



The Effect of a Bioenergy Economy-Based Program on the Wellbeing of Patients with Breast Cancer

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Quantitative Study

Abstract

Background: Breast cancer is the most prevalent cancer among women, with various complications and morbidities due to treatment modalities. Most patients suffer from psychological problems, including depression, anxiety, poor quality of life, and sleep. Bioenergy Economy (BEE)-based program is an integrative mind-body care model that targets the development of individuals' well-being. This study aimed to evaluate the effect of the BEE program on the four factors of depression, anxiety, quality of life, and sleep quality in patients with breast cancer.

Methods: This study was a clinical trial on 20 patients with the stage I-III of breast cancer who were referred to an oncologist in Isfahan, Iran. The candidates were selected by the convenience sampling method and the BEE protocol was done for all of the patients in 8 sessions. Depression, anxiety, quality of life, and sleep quality of the patients were assessed by Hospital Anxiety and Depression Scale (HADS), 36-Item Short Form Health Survey (SF-36), and Pittsburgh Sleep Quality Index (PSQI) questionnaires, respectively. The trial had no control group. All assessments were done in 3-time courses consisting of before the intervention, immediately after, and one year after the intervention.

Results: This study evaluated 20 patients with breast cancer. The mean score of depression and anxiety significantly decreased immediately after the intervention and then significantly increased in a 1-year follow-up ($P = 0.003$ and $P = 0.014$, respectively, for depression and $P = 0.006$ and $P = 0.003$, respectively, for anxiety). Evaluating the quality of life in different 8 subscales showed significant changes in subscales of physical functioning and social role functioning immediately after the intervention and in the 1-year follow-up in comparison with the pre-test ($P = 0.007$ and $P = 0.005$, respectively). The mean score of sleep quality was increased immediately after the intervention and also during the 1-year follow-up.

Conclusion: The BEE program can be considered a psycho-oncology intervention in patients with breast cancer, alongside their conventional treatments. The findings suggest that for the sustained mental health of patients with cancer, a continuous BEE practice might be demanded.

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Keywords: Mind-body therapies; Breast neoplasms; Behavioral medicine; Psycho-oncology

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Introduction

Breast cancer is the most common cancer among women, with an incidence of 2.3 million cases annually, and one of the leading causes of death in women, with an incidence of 685000 deaths annually around the world (Sung et al., 2021). It is expected to reach 4.4 million individuals by 2070 (Soerjomataram & Bray, 2021). Breast cancer is also prevalent in the Iranian population, with a standard incidence rate of 28%, and is the fifth cause of Iranian women's death (Shamshirian et al., 2020).

According to improvements in screening and treatment services for breast cancer, the mortality rate is decreased (Allemani et al., 2015). Despite this improvement in survival rate, the aggressiveness of treatment modalities has encountered patients with side effects and morbidities. Indeed, cancer per se and treatment-related symptoms are the major stressors in patients with breast cancer who endured various therapy types (Jim, Andrykowski, Munster, & Jacobsen, 2007). These stressors can remarkably affect the patient's quality of life in physical, psychological, and social aspects (Van Dijck, Nelissen, Verbelen, Tjalma, & Gebruers, 2016).

Around half of the patients with cancer suffer from psychological discomforts due to its diagnosis and treatment (Mehnert et al., 2014). The prevalence of mental health problems in patients with breast cancer is 40%-50%, with superiority of depression and anxiety (Kuhnt et al., 2016). Accordingly, depression and anxiety hold 13%-54% of psychological complications based on the type of cancer and its stage (Hopwood, Haviland, Mills, Sumo, & Bliss, 2007; Burgess, Cornelius, Love, Graham, Richards, & Ramirez, 2005; Nikbakhsh, Moudi, Abbasian, & Khafri, 2014; Tsaras et al., 2018; Jacob, Bleicher, Kostev, & Kalder, 2016). Another problem in patients with breast cancer is sleep disorders found in 67%-90% of the survivors (Otte et al., 2016). Sleep disorders in these patients were associated with a high level of distress and usually were untreated or under-treated, resulting in a poor quality of life (Vargas et al., 2014; Savard, Simard, Ivers, & Morin, 2005; Habibi, Simard, Ivers, & Morin, 2016).

There are medical and non-medical treatments for psychological disorders, complications, and cancer morbidities. A meta-analysis reported that for treating depression and anxiety, there was no superiority of antidepressant medications over placebo (Ostuzzi, Matcham, Dauchy, Barbui, & Hotopf, 2015). Moreover, it has been reported that psychotherapy was more effective than medical therapy due to these patients' low tolerance to antidepressant consumption (Lloyd-Williams, Payne, Reeve, & Kolamunnage, 2013; Okamura et al., 2008). Accordingly, both patients with cancer and random healthy individuals were found to prefer psychotherapy over medical therapy in depression and anxiety treatment (Okuyama et al., 2007; McHugh, Whitton, Peckham, Welge, & Otto, 2013). Evidence showed that a combination of psycho-physical treatments and complementary/alternative medicine was effective in improving psychological symptoms caused by the diagnosis and treatment of cancer (Faller, Schuler, Richard, Heckl, Weis, & Kuffner, 2013). In addition, psychoeducation, mindfulness, and cognitive behavioral therapy (CBT) methods were found to have an effective role in alleviating breast cancer symptoms (Setyowibowo et al., 2022; Wu, Chen, Huang, Chang, & Hsu, 2018; Bower et al., 2015; Kenne, Martensson, Andersson, Karlsson, & Bergh, 2017; Ye et al., 2018; Zhang, Huang, Feng, Shao, & Chen, 2017).

Moreover, a less-touched approach named Bioenergy Economy (BEE) has been recently introduced to enhance patients' well-being. BEE is an integrative model of care that coheres cognitive, behavioral, physically energetic, mindful, and

transpersonal modalities of an individual. BEE targets the sustained development of happiness by optimizing timely investments of energy. By developing body awareness and mind-body integrity, BEE concludes this integrated energy toward salutogenesis (Goli, 2018; Everybodywiki, 2022; Antonovsky, 1979). The effectiveness of the BEE program has been evaluated in former studies on migraine, high anxiety sensitivity, and tethered cord syndrome. The results showed modification of depression, anxiety, and pain in patients with migraine. Besides, decreased anxiety scores in patients with high anxiety sensitivity and alleviated symptoms in tethered cord syndrome manifestations were recorded (Derakhshan, Manshaei, Afshar, & Goli, 2016; Goli & Boroumand, 2016). There were no prior investigations of the BEE approach on patients with cancer.

According to the benefits described above regarding BEE and the lack of gold standard psychotherapy for breast cancer-related complications and morbidities, this study aimed to evaluate the effectiveness of the BEE program on depression, anxiety, sleep quality, and quality of life of patients with breast cancer in Isfahan, Iran.

Methods

This study was a clinical trial on patients with breast cancer who were referred to an oncologist between the years 2016 to 2017 in Isfahan. Candidates were selected by the convenience sampling method. All patients who had active medical files in the clinic were selected and called to the trial. As a result, the study could recruit 20 individuals. This work investigated no control group. The inclusion criteria were age between 18-60 years old, having stage I-III of breast cancer staging system [National Library of Medicine (NLM), 2014], chemotherapy with or without radiotherapy treated, no reception of chemotherapy or radiotherapy during the last three months (due to the malaise-related inability to participate in the program), and patient's willingness to participate in this study. Exclusion criteria were a history of receiving any type of psychotherapy during cancer treatment, prior psychiatric diseases, prior consumption of psychiatric medications, and unwillingness to continue the study. The study was completely explained to the participants and informed consent was taken following the procedures outlined by the institutional review board. Patients were informed that they could withdraw from the experiment at any time. The optimum sample size benefited from all the 20 mentioned individuals, as there were no more volunteers for the study. All participants received the BEE protocol. Therapeutic and training principles of BEE intervention were based on the "Bioenergy Economy" package of the Energy Medicine University, California, the United States (US), established by Goli (2010). This protocol was planned in eight training sessions (1 session per week, 160 minutes each) and participants were asked to daily perform the taught tasks during the following week. All sessions included educational and clinical instructions. The protocol was focused on training conscious release of tension in muscles, cognition, and bioenergy levels. In addition, a conscious guide of will, body awareness, and stress release relaxation techniques were taught. The procedure was performed by a skillful psychologist who had been trained in the subject before. The content of each session is shown in table 1.

Demographic data including age, marital status, education level, and disease data including type of breast cancer and its stage were extracted from the patients' documents. Depression, anxiety, sleep quality, and quality of life of participants were assessed before the intervention, immediately after, and one year after the intervention. Metrics were evaluated by the standard questionnaires as follows:

Table 1. The contents of each session in Bioenergy Economy (BEE) program

Session	Topic	Subject	Exercise
1	Relaxation	Work-burden/mind-body coordination, stress response/release	Abdominal breathing/gradual relaxation/body purification
2	Tensegrity	Somatic memory, armor/integrity-safety	Vibration/tensegrity exercises
3	Body awareness	Body sense, salutogenesis	Body awareness (superficial, deep, balanced, and visceral senses)
4	Attention work	Attention skewness/conscious direction of attention, danger brain-communication brain/gratitude	Attention/gratitude exercises, bioenergy work
5	Narrative work	Narrative skewness (resentment/blame/greed/melancholia), non-life/self-care bias, time and narration (memory reconstruction)/narration and body tune	Body caress, lack of interpretation, pragmatic speech, body awareness
6	Relation work	Relation-nature/selves/avoidance of rejection/limit and love/in-field and synergy/relational body	Positive no/sharing, biofield work
7	Liberation from non-life (forgiveness: inter/intrapersonal)	Death instinct/fate of repetition /stabilized anger/why we do not forgive/value bias/body bias	Biofield work/refining resentments (forgiveness with guided imagination), body purification
8	Path of love (forgiveness: transpersonal)	Transpersonal dimension/openness to whole/unconditioned health providing/kindness: mature defense/submission/intentional force	Wholeheartedness, love meditation (transpersonal forgiveness)

Hospital Anxiety and Depression Scale (HADS): This questionnaire was used to assess depression and anxiety with 14 items in 2 subscales (each one has 7 items). Each subscale was scored from 0 to 21 and was categorized as normal (0-7), borderline (8-10), and abnormal (11-23). The sensitivity and specificity of this scale were more than 80% in previous studies (Bjelland, Dahl, Haug, & Neckelmann, 2002). Recent studies demonstrated strong reliability and validity of the questionnaire's scales (Al Aseri et al., 2015; Djukanovic, Carlsson, & Arestedt, 2017).

Pittsburgh Sleep Quality Index (PSQI): This questionnaire was used to assess sleep quality with 19 items on 7 scales of overall sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, need for medication to sleep, and daytime dysfunction due to sleepiness. Each scale is scored from 0 to 3 and the total score ranges from 0 to 21. Scoring more than 5 was considered as poor sleep quality and insomnia. This questionnaire also had high (> 85%) sensitivity and specificity (Backhaus, Junghanns, Broocks, Riemann, & Hohagen, 2002). Profound studies demonstrated strong reliability and validity of the questionnaire (Spira et al., 2012; Farrahi, Nakhaee, Sheibani, Garrusi, & Amirkafi, 2012)

36-Item Short Form Health Survey (SF-36): This questionnaire was used to evaluate health status in different 8 parts including vitality, physical functioning, bodily pain, general health perception, physical role functioning, emotional role functioning, social role functioning, and mental health. The lower score showed more disability in this questionnaire. Previous studies showed this scale's sensitivity and specificity above 85% (Motamed, Ayatollahi, Zare, & Sadeghi-Hassanabadi, 2005). Recent studies demonstrated strong reliability and validity of the questionnaire parameters and its applicability to breast cancer (Asghari Moghaddam & Faghehi, 2003; Treanor & Donnelly 2015; Zhou et al., 2019).

Data from all participants were entered into SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA) and then analyzed. The quantitative and qualitative data were reported by mean \pm standard deviation (SD) and number and percent, respectively. For analyzing data, repeated measures analysis of variance (ANOVA) was used. P-values of less than 0.05 were considered statistically significant in all analyses.

Results

In this study, 20 patients with breast cancer were selected based on inclusion criteria. Of them, 4 participants did not continue the study. Thus, the data of 16 patients were analyzed. The mean age of participants was 49.00 ± 4.32 years (ranging from 40 to 56 years). Thirteen patients (81.25%) were married, one (6.25%) was single, and two patients (12.5%) were divorced. The education level was under diploma in 56.25% (n = 9) of the patients, and 43.75% (n = 7) had a diploma or above literacy.

Depression and anxiety: The mean score of depression significantly decreased immediately after the intervention and then significantly increased in a 1-year follow-up (P = 0.003 and P = 0.014, respectively). There was no significant difference between the pre-test and the 1-year follow-up (P = 0.95). The repeated measure test showed a significant difference in depression scores at different times of evaluation (P = 0.003). Variables were scaled into normal, borderline, and abnormal categories. Data of the normal category (P = 0.089) were as follows: before intervention: 56.2% (n = 9), immediately after intervention: 93.1% (n = 15), and follow-up: 87.5% (n = 14) (Tables 2 and 3).

Similarly, the mean score of anxiety was significantly decreased immediately after the intervention and significantly increased in the 1-year follow-up (P = 0.006 and P = 0.003, respectively). There was no significant difference between the pre-test and the 1-year follow-up (P = 0.48). The repeated measure test showed a significant difference in scores of anxiety at different times of evaluation (P = 0.001). Variables were scaled into normal, borderline, and abnormal categories. Data of the normal category (P = 0.056) were as follows: before intervention: 75% (n = 12), after intervention: 93.8% (n = 15), and follow-up: 56.2% (n = 9) (Tables 2 and 3).

Sleep quality: The mean score of sleep quality was increased immediately after the intervention and also during the 1-year follow-up although the increases were not statistically significant (P = 0.76 and P = 0.19, respectively). The repeated measure test did not show a significant difference between the mean score of the PSQI questionnaire at different times of evaluation (P = 0.058). Data that were considered as poor sleep quality (P = 0.17) were as follows: before intervention: 81.25% (n = 13), after intervention and follow-up: 87.5% (n = 14) (Tables 2 and 3).

Quality of life: Evaluating the quality of life in different 8 subscales showed significant changes in subscales of physical functioning and social role functioning (based on repeated measure test, P = 0.007 and P = 0.005, respectively). In the mentioned subscales, the quality of life was improved immediately after the intervention and in the 1-year follow-up (in comparison with the pre-test). In the other six subscales, the score change was not statistically significant (P > 0.005) (Table 2).

Discussion

This study evaluated the effects of the BEE program on depression, anxiety, sleep quality, and quality of life of patients with breast cancer. The results manifested positive effects of BEE program on improving depression, anxiety, and components of quality of life including social role functioning and physical function.

Table 2. The mean score of depression, anxiety, quality of life subscales and sleep quality components in participants before and after intervention and in follow up (Part I)

Variable		Pretest (mean ± SD)	Post-test (mean ± SD)	Follow-up (mean ± SD)
Depression		6.37 ± 3.28	3.18 ± 3.80	6.43 ± 2.15
Anxiety		6.12 ± 3.20	3.56 ± 3.16	6.87 ± 1.70
Quality of life	Vitality	11.62 ± 1.36	11.68 ± 1.49	11.60 ± 2.40
	Physical function	23.37 ± 4.61	25.12 ± 3.87	21.37 ± 5.58
	Bodily pain	5.00 ± 2.25	4.87 ± 1.82	4.37 ± 1.30
	General health perception	11.00 ± 2.63	10.00 ± 1.63	11.37 ± 2.65
	Physical role function	14.62 ± 4.97	16.87 ± 9.45	12.18 ± 2.28
	Emotional role function	10.81 ± 3.33	11.00 ± 3.20	9.43 ± 2.27
	Social role function	5.68 ± 0.87	6.50 ± 1.63	5.50 ± 0.63
	Mental health	16.12 ± 1.96	16.37 ± 1.85	16.02 ± 1.46
Sleep quality	Subjective sleep quality	0.43 ± 0.89	0.81 ± 0.94	1.20 ± 0.57
	Sleep latency	1.12 ± 0.88	1.18 ± 0.91	1.12 ± 0.80
	Sleep duration	0.90 ± 1.10	0.81 ± 0.90	1.20 ± 1.09
	Sleep efficiency	0.93 ± 1.34	0.87 ± 1.31	1.04 ± 1.20
	Sleep disturbance	1.75 ± 0.57	1.62 ± 0.71	1.93 ± 0.44
	Use of sleep medication	0.56 ± 1.03	0.56 ± 1.09	0.86 ± 0.96
	Daytime dysfunction	1.68 ± 1.10	1.93 ± 1.20	1.25 ± 0.93
	Total score	6.68 ± 3.84	7.00 ± 3.74	8.60 ± 2.30

Table 2. The mean score of depression, anxiety, quality of life subscales and sleep quality components in participants before and after intervention and in follow up (Part II)

Variable		P-value (pretest- posttest)	P-value (posttest- follow-up)	P-value (pretest- follow-up)	P-value
Depression		0.003*	0.014*	0.095	0.003**
Anxiety		0.006*	0.003*	0.480	0.001**
Quality of life	Vitality	0.460	0.310	0.980	0.640
	Physical function	0.0390*	0.046*	0.330	0.007
	Bodily pain	0.210	0.400	0.380	0.056
	General health perception	0.140	0.790	0.560	0.072
	Physical role function	0.340	0.070	0.090	0.150
	Emotional role function	0.870	0.070	0.180	0.340
	Social role function	0.042*	0.013*	0.090	0.005**
	Mental health	0.090	0.140	0.810	0.140
Sleep quality	Subjective sleep quality	0.600	0.860	0.310	0.058
	Sleep latency	0.840	0.620	0.820	0.560
	Sleep duration	0.610	0.110	0.090	0.150
	Sleep efficiency	0.140	0.060	0.620	0.750
	Sleep disturbance	0.540	0.680	0.140	0.180
	Use of sleep medication	0.090	0.130	0.610	0.100
	Daytime dysfunction	0.060	0.080	0.900	0.300
	Total score	0.760	0.190	0.140	0.058

*Paired t-test showed significant changes in score of depression, anxiety, physical function, and social role functioning after intervention (compared to before intervention) and in follow-up (compared to after intervention)

**Repeated measure test showed significant changes in the score of depression, anxiety, physical function, and social role functioning

SD: Standard deviation

BEE is an integrative model of care which is applicable as a contextual meta-diagnostic and complimentary program for all levels of prevention. It includes a cognitive, behavioral, mindful, and bioenergetic method to optimize our cathexis in intra/inter/transpersonal fields. It has four levels including body economy, narrative economy, relation economy, and intention economy (Goli, 2010; Goli, 2016). The main goal of the BEE program is the sustainable development of happiness.

Table 3. The distribution of depression, anxiety, and poor sleep quality in participants before the intervention, after intervention, and in follow-up

Variables		Before intervention [n (%)]	After intervention [n (%)]	Follow-up [n (%)]	P-value
Depression	Normal	9 (56.2)	15 (93.1)	14 (87.5)	0.089
	Borderline	5 (31.2)	1 (6.2)	1 (6.2)	
	Abnormal	2 (12.5)	0 (0)	1 (6.2)	
Anxiety	Normal	12 (75.0)	15 (93.8)	9 (56.2)	0.056
	Borderline	3 (18.8)	1 (6.2)	7 (43.8)	
	Abnormal	1 (6.2)	0 (0)	0 (0)	
Poor sleep quality		13 (81.2)	14 (87.5)	14 (87.5)	0.170

This method can integrate matter, energy, information, and consciousness through aforesaid levels. BEE works on the embodied aspect of experience among intra-personal, inter-personal, and transpersonal bodies. In times of facing a problem, using BEE could enhance an individual's body awareness, emotional regulation, and bodily sensational perceptions. Moreover, BEE could elevate the sensation of being influent while concentrating in the center of body gravity when opening the body field to the presence of now and here. Focusing awareness in the center of the body could increase the sense of balance and self-control. BEE could make the body a mindful bio-field (Goli, 2016).

BEE and depression: The effects of the BEE program in our study on improving depression were promising. These data accord with other BEE experiences in patients with myofascial pain syndrome and high anxiety sensitivity which manifested depression alleviation (Keyvanipour et al., 2019).

BEE and anxiety: Similarly, promising findings were demonstrated in this study for the application of BEE to anxiety. Anxiety reduction was also achieved by BEE application in patients with myocardial infarction and obesity (Bavari et al., 2022; Ghassemi et al., 2021) in addition to aforesaid decent works on myofascial pain syndrome and high anxiety sensitivity (Keyvanipour et al., 2019).

BEE and sleep quality: The effect of the BEE program was not previously evaluated for sleep quality. Although our study reported no statistically meaningful impact, more research on a larger scale is needed for assessing the effect of this method on sleep quality.

BEE and quality of life: The effects of this program on 2 subscales of quality of life are maybe due to improving depression and anxiety which are cardinal factors for qualifying this matter (Brown, Kroenke, Theobald, Wu, & Tu, 2010). Another decent work showed beneficial effects of the BEE program on improving the quality of life in patients with coronary heart disease (CHD) which allied with the findings of this study.

Moreover, BEE program had been evaluated in other medical conditions and showed favorable effects. Derakhshan et al. (2016) evaluated the effects of the BEE program on 30 patients who suffered from migraine disease. These patients were divided into two groups who received BEE with real bio-filed attunement or BEE intervention with sham energy attunement. Changes in depression, anxiety, and pain were assessed in a pre-test, post-test, and a 2-month follow-up. This study revealed that the mean score of depression, anxiety, and the pain was significantly decreased in the real biofield attunement group in comparison to the sham energy attunement group. There was no statistically significant difference between the post-test and the follow-up which manifested the continuous effects of the intervention after 2 months (Derakhshan et al., 2016). In another study, Keyvanipour et al. (2019) assessed the effects of the BEE program on 30 patients with high anxiety sensitivity. Patients were

randomly divided into two groups of intervention and control. This study reported that the mean score of anxiety sensitivity in the intervention group significantly decreased in the post-test and the follow-up in comparison with the control group. These data showed the effectiveness of the BEE program in reducing anxiety (Keyvanipour et al., 2019). Moreover, a case report evaluating the effect of the BEE program on tethered cord syndrome revealed promising results. A surgery-candidate 10-year-old boy with a documented diagnosis of tethered cord syndrome participated in the program. His symptoms comprise claudication, urinary and fecal incontinence, urinary reflux relapse, back pain, looseness of the big toe, and nocturia. Interestingly, even in the first session of the BEE program, his big toe loosened and became strong enough to be extended. Accordingly, the surgery was postponed and the BEE program was continued. During the first year of the program, all symptoms of the patient were significantly improved which let him exercise as a healthy individual. After 12 sessions in almost 2 years of therapy, he returned to his normal activities and began an athletic lifestyle. Assessments in the third year post-intervention reported no recurrence of the symptoms (Goli & Boroumand, 2016).

Besides, there are pieces of evidence about the therapeutic effects of BEE elements including relaxation, body awareness, body psychotherapy, and bioenergy healing. These studies revealed that bioenergetic approaches had positive effects on treating physical and psychological problems including addiction, post-traumatic stress disorder (PTSD), allergies, stress, anxiety, pain, and cardiac dysrhythmia. In addition, shreds of evidence of improving mood, healing speed, overall health, and quality of life were demonstrated (Goli, 2016; Geggus, 2004; Crawford, Leaver, & Mahoney, 2006; Marcus, Blazek-O'Neill, & Kopar, 2013). Furthermore, Ghassemi et al. (2020) illustrated the positive effects of BEE intervention on body self-concept and weight control process in overweight women (Ghassemi, Vahedi, Tabatabaei, & Alivandi Vafa, 2020). Another research by Goli et al. represented a positive efficacy of the BEE program with a significant decrease in pain intensity, depression, anxiety, and improving quality of life in women patients with myofascial pain syndrome. The effects remained consistent in both two- and six-month follow-ups (Goli et al., 2020).

BEE program is directed to optimize the free movements of energy and also redirect it from dysfunctional investments to timely and attuned acts. It could reprocess energy information and adjust depression and anxiety. This process could make the individual's behavior become more flexible and organize his emotions leading to a better quality of life (Goli, 2010). Following this matter, a case report by Goli (2021) demonstrated an absolute recovery of a young woman. She had experienced domestic assault in her early years of life and was suffering from post-traumatic stress in addition to a recent outbreak of existential and religious crises. A BEE-based trauma therapy was performed for her by context alterations of her embodied sensations, narrative, relationships, and intentionality. These shifts deconstructed the fixed meaning-making systems of her trauma experience and crisis (Goli, 2021).

There are other studies on the effects of different complementary and alternative medicine on patients with cancer. One study on mice with breast cancer showed that healing touch for 15 days could reduce the size of the tumor, but it did not affect metastasis development (Running, Greenwood, Hildreth, & Schmidt, 2016). A systematic review and meta-analysis in early-stage breast cancer strongly demonstrated, by psychosocial support and psychoeducational support, that emotional well-being could improve in 6 months post-intervention (Matsuda, Yamaoka, Tango, Matsuda, & Nishimoto, 2014). Zhang et al. (2019) demonstrated

that mindfulness-based stress reduction (MBSR) had a valuable effect on the reduction of stress, anxiety, fatigue, depression, and distress and promoted awareness, emotional well-being, physical function, cognitive function, and overall quality of life (Zhang, Zhao, & Zheng, 2019). A meta-analysis by Matthews et al. (2017) represented a positive efficacy of CBT in promoting outcomes concerning anxiety, quality of life, and depression following breast cancer surgery (Matthews, Grunfeld, & Turner, 2017). A meta-analysis of 12 relevant studies reported that in comparison to routine treatment of depression, psychotherapy could significantly reduce the number of depression in patients with advanced cancer (Okuyama, Akechi, Mackenzie, & Furukawa, 2017). One study on 42 patients with breast cancer showed that group positive psychotherapy could reduce stress and depression and increase happiness in comparison to the control group (Dowlatabadi, Ahmadi, Sorbi, Beiki, Razavi, & Bidaki, 2016). Another article on the explanation of intensive short-term dynamic psychotherapy on patients with breast cancer reported that this method could improve emotional expressiveness and defense style that could affect depression, anxiety, quality of life, and physical and emotional function (Mahdavi, Mosavimoghadam, Madani, Aghaei, & Abedin, 2019). In accordance, our study also demonstrated improved changes in relatively similar variables when compared before and after the BEE intervention. It is quite important to note that our results showed worsened variable changes when immediately after intervention and follow-up metrics were compared. This might suggest the importance of BEE practices to be in maintenance. On the other hand, as we assessed all patients in a 1-year follow-up, maybe this duration was too long and thus the metrics get biased. As an assumption, it might be reasonable to follow participants in both short and long time durations to better evaluate the steady effects of the BEE.

Conclusion

This study has its strength and limitations. This was the first experience of using BEE on patients with breast cancer. Although no positive effect on sleep quality was found, this was the first study that considered sleep quality as a variable for evaluating the BEE program. One of the limitations of this study was its small sample size which is too shallow to generalize the findings to all patients with cancer. Moreover, in this study, there was no control group to compare BEE's effect with other routine psychotherapies which are common among patients with cancer. Future case-control or randomized clinical trial studies are suggested to be designed with a greater sample size in addition to including other cancer types.

In conclusion, the BEE program could positively affect depression, anxiety, and physical and social function in patients with breast cancer. BEE is suggested to be considered as an alternative medicine for these patients alongside routine treatments.

Conflict of Interests

Authors have no conflict of interests.

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