ISSN 2706-6819 Vol.6, Issue 10: 59-65, DOI: 10.25236/IJFM.2024.061010

Study on the quality of life in convalescent young breast cancer patients: A randomized controlled feasibility trial

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Abstract: *To explore the intervention effect of expressive writing on the quality of life in convalescent young breast cancer patients. A total of eighty young breast cancer patients were randomly divided into control group and observation group, with 40 cases in each group. The control group received routine health education, while the observation group underwent three sessions of expressive writing intervention in addition to routine health education. A longitudinal study was conducted to follow up the breast cancer patients before the intervention and 1 month after the intervention, using the Functional Assessment of Cancer Therapy-Breast Cancer. The research results show that the overall quality of life and physiological condition scores of the observation group were significantly higher after intervention than before intervention (P<0.05); After intervention, the overall quality of life and physiological condition scores of the observation group were significantly higher than those of the control group (P<0.05). Expressive writing can improve the quality of life of young breast cancer patients during the rehabilitation period.*

Keywords: *Expressive writing, Breast cancer, Quality of life, Intervention Study*

1. Introduction

Breast cancer is a common malignant tumor among young women. With the promotion of early screening for breast cancer and the advancement of diagnosis and treatment techniques for breast cancer, the 5-year survival rate of breast cancer patients has significantly increased, and it has become common for patients to enter the rehabilitation period after clinical treatment [1, 2]. Young breast cancer patients are in the prime of their lives. They face issues such as impaired body image, concerns about fertility, fear of cancer recurrence, and changes in social and family roles due to the disease. As a result, they commonly experience negative psychological states such as anxiety, fear, and depression, which seriously affect their quality of life [3-5]. Adjusting their physical and mental conditions and returning to a normal life have become urgent needs for young breast cancer patients in the rehabilitation period. The Expressive Writing is a psychological intervention method that enables individuals to disclose and express their feelings and thoughts related to an important or traumatic event through the act of writing, thereby achieving emotional disclosure and regulating emotional and cognitive processes to promote health [6]. Relevant studies have shown that expressive writing can reduce anxiety and depression levels, alleviate post-traumatic stress symptoms, and improve quality of life [7-9]. This study aims to explore the impact of expressive writing on the quality of life of young breast cancer patients in the rehabilitation period and provide a reference for the rehabilitation care of these patients.

2. Methods

2.1. Participants

This study employed the convenience sampling method to select 80 young female breast cancer patients in the rehabilitation period who visited the oncology department of a tertiary Grade A hospital in Guangdong Province and participated in health education activities from March to September 2023 as the research subjects. The inclusion criteria were as follows: (1) aged 18-44 years; (2) pathologically diagnosed with breast cancer and in the rehabilitation period: more than half a year since the onset and more than 2 months since the end of treatment, with a Karnofsky Performance Status score of more than

ISSN 2706-6819 Vol.6, Issue 10: 59-65, DOI: 10.25236/IJFM.2024.061010

80 points [10]; (3) provided informed consent and cooperated with the research process. The exclusion criteria were as follows: (1) patients with recurrence or metastasis; (2) those with a history of mental illness; (3) those who have recently experienced other stressful events. Through the random number table, the research subjects were randomly divided into an expressive writing group (intervention group, IG) or a treatment-as-usual group (control group, CG), each group of 40 people. 1individuals in the intervention group and 3 individuals in the control group failed to complete the entire research process. Eventually, 39 individuals in the intervention group and 37 individuals in the control group completed the study, and the data of these 76 subjects will be used for data analysis.

2.2. Measures

2.2.1. Basic Information Questionnaire

The questionnaire comprises two main sections: (1) Demographic information, including age, educational level, marital status, living situation, work status, and average monthly household income; (2) Disease-related information, such as disease stage and surgical approach.

2.2.2. Functional Assessment of Cancer Therapy-Breast Cancer (FACT-B)

Developed by Cella et al. and adapted by Wan Chonghua et al., the FACT-B scale boasts a Cronbach's α coefficient of 0.89, indicating its widespread applicability among breast cancer patients. The FACT-B encompasses five domains: Physical Well-being, Social/Family Well-being, Emotional Well-being, Functional Well-being, and Additional Concerns, totaling 36 items. The Likert 5-point scale is employed, with patients rating each item on a scale of 0 to 4 based on their level of agreement or experience, resulting in a maximum possible total score of 144. A higher score signifies a better quality of life [11].

2.3. Study Design

2.3.1. Intervention plan

Both the intervention group and the control group participated in a four-week breast cancer rehabilitation health education activity and filled in basic information in the first week. The control group only participated in the health education activity and did not engage in expressive writing. The intervention group began expressive writing from the second week. For the first time, they were required to write down their innermost feelings and thoughts during the breast cancer experience. For the second time, they wrote about the pressures and coping strategies they faced during the breast cancer experience. For the third time, they wrote down the positive thoughts and feelings since the onset of the disease. Questionnaires were filled out at two time points: before the intervention(T0) and one month after the intervention(T1). After the questionnaire, a telephone return visit was conducted for the intervention group, and the question was, "Please describe the changes and gains you have felt during this period." The research team consisted of oncologists, nurses, graduate students, and the researcher himself/herself. Oncologists and nurses recruited participants and conducted health education activities. Graduate students and the researcher himself/herself participated in the recruitment and were responsible for the expressive writing intervention and questionnaire collection. The research design and methods of this study were reviewed and approved by the hospital's medical ethics committee.

2.3.2. Intervention process

Postoperative breast cancer patients who met the inclusion criteria were recruited by the oncologists in the outpatient department of the research team. The purpose, content, and methods used in the study were explained to obtain their informed consent. Patients were introduced to relevant disease knowledge after breast cancer surgery, and a WeChat group was established to provide assistance for subsequent guidance and establish a trusting relationship. The first questionnaire data was filled out by the research subjects on-site, using a uniform guideline provided by the researcher, who completed it independently. The data was verified and collected on-site. The expressive writing intervention lasted for three weeks, with writing sessions once a week for 20-30 minutes, completed alone at home. After the health education activity each week, patients in the intervention group received a sealed envelope marked with the date, which contained writing instructions and paper for writing. The researcher reminded the patients to write according to the instructions in the envelope this week, and to put the completed writing back in the envelope and seal it before the three-week writing intervention was over, and then give it to the researcher. The researcher reminded the participants to complete the online questionnaire task via WeChat one month after the intervention.

ISSN 2706-6819 Vol.6, Issue 10: 59-65, DOI: 10.25236/IJFM.2024.061010

2.4. Data Analysis

A database was established using Excel, and data analysis was performed using SPSS 21.0.The t-test and chi-square test were used to compare the differences between the two groups, Statistical significance was set at $p < 0.05$.

3. Results

3.1. Sample Characteristics

There was no statistically significant difference (P>0.05) between the two groups of patients in terms of age, education level, marital status, occupational status, average monthly household income, disease stage, and surgical method, as shown in Table 1.

Table 1: Comparison of sociodemographic characteristics between IG and CG.

	CG(N=37)	IG(N=39)	$t/\chi 2$	p
Age(years), (M±SD)	37.03±6.36	37.84±5.98	0.421	0.737
Education				
Middle school or below	5	6	0.253	0.849
High school or junior college	13	15		
College or above	19	18		
Marital status				
Married	28	30	0.132	0.747
Single	9	8		
Occupational status				
On duty	25	24	0.363	0.597
not on duty	12	15		
Monthly income				
<3000	10	9	0.502	0.799
3000-5000	15	19		
>5000	12	11		
Stage of breast cancer				
I	10	9	0.201	0.867
II	20	212		
III	7	8		
Type of breast surgery received				
Breast conservation treatment	7	7	0.277	0.932
Breast reconstruction	19	21		
Mastectomy	12	11		

3.2. Comparison of FACT-B questionnaire scores between the two groups

3.2.1. Overall quality of life scores

There was no statistically significant difference in overall quality of life scores between the control group before and after intervention, while the intervention group had higher scores after intervention than before (P<0.05). There was no statistically significant difference in overall quality of life scores between the control group and the intervention group before intervention, and the intervention group had higher overall quality of life scores than the control group after intervention ($P < 0.05$).

3.2.2. Physical well-being dimension scores

There was no statistically significant difference in physical well-being dimension scores between the control group before and after intervention, while the intervention group had higher scores after intervention than before (P<0.05). There was no statistically significant difference in physical well-being dimension scores between the control group and the intervention group before intervention, and the intervention group had higher physical well-being dimension scores than the control group after intervention ($P < 0.05$).

3.2.3. Social/family well-being dimension scores

There was no statistically significant difference in social/family well-being dimension scores between the control group and the intervention group before and after intervention.

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3.2.4. Emotional well-being dimension scores

There was no statistically significant difference in emotional well-being dimension scores between the control group and the intervention group before and after intervention.

3.2.5. Functional well-being dimension scores

There was no statistically significant difference in functional well-being dimension scores between the control group and the intervention group before and after intervention.

3.2.6. Additional focus dimension scores

There was no statistically significant difference in additional focus dimension scores between the control group and the intervention group before and after intervention, as shown in Table 2.

Table 2: Comparison of FACT-B questionnaire scores between IG and CG.

Measure	Group	T0	T1	*t*	P
Overall quality of life	CG(N=37)	95.36±22.14	94.33±20.862	0.849	1.060
	IG(N=39)	93.00±23.584	103.46±17.031	-2.206	0.030
	t	0.680	-2.062		
	P	2.387	0.043		
Physical well-being dimension	CG(N=37)	19.76±5.445	19.91±5.613	0.946	-0.089
	IG(N=39)	18.97±6.464	22.48±4.153	-2.796	0.007
	t	0.547	-2.234		
	P	0.851	0.029		
Social/family well-being dimension	CG(N=37)	18.089±5.21	18.41±6.101	0.668	0.616
	IG(N=39)	18.68±5.933	20.58±4.980	-1.517	0.134
	t	0.804	-1.678		
	P	0.346	0.098		
Emotional well-being dimension	CG(N=37)	17.284±4.08	17.10±4.317	0.830	0.242
	IG(N=39)	17.22±5.403	18.54±3.858	-1.237	0.220
	t	0.920	-1.17		
	P	0.125	0.246		
Functional well-being dimension	CG(N=37)	18.281±5.67	17.09±4.887	0.440	1.321
	IG(N=39)	17.22±6.667	19.27±4.866	-1.168	0.246
	t	0.517	-1.917		
	P	1.196	0.059		
Additional focus dimension	CG(N=37)	20.53±6.83	21.81±6.111	0.514	-1.029
	IG(N=39)	20.91±6.083	22.47±5.470	-0.176	0.476
	t	0.932	-0.486		
	P	-0.131	0.628		

4. Discussion

The results of this study showed that the overall quality of life scores of the control group and the intervention group of young breast cancer patients in the rehabilitation period before the intervention were (95.39 ± 26.07) and (94.79 ± 24.62) respectively, which were higher than the survey results of Shen Aomei, Cai Jianping, Ning Fan, etc. on breast cancer patients in China [12-14], but lower than the survey research on young breast cancer patients by Maribel, Lianne, etc. [15, 16] abroad, especially in the emotional condition and functional condition dimensions, the scores were relatively low. The subjects of this study were young breast cancer patients in the rehabilitation period, with an average age of (37.66 ± 5.59) and (38.16 ± 5.55) respectively. The patients had been diagnosed for more than half a year and had completed treatment for more than 2 months, and the Karnofsky performance status score was > 80 points. Young breast cancer patients performed better than middle-aged and elderly breast cancer patients and patients in the treatment period in terms of physical condition, additional concerns related to breast cancer, etc. However, young breast cancer patients play important roles and responsibilities in the family and society. The diagnosis and treatment process of the disease inevitably affect career development and work performance, reduce family and social roles, and increase the economic burden. Stigma is a negative emotion felt by patients and is caused by the isolation of the mainstream group's negative cognition of the patient. Breast cancer patients generally have a sense of stigma [17]. The diagnosis and treatment of breast cancer bring physical and psychological changes, which will cause continuous stress to the patient, and the patient is prone to feeling social exclusion and the shame of being stigmatized [18, 19]. Countries in Europe and the United States have relatively developed economies, superior social

ISSN 2706-6819 Vol.6, Issue 10: 59-65, DOI: 10.25236/IJFM.2024.061010

welfare and medical environments. Patients in Western individualistic cultures are more likely to accept the disease and actively seek help, while patients in Eastern collectivist cultures have a stronger sense of stigma [20]. Young breast cancer patients' concerns about their health status and inability in work and family roles will affect the quality of life of patients in the emotional and functional dimensions.

The research results show that the overall quality of life and physiological condition scores of the intervention group were significantly higher after intervention than before intervention ($P<0.05$); After intervention, the overall quality of life and physiological condition scores of the intervention group were significantly higher than those of the control group ($P<0.05$). From the empirical perspective, it was confirmed that expressive writing has a positive significance in improving the quality of life of young breast cancer patients in the recovery period, which is consistent with the results of other expressive writing interventions for breast cancer patients [21, 22].

The theoretical model of this expressive writing research design is emotional disclosure, narrative expression, and benefit discovery. The theoretical model of this expressive writing study design is emotional disclosure, narrative expression, and benefit discovery. In the first week, emotional disclosure is triggered by writing about deep feelings and thoughts related to breast cancer experiences. Breast cancer patients often hide their illness and avoid social interactions during the stressful events of diagnosis and treatment. "I didn't dare tell my family at first. I was alone in the hospital, and the doctor even said I was optimistic. But in fact, I was very depressed inside." In Chinese cultural context, it is often believed that "family secrets should not be spread outside" and "illness is not a glorious thing." For many people, it is difficult to express their personal experiences and painful emotions through verbal expression. Expressive writing can disclose the inner emotions and thoughts of breast cancer patients in a private way. "I am grateful for the opportunity to participate in this study, which allows me to express myself freely through writing and tell my story." Research by expressive writing founder Pennebaker has found that exposure and expression of negative emotions and traumatic experiences can reduce the pressure caused by traumatic experiences and negative emotions [6].

In the second week, narrative expression is emphasized through writing about the pressure and coping strategies faced during breast cancer experiences. Narrative is a verbal act and a fundamental mode of human cognition, through which people construct a meaningful experience of their life events [23]. Expressive writing serves as a narrative vehicle, a process of clarifying inner experiences through written language. By writing about negative event memories and organizing scattered fragments of consciousness into a narrative, the experience of breast cancer pressure events is reconstructed, increasing the awareness of breast cancer pressure events and improving the psychological experience of cancer. Klein et al.'s study found that expressive writing can effectively reduce intrusive thoughts [24]. "Cancer is like a bomb that tore my life apart. But writing for a sustained period of time seems to have helped me put the pieces back together. It's like a story, a story of the past. I want to retell this story."Chu et al.'s research on expressive writing in breast cancer patients found that expressive writing can reduce patients' high alertness symptoms, reduce the invasive and avoidance symptoms of cancer as a stress event, and help patients recover [25-26].

In the third week, guide patients to discover benefits by writing about their positive thoughts and feelings since falling ill. Post traumatic growth refers to the positive changes that occur in an individual during the process of experiencing a traumatic event. Relevant studies have found that breast cancer patients have experienced disease adaptation and control, and started to actively reflect on disease and life. Six months after the operation, they experienced post-traumatic growth of cancer [27, 28]. Tedeschi, the proposer of the concept of posttraumatic growth, believes that an individual's cognitive processing of traumatic information is a key process in generating posttraumatic growth, and self disclosure is an important factor in posttraumatic cognitive processing [29-30]. Cancer, as a traumatic event, has impacted an individual's original worldview, disrupted their original life order, and brought about a high degree of uncertainty. At that time, every day was spent in fear and anxiety, because you didn't know what bad things might happen again. "During the self disclosure process of cancer events, patients would see the pain of the disease and the power of life, and begin to accept themselves, the disease, and changes in rumination. Since that's the case, let's go with the flow, follow the changes, and also let ourselves change. "The patient began to reflect on their past lifestyle due to the disease and tried new healthy lifestyles. Previously, there was no concept of healthy eating or exercise, and people who indulged in overeating and worked overtime all night only now realize that eating slowly is the key to taste and living a regular life is the key to longevity. Patients who have experienced cancer events will develop a "survivor mission" during their recovery period, transforming their perception of vulnerability and distrust after trauma into a more positive view of others and the world. Now I don't complain about this disease anymore. It allows me to see the true feelings of humanity, return to my family, and truly understand life.

ISSN 2706-6819 Vol.6, Issue 10: 59-65, DOI: 10.25236/IJFM.2024.061010

"Cafaro, Gallagher, and others' research on cancer patients also shows that expressive writing has a positive effect on post-traumatic growth in cancer, promoting cancer patients' cognitive reevaluation and meaning discovery of the disease and life [31,32].

5. Conclusions

In conclusion, this study confirms that expressive writing has a positive significance in improving the quality of life of young breast cancer patients during the recovery period. However, the study is limited by its single-center design and sample size, which may lead to limitations in data analysis. In the follow-up study, a large-scale, multi-center, clinical randomized controlled trial will be conducted, and further qualitative analysis of the content of expressive writing texts will be explored to gain a deeper understanding of the clinical effects and mechanisms of expressive writing.

Acknowledgements

We would like to thank the breast cancer survivors who participated in this study and contributed to its accomplishment.

Funding

This work was supported by a grant from the Guangdong Philosophy and Social Sciences 13th Five Year Plan Project (GD20XXL06)

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