



THE EFFECT OF MINDFULNESS-BASED COGNITIVE THERAPY ON ANXIETY AND DEPRESSION LEVELS IN BREAST CANCER PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Cancer is closely associated with several anxiety issues and depression is the most common comorbidity of cancer. It has been stated that 60% of individuals with cancer have psychological symptoms (depression and anxiety) related to cancer and according to the American Cancer Society, more than 25% of cancer patients suffer from symptoms of clinical depression. Methods: This study is a systematic review that analyzes 11 articles that are relevant to the topic, articles are searched through Pubmed, SpringerLink, Sciencedirect and Google Scholar from 2019-2023. Keywords used (“Mindfulness Based Cognitive Therapy” OR “MBCT”) AND (“Anxiety” OR “Anxiety Disorders”) AND (“Depression” OR “Depressive Disorder”) AND (“Breast Cancer” OR “Breast Neoplasm” OR “Breast Carcinoma” OR “Breast Tumor”). Results: The provision of mindfulness based cognitive therapy in 11 articles applied to various ages and to patients experiencing anxiety and depression in various countries with results showing effectiveness in preventing relapse and overcoming anxiety and depression by providing therapy for 8 weeks with a single administration for 90 minutes. Conclusion: The provision of mindfulness based cognitive therapy for 8 weeks with a single administration for 90 minutes can prevent and overcome anxiety and depression. Therefore, it is expected that nurses can apply this evidence based nursing as a preventive and curative effort.

Keywords: anxiety; breast cancer; depression; mindfulness based cognitive therapy

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INTRODUCTION

Cancer is a chronic disease that is the second leading cause of death in developed countries and the third leading cause of death in developing countries. According to the Global Cancer Observatory (GCO) statistics, there were 14.1 million new cancer cases and 8.2 million cancer deaths worldwide in 2012. GCO statistics in 2018 reported about 110,000 new cancer cases and about 56,000 cancer deaths in Iran in 2018.(Antari, et al 2023). In addition, cancer is considered the third leading cause of death in Iran. In this regard, the most common types of cancer among Iranians are breast, colorectal, bladder, stomach, and prostate cancers. In addition, breast and gastrointestinal cancers cause the highest death rates.(Sheikhzadeh et al., 2021).

Research has shown that cancer is strongly associated with several psychological problems anxiety and depression are the most common comorbidities of cancer.(Fajrina et al., 2018). It has been stated that 60% of individuals with cancer have psychological symptoms (primarily depression and anxiety) related to cancer and according to the American Cancer Society, more than 25% of cancer patients suffer from symptoms of clinical depression.(Rahayuwati et al., 2019). Anxiety can increase feelings of pain and disrupt sleep and reduce quality of life. In addition, anxiety can even shorten the life of cancer patients. It usually causes irritability,

inability to cope with the disease, withdrawal from social activities, and inability to perform daily activities.(Yao et al., 2022)

Although there is evidence of the efficacy of chemotherapy and radiation therapy in treating cancer, they do not necessarily improve patients' psychological symptoms. Some patients may even forego chemotherapy because of their psychological symptoms. Psychological treatments have been shown to be effective for treating psychological symptoms; CBT as a 2-wave therapy is the most common psychological treatment for depression and anxiety.(Agung et al., 2021). The usefulness of CBT in reducing fatigue has also been confirmed in several studies, and it has been reported that CBT is significantly more effective than usual care that includes cancer care based on comprehensive cancer center guidelines. Another study by Eichler et al showed a 33% reduction in anxiety, and 57% in depression among breast cancer patients. For CBT, recently third wave therapy has been gaining popularity.(Nissen et al., 2020)MBCT is a third wave therapy based on mindfulness, as an accepting and non-judgmental awareness of the present moment. It consists of a combination of the main techniques of CBT and mindfulness. Mindfulness meditation activates the part of the brain responsible for positive emotions and thus has a beneficial effect on immune function.(Zullig, K, 2018). This process allows individuals to feel less painful events in the present. When individuals become aware of the present moment, they do not focus on the past or the future. In contrast, most psychological disorders are created by focusing on the past.(Sheikhzadeh et al., 2021).

This treatment aims to improve patients by using the main techniques of both waves of therapy. MBCT and CBT have similar goals and both aim to help individuals recognize the role of negative automatic thoughts in causing depressive symptoms.(Sanjiwani, AAS, et al, 2022). Unlike traditional cognitive therapy which emphasizes evaluating and changing the validity of thought content and generating alternative thoughts, MBCT encourages attention and awareness of thoughts and feelings and observing them as they come and go, so that the association between negative automatic thoughts and unhappy feelings is reduced.(Sukmawati, Y., et al, 2023). According to research results in Japan, MBCT is well accepted by cancer patients in Japan and has a positive effect on their mental status and quality of life.(Sheikhzadeh et al., 2021). The aim of this study was to examine the effectiveness of mindfulness based cognitive therapy on anxiety and depression in breast cancer patients.

METHOD

The literature search process was carried out from February 27, 2024 to March 1, 2024. The search was conducted on the last 5 years of research 2019-2023 with 4 databases, namely Pubmed, SpringerLink, Sciencedirect and Google Scholar. The writing of the article results follows the protocol and rules with the Preferred Reporting Items for Systematic Rireview (PRISMA). Searching for articles or journals using keywords and Bollean operators (AND, OR, OR NOT or AND NOT) where this is used to expand or specify the search, making it easier to determine the articles or number of articles to be used. Keywords in the systematic review that are adjusted to the Medical Subject Heading (MeSH) of the article are identified with the keywords (("Mindfulness Based Cognitive Therapy" OR "MBCT") AND ("Anxiety" OR "Anxiety Disorders") AND ("Depression" OR "Depressive Disorder") AND ("Breast Cancer" OR "Breast Neoplasm" OR "Breast Carcinoma" OR "Breast Tumor")). The articles in this study were analyzed for quality assessment with the instrument used being sourced from The Joanna Briggs Institute Guideline (JBI) Critical Appraisal Tools or commonly known as JBI, with the type of JBI adjusted to the one used. The assessment on JBI is divided into answer choices of "yes", "no", "unclear" or "not applicable", with a value of 1 given to

the answer “yes”, and a value of 0 to the other answer choices. The critical appraisal stage aims to assess the quality of an article, an article can be included in this study if the JBI score is more than 70% meeting the critical appraisal criteria, so that it is considered feasible and the research article is included in the criteria. This is done so that articles in the systematic review study are free from low-quality articles so that there is no bias in the validity of the results.

Table 1.
The article search strategy was carried out using the PICOS framework.

| PICOS framework | Inclusion Criteria | Exclusion Criteria |
|--|--|--|
| <i>Population</i> | A study that reviewed breast cancer patients who had high levels of anxiety and depression. | Studies that did not review breast cancer patients who had high levels of anxiety and depression |
| <i>Intervention</i> | A study examining mindfulness based cognitive therapy on anxiety and depression | Research that does not discuss mindfulness based cognitive therapy on anxiety and depression |
| <i>Comparator</i> | There are no inclusion criteria | There are no exclusion criteria |
| <i>Outcomes</i> | A study explaining the effects of mindfulness based cognitive therapy on anxiety and depression. | Studies that do not address the effects of mindfulness-based cognitive therapy on anxiety and depression |
| <i>Study design and publication type</i> | <i>Randomized control trials (RCTs), experiments</i> | <i>Review and analysis: literature review, systematic review, meta-analysis</i> |
| <i>Publication years</i> | 2019 - 2023 | |
| <i>Language</i> | English | |

The inclusion criteria in this study were articles taken in the last 5 years with the Randomized control trial (RCTs) method, experiment design. The purpose of this study was to examine the effectiveness of mindfulness based cognitive therapy on anxiety and depression in breast cancer patients in detail, the search results based on keywords and selection carried out obtained 10 articles from 207 articles that had been found.

RESULT

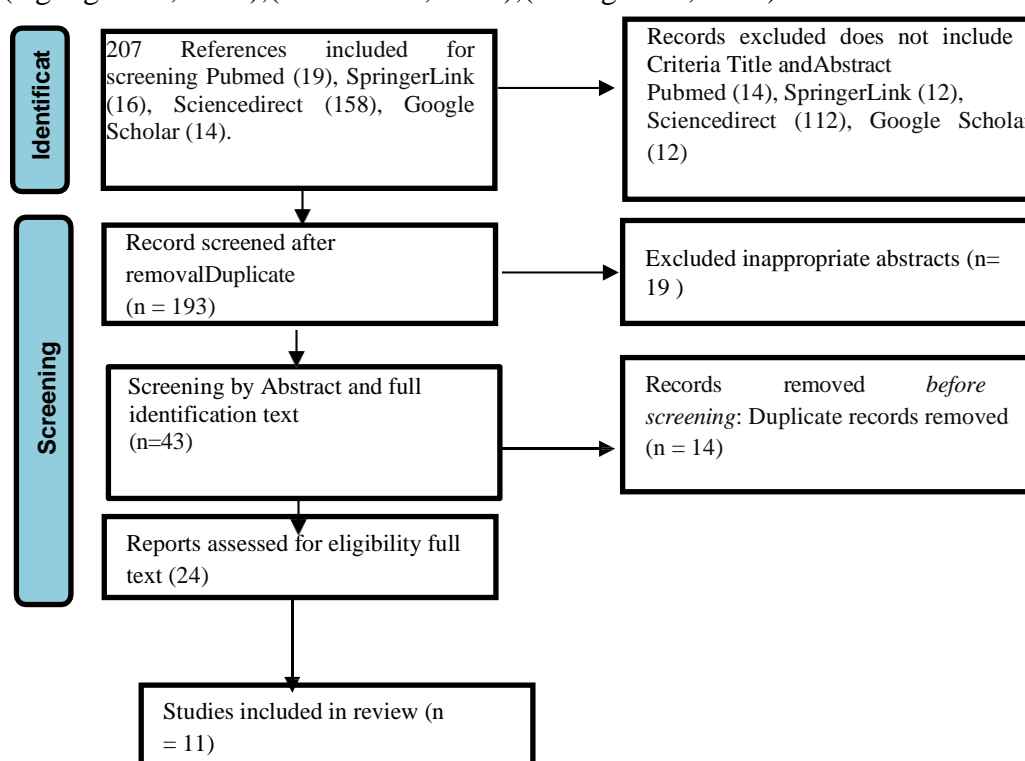
The articles in this study consist of articles that have met the inclusion criteria that have been determined in this study, with all types of research being quantitative with the research design used being Randomized control trial (7), experiment (3). The articles found were published from 2019 to 2023. The places where the studies were conducted in this research article consisted of various countries, from Japan there were 2 articles.(Park et al., 2020);(Tamura et al., 2022), Iran 4 articles(Sheikhzadeh et al., 2021);(Mehranfar et al., nd2019);(Zemestani & Nikoo, 2020);(Mirmahmoodi et al., 2020), china 1 article(Chu et al., 2020), Beijing China 1 article(Liu et al., 2022), Denmark 1 article(Nissen et al., 2020), United States 1 article(Lengacher et al.,2021), English 1 article(Carreira et al., 2021). The use of mindfulness based cognitive therapy interventions can be done in various countries and at various ages as seen in table 1.

Table 2.
Frequency distribution of breast cancer patients by age

| Age | Min | Max | Mean |
|-----|-----|-----|------|
| | 17 | 74 | 43 |

The results of this study show that the average age is 43 years with a minimum age of 17 years and a maximum age of 74 years or is considered elderly. The articles in this study consist of several interventions, namely single interventions and combination interventions. Single interventions that only use mindfulness-based cognitive therapy as the main intervention. In this study, there were 8 articles that provided a single intervention in the

research article (Park et al., 2020); (Mehranfar et al., nd2019); (Zemestani & Nikoo, 2020); (Mirmahmoodi et al., 2020), (Chu et al., 2020), (Liu et al., 2022), (Nissen et al., 2020), (Lengacher et al., 2021). The interventions given in each article are the same, namely using mindfulness-based cognitive therapy for anxiety and depression in breast cancer patients. The duration of the intervention was 8 sessions for 8 weeks with a duration of 90 minutes each time the intervention was given ((Park et al., 2020),(Sheikhzadeh et al., 2021);(Mehranfar et al., nd2019);(Zemestani & Nikoo, 2020);(Mirmahmoodi et al., 2020),(Chu et al., 2020),(Liu et al., 2022),(Nissen et al., 2020),(Lengacher et al.,2021),(Agung et al., 2021),(Pedro et al., 2021),(Chang et al., 2023).The results of the interventions provided in each of these research articles all show that they are effective in reducing levels of anxiety and depression due to conditions experienced by breast cancer patients.(Park et al., 2020),(Sheikhzadeh et al., 2021);(Mehranfar et al., nd2019);(Zemestani & Nikoo, 2020);(Mirmahmoodi et al., 2020),(Chu et al., 2020),(Liu et al., 2022),(Nissen et al., 2020),(Lengacher et al.,2021),(Agung et al., 2021),(Pedro et al., 2021),(Chang et al., 2023).



Identification of studies via databases and registers

Table 2.

Include Study Characteristics

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|--|---------|-------------------------------------|--|--|
| Mindfulness-Based Cognitive Therapy for Psychology Distress, Fear of Cancer Recurrence, Fatigue, Spiritual Well-Being, and Quality of Life in Patients With Breast | Japan | 1 time a week for 8 weeks | Design : Randomized Controlled Trial (RCT) Sample : 74 patients, randomly divided into two groups, namely the intervention group (n: 38) and the control group (n: 36) Variables : | Results : This study showed that an eight-week mindfulness-based cognitive therapy (MBCT) program was effective in reducing psychological distress |

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|---|---------|-------------------------------------|---|--|
| CancerdA Randomized Controlled Trial ((Park et al., 2020) | | | <p>Independent : mindfulness-based cognitive therapy (MBCT)</p> <p>Dependents : psychological distress (anxiety and depression), fear of cancer, fatigue, spiritual well-being, quality of life, awareness skills</p> <p>Instruments : questionnaire</p> <p>Analysis: using various statistical tests such as T-test, regression test, covariance analysis, correlation analysis, so that researchers can analyze the data carefully and draw strong conclusions regarding the effectiveness of MBCT.</p> | (anxiety and depression) in patients with stage I-III breast cancer. In addition, MBCT was also shown to reduce fear of cancer recurrence, fatigue, improve spiritual well-being, and improve patients' quality of life. |
| Efficacy of Mindfulness-Based Cognitive Therapy and Cognitive Behavioral Therapy for Anxiety, Depression, and Fatigue in Cancer Patients: A Randomized Clinical Trial ((Sheikhzadeh et al., 2021) | Iran | 1 time a week for 8 weeks | <p>Design : Randomized Controlled Trial (RCT)</p> <p>Sample : 100 cancer patients with 2 groups, namely the intervention group and the control group.</p> <p>Variables : Independent : Mindfulness based cognitive therapy (MBCT), cognitive behavior therapy (CBT)</p> <p>Dependents : Anxiety levels, depression levels and fatigue levels in cancer patients</p> <p>Instruments : questionnaire</p> <p>Analysis : Using analysis of covariance (ANCOVA) with the help of SPSS-16 software. ANCOVA is used to compare group means that have been adjusted for relevant control variables (pretest).</p> | Results : Research shows that both MBCT and CBT are effective in reducing anxiety and depression in cancer patients, but outcomes related to fatigue require further research to be better understood. |
| Effect of Mindfulness Based Cognitive Therapy on the Mental Health and Quality of Life in Patients with Breast Cancer ((Chu et al., 2020) | China | 1 time a week for 8 weeks | <p>Design : Randomized controlled trial</p> <p>Sample : 84 breast cancer patients were divided into two groups, namely the intervention group (n: 42) and the control group (n: 42).</p> <p>Variables : Independent : Mindfulness based cognitive</p> | Results : Showing that psychological disorders in the MBCT intervention group significantly improved at week 8, with a mean score difference of 7.82 compared to the control group. |

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|---|---------|-------------------------------------|--|--|
| | | | therapy (MBCT) Dependents : Psychological disorders, fear levels, fatigue levels and quality of life. Instruments : questionnaire Analysis : Using SPSS 18.0 with independent t-test to compare differences between groups | Significant improvements were also seen in the level of fear of cancer recurrence and mental health in the MBCT group after the intervention. |
| Effectiveness of Mindfulness-Based Cognitive Therapy on Reduction of Depression and Anxiety Symptoms in Mothers of Children With Cancer ((Mehranfar et al., nd2019) | Iran | 1 time a week for 8 weeks | Design : Single case experiment Sample : 4 respondents were selected through purposive sampling to participate in the MBCT program. Variables : Independent : Mindfulness based cognitive therapy (MBCT) Dependents : Depression levels and anxiety levels Instruments : questionnaire Analysis : Using improvement quotient to show the effect of treatment clearly. Improvement quotient is calculated by using pretest score from post-test score, then dividing the result by pretest score. | Results : This study showed that mindfulness based cognitive therapy (MBCT) has a significant effect in reducing symptoms of depression and anxiety in mothers of children with cancer. There was a significant increase in depression and anxiety scores from before the intervention. after the intervention to the 30-day follow-up. |
| Effectiveness of mindfulness-based cognitive therapy for comorbidities depression and anxiety : a randomized controlled trial (Zemestani & Nikoo, 2020) | Iran | 1 time a week for 8 weeks | Design : Randomized Controlled Trial (RCT) Sample : 38 patients were divided into two groups, namely the intervention group (n=19) and the control group (n=19). Variables : Independent : Mindfulness based cognitive therapy (MBCT) Dependents : Depression levels and anxiety levels Instruments : questionnaire Analysis : Using SPSS version 23, with independent t-test and chi-square test and mixed method repeated measure (MMRM) analysis. | Results : This study shows that MBCT can be effective in reducing depression and anxiety levels and improving emotion regulation, as well as enhancing participants' psychological well-being. |

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|---|---------|-------------------------------------|---|--|
| Effect of mindfulness yoga on anxiety and depression in early breast cancer patients received adjuvant chemotherapy: a randomized clinical trial (Liu et al., 2022) | Beijing | 1 time a week for 6 weeks | Design : Randomized Controlled Trial (RCT) Sample : 136 patients with two groups, namely 68 intervention groups and 68 control groups. Variables : Independent : Mindfulness yoga Dependents : Anxiety and depression Instruments : questionnaire Analysis : Generalized estimating equation (GEE), chi-square test, Fisher's exact test, probability test, rank-sum test and T-test | Results : This study showed that the intervention group that received mindfulness yoga therapy had a better prognosis compared to the control group that only received conventional care. |
| Internet-delivered mindfulness-based cognitive therapy for anxiety and depression in cancer survivors: A randomized controlled trial (Nissen et al., 2020) | Denmark | 1 time a week for 8 weeks | Design : Randomized Controlled Trial (RCT) Sample : 150 patients with intervention group (n=105) and control group (n=45) Variables : Independent : Internet-delivered mindfulness based cognitive therapy Dependents : Levels of anxiety, depression and stress Instruments : questionnaire Analysis : Multilevel modeling (MLM) analysis, t-test and chi-square, intention-to-treat analysis, sensitivity analysis. | Results : This study shows that iMBCT has a positive effect in reducing anxiety and depression levels in patients. |
| The Effects of Mindfulness-Based Stress Reduction Group Counseling on Psychological and Inflammatory Responses of the Women With Breast Cancer (Mirmahmoodi et al., 2020) | Iran | 1 time a week for 6 weeks | Design : Experimental Sample : 44 patients in 22 intervention groups and 22 control groups Variables : Independent : Mindfulness based counseling group Dependents : Psychological responses such as anxiety levels, depression and stress levels Instruments : questionnaire Analysis : Chi-square test, fisher's exact | Results : Mindfulness-based counseling interventions can provide significant benefits in reducing the levels of anxiety, depression and stress experienced by participants. |

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|--|---------------|-------------------------------------|--|--|
| | | | test, Wilcoxon test, man-whitney test, independent t-test and paired independent t-test and ANCOVA test | |
| Mindfulness-based stress reduction for breast cancer survivors (MBSR(BC)): evaluating mediators of psychological and physical outcomes in a large randomized controlled trial (Lengacher et al., 2021) | United States | 1 time a week for 6 weeks | Design : Randomized Controlled Trial (RCT) Sample : 322 women Variables : Independent : MBSR (BC) program Dependents : Levels of anxiety, fatigue, perceived stress, and fear of breast cancer recurrence. Instruments : Questionnaire Analysis : Regression analysis, mediation analysis, analysis of variance, correlation analysis, multiple linear regression analysis and serial mediation analysis | Results : Showing that fear of breast cancer recurrence and perceived stress, but not mindfulness, acted as mediators in reducing anxiety and fatigue at 6 and 12 weeks after the intervention. This suggests that the mechanism of action of MBSR (BC) may occur through participants' internal cognitive perspectives on fear of cancer recurrence and perceived stress. |
| Quality of life and mental health in breast cancer survivors compared with non-cancer controls: a study of patient-reported outcomes in the United Kingdom (Carreira et al., 2021) | English | 1 time a week for 6 weeks | Design : cross-sectional study Sample : 356 women with breast cancer and 252 women in the control group Variables : Independent : Quality of life and mental health Dependents : breast cancer survivors compared Instruments : Hospital anxiety and depression scale (HADS) questionnaire Analysis : Using a special logistic regression test | Results : Shows that there is a relationship between breast cancer survivor status and anxiety and depression. Sensitivity analysis shows that using lower cutoff values for anxiety and depression cases can increase sensitivity in detecting depression cases in the patient population. |
| Predictors and moderators of outcomes in mindfulness-based cognitive therapy intervention for early breast cancer patients (Tamura et al., 2022) | Japan | 1 time a week for 8 weeks | Design : Randomized Controlled Trial (RCT) Sample : 74 patients Variables : Independent : Mindfulness Based Cognitive Therapy Dependents : Early stage breast cancer Instruments : QOL Questionnaire | Results : Demonstrates the impact of MBCT intervention outcomes in breast cancer patients, and highlights the importance of adherence to the program and initial levels of psychological distress in achieving |

| Title, Author and Year of Publication | Country | Duration, Frequency of Intervention | Design, Sample, Variables, Instruments and Analysis | Results |
|---------------------------------------|---------|-------------------------------------|---|--------------------------------|
| | | | Analysis : Analysis using Chi-square test, t-test, Wilcoxon test, logistic regression and generalized estimating equations (GEE) | remission and better response. |

DISCUSSION

Of the 11 articles reviewed above, there are similarities in each study. The similarities of the journals above all discuss mindfulness-based cognitive therapy interventions on reducing anxiety and depression levels using randomized control trial and experiment methods. The results of the study obtained from the 11 articles above show that providing mindfulness-based cognitive therapy interventions is very effective for the process of reducing anxiety and depression levels. The results of various studies that have been analyzed show that mindfulness based cognitive therapy is effective in reducing levels of anxiety and depression. These results reflect that giving mindfulness based cognitive therapy is effective in reducing anxiety and depression experienced by sufferers, so this method can be used (Cillessen et al., 2020). These results are in line with studies conducted by (Park et al., 2020) which shows that mindfulness based cognitive therapy is effective in reducing anxiety and depression. The effective provision of mindfulness based cognitive therapy can be explained through mechanisms involving the development of awareness (mindfulness) and cognition (thinking). Various studies in this systematic review study show the influence of mindfulness-based cognitive therapy on reducing anxiety and depression (Spijkerman, MP., et al, 2016). Mindfulness based cognitive therapy is a series of structured therapy sessions to increase awareness of the sufferer's thoughts and emotions and how to identify detrimental thought patterns and replace negative thoughts with more positive thoughts. So that it can help sufferers recover from anxiety and depression and can prevent recurrence of excessive anxiety and depression levels (Compen, F., et al, 2018).

Providing mindfulness based cognitive therapy can help reduce anxiety and depression through several mechanisms that involve developing awareness (mindfulness) and cognition (thinking) by conducting mindfulness based cognitive therapy to increase awareness by teaching individuals to be more aware of thoughts, emotions and body sensations without judging or overreacting to the conditions they experience (Jayadi, TH, et al, 2018). By increasing awareness, we can identify negative thought patterns that may trigger anxiety and depression and learn to respond more wisely. Mindfulness based cognitive therapy can help reduce anxiety and depression through several mechanisms involving the development of awareness (mindfulness) and cognition (thinking) by doing mindfulness based cognitive therapy to understand negative thoughts by helping to identify and change negative thought patterns that may worsen anxiety and depression. By recognizing thought patterns, negative thoughts can be replaced with more positive and balanced thoughts.

CONCLUSION

Mindfulness based cognitive therapy is proven effective in preventing recurrence and treating anxiety and depression in patients with breast cancer, which is usually the majority of this occurs in patients with terminal illness. The results of this study indicate that giving mindfulness based cognitive therapy can prevent recurrence and treat anxiety and depression, because mindfulness based cognitive therapy can develop awareness (mindfulness) and cognition (thinking) that starts from negative thinking replaced with more positive thinking.

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