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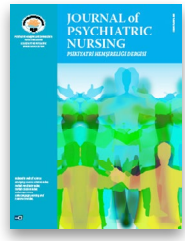

Systematic Review

The effect of mindfulness-based stress reduction program on quality of life in breast cancer: A systematic review

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Abstract

Objectives: This study was carried out to review the studies published between January 2008 and February 2020 on the effects of the Mindfulness-Based Stress Reduction (MBSR) program, which was applied to people with breast cancer, upon quality of life and to analyze the data obtained from the studies in a systematic form.

Methods: Randomized controlled studies that were conducted with patients with breast cancer and examined the quality of life of people, who participated in the Mindfulness-Based Stress Reduction program, were searched on PubMed, Proquest and Google Academic databases in January 2020. All publications were systematically analyzed in terms of methods and findings.

Results: As a result of the literature review, 7 articles containing 640 participants were included in the scope of the review. All of the studies evaluated focused on the Mindfulness- Based Stress Reduction program. It was observed that the MBSR program improved quality of life and was effective in terms of increasing the coping skills of patients. As a result of the evaluations, it was found out that the MBSR program increased quality of life in patients with breast cancer and that the generalizability level of these results was high. In addition, with the obtained data, the MBSR program was found to reduce sleep problems and fatigue levels.

Conclusion: In this systematic review, it was determined that the MBSR program was effective and safe in terms of increasing quality of life in patients diagnosed with breast cancer. In addition, it was stated that it played an important role in the development of coping skills, psychological well-being and sleep quality.

Keywords: Awareness; breast cancer; quality of life.

Cancer is one of the most important health and psychological problems of society. It causes many mental, social and physical losses and damages by threatening the life and health of people of different ages and different genders. For this reason, cancer is considered one of the most important diseases in the world.[1] Breast cancer is the most common type of cancer in women and causes important health problems. Diagnosis of cancer, interventions and treatments on the breast after diagnosis threaten both the female identity and life of the woman. For these reasons, the diagnosis of breast cancer in women affects patients psychologically negatively.[2]

Being diagnosed with cancer can lead to psychological problems on its own, and medical interventions applied throughout the process can negatively affect patients' lives.[3–7] Decreased quality of life,[8,9] psychological distress, especially depression and anxiety,[8–11] sleep disorders,[12–14] fatigue,[15] fear of recurrence of cancer[16–18] have been identified as short-term effects.[19]

Significant progress has been made in the development and dissemination of psychosocial interventions for patients diagnosed with breast cancer recently. The use of these types of interventions has gained importance as they have positive effects on the quality of life of cancer patients as well as increasing the success of medical treatment. It is claimed that besides traditional treatment, treatment programs are needed to reduce problems such as fatigue and anxiety. This in-

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What is presently known on this subject?

- The effects of mindfulness-based interventions seem to be effective in people with physical diseases such as cancer as well as various psychological disorders, and randomized controlled studies conducted on mindfulness-based interventions with patients diagnosed with breast cancer appear to have positive effects on various psychological and physical variables such as quality of life, psychological distress, fatigue, coping skills and pain.

What does this article add to the existing knowledge?

- It was reported that the MBSR program was effective and safe in increasing quality of life in patients diagnosed with breast cancer and played an important role in the development of coping skills, psychological well-being and sleep quality.

What are the implications for practice?

- It reveals that the mindfulness-based stress reduction program can play an important role in improving symptoms in people diagnosed with breast cancer, improves the quality of life, stress symptoms, sleep quality, and can have positive results for patients after participating in this program.

dicates the importance of psychological interventions and is seen as a sign that individuals may be more optimistic and hopeful about their treatment[20] and that feelings of hopelessness and helplessness may decrease.[8] Studies show that cancer patients who receive psychological interventions have less distress and higher quality of life.[21,22]

One of the most common interventions to reduce fatigue, stress and symptoms of chronic pain is the mindfulness-based stress reduction program (MBSR). Awareness is defined as having instant experiences and accepting the present moment without being influenced by previous or future experiences and emotions.[23] Awareness is when an individual has a high level of consciousness about society and other individuals.[24] However, the person is fully aware of himself/herself and accepts his/her instant experiences without judgment by concentrating on the present moment.[24,25] In awareness, the person adopts and accepts the thoughts of the present moment and the physical awareness of the present moment, as well as the environment s/he is in as a whole. The importance of living in the present moment underlies awareness.[26]

The effects of mindfulness-based interventions appear to be effective in individuals with physical illnesses such as cancer as well as various psychological disorders.[27–31] Due to the increasing interest in the effects of mindfulness-based interventions in patients with different cancer types in recent years, review studies of these interventions are gaining importance.[5,6,32] Baer (2003) stated that more research was needed on this subject by supporting awareness-based studies.[33] Although it has been observed that the interest in awareness-based interventions has increased in recent years, it is seen that new randomized controlled studies have not been addressed. Although it is seen that awareness-based therapies are an effective approach for cancer patients, no efficacy studies have been found when the literature is examined in our country. Considering the increasing rates of cancer in our country, the development and implementation of awareness-based intervention programs are necessary for increasing quality of life and protecting the psychological and physical health of cancer patients.

In this context, this study aims to systematically evaluate randomized controlled studies conducted to find out the effects of awareness-based interventions, which were applied to patients diagnosed with breast cancer, on various psychological and physical variables such as quality of life, psychological distress, fatigue, coping skills and pain.

Materials and Method

In this systematic review study, MBSR was focused on because therapeutic methods are a standard and well-defined program for awareness. For review, 3592 studies published between 2008 and 2018 were reached, and the reviewed articles were subjected to quality evaluations using the PRISMA checklist. Randomized controlled studies that were conducted with patients with breast cancer and examined the quality of life of people were searched on PubMed, Proquest and Google Academic databases. The search was conducted using 3 keywords in English: "breast cancer", "awareness" and "quality of life". The titles and abstracts of all relevant articles determined by electronic search were independently reviewed by the researcher. The research articles included in the sampling in the study do not require ethical permission since they were obtained from electronic databases and search engines that were accessible. All the stages of the study were carried out in accordance with the principles included in the Declaration of Helsinki.

All clinical studies that determined examining quality of life in breast cancer patients participating in the MBSR program as the inclusion criteria were included in this study. The research sample consists of adult female participants (Stage 0–IV) with a clinical diagnosis of breast cancer. Only randomized controlled studies evaluating the MBSR program were included in the study. The exclusion criteria were that the study was conducted in languages other than English and that there was no comparison group. Although the number of articles reached in the study was 3592, 7 articles meeting the criteria were included in the study.

As a result of the search, a total of 3592 studies were reached. The accessed 3592 (Pubmed: 109, Prequest: 3377, Google Scholar: 116) studies were first examined according to the titles, and a total of 3510 studies that were not related to the research topic were excluded. The abstracts and full texts of the remaining 82 studies were screened in terms of the inclusion and exclusion criteria of the study, and a total of 42 studies consisting of reviews, case studies, meta-analysis studies, incomplete study protocols and qualitative studies were excluded and 40 studies remained. It was observed that 16 of the remaining 40 researches were common in some databases and were excluded from the study. The remaining 24 studies were examined in detail, and 6 non-randomized controlled studies and 11 studies that did not address the outcome of the direct awareness-based study were excluded. A total of 7 studies were found to meet the criteria for a systematic review study. The research selection process of the systematic review is shown in the PRISMA flow diagram in Figure 1.[34]

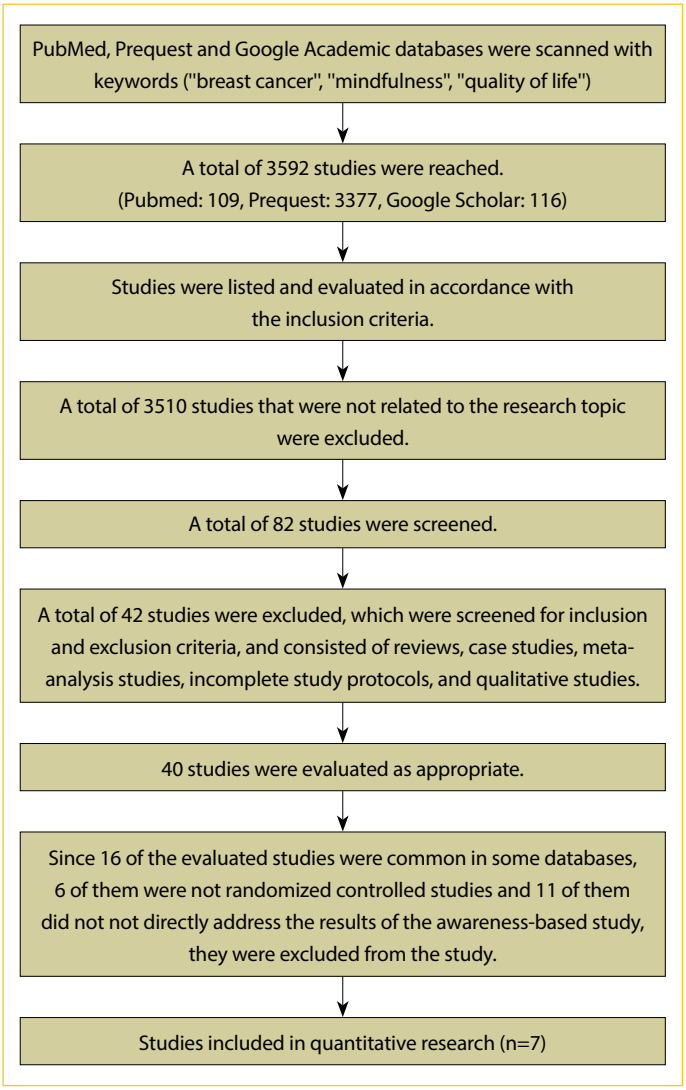

Figure 1. Process steps

Results

Considering the content of a total of 7 studies included in this study, the following findings draw attention in general:

- The change in quality of life in breast cancer patients participating in the awareness program after training
- Change in sleep quality of patients after training
- Change in patients' coping skills related to the disease after training.

The systematic review includes the studies conducted between 2008 and 2018. The sample of the studies included in the study consisted of female patients diagnosed with breast cancer, ranging from Stage 0 to Stage III (n=640). When the sample numbers of the studies were examined, it was found that the highest sample size was found in the study conducted by Hoffman et al.[37] (2012) (n=229) and that the lowest sample size was found in the study conducted by Lee et al.[40] (2017) (n=32). Three of the studies were carried out in the United States, one in the United Kingdom, two in Iran and one in Korea. All of these studies were randomized controlled trials. Interventions were conducted face-to-face, and treatment results were evaluated with scales measuring quality of life. The intervention program used in research is the MBSR program. The MBSR program, which is the technique used in the intervention, consists of breathing exercises, yoga, sitting and walking meditations, and body scanning techniques. In terms of control groups, it was determined that the studies included waiting lists and standard treatment practices.

It was observed that a wide range of cancer-related variables, such as quality of life, coping skills, sleep, fatigue and pain, were examined as outcome variables. The Functional Assessment of Breast Cancer - Quality of Life tool (FACT-B) [36,37,40] was used in three studies to assess the quality of life of patients with breast cancer. One study used the European Cancer Quality of Life Survey Research and Treatment Organization - Breast Cancer Module (EORTC QLQ-BR23),[38] and another study used the quality of life scale (QLQ C30).[39] Another study employed the World Health Organization Quality of Life Scale (WHO-QOL-BREF).[41] In the other study, it was seen that the quality of life index cancer version-3[35] was used. Descriptive statistics for a total of 7 studies meeting the criteria of the systematic review study are shown in Table 1 and Table 2.

Wite-Janusek et al.[35] (2008) investigated the effects of MBSR program on immunity, quality of life and coping skills in women diagnosed with early stage breast cancer. In this study, it was reported that significant differences were observed between the quality of life data of patients in the intervention group and those in the control group. Quality of life scale-3, coping scale and mindfulness scale in cancer were used in the study. It was observed that after the MBSR intervention, the coping skills of the patients increased and their quality of life increased. It was reported that the effects of the awareness-based intervention were ongoing in the follow-up study, which was generally carried out at 4-8 and 12 weeks after the intervention.

Henderson et al.[36] (2012) compared the effect of MBSR on quality of life and psychosocial variables (depression, coping ways, emotional control, spiritual well-being) in patients diagnosed with breast cancer with nutritional education and standard therapy. Nutrition education is not only a group intervention, but also an intervention that aims to provide cooking and diet change. The findings reported that the improvement in quality of life was significantly higher in those involved in the mindfulness-based intervention compared to the other groups and that the intervention group had significant reductions in hostility, depression, and loneliness. It was also determined that the coping mechanisms of the participants in the intervention group were strengthened and that their emotional control and spiritual well-being levels increased. Overall, 4-month, 1-year, and 2-year follow-up studies found that the awareness-based intervention continued, although its effects were diminished.

Table 1. Characteristics of studies included in the review

Study	Countr	N	Experimental Group	Control Group	Training contents	Measuring tool
Witek- Janusek (2008)	United States of America	Experimental group: 38 Control Group:28	Original MBSR program	Standard care	1 hour per week, 8 weeks, 1 session per week	Quality of life index cancer version-3
Henderson (2012)	United States of America	Experimental group: 53 Control Group: 52 Control Group 2: 58	Original MBSR program	Standard care	2 hours a week, 8 weeks, 1 session per week	FACT-B
Hoffman (2012)	United Kingdom	Experimental group: 114 Control Group:115	Original MBSR program	Standard care	2 hours a week, 8 weeks, 1 session per week	FACT-B
Lerman (2012)	United Kingdom	Experimental group: 48 Control Group: 20	Original MBSR program	Standard care	2.5–3.5 hours per week, 8 weeks, 1 session per week	EORTC LQ- BR23
Rahmani (2014)	Iran	Experimental group: 12 Experimental group 2:12 Control Group:12	Original MBSR program	Standard care	1 hour per week, 8 weeks, 1 session per week	QLQ C-30
Lee (2017)	Korea	Experimental group: 20 Control Group: 12	Original MBSR program	Standard care	2 hours a week, 8 weeks, 1 session per week	FACT-B
Pouy (2018)	Iran	Experimental group: 32 Control Group: 34	Original MBSR program	Standard care	2 hours a week, 8 weeks, 2 sessions per week	WHOQOL-BREF

The World Health Organization Quality of Life Scale (WHOQOL-BREF), Quality of life index cancer version-3, the quality of life scale (QLQ C30), The Functional Assessment of Breast Cancer - Quality of Life too (FACT-B), he European Cancer Quality of Life Survey Research and Treatment Organization - Breast Cancer Module (EORTC QLQ-BR23.

Another study in which MBSR intervention was applied is the study of Hoffman et al.[37] (2012) with patients who survived breast cancer. Researchers examined the long-term emotional and physical effects of cancer. In this study, a significant decrease in anxiety, anger, depression, and fatigue levels and an increase in breast cancer-specific quality of life were observed in patients who underwent MBSR compared to patients in the control group. Continued improvements in quality of life and mood were reported in a follow-up study 3 months after the intervention.

Lerman et al.[38] (2012) implemented the Hope Light Cancer Well-being Program, which they adapted to the MBSR program to examine quality of life, psychological symptoms and effect of stress in female patients diagnosed with breast cancer. When the structure of the intervention program was examined, it was seen that the program was MBSR-oriented. It was observed that there was a significant improvement in all sub-dimensions of quality of life and stress levels of the patients in the intervention group. However, when the intervention and control groups were compared, no significant difference was found between the control and the intervention group in the data collected before and after the intervention, and it was observed that both groups showed significant improvements. As a possible cause, the researchers suggested that knowing that participants in the control group would receive treatment might have had a positive effect.

In the study of Rahmani et al.[39] (2014) on conscious yoga and MBSR's effects on fatigue and quality of life in women with breast cancer, the quality of life scale-3 was used in cancer patients whereas the quality of life scale was employed in breast cancer patients. Considering the findings of the study, it was determined that the MBSR intervention was effective in improving the quality of life of the patients and reducing fatigue, pain and side effects of treatment. Generally, in the follow-up study performed at 4–8 and 12 weeks after the intervention, it was stated that the effects of the awareness-based intervention were continuing.

In the study conducted by Lee et al.[40] (2017) on the physical and psychological effects of MBSR intervention on quality of life in patients with metastatic breast cancer, the short pain inventory scale, heart rate variability test, anxiety and depression scale, distress thermometer, and the functional assessment of breast cancer scale were used to assess quality of life. Considering the study findings, it was seen that the MBSR program reduced pain, anxiety and depression levels. There was no significant difference in the quality of life findings between the experimental and control groups after the intervention.

The first of the studies based on the MBSR program is the study by Pouy et al.[41] (2018) in which they assessed the effects of MBSR on quality of life, depression, anxiety and stress level (with two different scales) in breast cancer patients. The findings in this study show that the quality of life of breast cancer patients after MBSR intervention increased. In addition, it was reported in the post-intervention follow-up that patients in the intervention group had higher life expectancy compared to the control group and that their depression, anxiety

Table 2. Findings of the studies

Study	Criteria	Treatment results	Follow-up time
Witek-Janusek (2008)	Included people diagnosed with early stage breast cancer (35–75 years) and not receiving chemotherapy	It was stated that it was a suitable program for women who were diagnosed with breast cancer recently and that the program improved quality of life and was effective in improving coping skills	Gains continued at 4–8 and 12 weeks after the intervention
Henderson (2012)	Patients between the ages of 20–65 who were diagnosed with stage 1–2 breast cancer in the last two years were included in the study	It was reported that quality of life and coping skills increased in the experimental group after the intervention	Gains continued in the 4th month and the first and second year after the intervention
Hoffman (2012)	Patients who were diagnosed with breast cancer for at least 2 months and up to 2 years and were in the 0–3 stage were included in the study	It was observed that the quality of life of the patients in the intervention group increased significantly, that the symptoms of breast cancer decreased and that the general well-being increased	Gains continued at 8 and 12 weeks after the intervention
Lerman (2012)	Included patients diagnosed with breast cancer over 18 years of age	It was stated that the quality of life of the patients in the experimental group increased after the intervention	No information available
Rahmani (2014)	Included patients diagnosed with stage 1–2–3 breast cancer	It was determined that the MBSR program was effective in improving the quality of life and reducing fatigue, pain and side effects of treatment	Gains continued in the second month after the intervention
Lee (2017)	Included patients diagnosed with metastatic breast cancer	There was no difference in the quality of life data between the experimental group, in which the MBSR program was applied, and the control group without any intervention	No information available
Pouy (2018)	Included people diagnosed with breast cancer at least 6 months ago	It was observed that the quality of life and life expectancy of the patients in the experimental group increased after the intervention	Gains continued in the second month after the intervention

and stress levels decreased. In a follow-up study performed 2 months after the intervention, it was stated that the effects of the awareness-based intervention were continuing.

Discussion

In this study, which included the effects of awareness-based intervention studies on quality of life in breast cancer patients, only randomized controlled studies were examined. The results of 7 studies that met the specified criteria showed that awareness-based interventions improved the psychological and physical symptoms of patients diagnosed with breast cancer in almost all of them. In the follow-up measurements of the studies, it was reported that awareness-based intervention groups generally maintained their treatment gains.

Seven studies involving 640 participants with a diagnosis of breast cancer noted a positive effect of MBSR interventions on quality of life.[35–39,41] The intervention applied to the participants is the original MBSR program. The MBSR program consists of 8 sessions and was implemented once or twice a week. One of the factors that can affect the effectiveness of interventions is the length of therapy administered. The duration of training sessions in the studies ranges from at least 60 minutes to 2.5 hours per week. Among the included studies, one study compared the intervention type with two control groups,[36] whereas another study compared two intervention groups.[39] The general content of the programs applied to the intervention groups consisted of techniques such as body scanning, yoga, psychoeducation and meditation. Some of the studies in the review have detailed session structures. However, homework technique was also used for patients in the intervention group.[37,39] Based on these data, it can be said that awareness-based interventions consisting of 8 sessions and supported by homework are successful in reducing physical and psychological problems. In the studies evaluated, it was observed that the differences in the content of the programs applied to the intervention group (such as homework and additional sessions) and the application of the materials used during the intervention (video recordings and manuals) to the participants did not indicate whether or not they made a difference in the results after the intervention.

Among 7 studies, only one study reported no significant effect of MBSR interventions on quality of life. In the study conducted by Lee et al.[40] In 2017, Korean female patients with metastatic breast cancer were selected as the sample. When the data of the 8-week MBSR intervention group was compared with the control group, there was no significant difference in the quality of life scores. The remaining patients diagnosed with breast cancer who received the original MBSR intervention experienced an increase in quality of life compared to the control group.

In the studies in the study, it was seen that the waiting list and standard care were generally chosen as the comparison group. Only Rahmani et al.'s[39] (2014) study included two intervention groups. In this study, while the MBSR program was applied to one group, metacognitive intervention method was used for the other group. In a study comparing these two intervention programs, the MBSR program was found to be a more effective method in alleviating symptoms such as quality of life, sleep quality, fatigue and pain. In addition, in the study conducted by Henderson et al.[36] (2012), two control groups were formed and one of these groups was given the usual treatment, while the other was administered a nutrition education program (NEP). When the MBSR program was compared with the nutrition education program, it was found that there was an increase in developing and maintaining coping skills and that symptoms such as unhappiness, paranoid thinking, anger and anxiety decreased after the MBSR intervention. It was observed that having an active treatment group (e.g. metacognitive therapy) and further studies with active comparison groups to examine the effectiveness of mindfulness-based studies could reveal the main effects of treatment. For this reason, in future studies, including another treatment group to evaluate the psychological outcomes of patients with breast cancer will provide a way to interpret the findings of the literature and to evaluate the effectiveness of the treatments.

Two studies included in the study showed that the MBSR program led to a significant increase in the coping skills of patients diagnosed with breast cancer.[35,36] In the other two studies included in the study, it was found that the MBSR program increased sleep quality.[39,40] In line with the results of these studies, it is seen that more studies are needed to investigate the effect of the MBSR program on the physical and psychological symptoms of cancer.

It was observed that the effects of awareness-based interventions continue in most of the studies evaluated within the scope of the study and that the studies include follow-up studies.[35–37,39,41] Another point obtained from the studies in the review is that there are time differences in the follow-up studies and that the studies mostly include short follow-up periods. In the studies included in the review, follow-up studies range from 4 weeks[35] to 2 years.[36] In addition, it was observed that in the two studies included in the study, information about the follow-up study was not included.[38,40] In the study conducted by Henderson et al.[36] (2012), it was determined that the psychosocial results of the intervention group decreased in a short-term follow-up. However, the same findings did not occur in the majority of studies, and it was observed that gains continued.[37,39,41] The fact that follow-up studies are carried out at a frequency and for a long time appropriate to the people involved in research can be an important factor for the effectiveness and sustainability of awareness-based interventions.[42] In future studies, keeping follow-up studies at an appropriate frequency and for a longer period will present findings about the long-term effects of awareness-based interventions.

It was found that the studies included in the review frequently focused on psychological distress, coping skills, and quality of life and that mindfulness-based therapies helped patients improve their coping skills and quality of life. However, it was observed that there was a limited number of studies on the effects of mindfulness-based therapies on the physical symptoms experienced by cancer patients. It is important for future studies to assess their impact on physical symptom levels, such as fatigue, pain, and somatic symptoms, which are common in cancer patients.

Finally, the objective of the present systematic review is to evaluate the effects of awareness-based interventions on quality of life in patients diagnosed with breast cancer. Implications for clinical practice should be drawn in light of these limitations. In this systematic review, MBSR interventions for women diagnosed with breast cancer were shown to be an effective and reliable intervention program. Therefore, implementing MBSR intervention programs in such patients will be supportive in cancer treatment.

Conclusion

This review was conducted to evaluate the effects of MBSR interventions on the quality of life of patients diagnosed with breast cancer. It reveals that the mindfulness-based stress reduction program can play an important role in improving symptoms in people diagnosed with breast cancer and lead to positive results for patients after participating in this program. It was observed that the MBSR program was effective and safe in terms of increasing quality of life in patients diagnosed with breast cancer. It was also revealed that it played an important role in increasing the symptoms of stress and sleep quality.

In all the studies evaluated, it is seen that mindfulness-based intervention programs are an effective approach to reduce the symptoms experienced by patients diagnosed with breast cancer after treatment and create positive results. Although all of the studies included in the review were randomized controlled studies, some methodological differences were observed. For this reason, it is recommended that future studies should conduct intervention programs that apply appropriate follow-up periods, examine the characteristics of the person who discontinues treatment, have follow-up periods after application, and examine physical symptoms common in cancer patients.

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References

1. Alipour A. An Introduction to health psychology. 2nd ed. Tehran: Payame Noor University; 2011. p. 120–88.
2. Işık, I. Meme kanseri hastalarında tedavi sonrası dönemde gelişen psikososyal sorunlar ve destekleyici hemşirelik girişimleri. HEAD 2014;11:58–64.
3. Maunsell E, Brisson J, Deschênes L. Psychological distress after

initial treatment of breast cancer. Assessment of potential risk factors. Cancer 1992;70:120–5.
4. Deimling GT, Sterns S, Bowman KF, Kahana B. The health of older-adult, long-term cancer survivors. Cancer Nurs 2005;28:415–24.
5. Smith JE, Richardson J, Hoffman C, Pilkington K. Mindfulness-Based Stress Reduction as supportive therapy in cancer care: systematic review. J Adv Nurs 2005;52:315–27.
6. Piet J, Würtzen H, Zachariae R. The effect of mindfulness-based therapy on symptoms of anxiety and depression in adult cancer patients and survivors: a systematic review and meta-analysis. J Consult Clin Psychol 2012;80:1007–20.
7. Stanton AL, Luecken LJ, MacKinnon DP, Thompson EH. Mechanisms in psychosocial interventions for adults living with cancer: opportunity for integration of theory, research, and practice. J Consult Clin Psychol 2013;81:318–35.
8. Smith B, Metzker K, Waite R, Gerrity P. Short-form mindfulness-based stress reduction reduces anxiety and improves health-related quality of life in an inner-city population. Holist Nurs Pract 2015;29:70–7.
9. Batty GD, Russ TC, Stamatakis E, Kivimäki M. Psychological distress in relation to site specific cancer mortality: pooling of unpublished data from 16 prospective cohort studies. BMJ 2017;356:j108.
10. Gómez-Campelo P, Bragado-Álvarez C, Hernández-Lloreda MJ. Psychological distress in women with breast and gynecological cancer treated with radical surgery. Psychooncology 2014;23:459–66.
11. Russell L, Gough K, Drosdowsky A, Schofield P, Aranda S, Butow PN, et al. Psychological distress, quality of life, symptoms and unmet needs of colorectal cancer survivors near the end of treatment. J Cancer Surviv 2015;9:462–70.
12. Palesh O, Aldridge-Gerry A, Ulusakarya A, Ortiz-Tudela E, Capuron L, Innominato PF. Sleep disruption in breast cancer patients and survivors. J Natl Compr Canc Netw 2013;11:1523–30.
13. Howell D, Oliver TK, Keller-Olaman S, Davidson JR, Garland S, Samuels C, et al. Sleep disturbance in adults with cancer: a systematic review of evidence for best practices in assessment and management for clinical practice. Ann Oncol 2014;25:791–800.
14. Khoramirad A, Mousavi M, Dadkhahtehrani T, Pourmarzi D. Relationship Between Sleep Quality and Spiritual Well-Being/Religious Activities in Muslim Women with Breast Cancer. J Relig Health 2015;54:2276–85.
15. Carlson LE, Angen M, Cullum J, Goodey E, Koopmans J, Lamont L, et al. High levels of untreated distress and fatigue in cancer patients. Br J Cancer 2004;90:2297–304.
16. Stein KD, Syrjala KL, Andrykowski MA. Physical and psychological long-term and late effects of cancer. Cancer 2008;112(Suppl 11):2577–92.
17. Simard S, Thewes B, Humphris G, Dixon M, Hayden C, Mireskandari S, et al. Fear of cancer recurrence in adult cancer survivors: a systematic review of quantitative studies. J Cancer Surviv 2013;7:300–22.
18. Thewes B, Butow P, Bell ML, Beith J, Stuart-Harris R, Grossi M, et al; FCR Study Advisory Committee. Fear of cancer recurrence in young women with a history of early-stage breast cancer: a cross-sectional study of prevalence and association with health behaviours. Support Care Cancer 2012;20:2651–9.
19. Yastıbaş C, Dirik G. kanser ve farkındalık temelli müdahale programları: sistematik derleme. Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry 2018;10:385–403.
20. Downer SM, Cody MM, McCluskey P, Wilson PD, Arnott SJ, Lister TA, et al. Pursuit and practice of complementary therapies by cancer patients receiving conventional treatment. BMJ 1994;309:86–9.
21. Marchioro G, Azzarello G, Checchin F, Perale M, Segati R, Sampognaro E, et al. The İmpact Of A Psychological İntervention On Quality Of Life İn Non-Metastatic Breast Cancer. Eur J Cancer 1996;32:1612–5.
22. Stevensen, C. Nursing Perspectives. In: Barraclough J, editor. Integrated Cancer Care: Holistic, Complementary, and Creative Approaches. Oxford University Press; 2001. p. 23–35.
23. Bishop SR, Lau M, Shapiro S, Carlson L, Anderson ND, Carmody J, Devins G. Mindfulness: a proposed operational definition. Clinical Psychology: Science And Practice 2004;11: 230–41.
24. McKee A, Johnston F, Massimilian R. Mindfulness, hope and compassion: a leader's road map to renewal. Ivey Business Journal 2006;70:1–5.
25. Demir V. Bilinçli farkındalık temelli hazırlanan eğitim programının bireylerin depresyon ve stres düzeyleri üzerine etkisi. [Yayımlanmamış Yükseklisans Tezi]. İstanbul: İstanbul Arel Üniversitesi Sosyal Bilimler Enstitüsü; 2014.
26. Demir V. Bilinçli farkındalık temelli bilişsel terapi programının üniversite öğrencilerinin kaygı düzeylerine etkisi. Uluslararası Toplum Araştırmaları Dergisi 2017;7:98–118.
27. Campbell TS, Labelle LE, Bacon SL, Faris P, Carlson LE. Impact of Mindfulness-Based Stress Reduction (MBSR) on attention, rumination and resting blood pressure in women with cancer: a waitlist-controlled study. J Behav Med 2012;35:262–71.
28. Carlson LE. Mindfulness-based interventions for physical conditions: a narrative review evaluating levels of evidence. ISRN Psychiatry 2012;2012:651583.
29. van der Lee ML, Garssen B. Mindfulness-based cognitive therapy reduces chronic cancer-related fatigue: a treatment study. Psychooncology 2012;21:264–72.
30. Chambers SK, Occhipinti S, Foley E, Clutton S, Legg M, Berry M, et al. Mindfulness-based cognitive therapy in advanced prostate cancer: a randomized controlled trial. J Clin Oncol 2017;35:291–7.
31. Nakamura Y, Lipschitz DL, Kuhn R, Kinney AY, Donaldson GW. Investigating efficacy of two brief mind-body intervention programs for managing sleep disturbance in cancer survivors: a pilot randomized controlled trial. J Cancer Surviv 2013;7:165–82.
32. Ledesma D, Kumano H. Mindfulness-based stress reduction and cancer: a meta-analysis. Psychooncology 2009;18:571–9.
33. Baer RA. Mindfulness training as a clinical intervention: a conceptual and empirical review. Clin Psychol Sci Pract 2003;10:125143.

34. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Ann Intern Med 2009;151:264–9.
35. Witek-Janusek L, Albuquerque K, Chroniak KR, Chroniak C, Durazo-Arvizu R, Mathews HL. Effect of mindfulness based stress reduction on immune function, quality of life and coping in women newly diagnosed with early stage breast cancer. Brain Behav Immun 2008;22:969–81.
36. Henderson VP, Clemow L, Massion AO, Hurley TG, Druker S, Hébert JR. The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial. Breast Cancer Res Treat 2012;131:99–109.
37. Hoffman CJ, Ersser SJ, Hopkinson JB, Nicholls PG, Harrington JE, Thomas PW. Effectiveness of mindfulness-based stress reduction in mood, breast- and endocrine-related quality of life, and well-being in stage 0 to III breast cancer: a randomized, controlled trial. J Clin Oncol 2012;30:1335–42.
38. Lerman R, Jarski R, Rea H, Gellish R, Vicini F. Improving symptoms and quality of life of female cancer survivors: a randomized controlled study. Ann Surg Oncol 2012;19:373–8.
39. Rahmani S, Talepasand S, Ghanbary-Motlagh A. Comparison of effectiveness of the metacognition treatment and the mindfulness-based stress reduction treatment on global and specific life quality of women with breast cancer. Iran J Cancer Prev 2014;7:184–96.
40. Lee CE, Kim S, Kim S, Joo HM, Lee S. Effects of a mindfulness-based stress reduction program on the physical and psychological status and quality of life in patients with metastatic breast cancer. Holist Nurs Pract 2017;31:260–9.
41. Pouy S, Attari Peikani F, Nourmohammadi H, Sanei P, Tarjoman A, Borji M. Investigating the effect of mindfulness-based training on psychological status and quality of life in patients with breast cancer. Asian Pac J Cancer Prev 2018;19:1993–8.
42. Sanderson WC. Why empirically supported psychological treatments are important. Behav Modif 2003;27:290–9.