Effect of Mindfulness Based Intervention on Alopecia Distress, Body Image Changes and Health Related Quality of Life among Women with Breast Cancer

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Abstract

Background: Cancer breast is a most type of cancer in women worldwide; mindful has been applied to enhance cancer care by get better psychological well-being, quality of life and psychosocial adjustment among women with cancer receiving chemotherapy-induced alopecia. **Aim:** to examine effect of mindfulness based intervention on alopecia distress, body image changes and health related quality of life among women with breast cancer. **Design:** quasi-experimental design (pre- posttest single group)**. Subjects:** a purposive sample of 110 women with chemotherapy induced alopecia**. Setting:** Outpatient clinics in Oncology Institute, Menoufia University, Egypt. **Instruments:** five instruments consisted of interviewing questionnaire comprised socio-demographic properties and clinical data, chemotherapy induced alopecia distress scale, mindful attention awareness scale, coping with body image changes inventory and health related quality of life questionnaire. **Results:** On pre intervention the level of higher distress was 89.1% reduced to 10.9% on post intervention beside, there was high statistical significant difference between total mean scores of alopecia distress p= .000 on pre and post intervention. Moreover, there was an statistical significant difference between pre and post intervention regarding to the total mean score of coping with body image changes p = .000. Additionally, the good quality of life level was 40.0% before intervention which improved to 63.6% after intervention as well there was an statistical significant difference between pre and post intervention p= .000. Furthermore, on post intervention there was significant negative correlation between mindful attention awareness and alopecia distress R= -.338- & p=.002 and health related quality of life R=-.374-& p=.000. Also, there was significant positive correlation between mindful attention awareness and coping with body image changes R=.323 & p= 0.003. **Conclusion:** mindfulness intervention has significant positive effects outcomes on alopecia distress, coping with body image changes and health related quality of life in cancer breast women with chemotherapy induced alopecia. **Recommendations**: usage of mindfulness intervention as a mean in management plan for women with cancer breast.

Keywords: Alopecia distress, Breast cancer and Mindfulness based intervention.

Introduction

Cancer breast is a common cancer around the worldwide and a prime reason of cancer-related deaths amongst women with estimated 2.3 million diagnose each year **(Sung et al., 2021).** With a projected 665,508 new cases and a mortality of 131,322, especially in women under 50 **(Ferlay et al., 2020)**. Breast cancer (BC) patients are typically younger in low- and moderate-income nations than other high-income nations **(Paluch-Shimon et al., 2020)**. In 2020, there were 9,148 BC-related deaths and 22,038 new BC cases in Egypt **(Ibrahim & Shash, 2022)**.

Chemo-therapy induce alopecia (CIA) is one of a major upsetting adverse effects of chemotherapy (CT). Given that alopecia is entirely reversible, physicians frequently ignore

it in favor of treating the illness (**Wikramanayake et al., 2023**). An estimated 65% of chemotherapy patients are predicted to experience CIA, which may result in alterations to hair growth, texture, color, and quantity (**Amarillo, de Boni & Cuello, 2022**).

Chemotherapy-induced alopecia significantly lowers patients' sense of self-worth, body image, sexuality, and general quality of life (**Freites-Martinez et al., 2019**). A study of 179 patients having CIA conducted by **McGinty, 2022** revealed that, 37 patients (20.6%) covered up their hair loss with hair accessories, 101 (56.4%) thought that alopecia was the worst unpleasant effect of CT, and 129 (72%) said that, their social life was being negatively impacted by their hair loss.

A negative emotional reaction may be triggered by a cancer diagnosis thus; distress characterizes this emotional experience, as well as more conventional psychiatric diagnostic categories like anxiety or mood disorders (**Dekker et al., 2023**). Distress is linked to poor outcomes in the physical, mental and social dimensions of life and may impede decision-making in therapeutic encounters (**Dekker et al., 2020**).

Body image plays a significant social function at all ages, impacting confidence and self-worth not just in young women (**Cho et al., 2020**).

Furthermore, the patient's ability to cope with illness is positively correlated with their body image, a healthier body image being recognized as a crucial psychosocial concern for breast cancer patients. Body image is a multifaceted construct that includes ideas, behaviors, feelings, and perceptions of the entire body and its functions (**Esplen, 2021**). Women's changing perceptions of their bodies might contribute to the emergence of several psychological issues, including stress, avoidance, denial, shame, despair, dread, embarrassment, and a lack of sexual desire (**Zhang et al., 2021**).

Quality of life (QoL) is assessment of a person's position within their community's cultural context and value system as well as their goals, expectations, standards, and concerns; all of these aspects are influenced by their physical and mental well-being, level of independence, social interactions, surroundings, and personal beliefs (**WHO, 2022; Veenhoven, 2024**). Many chronic, disagreeable, and severely restricting physical and psychological symptoms are experienced by people with advanced cancer, which has a detrimental effect on their QoL (**Tang et al., 2023**).

Therefore, **Özüsağlam & Can, (2021)** reported that, the average scores of QoL in alopecia patients were low. Furthermore, cancer breast patients' negative experiences brought on by their symptoms, along with the noticeable deterioration in their bodily functions, result in a significantly low health-related quality of life (HRQoL). Besides, to improve HRQoL in women suffering cancer breast; the timely, suitable and customized interventions ought to be given in regard to the physical, psychological and social elements of their lives (**Chen et al., 2022**).

Mindfulness is defined as a meditative practice and a state of awareness accompanied by a nonjudgmental attitude of acceptance and open-mindedness (**Weder, 2022**). Mindfulness based intervention is easy-to-implement nursing interventions to help patients with breast cancer manage their fatigue and enhance their coping mechanisms (**Zuo et al., 2023**).

Numerous patient-level therapies intended to reduce distress; have been found to be effective (**Georgia et al., 2020**). Beside, in randomized controlled trials, patient-level intervention techniques such as cognitive-behavioral therapy, mindfulness and supportive-expressive psychotherapy have demonstrated significant reductions in distress (**Nápoles et al., 2020**).

Increasing mindfulness reduces cognitive disorganization, unlikable emotions, and the adoption of undesirable adaptive coping methods like worry (**Penney & Norton, 2022**). Moreover, training paying close attention to the present time and dealing with dissatisfied feelings and ideas leads to cognitive alterations

and reduced psychological manifestations, which then diminish unreliable coping strategies, enhance the adoption of problem-centered coping and avoidance (**Zandi et al., 2021**).

The mindfulness intervention (MI) boosts patients' quality of life and positively mental emotion control skills while undergoing early treatment for breast cancer. It greatly reduces the patients' poor cognitive emotion control techniques, anxiety and depression (**Penney & Norton, 2022**). Furthermore, **Zhu et al., 2023** study found that participants in the MI group performed much better in terms of QoL, psychological discomfort, and cognitive emotion control skills. Furthermore, studies have demonstrated that the MI assists patients in modifying their mental states and encouraging positive psychology in order to improve their QoL.

Significance of the study

A cancerous breast is a major health concern and one of the leading causes of death among women. In 2018, nearly 2 million new breast cancer cases were detected, representing around 23% of all cancers and the most common malignancy among women (**Sarker et al., 2022**).

Chemotherapy Induced Alopecia continues to have widespread psychosocial repercussions. However, alopecia from the face and body has also been demonstrated to require adaptability and efficient coping mechanisms, so that these effects are not limited to scalp hair. Healthcare providers should make an effort to encourage patients to talk about the possible hazards associated with alopecia and give them a platform to express their worries, fears, and experiences with CIA (**Boland, Brady & Drury, 2020**).

In cancer patients and survivors, mindfulness-based intervention (MBIs) appears to be beneficial in reducing psychological distress along with other symptoms associated with CT (**Pedro et al., 2021**). Additionally, the MI program instructs participants in various mindfulness exercises to pay attention to their physical feelings and identify any unpleasant sensations without explanation, amplification, or judgment (**Chayadi, Baes & Kiropoulos, 2022**). Thus, this study was conducted to examine the effect of mindfulness based intervention on alopecia distress, body image changes and health related quality of life among women with breast cancer.

Aim of the study:

The current study aimed to examine the effect of mindfulness based intervention on alopecia distress, body image changes and health related quality of life among women with breast cancer

Method

Research hypotheses:

H_1: The studied women's level of alopecia distress will be lowered after mindfulness intervention than before.

H_2: The studied women's total mean score of alopecia distress will be reduced after mindfulness intervention than before.

H_3: The studied women will have significant increasing in coping with body image changes after mindfulness intervention than before.

H_4: The studied women will have significant decreasing in health related quality of life after mindfulness intervention than before.

Design:

Quasi-experimental design (pre- posttest single group) was used.

Setting:

The outpatient clinics at Menoufia University's cancer institute in Egypt were chosen for this study. The oncology institute specializes in treating a wide range of cancer diagnoses. It treats both inpatient and outpatient situations. It additionally comprises several

floors, with the fourth (chemotherapy unit) dedicated to chemotherapy medications for oncology patients.

The study's sample size and power of the study:

To compute the required size of the sample in a community of N=1000 individuals, we used the Epi website (Open Source Statistics for Public Health, USA). Our assumptions were:

Population size N=1000

Frequency of experience in the population (p) = 20%+/-5%

A power (1- β) or (% chance of detecting) of 80%.

Confidence limits (*d*) = 5%

Design effect (for cluster surveys- *DEFF*): 1

n =size of sample from population

d = 2 as the least significant difference.

Z= Standard normal deviate for two-tailed test based on alpha level (relates to the confidence interval level).

α = type I error of 0.05, β type II error of 0.20 (**Vorderstrasse et al., 2015**).

$$\text{Sample size } n = [DEFF*Np(1-p)]/[(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$$

Results were presented in different confidence levels .We used 95% confidence level with sample size of 122 participants. To overcome dropout 20%, sample size was (146) breast cancer women. From (146) breast cancer women who were selected by simple random sampling technique, only (110 breast cancer women) agreed to participate in the study program, with a response rate of 75.3%.

Subjects:

A purposive sample of 110 women with breast cancer undergoing chemotherapy-induced alopecia was chosen according to the following criteria:-

The Inclusion Criteria

a) Women diagnosed with cancer breast and have registered in outpatients' clinic.

b) Women with alopecia due to chemotherapy.

c) Women who agree to share in the study.

The Exclusion Criteria

a) Women with psychiatric illnesses.

b) Women with chronic physical illnesses.

c) Women with other serious malignances.

Instruments: The researchers used five tools to achieve the study's purpose. A translation consultant translated them into Arabic and then back into English using the English language.

Instruments (1): Sociodemographic interviewing questionnaire:

The researchers designed it based on an examination of the appropriate literature to analyze the sociodemographic qualities of the women studied. It comprised: age, place of residence, marital status, educational level, occupation and clinical data which included date of onset of the diagnosis /months, number of chemotherapy doses, loss of scalp hair.

Instruments (2): Chemotherapy Induced Alopecia Distress (CIA) scale:

It was developed by **Cho et al., (2014)** to assess distress result from chemotherapy induced alopecia. The CIA distress scale consists of 25 items divided into five domains:

physical (2 items), emotional (8 items), daily activity (8 items), relationship (5 items), and treatment (2 items), with a four-point Likert scale for each statement (1 = not at all, 2 = a little, 3 = quite a bit, and 4 = very much). Total scores were calculated by adding the responses to all items. Higher scores indicated more distress due to CIA. **Subscale reliability was rated as adequate (0.88), with test-retest reliability of 0.26 for physical, 0.87 for emotional, 0.83 for daily activities, 0.23 for relationship, and 0.55 for treatment.**

Instruments (3): Mindful Attention Awareness Scale (MAAS):

It was developed by **Brown and Ryan, (2003).** It designed to assess a core characteristic of dispositional mindfulness, namely open or receptive awareness of and attention to what is taking place in the present. It consisted of 15 questions with 3 points Likert scale. The responses ranged from almost always=1, sometimes=2 and almost never=3. The scale's total score is 45, calculated as the sum of the 15 elements' means. Higher scores indicate higher levels of dispositional mindfulness. **The reliability was using the Cronbach's α ranged between 0.95 and 0.84.**

Instruments (4): Coping with Body Image Changes inventory:-

It was designed by **Cash, Santos and Williams, (2005)**. Its purpose was to evaluate women's coping strategies. The tool is a 29-item self-reported questionnaire designed to assess how individuals typically manage challenges and changes to their body image. On a four-point Likert scale, 29 items rely on three avoidance methods. 8 items, appearance fix 10 items, and favorable rational acceptance 11 items. The studied women were asked to score each statement on how they dealt with the threat of their body image on a scale of (0 = sure not like me, 1 = often not like me, 2 = often like me, and 3 = sure like me). Total scores were determined by adding responses to all items; higher scores indicated a greater likelihood of using specific coping techniques. **The reliability was using the Cronbach's α**

coefficient for overall items of the scale were **R=0.89.**

Instruments (5): European Organization Research and Treatment of Cancer 30 (EORTC QLQ-C30) version 3:-

It was developed by **Aaronson, et al., 1993** and re-examined by **Tsui, 2022. It** was adopted in the present study to assess health-related quality of life and preferences in patients with cancer breast. The EORTC QLQ-C30 is a HRQoL patient reported instrument with subscales comprised:- functioning items (physical (5), role (2), emotional (5), cognitive (2) and social (2), financial difficulties (1), fatigue (3), symptoms related to chemotherapy side effects included (nausea and vomiting (2), pain (2), dyspnea (1), insomnia (1), appetite loss (1), constipation (1) and diarrhea (1) and two questions about global health (overall health during past week, overall Qol during past week). Beside, sexual functioning and enjoyment subscale of Breast cancer 45 (6 items) adopted from (**Bjelic-Radisic et al., 2020**), it was added and measured within the study. Each subscale contains four response options ranging from 1 "not at all" to 4 "very much". Global health items are evaluated from 1 ("poor") to 4 ("excellent").

The total scores were calculated by summing responses =148 scores; the higher scores (>74) indicated poor quality while, the lower score (≤74) indicated good quality.

The reliability was using the Cronbach's α coefficient values ranged from 0.72-0.95.

The validity of the instruments:

The study's instruments were translated into Arabic by specialists, and the Arabic version was translated into English, with any differences in meaning considered. A team of specialists in family and community health nursing, psychiatric health nursing, medical surgical nursing, and psychiatric medicine approved the Arabic version of the tools to confirm the authenticity of the contents of the translated version compared to the original. The

revisions were made based on the panel's recommendations for sentence clarity and topic fit.

A pilot study:

A pilot study was conducted in order to test the reliability and validity of the questionnaire items and clarity of questions. The pilot trial included 11 cancer breast women, or 10% of the entire sample. The pilot study revealed only minor changes to the tool one, and subjects in the pilot study were omitted from the main study sample.

Ethical and administrative considerations:

On March 15, 2023, the Menoufia University, Egypt's Faculty of Nursing's Ethical Committee for Scientific Research Review approved the study under the registration number N: 924. Furthermore, after outlining the study's purpose and data collection procedures, the researchers were granted official approval by the authorities to conduct the current investigation. Furthermore, the women under research gave written, informed consent. All information was guaranteed to stay secret. The women who were being studied were assured that their participation in the study was fully voluntary and that they might withdraw at any time. They were informed that there is no fee connected with participating in the study.

Data collection procedure: - The data was acquired via a series of steps:

- Permission to conduct the study was obtained from the provost of Oncology Institute of Menoufia University, Egypt.

- Interviews with study women were scheduled based on their chemotherapy dosages or follow-up dates. The researchers conducted an interview with each of the studied women to collect data.

- The oncology chemotherapy unit was the designated location for the mindfulness intervention sessions. Pre-test questionnaires were given to the researchers in order to gather baseline assessment information. In order to facilitate communication with the women under study, phone numbers were obtained.

- As mindfulness training is better practiced with fewer individuals, the study groups were divided into 10 groups (n = 11). The intervention was administered once a week for 8 weeks, lasting between 45-60 minutes. After the intervention, post-test were administered to the studied women to assess the effectiveness of the intervention.

- The study was done from March to December 2023. The mindfulness intervention was carried out in four stages: initiating, transitioning, working, and terminating.

The mindfulness intervention:

After revising related literature; the researchers adapted the mindfulness intervention from **Santorelli, Florence, Meleo-Meyer and Lynn Koerbel (2017).** The ultimate goal of mindfulness intervention is to assist cancer breast women in developing mindfulness skills, decreasing level of alopecia distress, increasing coping with body image changes and HRQoL. It was done through arrange of educational methods, including group discussions, lecture, brainstorming and role playing. A lap top PowerPoint presentations, videos and pictures were used as teaching aids. The illustrative booklets were available and given to all studied women which contained information related to study variables. At the end of each session summary, feedback and time were permitted for asking any questions and explaining homework assignments for the next session (participants performed 10–15 min of home practice at least twice daily). Eight sessions were included in the MI. The mindfulness intervention passed by **the following 4 stages**:

Initiation stage (session 1): This stage intended to build a suitable relationship between the researchers and the studied women.

- Researchers introduced themselves to the women being studied, introduced them to one another, and began the session.

- The study's purpose and group guidelines, which include (active involvement, putting feelings into words rather than acts, secrecy, and attendance commitment) are described by the researchers.

- At the end of the session, the researchers arranged for more appointments with studied women. The entire session lasted for around sixty minutes in total.

Transition stage (session 2, 3): This step intended to clarify the link between alopecia and breast cancer chemotherapy; it accomplished this by holding two sessions that addressed the following topics:

- Began with an overview of breast cancer including its definition, causes, symptoms, effects and risk factors for breast cancer - Chemotherapy symptoms and side effects; - Negative perceptions about alopecia and coping strategies; - Factors influencing response to chemotherapy, particularly psychological status.

- Presented mindfulness as a type of meditation therapy intended to reduce suffering brought on by mental health issues. The researchers also talked about how to deal with challenges like anxiety and daydreaming, how to find solutions like letting go of false beliefs and practicing non-judgment, and introduce the relationship between brain function, emotion, and cognition

Working stage (session 4,5,6,7): this stage aimed to teach the patients how to practice mindfulness. The women in the study were instructed by the researchers in the techniques of **raisin-eating**, **mindful listening**, **mindful breathing space** and **mindful breathing**. All of these methods assist women in turning their attention from un-pleasant, unproductive ideas and feelings from the past or future to their thoughts, feelings and experiences in the here and now.

The Raisin-Eating Technique (session 4): - In this technique, women were given a few raisins by the researchers and asked to envision what it would be like to never have seen a raisin before.

The researchers then instructed them to examine the raisin's appearance, texture, flavor, and aroma closely. Bringing the women's attention back to the raisin and its singular purpose.

The Mindful Listening Technique(session 5):- it involved the following steps:

⇒ Step 1: The researchers asked the women in the study to list one thing they are excited about and one thing they are anxious about in relation to alopecia.,

⇒ Step 2: Once everyone was finished, each women took their turn in sharing their story with the group,

⇒ Step 3: Ask each woman to focus on how it feels to speak, how it feels to discuss a difficult topic, and how it feels to share something encouraging.
Step 4: Participants are asked to pay attention to their own feelings, ideas, and bodily experiences throughout both speaking and listening.

The 3-Minutes Breathing Space Technique (session 6):- It worked as follows:

⇒ The first minute was devoted to responding to the question, "How am I doing right now?" while trying to articulate these words and phrases and concentrating on the feelings, thoughts, and sensations that surfaced. Maintaining awareness of the breath was the focus of the second minute. The final minute was dedicated to expanding awareness beyond the breath and sensing the ways in which your breathing impacts the body as a whole.

Mindful Breathing Technique (session 7): - In this technique, the researchers asked each studied women to sit quietly and concentrate on her breathing. Pay attention to every breath she takes and let's go, noting how her chest rises and falls. Remind her to pay attention to her breathing whenever her thoughts stray.

Terminating stage (session 8):

In this phase, the researchers gave a warm welcome to each participant and conveyed their gratitude for their participation in the MI. They also went over how to integrate mindfulness into daily life (participants performed 10–15 min of home practice at least twice daily) evaluated all of the previous sessions, and led a discussion about sitting meditation. Furthermore, the researchers used the research pre-test instrument (II, III, IV, and V) to collect post-test data throughout this phase. This was carried out in order to assess the variations, overlaps, and gaps in practice

Statistical analysis:

The acquired data were tabulated and analyzed using SPSS version 22. Graphics were created using the Excel application. Descriptive statistics for quantitative data were expressed as mean and standard deviation (X+SD), whereas qualitative data were expressed as number and percentage. Inferential statistics were calculated and presented as mean and standard deviation (X±SD). A paired sample t-test was performed to compare the means of the pre- and post-intervention groups. Chi-Square ($\chi2$) was utilized for qualitative variables. Pearson correlation was used to measures the strength of the linear relationship between the study variables. It has a value between -1 to 1, with a value of -1 meaning a total negative linear correlation, 0 being no correlation, and + 1 meaning a total positive correlation. The significance level was set at p ≤ 0.05.

Results:

Table 1: shows socio-demographic data among studied women. As indicated in the table, 38.2% of studied women are between 33-years and 16.3% are between 53- less than 60 years old. The mean age of studied women is (42.036±9.114). Regarding to place of residence, 57.3% is urban. Concerning to marital status, more than three quarters of studied women are married (55.5%). In relation to educational level, 61.8% of studied women are secondary education. Besides to occupation, 53.6% of studied women are worked.

Table 2: reveals that the mean total score of date of onset of the diagnosis/months was13.073±6.627. Also, the mean total score of number of chemotherapy doses is 4.591 ± 11.436. On the other hand, more than half (59.1%) of studied women have increase loss of scalp hair, while 65.5% of studied women have decrease loss of scalp hair.

Table 3: Supports **hypothesis 2,** which proposed that the studied women's total mean score of chemotherapy induced alopecia distress will be reduced after mindfulness intervention than before, there is a high statistical significant differences on total mean scores of alopecia distress subscales including:-physical distress, emotional distress, activity distress, relationship distress and treatment) between pre and post intervention where p = .000. Moreover, there is a high statistical significant differences on grand total mean score of alopecia distress scale between pre and post intervention where p = .000.

Table 4 & figure 1: Supports **hypothesis 1,** which proposed that the studied women's level of chemotherapy induced alopecia distress will be lowered after mindfulness intervention than before, on pre intervention the higher distress level is 89.1% reduces to 10.9% on post intervention. Also, the lower distress level is 52.7% decreases to 47.3% on post intervention. In addition, there is a high statistical significant difference in two levels of alopecia distress between pre and post intervention p = .000.

Table 5 & figure 2: represent that, there is high statistical significant difference on the total mean scores of mindful attention awareness between pre and post intervention; p = .000.

Table 6 & figure 3: Supports **hypothesis 3,** which proposed that the studied women will have significant increase in coping with body image changes after mindfulness intervention than before, on pre intervention the total mean score of coping with body image changes is 25.93±6.65 increases to 44.882±9.796 on post intervention and there is high statistical significant difference in the total

mean score of coping with body image changes between pre and post intervention where p value = .000.

Table 7: explains that on pre intervention; the total mean score of health related quality of life is 79.61±11.01 decreases to 70.01±9.84 on post intervention and there is a high statistical significant difference regarding to the total mean score of HRQoL between pre and post intervention where p value = .000.

Table 8 & figure 4: Supports **hypothesis 4,** which proposed that the studied women will have significant decrease in health related quality of life after mindfulness intervention than before, on pre intervention the poor quality level is 60.0% lowers to 36.4% on post intervention. Beside, on pre intervention the good quality level is 40.0% improves to 63.6% on post intervention. Furthermore, there is a high statistical significant difference on levels of alopecia distress between pre and post intervention where p value = .000.

Table 9: represents that on post intervention; there is significant negative correlation between mindful attention awareness and alopecia distress and health related quality of life $P < 0.05$. Also, there is significant positive correlation between mindful attention awareness and coping with body image changes where P value < 0.05.

Table (1): Distribution of Socio-demographic properties among The Studied Women (n=110)

Socio-demographic properties	No.	%
Age category:-		
23-	17	15.5
33-	42	38.2
43	33	30.0
53- less than 60	18	16.3
X±SD	42.036±9.114	
Place of residence:-		
Rural	47	42.7
Urban	63	57.3
Marital status:-		
Single	8	7.3
Married	61	55.5
Widowed	27	24.5
Divorced	14	12.7
Education Level:-		
Illiterate	9	8.2
Read and write	11	10.0
Secondary education	68	61.8
University education	15	13.6
Post graduate education	7	6.4
Occupation:-		
House wife	51	46.4
Worked	59	53.6
Total	**110**	100.0

Table (2): Distribution of clinical medical data among the studied women (n=110)

Clinical medical data	No.	%
Date of onset of the diagnosis /months		
X±SD	13.073±6.627	
Number of chemotherapy doses		
X±SD4.591 ± 11.436		
Loss of scalp hair is increasing		
No	45	40.9
Yes	65	59.1
Loss of scalp hair is decreasing		
No	72	65.5
Yes	38	34.5
Total	**110**	**100.0**

Table (3): Effect of mindfulness intervention on total mean scores of alopecia distress among the studied women on pre and post intervention

Alopecia Distress Subscales (total 100)	Pre-intervention(n=110)	Post-intervention(n=110)	Test	P value
- Physical distress (total score 8)	4.673±1.78	3.473±1.399	8.419	.000
- Emotional distress (total score 32)	13.455±5.65	10.94±4.45	5.491	.000
- Activity distress (total score 32)	15.927±6.68	12.70±5.69	5.732	.000
- Relationship distress (total score 20)	10.491±4.69	8.13±3.79	5.945	.000
- Treatment distress (total score 8)	4.882±2.11	3.53±1.79	7.160	.000
- Grand total mean score (total 90)	49.427±12.49	38.76±9.33	12.413	.000

Table (4): Effect of mindfulness intervention on levels of alopecia distress among the studied women on pre and post intervention

Alopecia Distress Levels (total 100 score)	Pre- intervention(n=110)		Post-intervention(n=110)		Test	P value
	No.	%	No.	%		
Higher distress (>50)	98	89.1	12	10.9	15.024	.000
lower distress (≤ 50)	58	52.7	52	47.3		

Figure (1): Effect of mindfulness intervention on levels of alopecia distress among the studied women on pre and post intervention (n=110)
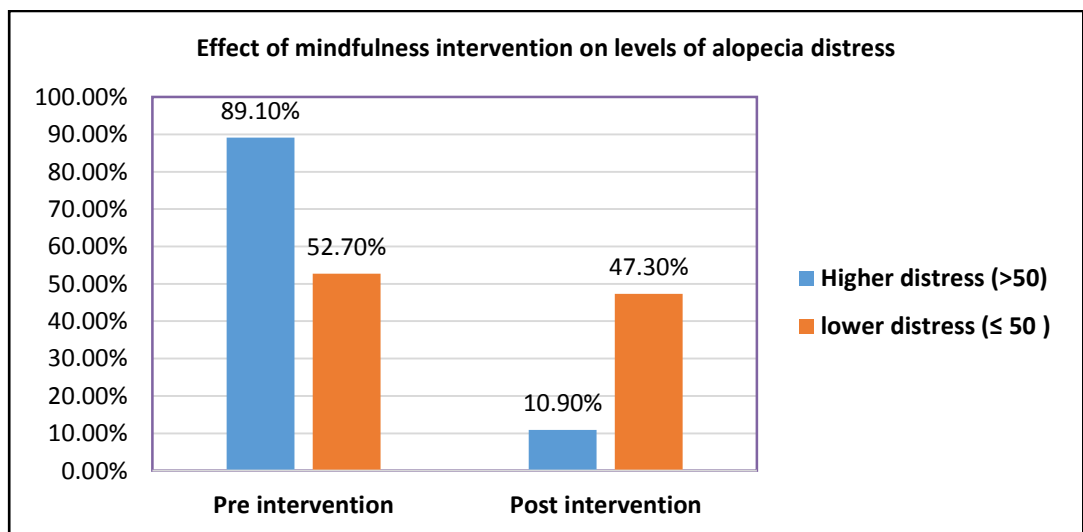
Figure (2): Distribution of total mean score of mindful attention awareness among the studied women on pre and post intervention
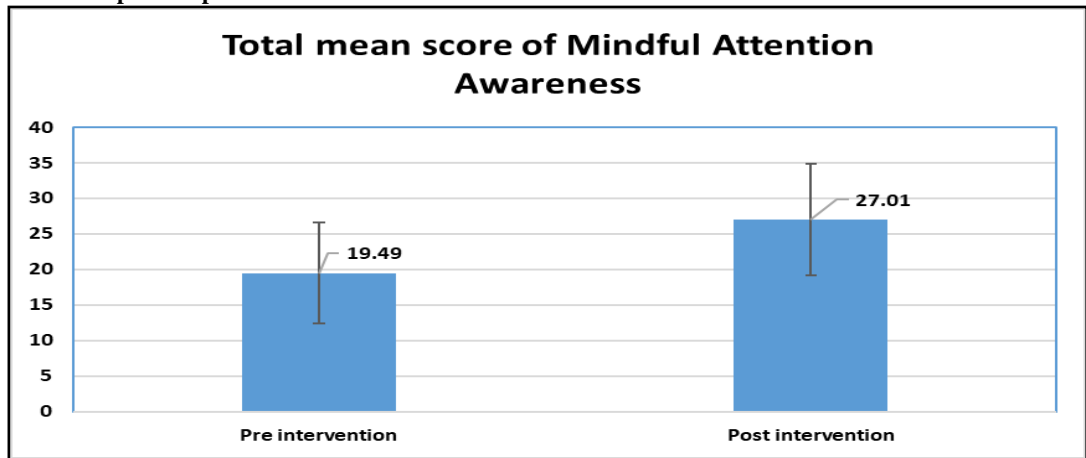

Table (5): Distribution of total mean score of mindful attention awareness among the studied women on pre and post intervention

Total Mean Score of Mindful Attention Awareness (total 90)	Pre- intervention(n=110)	Post- intervention (n=110)	Test	P value
	19.49±7.08	27.01±7.83	-8.045-	.000

Figure (3): Effect of mindfulness intervention on total mean score of coping with body image changes among the studied women on pre and post intervention (n=110)
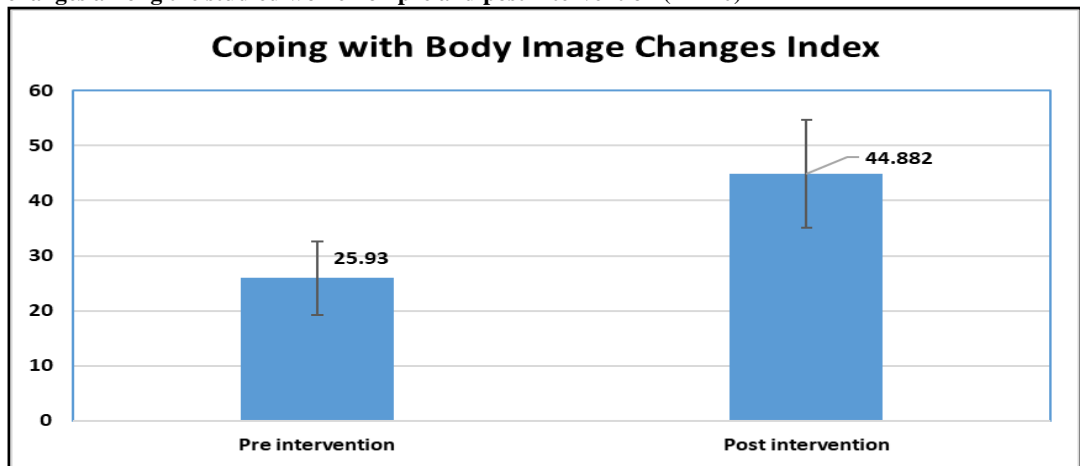

Table (6): Effect of mindfulness intervention on total mean score of coping with body image changes among the studied women on pre and post intervention

Coping with Body Image Changes Index (total 87)	Pre- intervention (n=110)	Post- intervention (n=110)	Test	P value
Total mean score	25.93±6.65	44.882±9.796	-7.883-	.000

Table (7): Effect of mindfulness intervention on total mean score of HRQoL among the studied women on pre and post intervention

Total mean score of HRQoL (total 148)	Pre intervention(n=110)	Post intervention(n=110)	Test	P value
	79.61±11.01	70.01±9.84	6.102	**.000**

Table (8): Effect of mindfulness intervention on levels of HRQoL among the Studied Women on Pre and Post intervention

Levels of HRQoL	Pre intervention(n=110)		Post intervention(n=110)		Test	P value
	No.	%	No.	%	13.259	**.000**
Poor quality (>74)	66	60.0	40	36.4		
Good quality (≤ 74)	44	40.0	70	63.6		

Table (9): Correlation between total mean score of mindful attention awareness and alopecia distress, coping with body image changes and HRQoL on post intervention among the studied women (n=110)

Studied Variables	Total mean score of Mindful Attention Awareness	
	R	P value
- **Total mean score of alopecia distress**	-.338-	.002
- **Total mean score of coping with body image changes**	.323	.003
- **Total mean score of HRQoL**	-.374-	.000

Figure (4): Effect of mindfulness intervention on levels of HRQoL among the studied women on pre and post intervention
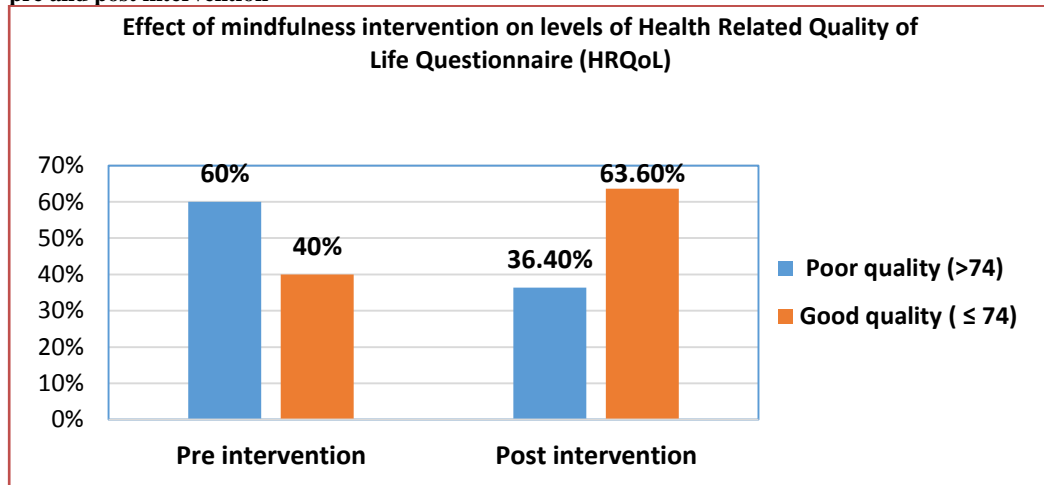
Discussion:

Breast cancer patients suffer physical, emotional, and psychological discomforts due to CIA that can impede their QoL and their capacity to deal effectively with cancer and its treatment **(Wikramanayake et al., 2023).** As a result, mindfulness has being applied growingly used in several facets of treatment of cancer. Reimbursements of mindfulness practices within the management of the adverse effects of treatment and symptoms from cancer advancement have been set to be cost efficient **(Mehta et al., 2019)**.

The aim of the current study was to examine effect of mindfulness based intervention on alopecia distress, body image changes and health related quality of life among women with breast cancer. Regarding to the effect of mindfulness intervention on alopecia distress encompass (physical, emotional, activity, relationship and treatment) among studied women on pre - post intervention, the findings of present study revealed that, there were a high statistical significant decreasing in total mean scores of alopecia distress subscales on post intervention p value = .000. Moreover, the current study findings demonstrated that, there were a high statistical significant differences between grand total mean scores of alopecia distress p = .000 on post intervention than before. These results were agreed well with

Wu et al., (2022) who conducted the study in China and evaluate the effect of Mindfulness Based Stress Reduction (MBSR) as the basis for the treatment of breast cancer patients. Also, suggests that MBSR efficient alleviated the psychological stress, depression, anxiety, and sleep disorder in patients with breast cancer receipting chemotherapy.

These similarities might be due to that, mindfulness-based interventions could help patients to consciously perceive the present day, guide them to institute positive emotional and physical responses, as well as accepting, patience, trusting, and other attitude, all of which improve cognitive functioning.

In addition, the results of current study stated that, on pre intervention more than half of studied women have higher level of distress reduced to nearly ten percent on post intervention. Also, the level of lower distress was more than fifty percent which decreased to forty seven percent on post intervention. Additionally, on post-intervention, there was a significant statistical difference (p value =.000) between the two levels of alopecia distress. These results were congruent with a research by **Park et al., (2020)** which looks at how well mindfulness-based cognitive therapy (MBCT) works for Japanese breast cancer patients' psychological distress, weariness, spiritual well-being, and fear of cancer recurrence. The study clarified that, the participants in the MBCT group showed significantly better results in their psychological distress (P < 0.001) and approved that the mindful intervention was demonstrated to enhance well-being which is comprised of the physical, spiritual, and psychological domains.

These similarities might be for the reason that the application of mindfulness-based intervention has useful effect on patients' physical and mental health who was suffering from chronic illnesses e.g. cancer. Consequently, early breast cancer patients who practice mindfulness exercises unavoidably have higher levels of spiritual-psychological self-care, improving their ability to accept challenges and facing the various side effects during treatment of cancer.

On the other hand, this finding in accordance with the study carried out **Nnate et al.,(2021)** who studied **"Effectiveness of mindfulness based intervention on men with prostate cancer's improved QoL and psychological well-being "**and revealed that MBIs showed few to moderate impact for meliorating psychological outcomes. Therefore the prostate organ is mainly linked to male fertility and these consider a psychological trauma when occurred.

Concerning to the total mean score of mindful attention awareness among studied women on pre-post intervention; the concurrent study stated that, a high statistical significant improvement in the total mean scores of mindful attention awareness on post intervention p = .000. This result was consistent with that of **Park et al., (2020)**, who examine the impact of MBCT on Japanese ambulatory patients with stage I–III breast cancer in terms of anxiety and depression, fatigue, fear of cancer recurrence, spiritual well-being, and QoL and found that a significant increase in patients' mindfulness after following MBIs. Furthermore, this outcome agreed with finding of a Beijing study by **Zhao et al., (2020)**, who investigate the impact of MBCT on breast cancer survivors with sleeplessness and conclusion that MBCT may be an effective non-pharmacologic intervention to enhance patient's mindfulness. Besides, this result was similar to study carried out by **Nnate et al., (2021)**, who investigated the efficacy of MBIs on men with prostate cancer's improved QoL and psychological well-being. Also, who found that MBIs might be promise for psychological results, QoL and post-traumatic growth signs amelioration in men with prostate cancer.

These consistencies among the studies might be due to that, 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.

As regards the effect of mindfulness intervention on total mean score of coping with body image changes (e.g. do many things to be more in good appearance) among studied

women on pre - post intervention, the current study clarified that, on pre intervention the total mean score of coping with body image changes which was significantly improved on post intervention and there was a high statistical significant difference between pre and post intervention related to the total mean score of coping with body image changes p value = .000. This outcome was consistent with **Chang et al., (2022)** who conducted the study in Taiwan entitled " Short-term impact of internet-delivered mindfulness-based stress reduction " and revealed that women with breast cancer had participation in Internet-Based Mindfulness-Based Stress Reduction (IMBSR) sessions improved body image. Furthermore, this outcome was adherent to the outcome of a study carried out by **Chang et al., (2023)** conducted the study in Taiwan who decrease menopausal symptoms, sleep disturbance, and body image using MBSR in patients with breast cancer. Also, stated that, determined the short - period advantages linked to group-based MBIs for breast cancer women.

These consistencies among the studies might be due to that body image was seen as a very subjective mental representation that captures not only an individual's physical attributes, and attractions but also their perceptions of their mental health, marital satisfaction, psychosocial stress, and understand functioning

However, this result was incongruent with **Guedes et al., (2018)** who conducted the study in Northeast Brazil entitled of **"Body image of women submitted to breast cancer"** and were illustrated that, about 74.8% of receiving breast cancer treatment expressed dissatisfaction with their bodies' image. This discrepancy might due to certain patients of breast cancer showed significant changes in the way they perceived their own appearance. Also, patients with a negative body image reported not receiving multi-professional follow-up, including mindfulness. This suggests that, in order to satisfy the needs of this population, there is a need for initiatives that enhance and expand healthcare.

According to the current study's findings, there was a statistically significant results were found on HRQoL Questionnaire. Additionally, the current study represented that, on pre intervention the level of poor quality was sixty percent which lowered to more than one third on post intervention. Beside, on pre intervention the level of good quality were forty percent and improved to more than two thirds of the studied women on post intervention. These findings was agreed with **Roine et al., (2021)**, who conducted a study in the Helsinki and Uusimaa Hospital District titled " Long-term HRQoL of breast cancer survivors remains impaired compared to the age-matched general population especially in young women" and found that, there was a significant difference in mean of HRQoL between younger and older survivors during follow-up (p for interaction < 0.001). Furthermore, the present study results supported by a research conducted by **Liu et al., (2022),** who did a research in Beijing and examined the impact of mindfulness yoga on anxiety and depression in patients with early-stage breast cancer received adjuvant chemotherapy. Also, reported that the HRQoL score was significantly higher in the experimental group, and concluded that mindfulness yoga may assist patients with early-stage breast cancer improve their overall physical and mental health as well as their QoL.

These consistency might be explain the fact that, the efficacy of MI in enhance QoL. Maintaining awareness of one's mind state and cultivating compassion are benefits of mindfulness. It may support patients with cancer earning insight into the understanding of life'

Regarding to the correlation between total mean score of mindful attention awareness and alopecia distress, coping with body image changes and HRQoL on post intervention among the studied women; the finding of this study showed that, on post intervention there was a significant negative correlation between mindful attention awareness and alopecia distress P < 0.05 and HRQoL. Moreover, there was a significantly positive correlation between mindful attention awareness and coping with body image changes P < 0.05. This outcome was well similar to the findings of **Hepburn, Carroll & McCuaig, (2021)** who conducted the research in the University of Queens-land and

studied "link between mindful attention awareness, subjective wellbeing and perceived stress" and who reported that lower levels of perceived stress may be connected to higher subjective wellbeing and higher levels of mindful attention awareness may be linked to both lower levels of perceived stress and higher subjective wellbeing levels. Furthermore, these findings seems to be consistent with the research findings of **Gomaa et al., (2022),** who evaluate the impact of smartphone-based mindfulness training on stress, pain, and QoL among patients with prostate cancer in the South Egypt Cancer Institute-Assiut University and who illustrated that there was a highly statistically significant association between total mindful attention awareness and perceive stress and QoL among patients with prostate cancer P<0.001

Conclusion:

Mindfulness intervention has significant positive effects outcomes on distress, coping with body image changes and health related quality of life in women with cancer breast and receiving chemotherapy induced alopecia.

Recommendations:

- Usage the mindfulness intervention as a mean in management plan for women with cancer breast.

- There is a need to develop further mindfulness interventions that will allow the women with cancer to have a greater control over their illness treatment and their lives.

- The future researchers consider incorporating home assignments in their MBI curriculums to encourage adherence to the practice of mindfulness in daily life.

Conflict of interest

The authors declare that there are no conflicts of interest.

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