- *Basic Research*

Effectiveness of Mindfulness-Based Interventions for Reducing Anxiety among Breast Cancer Women at Nasser Institute-Egypt

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Abstract

Background: Breast cancer is characterized by negative aspects. Mindfulness-Based Interventions (MBIs) are psychological approaches that incorporate mindfulness practices to promote awareness, non-judgmental acceptance, and present-moment focus. **Aim of the study:** The study aimed to evaluate the effect of MBIs for reducing anxiety among post-operative breast cancer women. **Research design:** A quasi-experimental design was employed. **Setting:** The study was conducted at the Nasser Institute for Oncology. **Subject:** A convenience sample of post-operative breast cancer women (n= 30). **Tools of data collection:** Three tools were utilized for data collection: A structured sheet for gathering socio-demographic data and assessing women's knowledge. The Freiburg Mindfulness Inventory (FMI), a Likert-type self-report scale. The Hamilton Anxiety Rating Scale (HAM-A). **Results:** The findings revealed that a significant majority of breast cancer patients exhibited high mindfulness awareness, with a notable increase observed after the intervention ($\chi 2 = 56.143$, $P < 0.001**$). Additionally, anxiety levels decreased post-intervention, with over half of the participants reporting mild anxiety ($\chi 2 = 24.178$, $P < 0.001**$). **Conclusion:** The study concluded that; the Mindfulness-Based Interventions program for breast cancer women had significant reducing in women's level of anxiety. **Recommendations:** The study recommended that; MBIs program should be included in the protocol of treatment as a psychological support for reducing anxiety among breast cancer women.

Keywords: Anxiety, Breast Cancer, Mindfulness Based Interventions.

1. Introduction:

Breast cancer originates in the cells of the breast and is among the most prevalent cancers in women, although men can also be affected, albeit less frequently. It encompasses various malignancies that develop in the mammary glands and is characterized by diverse physiological and molecular profiles. Breast cancer can manifest in different areas of the breast, including the ducts, lobules, or the surrounding tissue. There are several forms of breast cancers that might manifest in different parts of the breast, such as the ducts, lobules, or the tissue in between. **(Reme et al., 2022).**

Breast cancer presents various negative aspects encompassing physical, mental, and psychological symptoms. Anxiety, when excessive and uncontrollable, can develop into a pathological disorder, characterized by a lack of specific external triggers and a wide array of affective symptoms along with behavioral and cognitive changes **(Liu et al., 2022; Reme et al., 2022).**

Anxiety is typically manifested as overwhelming worry, severe terror in the form of panic attacks, disturbing nightmares, and flashbacks. Patients report experiencing uncontrolled dread, restlessness, hypervigilance, sleeplessness, dyspnea, tachycardia, numbness, exhaustion, or muscular strain. Anxiety can arise upon receiving a breast cancer diagnosis, during treatment, or later during disease monitoring. **(Tsaras k et al. , 2018).**

Many breast cancer patients seek alternative remedies to ease symptoms. 33% to 47% of women globally, and 48% to 80% of American women, utilize such therapies, and meditation is one of the complimentary options that helps with recovery by lowering pain, tension, anxiety, sadness, exhaustion, and even medicine side effects. Kabat-Zinn was the first to propose meditation, and it has subsequently been successfully integrated into a range of therapy modalities **(Del-Castanhel and Liberali, 2018).**

Mindfulness-Based Interventions (MBIs) are psychological treatments that combine mindfulness techniques to promote awareness, nonjudgmental acceptance, and attention to the present moment. These interventions are becoming more widely used in healthcare settings, particularly to address the issues associated with cancer diagnosis, treatment, and survivorship. MBIs frequently address common sensations such as loss of control, uncertainty about the future, and worries of recurrence, as well as a wide range of medical and psychological symptoms such as sadness, anxiety, sleeplessness, and exhaustion **(Wang et al., 2022).**

Numerous mindfulness-based therapeutic approaches are currently available, each tailored to address specific needs. These include Mindfulness-Based Eating Awareness Training (MB-EAT), Mindfulness-Based Relationship Enhancement (MBRE), Mindfulness-Based Relapse Prevention (MBRP), Mindfulness-Based Cognitive Therapy (MBCT), and Mindfulness-Based Stress Reduction. MBSR, in particular, is a widely

established technique that incorporates many mindfulness practices, including hatha yoga **(Del-Castanhel and Liberali, 2018).**

2. Aim of the study:

The objective of this study is to assess the effectiveness of a mindfulness-based intervention in reducing anxiety among women recovering from breast cancer surgery by:

1- Evaluating the anxiety levels among post-operative breast cancer women before, immediately after, and during follow-up after participating in the mindfulness-based intervention program.

2- Assessing the level of mindfulness among post-operative breast cancer women before, immediately after, and during follow-up after participating in the mindfulness-based intervention program.

3- Implementing the Mindfulness-Based Interventions program among post-operative breast cancer women.

4- Examining the impact of the Mindfulness-Based Interventions program on post-operative breast cancer women immediately after and during follow-up after participating in the program."

3. Significance of the Study

Breast cancer is the most common cancer among Egyptian women, accounting for 18.9% of all cancer cases with an age-adjusted incidence rate of 49.6 per 100,000 individuals **(Elsheshtawy et al., 2014).** Breast cancer is the most frequent disease among women globally, affecting one out of every eight of them at some time in their life. Breast cancer is on the rise in many developing nations.

Anxiety is a prominent symptom associated with breast cancer and can significantly impact the risk of relapse or mastitis. Mindfulness-Based Interventions (MBIs) are particularly effective in addressing the common emotions experienced during cancer diagnosis, treatment, and survivorship, such as feelings of loss of control, uncertainty about the future, and fear of recurrence. MBIs also target various physical and psychological symptoms, including depression, anxiety, insomnia, and fatigue.

4. Research Design:

A quasi-experimental research design was utilized in this study.

5. Research Setting:

The current study was conducted at Nasser Institute for oncology including outpatient units. This is one of the largest specialized medical centers and one of the most important providers of health care services in Egypt, inaugurated in 1987.

6. Research Subjects:

Convenience sample included 30 women of post-operative breast cancer women.

7. Tools for data collection:

The current study contains 3 tools: -

7.1 A structured questionnaire sheet:

The researchers built this tool based on a review of the literature; it comprises the following data relevant to breast cancer women:

Part I:- Breast cancer women's characteristics and medical history included age, residence, marital status, number of children, employment, educational levels, stage of cancer, and heredity, among other factors.

Part II knowledge assessment (Pre, post & follow-up)**:** about breast cancer questionnaire that aimed to assess the knowledge about breast cancer through multiple choices questions (MCQ) with breast cancer women, it contains 10 items, ex: assess the definition, causes, signs, and types of breast cancer. The answer of the questions converted to Satisfactory >60% (4-6) and Unsatisfactory <60% (0-3).

7.2 Freiburg Mindfulness Inventory (FMI). (Wallach H et al., 2006) (Pre, post-test & follow-up):

FMI aims to investigate a critical aspect of mindfulness, concentrating on the attention and attitudinal aspects that comprise the construct, namely open or receptive awareness of and attention to what is happening in the moment. It was developed by Wallach H. et al. (2006).
Scoring system of (FMI): -

It includes 14 items on a Likert-type self-report scale with ratings ranging from 1 (rarely) to 4 (nearly usually). Composed of The short scale showed sensitivity to change [56] and strong internal consistency ($\alpha = 0.84$).. It is a valid and accurate questionnaire for assessing mindfulness. Add together all the elements to generate a single summary score.

The answer yielded 14-19 low awareness, 20-37 intermediate awareness, and 38-56 high awareness.

7.3 Hamilton Anxiety Rating Scale (HAM-A) (Hamilton, 1959) (Pre, post, and follow-up):

The Hamilton Anxiety Rating Scale (HAM-A) was one of the first measures designed to evaluate the severity of anxiety symptoms, and it is currently frequently used in clinical and research settings. It includes 14 measures, each with a score ranging from 0 (not present) to 4 (severe), that assess both psychic anxiety (mental agitation and psychological anguish) and somatic anxiety (physical feelings associated with stress).

Scoring system (HAM-A): -

The scale's 14 items are rated as follows: (0 to 14: Normal anxiety), (15 to 28: Mild anxiety), (29 to 42: Moderate anxiety), (43 to 56: Severe anxiety).

8. Operational design:

8.1 Exploratory phase:

Pilot study

A pilot study was conducted on 10% of the total research sample (30 participants) to ensure the reliability, clarity of questions, and proper application of the tools. Additionally, the pilot study assessed the time required to complete the tools and allowed for necessary adjustments based on available resources. Participants from the pilot study were included in the final sample.

8.2 Ethical considerations:

The referenced number of the ethics committee (23) on the date (24-3-2021).

The study's ethical considerations included the following.

- All collected data was just for research purposes.

- The study sample was informed about the study's purpose and expected outcomes. They were assured that participation was voluntary and that they could withdraw at any time without explanation. Anonymity and confidentiality were also guaranteed.

9. Field Work:

The fieldwork spanned a six-month period, starting from December 2022 and concluding in May 2023. The researchers were available at the study setting two days per week. Meetings with participants took place on Mondays from 9:00 to 10:30 a.m. for group 1 and Tuesdays from 9:00 to 10:30 a.m. for group 2, held at the Nasser Institute's outpatient unit, with each group consisting of 15 women. The educational program included one introductory session, 12 sessions (comprising 4 theoretical and 8 practical sessions), and one data collection session, all conducted over a 12-week period. The fieldwork was divided into five distinct stages.

9.1 Assessment phase:

During this phase, the researchers employed pre-constructed instruments to collect data on women's sociodemographic data and breast cancer knowledge, as well as tools to assess mindfulness and anxiety levels among breast cancer women (pre-intervention of program MBIs). The time allowed to complete the structured questionnaire format was 30-45 minutes.

9.2 Planning phase:

The Mindfulness-Based Interventions program was designed on the light of the literature review and according to the actual needs of the studied women that were determined in the assessment phase. The content of the Mindfulness-Based Interventions program included knowledge about breast cancer and anxiety and mindfulness based interventions (MBIs) as well as the application of the MBIs program.

9.3 Implementing phase:

The total number of sessions was Twelve sessions; Four theoretical sessions which include knowledge about breast cancer (definition, causes, signs and symptoms, types, and preventive measures) as well as knowledge about anxiety (definition, causes, effect of anxiety on the individual, and how to deal with anxiety) and knowledge about mindfulness (definition, benefits, and types). In addition, eight practical sessions about MBIs application including interventions of formal practice through body scan, mindfull breathing, Hatha yoga, mindfull sitting, and mindfull loving-kindness practice toward the self. At the end of each practical session was giving the women an informal practice of mindfulness as a home work like mindfull eating, drinking, walking and all routine daily activities then discuss the effect of it for each studied woman at the beginning of the next session.

MBIs was carried out weekly before sessions of chemotherapy, through group therapy using audio-guided meditation. Different teaching methods were used as; group

discussion, brainstorming, lecture, homework activity role play demonstration, and re-demonstration. Suitable media was used as; handouts, PowerPoint, booklet, Video, poster, and script.

9.4 Evaluation phase:

After completing the Mindfulness-Based Interventions, a post-test was administered to women using the same assessment tools to evaluate the outcomes of the Mindfulness-Based Interventions program using the women's assessment knowledge related to breast cancer, as well as to assess women's level of anxiety regarding the application of the MBIs program.

9.5 Follow-up phase:

Follow-up was conducted for breast cancer women after 3 months by using the same tools, evaluating knowledge about breast cancer, severity of anxiety, and mindfulness.

Program appraisal was done by comparing the women's knowledge and practice before, after, and follow-up the Mindfulness-Based Interventions program.

10. Administrative design:

Official permission was obtained from the Dean of Faculty of Nursing Helwan University, Nasser Institute in Cairo where the study was conducted and the permission of Ministry of Health.

11. Statistical Design:

The acquired data was structured, analyzed, and presented in the form of tables and figures using the Statistical Package for Social Sciences (SPSS) version 22. Qualitative components were presented as frequencies and percentages, whilst quantitative variables were represented as means and standard deviations. The data were analyzed using chi-square ($\chi 2$) and Pearson's correlation coefficient (r) tests, with $P < 0.05$ indicating a statistically significant difference.

12. Results:

Table (1) shows the number and percentage distribution of the examined women based on their sociodemographic characteristics (N=30).

Socio-demographic data	No.	%
Age (years)		
38 - 45 years	10	33.3
> 46 years	20	66.7
Mean±SD 48.33±7.25		
Mitral status		
Married	30	100.0
Address		
In-Cairo	22	73.3
Out-Cairo	8	26.7
Occupation	10	33.3
Worker	20	66.7
House-wife		

Table (1) shows the socio-demographic characteristics of women with breast cancer and found that 33.3% of them ranged 38 - 45 years and 66.7% are >46 years with a Mean ±SD of 48.33±7.25. Regarding marital status found that (100%) are married. In addition, 73.3% of them lived in-Cairo and 26.7 % lived out-Cairo. Regarding occupation found that 66.7% house-wife and 33.3%worker.

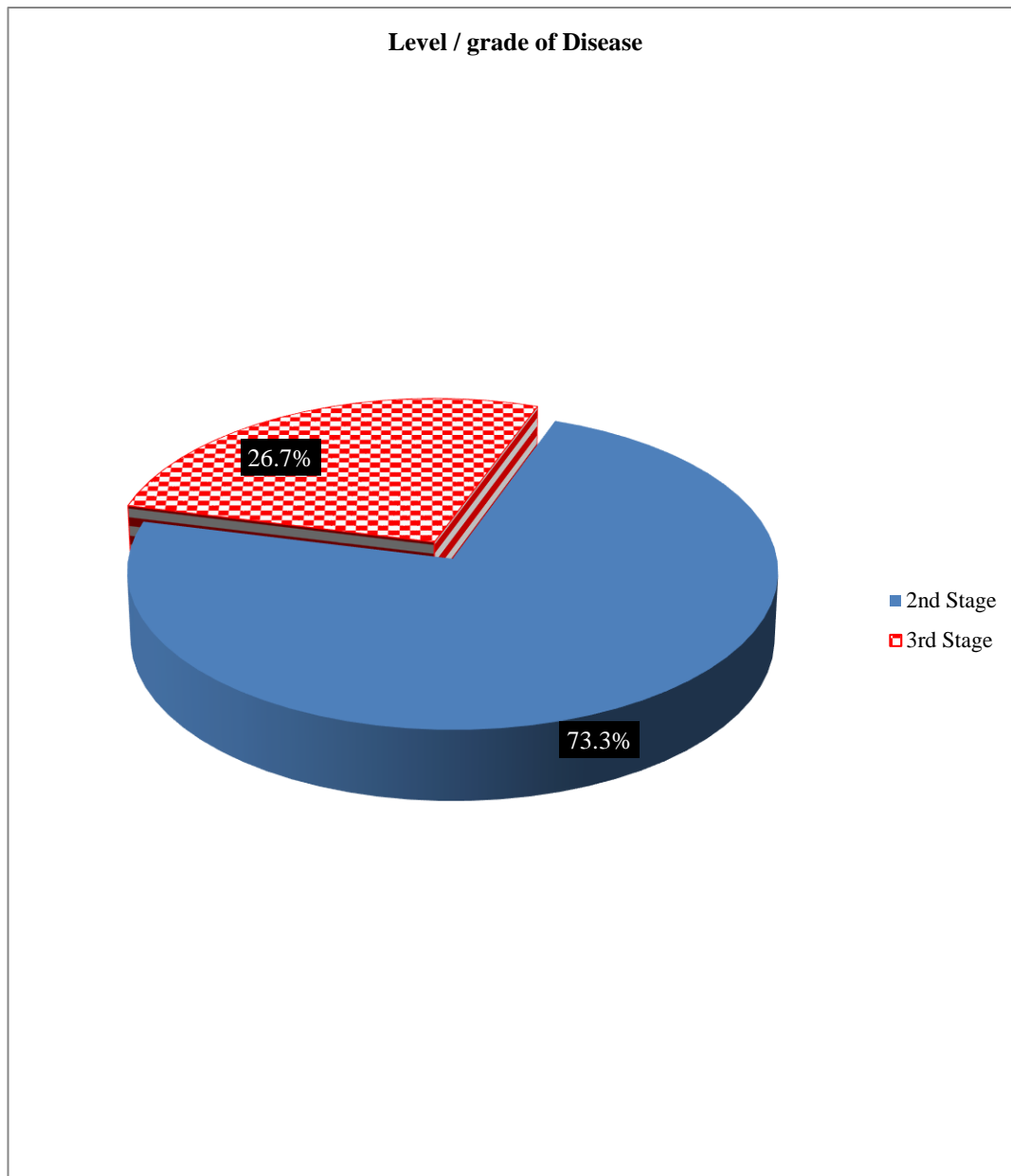**Figure 1: The percentage distribution of the investigated women based on their educational degree (n = 30)**
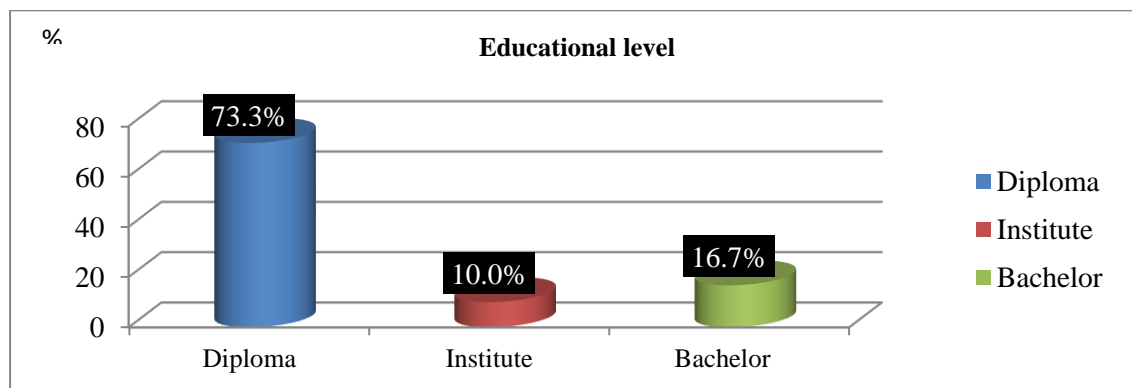
Table (2) shows the number and percentage distribution of the analyzed women based on their breast cancer history (n=30)

Item	No.	%
Number of relapsing		
1st time of disease	30	100
Type of current treatment		
Chemotherapy treatment	30	100
Do you have heredity with the disease?		
Yes	10	33.3
No	20	66.7
If the answer of heredity is (Yes), who is the relative?		
Yes, Mothers have breast cancer	10	33.3
Did you have other diseases?		
Hypertension + Diabetes	10	33.3
Hypertension	10	33.3
No other diseases	10	33.4
How did you discover the disease?		
Nodules in breast)	22	73.3
Pain in breast	5	16.7
Breast self-examination	3	10.0
Degree of improvement during treatment		
Mild improvement	8	26.7
Moderate improvement	20	66.7
High improvement	2	6.7
Using of other strategies to deal with anxiety		
No	30	100.0

Table (2) reveals the medical history of the studied women and found that more than half of them (73.3%) in 2nd stage of the disease and (26.7%) in 3rd stage of the disease. Regarding relapsing of the disease found that (100%) are 1st time without relapsing. Moreover more than two-third of them (66.7%) hasn't heredity and (33.3%) has heredity with their mothers.

Figure (2) depicts the percentage distribution of the investigated women according to their sickness level/grade (n = 30).
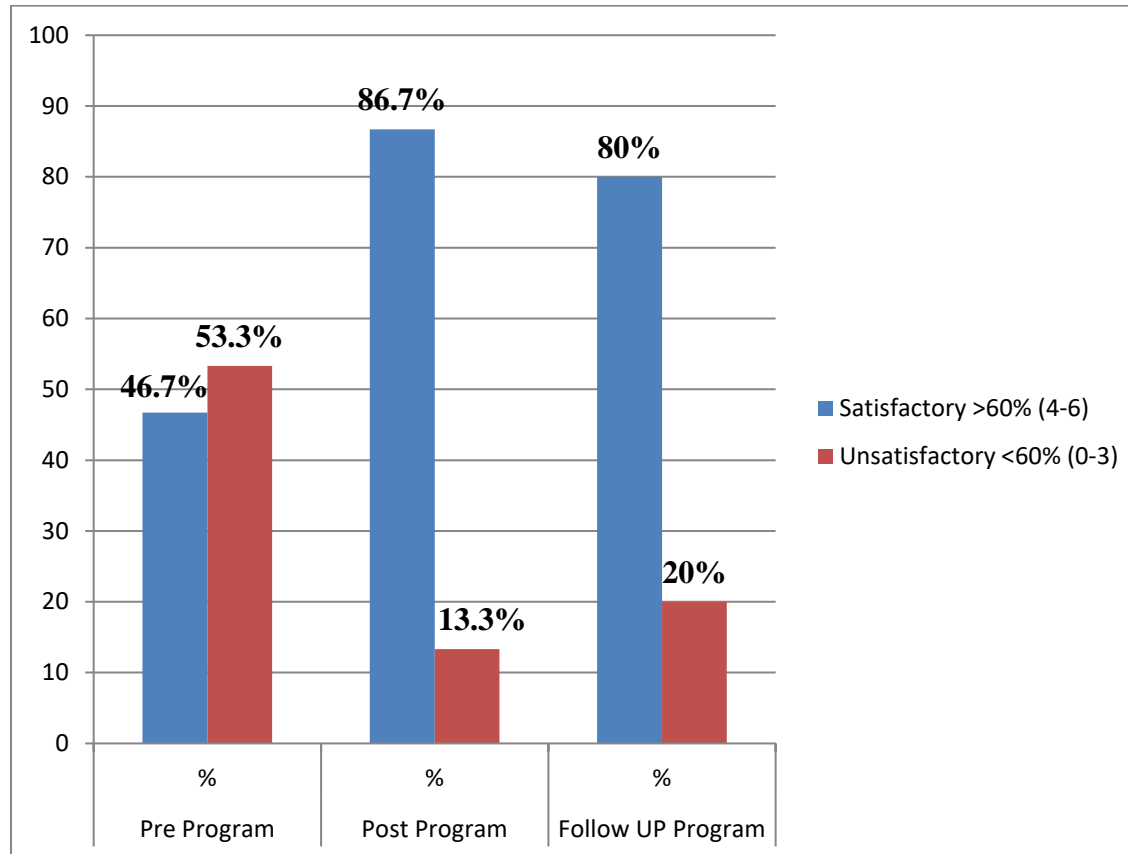
Table (3): Number and percentage distribution of the studied women according to their total knowledge about breast cancer of (pre/ post & follow up) (N=30).

Knowledge	Pre-Program		Post Program		Follow UP Program		Pre-Post		Pre-FU	
	No.	%	No.	%	No	%	x^2	p-value	x^2	p-value
Satisfactory >60% (4-6)	14	46.7	26	86.7	24	80.00				
Unsatisfactory <60% (0-3)	16	53.3	4	13.3	6	20.00				
Total	30	100.0	30	100.0	30	100.0	9.075	0.003*	8.919	0.015*
Mean score ±SD	2.38±1.04		4.38±1.27		3.97±1.18					
Range	1-4		3-6		2-5					
%Percentage of change	--		84.03%		79%					

Table (3) reveals that there is statistically significant difference between pre and post knowledge assessment regarding the total knowledge about breast cancer among breast cancer women at p-value 0.003* with percentage of change 84.03 %.

Figure (3) shows the number and percentage distribution of the examined women based on their overall knowledge about breast cancer (pre/post and follow-up) (n=30).
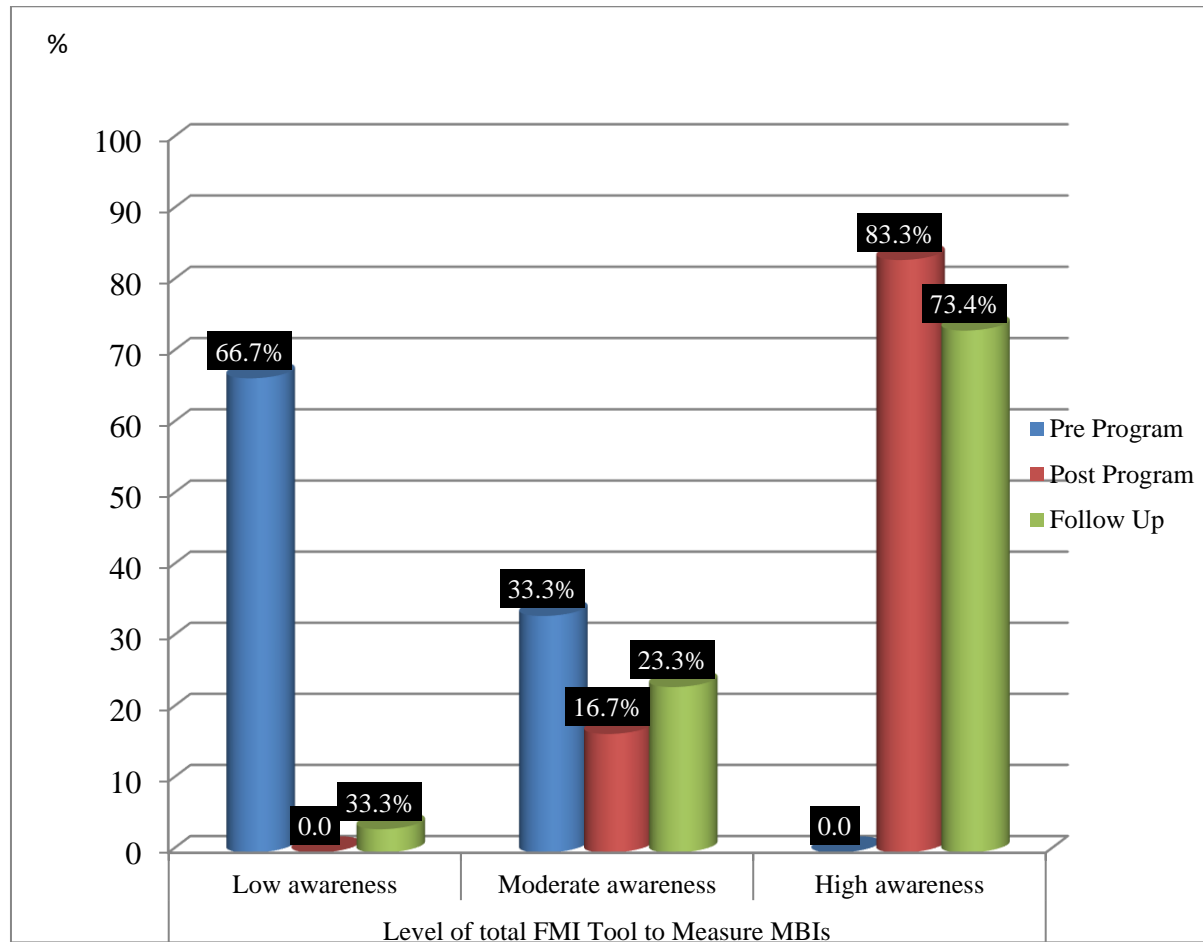
Table (4): Number and percentage distribution of the studied women of breast cancer according to their level of total FMI Tool to Measure MBIs of (pre/ post/ follow up) (N=30).

Level of total FMI Tool to Measure MBIs	Pre Program (n=30)		Post Program (n=30)		Follow Up (n=30)		Pre-Post		Pre-FU	
	No.	%	No.	%	No.	%	x^2	p-value	x^2	p-value
Low awareness (14-19)	20	66.7	0	0.0	1	3.3				
Moderate awareness (20-37)	10	33.3	5	16.7	7	23.3				
High awareness (38-56)	0	0.0	25	83.3	22	73.4	56.143	<0.001**	8.571	0.016*
Mean score ±SD	19.67±3.15		35.33±4.68		33.63±3.55					
Range	17-23		26-43		19-41					
%Percentage of change	--		79.61%		70.97%					

There is a significant difference (p-value < 0.001) between before and post Mindfulness Based Intervention Programs in terms of overall Mindful Attention Awareness. Following program execution, there was an increase in high awareness (83.3%) and percentage change (79.61%). While there is a statistically significant difference between post- and follow-up the program in terms of overall Mindful Attention Awareness (p-value > 0.05), the program follow-up is representative in High awareness (73.4%) with percentage of change (70.97%).

Figure (4): Percentage distribution of the studied women of breast cancer according to their level of total FMI Tool to Measure MBIs of (pre/ post/ follow up) (n=30).

Table (5): Number and percentage distribution of the studied women of breast cancer according to their level of total HARS tool to measure anxiety of (pre/ post/ follow up) (N=30).

Level of HARS tool to measure Anxiety	Pre-Program (n=30)		Post Program (n=30)		Follow Up (n=30)		Pre-Post		Pre-FU	
	No.	%	No.	%	No.	%	x^2	p-value	x^2	p-value
Normal anxiety (0-14)	0	0.0	11	36.7	7	23.3				
Mild Anxiety (15-28)	4	13.3	16	53.3	16	53.3				
Moderate Anxiety (29-42)	21	70.0	3	10.0	6	20.0	24.178	<0.001**	7.430	0.020*
Severe Anxiety (43-56)	5	16.7	0	0.0	1	3.3				
Mean score ±SD	38.93±3.36		15.93±2.13		17.23±3.13					
Range	21-47		6-36		10-43					
% of change	---		59.1%		55.7%					

Table (5) indicates a significant difference in anxiety levels before and after the Mindfulness Based Interventions Program (p-value < 0.001), with a decrease in Mild Anxiety (53.3%) and a 59.1% change rate. While there is a statistically significant difference between post- and follow-up the program at p-value > 0.05, the program follow-up representative in Mild Anxiety (53.3%) decreased with the percentage of change (55.7%).

Figure (5): Percentage distribution of the studied women of breast cancer according to their level of total HARS tool to measure anxiety of (pre/ post/ follow up) (n=30).
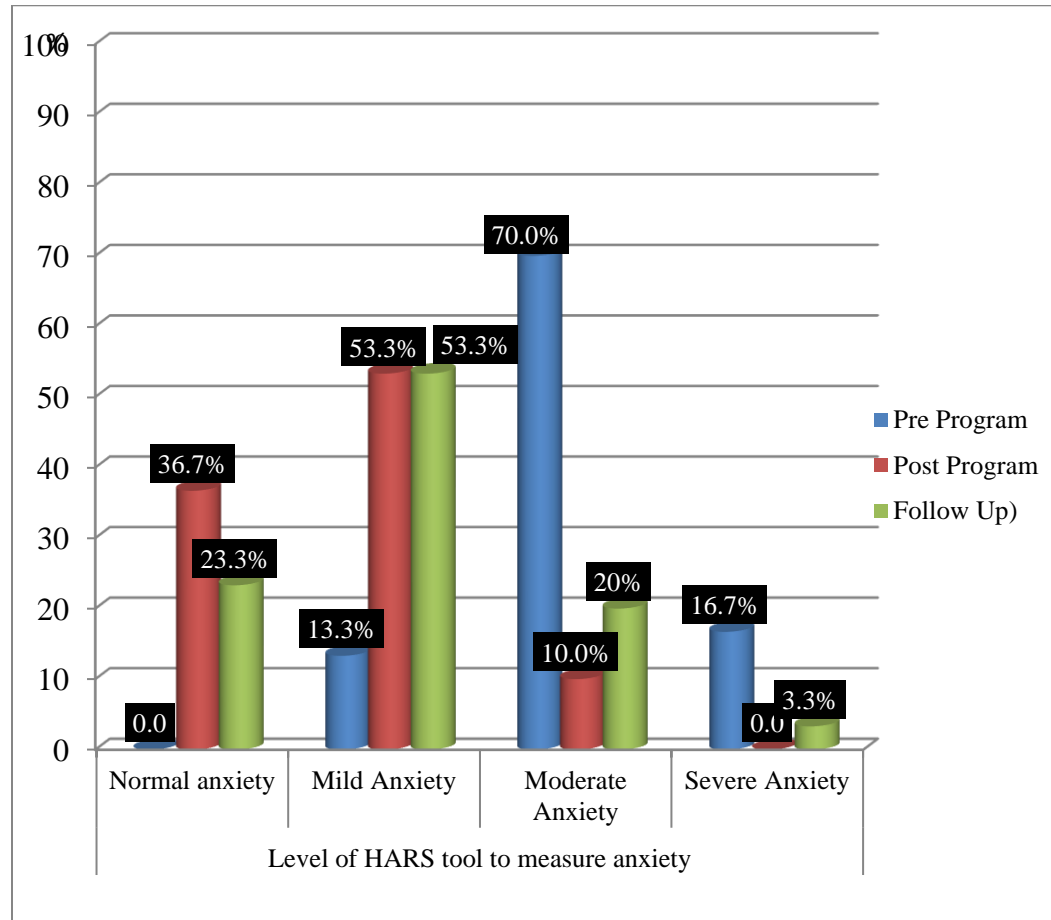
Table (6): Correlation between total score of knowledge about breast cancer and total score of Freiburg Mindfulness Inventory (FMI) Tool to Measure MBIs and total score of HARS tool to measure anxiety in Pre, Post, and Follow up program (n=30).

		Total score of knowledge			Total score of FMI			Total score of Anxiety		
		Pre	Post	FU	Pre	Post	FU	Pre	Post	FU
Total score of knowledge	*r*				0.162	0.395	0.375	0.209	0.423	0.402
	p-value				0.878	0.025*	0.029*	0.657	0.024*	0.028*
Total score of FMI	*r*	0.162	0.395	0.375				0.236	0.552	0.430
	p-value	0.878	0.025*	0.029*				0.562	<0.001**	0.027*
Total score of Anxiety	*r*	0.209	0.423	0.402	0.236	0.552	0.430			
	p-value	0.657	0.024*	0.028*	0.562	<0.001**	0.027*			

Table (6) represents a positive correlation between the total score of Freiburg Mindfulness Inventory (FMI) which measure mindfulness awareness of the studied women and the total score of anxiety level during post-program implementation with
(r 0.552, p-value <0.001), while during follow up there is statistically significant correlation between them.**

Discussion:

A significant proportion of breast cancer patients for alternative therapies to manage their symptoms. Studies indicate that between 33% to 47% of women globally and 48% to 80% of women in the United States utilize these treatments. Among these alternatives, meditation stands out as a complementary approach that enhances rehabilitation efforts by mitigating pain, stress, anxiety, depression, fatigue, and potential side effects of medication. The efficacy of meditation in clinical settings was initially introduced by **Kabat-Zinn** and has since been successfully integrated into various therapeutic interventions **(Del-Castanhel and Liberali, 2018).**

The current study was designed to assess the efficacy of mindfulness-based therapies in lowering anxiety among post-operative breast cancer patients. The study also expected that the mindfulness-based intervention program would benefit women who had undergone breast cancer surgery. Furthermore, the study was carried out at the Nasser Institute of Oncology, which included outpatient facilities, with a total sample size of 30 women.

The findings were consistent with those of **Abdelaziz et al., (2022),** who did a study in Egypt and investigated the "Relationship between Fear, Anxiety, and Chemotherapy Adherence among Patients Having Breast Cancer during COVID-19". Also discovered that the majority of breast cancer patients were between the ages of 30 and 60 and married. Furthermore, more than half of them had completed basic and secondary school, whereas just a small percentage had completed university education. Furthermore, the majority of them were housewives.

Regarding the medical history of breast cancer of the studied women, the current study results stated that, less than three quarterlies of them in the second stage of the disease, while more than one quarter of them on the third stage of the disease. This might be related to lack of regular screenings or early detection methods like mammograms and limited access to healthcare facilities, especially in certain geographic areas or among certain socioeconomic groups, could result in delayed diagnosis and presentation at later stages of breast cancer **(Carreira et al., 2021).**.

The current study findings were matched with the study by **Li et al., (2021)** who conducted the study in China and studied "Retrospective study of malignant phyllodes tumors of the breast: Younger age, prior fibroadenoma surgery, malignant heterologous elements and surgical margins may predict recurrence:. Also, reported that, more than two-third of patients hasn't heredity of breast cancer and about one quarter of them has heredity with their mothers.

The present study results were in consistent with the study by **Abu Awwad et al., (2020)** who conducted the study in the United Arab Emirates. Who studied "Women's

Breast Cancer Knowledge and Health Communication in the United Arab Emirates". Also, who stated that, all of the studied women had source of information from social media and WhatsApp and Overall, women had positive attitudes towards breast cancer screening and breast self-examination.

Furthermore, in Egypt, President Abdel Fattah El-Sisi's Initiative for Women's Health aims to achieve early detection of breast tumors in 28 governorates. It is the result and crystallization of the services of the 100 Million Health Presidential Initiatives that started in 2019. It aims to expand the provision of public health initiative services and ensure the availability of services with the required quality for all target groups. With an emphasis on the continuity and quality of referral, diagnosis, and treatment systems **(Ministry of Health and Population, 2019).**

The current study results were supported by **Abdel Halim et al., (2021)** who conducted the study in Egypt entitled "Effect of Mindfulness-Based Program and Perceived Self-Efficacy for Patients with Lung Cancer: An Intervention Study", also, who stated that, all of the studied sample had a poor levels of total knowledge before mindfulness-based program and perceived self-efficacy for lung cancer patients intervention, while, the majority of them had average to good levels of total knowledge after mindfulness-based program and perceived self-efficacy for lung cancer patients intervention. In addition, there was a statistically significant difference between total knowledge scores among the studied sample before and after the mindfulness-based program and perceived self-efficacy for lung cancer patients.

The Freiburg Mindfulness Inventory (FMI) is a well-known self-reporting questionnaire designed to measure mindfulness in individuals. The FMI has been used in various research studies to assess the impact of mindfulness-based interventions (MBIs), such as Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), on participants' mindfulness levels. It has also been used in clinical settings to track changes in mindfulness over time and to tailor interventions to individuals' needs **(Malakoutikhah et al., 2022; Zhao et al., 2023).**

The present results were similar with the study by **Chang et al., (2023)** who conducted the study in Taiwan, entitled of "Immediate impact of Mindfulness-Based Cognitive Therapy (MBCT) among women with breast cancer: a systematic review and meta-analysis", and who revealed that, the study participant awareness level of total FMI tool to measure MBIs improved after implementation of mindfulness. Also, the results suggested that MBCT is highly beneficial as an intervention for patients who have received treatment for breast cancer.

The current study results were revealed that, there was a highly statistically significant difference between pre and post Mindfulness Based Interventions Program implementation regarding Freiburg Mindfulness Inventory which increased in two items in post program implementation representative in "Fairly often" answer like "I watch my feelings without getting lost in them" and "I am able to smile when I notice how I sometimes make life difficult". The present study results might be due to mindfulness practices have been shown to have positive effects on various cognitive and emotional aspects. These practices can lead to increased self-awareness, reduced reactivity to stressors, and improved emotional well-being.

The current study results were in the same line with **Oberoi et al., (2020)** who conducted the study in Canada, entitled of "Association of Mindfulness-Based Interventions with Anxiety Severity in Adults With Cancer", and who emphasized that, This systematic review and meta-analysis of randomized controlled trials examined the effectiveness in mindfulness-based interventions in reducing anxiety and depression in adult patients with cancer. Additionally, there was a highly statistically significant difference between pre and post Mindfulness Based Interventions Program implementation with anxiety severity in adults with cancer which increased in two items in post program implementation representative as: I watch my feelings without getting lost in them" and "I am able to smile when I notice how I sometimes make life difficult.

The current study findings were consistent with the study conducted in **Germany by Schell et al., (2019),** who studied "Mindfulness-based stress reduction for women diagnosed with breast cancer" and reported that the majority of the participant patients with breast cancer anxiety levels decreased after the mindfulness-based stress intervention. Research suggests that MBSR may reduce anxiety, sadness, and exhaustion, as well as enhance sleep quality for breast cancer patients (moderate certainty).

Furthermore, the current study results are consistent with the findings of **Wang et al., (2022),** who conducted a study in China titled "Effect of a 4-Week Internet-Delivered Mindfulness-Based Cancer Recovery Intervention on the Symptom Burden and Quality of Life of Patients With Breast Cancer" and found that mindfulness-based had significantly larger decreases in the symptom burden of fatigue, pain, and anxiety of the studied group than those in the control group. Furthermore, a mindfulness-based intervention for cancer recovery had a significant influence on breast cancer patients' symptom burden and quality of life. Participants in the intervention group had significantly lower total scores than those in the control group, both immediately after the sessions and over the one-month follow-up period. Furthermore, the group intervention approach enabled breast cancer patients to talk and seek emotional support. According to research, social support was linked to better cancer adjustment and quality of life.

The results of the present study are in line with those of **Chang et al. (2021),** who conducted a similar study titled "Short-term Effects of Randomized Mindfulness-Based Intervention in Female Breast Cancer Survivors" in Taiwan. They also observed a statistically significant difference in the total anxiety levels among breast cancer patients based on their socio-demographic characteristics

Mindfulness-based interventions (MBIs) are increasingly being utilized to alleviate cancer patients' despair and anxiety while also boosting emotional and physical well-being **(Chayadi et al., 2022).** The current study's findings show that there is no statistically significant difference between the total score of knowledge about breast cancer, the total score of the Freiburg mindfulness inventory, which measures mindfulness, and the total score of HARS, which measures anxiety, among breast cancer women studied before and after implementing the mindfulness program.

On the other hand, there is a highly statistical significance difference between total score of Freiburg mindfulness inventory that measure mindfulness and total score of HARS that measure anxiety of studied breast cancer women in post mindfulness program implementation. From the researcher point of view, mindfulness program affect directly on the knowledge level of the studied women which reflect positively on their anxiety and stress level about their breast cancer diseases.

The outcomes of the current study support the idea that a mindfulness-based intervention program can benefit women recuperating from breast cancer surgery. Furthermore, the findings of this study satisfactorily meet the purpose of examining the efficacy of a mindfulness-based intervention in lowering anxiety among post-operative breast cancer patients.

Conclusion:

Based on the results of the current study, it was concluded that the Mindfulness-Based Interventions program had significant and positive effect in reducing anxiety among post-operative breast cancer women.

Recommendation:

In the light of the result of the current study, the following recommendations are suggested:

1- MBIs program should be included in the protocol of treatment as a psychological support for reducing anxiety among breast cancer women.

2- Encourage the implementation of Mindfulness-Based Interventions programs periodically for nurses working with breast cancer women to overcome anxiety and psychological symptoms.
3- Establish unit for complementary therapy in oncology Hospitals to deal with anxiety by applying of MBIs.
4- Similar studies should be conducted for breast cancer and other types of cancer in different settings to generalize findings.

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الملخص العربى

العنوان
تأثير تدخل ممارسة الوعي الذهني التام لتقليل القلق بين مرضى سرطان الثدى بعد العملية الجراحية

في معهد ناصر ــ مصر

مرض سرطان الثدي له جوانب سلبية منها أعراض جسدية وعقلية ونفسية. و إن ممارسة الوعي الذهني التام (*MBIs*) هو أسلوب نفسي يتضمن ممارسات اليقظة الذهنية لتعزيز الوعي والقبول بون حكم والتركيز على اللحظة الحالية. **هدف الدراسة:** هدفت الدراسة إلى تقييم تأثير *MBIs* لتقليل القلق لدى النساء المصابات بسرطان الثدي بعد العملية الجراحية. **تصميم البحث:** تم استخدام التصميم شبه التجريبي. **مكان الدراسة:** أجريت الدراسة في معهد ناصر للأورام. **العينة:** أخذ عينات ملائمة تتضمن أشخاصًا جاهزين للدراسة (العدد = 30). **أدوات جمع البيانات:** تم استخدام ثلاث أدوات لجمع البيانات؛ **الأداة الأولى:** بيانات عامة، وتقييم المعلومات عن سرطان الثدي؛ **الأداة الثانية:** مقياس الوعي الذهني التام (*FMI*) وهو مقياس للتقرير الذاتي من نوع *Likert* **الأداة الثالثة:** مقياس تقييم القلق هاميلتون (*HAM-A*). **النتائج:** كشفت النتيجة أن غالبية (79.6٪) من النساء المصابات بسرطان الثدي لديهن وعي عالٍ حول اليقظة الذهنية مع وجود فرق ذو دلالة إحصائية بين التدخل قبل وبعد التدريب (= *X2* 56.143 & *P = <0.001* **) وانخفاض القلق حيث غالبية (53.3٪) من النساء المصابات بسرطان الثدي لديهن قلق خفيف فيما يتعلق بالـ *MBIs* مع وجود فرق ذو دلالة إحصائية بين التدخل قبل وبعد التدريب (24.178 = *X2* *P = <0.001* & **). **الخلاصة:** خلصت الدراسة إلى أن ممارسة الوعي الذهني التام*MBIs* لديه أثر إيجابي لتقليل نسبة القلق بين سيدات سرطان الثدي . **التوصيات:** أوصت الدراسة بما يلي: يجب إدراج تقنية *MBIs* في بروتوكول العلاج كدعم نفسي لتقليل القلق لدى النساء المصابات بسرطان الثدي.