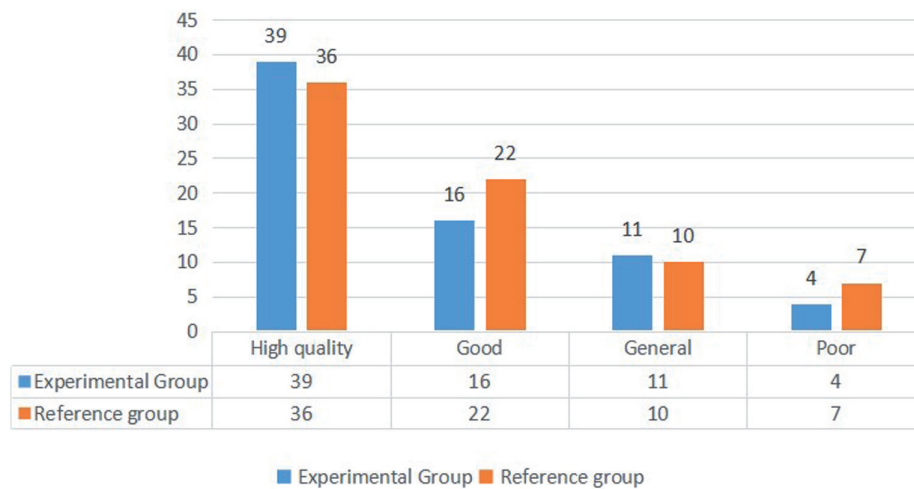


Figure 4. Comparison of prognosis quality were compared in both groups.

breast cancer.¹⁵ Radical mastectomy and modified radical mastectomy are the main treatment methods for breast cancer. Modified radical mastectomy for breast cancer completely removes the breast, which damages the body shape of women, seriously affects the patients' demand for physical beauty,^{16,17} and has a great impact on their image and psychology. Breast reconstruction can reconstruct a new breast with realistic shape, good hand feeling, and symmetry

with the opposite breast, which can avoid patients' psychological obstacles caused by breast loss after surgery and improve their quality of life and social image. However, this surgical method has a large wound and serious injury, and patients may suffer from anxiety and depression from wound pain, reduced comfort, and uncertainty about the quality of the prognosis.¹⁸ Negative emotions not only affect clinical compliance but may also affect the treatment process and prognosis. Based on the theoretical hypothesis that cognitive processes affect emotion and behavior,^{19,20} Beck's cognitive therapy, a kind of psychotherapy, can change patients' adverse cognition through cognitive and behavioral techniques. The application

Table 2. Comparison of Clinical Data in Both Groups

| Items | EG (n = 70) | RG (n = 75) | z | χ^2 | P |
|---|-------------------------|-------------------------|--------|----------|------|
| Mean age [M (P ₂₅ , P ₇₅), years] | 44.00 (40.00, 49.00) | 44.00 (40.00, 48.00) | -0.274 | - | .784 |
| BMI [M (P ₂₅ , P ₇₅) kg/m ²] | 22.55 (21.10, 24.30) | 22.70 (20.60, 24.60) | -0.150 | - | .880 |
| TNM stages | | | | 0.048 | .976 |
| Stage I | 36 (51.43) | 39 (52.00) | | | |
| Stage II | 19 (27.14) | 21 (28.00) | | | |
| Stage III | 15 (21.43) | 15 (20.00) | | | |
| Pathological types | | | | 0.118 | .998 |
| Invasive ductal carcinoma | 33 (47.14) | 34 (45.33) | | | |
| Invasive lobular carcinoma | 15 (21.43) | 16 (21.33) | | | |
| Intraductal carcinoma | 10 (12.86) | 11 (14.67) | | | |
| Mucinous carcinoma | 9 (12.86) | 10 (13.33) | | | |
| Metaplastic carcinoma | 3 (4.29) | 4 (5.33) | | | |
| Treatment programs | | | | 0.031 | .861 |
| Immediate breast reconstruction | 41 (58.57) | 45 (60.00) | | | |
| Delayed breast reconstruction | 29 (41.43) | 30 (40.00) | | | |
| Auxiliary treatment | | | | 0.121 | .941 |
| Chemotherapy | 31 (44.29) | 33 (44.00) | | | |
| Endocrine therapy | 21 (30.00) | 21 (28.00) | | | |
| Targeted therapy | 18 (25.71) | 21 (28.00) | | | |

BMI, body mass index; EG, experimental group; RG, reference group; TNM, tumor, node, metastasis.

Table 3. Comparison of Hamilton Anxiety Scale and Beck Depression Inventory Scores in Both groups at Different Stages [M (P₂₅, P₇₅)]

| Groups | EG (n = 70) | RG (n = 75) | z | P |
|--------|-------------------------|----------------------|--------|-------|
| HAMA | T0 40.50 (34.00, 48.00) | 41.00 (35.00, 49.00) | -0.584 | .559 |
| | T1 38.50 (33.00, 44.00) | 40.00 (34.00, 44.50) | -1.036 | .300 |
| | T2 31.00 (27.00, 36.00) | 37.00 (32.50, 43.50) | -4.524 | <.001 |
| | T3 24.00 (20.00, 29.00) | 29.00 (22.00, 36.50) | -3.280 | .001 |
| BDI | T0 26.00 (22.00, 30.00) | 25.00 (21.50, 30.50) | -0.277 | .781 |
| | T1 23.00 (18.00, 26.00) | 23.00 (18.00, 28.50) | -0.955 | .339 |
| | T2 17.00 (13.00, 21.00) | 23.00 (17.00, 28.00) | -4.987 | <.001 |
| | T3 15.50 (17.00, 20.00) | 21.00 (17.00, 23.50) | -4.662 | <.001 |

T0, T1, T2, and T3 stages represented 3 days before surgery, 1 month after surgery, 2 months after surgery, and 3 months after surgery, respectively.

BDI, Beck Depression Inventory; HAMA, Hamilton Anxiety Scale; EG, experimental group; RG, reference group.

Table 4. Comparison of Social Disability Screening Schedule Scores in Both Groups at Different Stages [M (P₂₅, P₇₅)]

| Groups | EG (n = 70) | RG (n = 75) | z | P |
|--------|---------------------|----------------------|--------|-------|
| T0 | 7.00 (4.00, 9.00) | 7.00 (4.00, 9.00) | -0.107 | .914 |
| T1 | 10.00 (7.00, 12.00) | 13.00 (10.00, 16.00) | -4.453 | <.001 |
| T2 | 9.00 (6.00, 11.00) | 11.00 (8.00, 14.50) | -4.404 | <.001 |
| T3 | 6.00 (3.00, 8.00) | 6.00 (4.00, 10.00) | -1.866 | .062 |

T0, T1, T2, and T3 stages represented 3 days before surgery, 1 month after surgery, 2 months after surgery, and 3 months after surgery, respectively.

EG, experimental group; RG, reference group.

of Beck therapy in clinical management is expected to regulate the negative emotions of patients with breast reconstruction.

Anxiety and depression are constantly changing and fluctuating.²¹ Therefore, this study conducted a longitudinal test on the 2 groups to observe their emotional fluctuations. The data of this study showed that the EG had obviously lower HAMA and BDI scores than the RG at T2 and T3 stages ($P < .05$), indicating that Beck's cognitive therapy effectively alleviates the depression and anxiety of patients. The reason is that Beck's cognitive therapy achieves cognitive treatment by correcting dysfunctional thinking. Most patients have serious depression and anxiety problems because they think that they are the center of everyone's attention and that they can only escape in a fragile and powerless way. Beck's cognitive therapy helps patients achieve decentralization,^{22,23} requiring them not to act in the same way as before and ignore excessive attention to their surroundings. However, in this study, both groups had no difference in HAMA and BDI scores at the T1 stage ($P > .05$). The reason may be that Beck's cognitive therapy needs a certain time period.²⁴ In addition, the small sample size may also lead to no significant difference in anxiety or depression in both groups at the T1 stage.

Considering the effects of physiological and psychological trauma on patients with breast reconstruction, this study conducted a questionnaire survey on the social function of such patients and measured their mental states on a behavioral basis. The data from this study showed that both groups had social disabilities at the T0 stage, indicating that breast reconstruction had a serious impact on patients. SDSS scores of the 2 groups increased remarkably at T1 stage and fell back at T2 and T3 stages, with a significant difference at T1-T2 stages ($P < .05$), manifesting that Beck's cognitive therapy combines cognitive change with behavioral training and pays attention to the correction and training of patients' external behavior.^{25,26} This study found that the SDSS scores of the 2 groups reached their peak at the T1 stage. The reason may be that the negative emotion and the uncertainty of prognosis have a great impact on patients after breast reconstruction, and at the same time, patients increase the sense of shame, social phobia, and other adverse psychology, so the SDSS scores at T0-T1 stages present a rising tendency.

After 3 months of follow-up, there was no significant difference in the excellent rate in both groups ($P > .05$), indicating that Beck's cognitive therapy had no remarkable effect on improving the excellent rate of breast reconstruction. The reason may be that Beck's cognitive therapy only corrects and improves the psychological problems of patients, especially the distorted cognition and adverse emotions and behavior of patients, so it has no obvious effect on the excellent rate after surgery.

There are some limitations to this study. Firstly, in view of the different levels of nursing staff during the implementation of Beck's cognitive therapy, there may be deviations in the actual treatment, thereby affecting the results. Secondly, this study did not collect objective data on patients' emotions, and the questionnaire survey was too subjective. Repeated collection of patient data using the same scale may cause fatigue and increase the error rate. Finally, this study is a longitudinal survey, and no horizontal investigation is carried out for patients with different pathologies and different treatment methods. Therefore, future research should increase objective observation

indicators, arrange multiple independent researchers for data collection, and carry out in-depth exploration in all aspects.

In summary, the implementation of Beck's cognitive therapy for patients with breast reconstruction can effectively improve their inner adverse emotions, reduce the sense of social disability, and promote postoperative rehabilitation, which has a certain clinical application value.

Availability of Data and Materials: Data to support the findings of this study are available on reasonable request from the corresponding author.

Ethics Committee Approval: This study was approved by the Ethics Committee of Tangshan People's Hospital (Approval No: 20200406).

Informed Consent: As a retrospective study, it is not necessary to obtain informed consent of patients.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – Y.W., Y.L., Ya.W., L.Y.Z., J.G.; Design – J.G., Y.L., Y.W., Ya.W.; Supervision – J.G., Y.L., Y.W., L.Y.Z.; Resources – Y.W.; Materials – Y.W., L.Y.Z., Ya.W.; Data Collection and/or Processing – Y.W., Y.L., J.G., Ya.W.; Analysis and/or Interpretation – Y.W., Y.L., J.G., L.Y.Z.; Literature Search – Y.L., Ya.W.; Writing – Y.L., Y.W., Ya.W., L.Y.Z., J.G.; Critical Review – Y.L., Y.W., L.Y.Z.

Declaration of Interests: The authors have no conflict of interest to declare.

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References

- Jokar N, Velikyan I, Ahmadzadehfar H, et al. Theranostic approach in breast cancer: a treasured tailor for future oncology. *Clin Nucl Med*. 2021;46(8):e410-e420. [\[CrossRef\]](#)
- Nigdelis MP, Karamouzis MV, Kontos M, Alexandrou A, Goulis DG, Lambrinoukaki I. Updates on the treatment of invasive breast cancer: quo Vadimus? *Maturitas*. 2021;145:64-72. [\[CrossRef\]](#)
- Bargon CA, Young-Afat DA, Ikinici M, et al. Breast cancer recurrence after immediate and delayed postmastectomy breast reconstruction: a systematic review and meta-analysis. *Cancer*. 2022;128(19):3449-3469. [\[CrossRef\]](#)
- Matar DY, Wu M, Haug V, Orgill DP, Panayi AC. Surgical complications in immediate and delayed breast reconstruction: a systematic review and meta-analysis. *J Plast Reconstr Aesthet Surg*. 2022;75(11):4085-4095. [\[CrossRef\]](#)
- Gilmour A, Cutress R, Gandhi A, et al. Oncoplastic breast surgery: a guide to good practice. *Eur J Surg Oncol*. 2021;47(9):2272-2285. [\[CrossRef\]](#)
- Salibian AA, Olson B, Shauly O, Patel KM. Oncoplastic breast reconstruction: principles, current techniques, and future directions. *J Surg Oncol*. 2022;126(3):450-459. [\[CrossRef\]](#)
- Sylvia M. Using values in cognitive and behavioral therapy: a bridge back to philosophy. *J Eval Clin Pract*. 2023;29(3):1189-1195.
- Katayama N, Nakagawa A, Umeda S, et al. Cognitive behavioral therapy effects on frontopolar cortex function during future thinking in major depressive disorder: a randomized clinical trial. *J Affect Disord*. 2022;298(A):644-655. [\[CrossRef\]](#)
- World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191-2194. [\[CrossRef\]](#)
- Thompson E. Hamilton Rating scale for anxiety (HAM-A). *Occup Med (Lond)*. 2015;65(7):601. [\[CrossRef\]](#)
- Wang YP, Gorenstein C. Psychometric properties of the Beck Depression Inventory-II: a comprehensive review. *Braz J Psychiatry*. 2013;35(4):416-431. [\[CrossRef\]](#)

12. Linden M. Definition and assessment of disability in mental disorders under the perspective of the international classification of functioning disability and health (ICF). *Behav Sci Law*. 2017;35(2):124-134. [\[CrossRef\]](#)
13. Yongzhou L. Effect of immediate breast reconstruction after modified radical resection of nipple-sparing areola breast cancer on patient quality of life and long-term prognosis. *Clin Med Res Pract*. 2019;4(22):18-19.
14. Bustos VP, Laikhter E, Manstein SM, et al. A national analysis of outpatient mastectomy and breast reconstruction trends from 2013 through 2019. *J Plast Reconstr Aesthet Surg*. 2022;75(9):2920-2929. [\[CrossRef\]](#)
15. Ticha P, Wu M, Mestak O, Sukop A. Evaluation of the number of follow-up surgical procedures and time required for delayed breast reconstruction by clinical risk factors, type of oncological therapy, and reconstruction approach. *Aesthet Plast Surg*. 2022;46(1):71-82. [\[CrossRef\]](#)
16. Hui CA, Kimberley L, Sze PW, et al. Quality of life, pain of prepectoral and subpectoral implant-based breast reconstruction with a discussion on cost: a systematic review and meta-analysis. *J Plast Reconstr Aesthet Surg*. 2022;75(8):2550-2560. [\[CrossRef\]](#)
17. Hwang YJ, Lee HC, Park SH, Yoon ES. A comparative study of breast sensibility and patient satisfaction after breast reconstruction: autologous, 2-stage implant-based, and prepectoral direct-to-implant reconstruction. *Ann Plast Surg*. 2022;88(3):262-270. [\[CrossRef\]](#)
18. Mericli AF, Chu CK, Sisk GC, et al. Microvascular breast reconstruction in the era of value-based care: use of a Cosurgeon is associated with reduced costs, improved outcomes, and added value. *Plast Reconstr Surg*. 2022;149(2):338-348. [\[CrossRef\]](#)
19. Suma P. *Cognitive Behavior Therapy*. Treasure Island, FL: StatPearls Publishing; 2023.
20. van Bentum JS, van Bronswijk SC, Sijbrandij M, et al. Cognitive therapy and interpersonal psychotherapy reduce suicidal ideation independent from their effect on depression. *Depress Anxiety*. 2021;38(9):940-949. [\[CrossRef\]](#)
21. Gilliam FG, Black KJ, Carter J, et al. A trial of sertraline or cognitive behavior therapy for depression in epilepsy. *Ann Neurol*. 2019;86(4):552-560. [\[CrossRef\]](#)
22. Markowitz John C, Beck A. Aaron Beck. *Am J Psychother*. 2021;74(4):139. [\[CrossRef\]](#)
23. Mendlowicz Mauro V, Levitan Michelle N, Nardi Antonio E, et al. The notable humanist and scientist Aaron Beck (1921-2021), the revolutionary founder of cognitive therapy. *Braz J Psychiatry*. 2022;44:221-222.
24. Renata M, Agnieszka M-G, Beata D, et al. Improving clinical, cognitive, and psychosocial dysfunctions in patients with schizophrenia: a neurofeedback randomized control trial. *Neural Plast*. 2021;2021:4488664.
25. Klug G, Seybert C, Ratzek M, Grimm I, Zimmermann J, Huber D. Not available. *Z Psychosom Med Psychother*. 2022;68(1):54-73. [\[CrossRef\]](#)
26. Kazantzis N, Carper MM, McLean CP, Sprich SE. Editorial: applications of cognitive and behavioral therapy in response to COVID-19. *Cogn Behav Pract*. 2021;28(4):455-458. [\[CrossRef\]](#)