Compassion-Based Intervention Protocol Effectiveness on Health-Related Outcomes of Women with Breast Cancer

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Abstract

Breast cancer (BC) among women requires a significant psychological and physical adaptation. Compassion training has been shown to improve both physical and mental health, but there is currently few researches examining the efficacy of compassion-based therapies for breast cancer. Purpose of the study: To evaluate compassion-based intervention protocol effectiveness on health related outcomes of women with breast cancer. Design: A quasi experimental design, two groups (study and control group pre/posttest). Setting: Oncology Hospital out-patient's clinics at Menoufia Governorate, Egypt. Subjects: A purposive sample of 140 women with breast cancer undergoing treatment was selected and divided randomized equally to study and control group. Study Instruments: Five Instruments were used; Structured Interviewing Questionnaire, Self-Compassion Scale, Cognitive Emotion Regulation Questionnaire, Self-related ability for health practice (self-efficacy) scale and Health - Promoting Behaviors Inventory. Results: A significant improvement in self-compassion and cognitive emotion regulation on post intervention among study group than control group. Also, health related behavior "self-efficacy" and health-promoting behaviors showed a significant difference between two studied groups after the protocol of intervention (P. value 0.01). Moreover, The high percentage of the study and control groups pre-test were low self-efficiency (≤ 37.6), while high percentage of the study group post-test were having high self-efficiency (≥ 74.6) than control group. Conclusion: Compassion training intervention protocol represents a potentially beneficial method to support women with breast cancer for improving self-efficacy, health-promoting behaviors as well as cognitive emotional regulation strategies. Recommendation: Further researches are required to highlight the potential advantages of compassion-based training intervention protocol on a variety of outcomes that health care providers can apply in clinical practice with clients and support by mobile technologies to determine its efficiency.

Keywards: Compassion, Cognitive Emotional Regulation, Self-Efficacy, Health-Promoting Behaviors, Breast Cancer

1. Introduction

Breast cancer is the second most common cause of death worldwide and the most common malignancy in women (Bray et al., 2018; Global Cancer Statistics, 2020). The patient and his family may experience severe social or psychological anguish as a result of having a chronic illness and receiving treatment, which lowers quality of life (Miller et al., 2020). Patients with breast cancer commonly exhibit psychological reactions such worry, loneliness, anger, impatience, and perplexity when they hear the word "cancer." However, most research show that depression, anxiety, and disorders related to adaptation are the most typical psychological concerns among breast cancer patients (Yazdi-Ravandi et al., 2016; Dekker and de Groot, 2018).

Women will have between 8 and 9% breast cancer during their lifetimes, along with 25.9% anxiety disorders and 39.5% depression, according to Ginsburg et al ., (2020). Many breast cancer patients also experience moderate to severe emotional problems, such as anxiety, depressive tendencies, irritability, wrath, and despair. Therefore, cognitive emotion management may be related to emotional problems and mental health in cancer-stricken women (Rzeszutek and Gruszczynska, 2018).

Compassion is an attribute that may help people accept and manage the challenges of a chronic medical disease. The concept of compassion is a sensitivity to pain, both in oneself and in others, coupled with a desire to prevent and relieve it (Callebaut, Molyneux and Alexander, 2017). To ensure the long-term health of breast cancer patients today, it is imperative to engage in health promotion activities both during and after treatment. Because

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breast cancer patients' quality of life and ability to remain independent depend so much on maintaining their health, which can be seriously impaired by the disease, they may require health promotion even more than the general population (Martel et al., 2020).

Cognitive emotion regulation (CER) refers to techniques that are useful in experience, emotional expression, as well as the moment when excitement occurs, which includes a wide variety of cognitive, behavioral, emotional, and physiological responses, provides a cognitive strategy for managing the consumption of information that makes people feel strongly (Garnefsk and Kraaij, 2018). Individuals utilize emotion management techniques differently, and it is widely known that indicators of mental health are correlated with emotion regulation impairments (Rodas, Jara-Rizzo and Oleas, 2021). Maladaptive emotion regulation techniques relatively brief relieve stress, but over time they raise autonomic arousal and cognitive burden, leading to emotion dys-regulation. Therefore, the purpose of rehabilitation typically focuses on adaptive emotion regulation, which is essential for psychological heath. (Kraiss et al., 2020).

Self-efficacy is an accurate and precise indicator to predict health-promoting activities for carrying out such behaviors. However, few cancer patients have been examined this finding (Zhang et al., 2018). Self-efficacy is defined as the degree to which a person can manage and carry out specified activities under a given circumstance. As a result, there is a strong association between engaging in healthy activity and self-efficacy (Lee, Kang, and Lee, 2020).

Improving health-promoting behaviors is becoming needed more and clearer when providing care for patients with chronic and debilitating diseases. Health promotion is defined as a process that helps people take more responsibility for and better care of their health in order to promote well-being. The primary objective of health promotion is to encourage healthy lifestyle choices that will increase lifespan and quality of life (Lin and Chia-Chin, 2016).

Compassion can be trained by specific approaches and methods (such as compassion-based interventions [CBIs] created to create specifically compassionate emotional and cognitive habits) (Cebolla et al., 2017). Some authors have argued that CBIs could give effective techniques for addressing and avoiding a variety of psychological issues (resources for interpersonal relationships, a decrease in depressive symptoms, a decrease in social anxiety, marital conflict, and anger management, as well as how to handle the challenges of being a carer) (Kirby, 2017). Furthermore, research shows that CBI has been associated to a decreased inflammatory response to a psychosocial stressor (García-Campayo et al., 2016).

Numerous studies have demonstrated the correlation among loving-kindness and compassion practices, which are part of CBIs, and decreased physical discomfort, reduced aggression, decreased feelings of loneliness, and improved pleasant emotions (Jennings et al., 2017). According to other researchers, practicing compassion improves positive feelings in daily interactions, which improves one's sense of purpose in life, socialization, and disease symptoms (Huang et al., 2016)

Compassion focused treatment (CFT) methods commonly use dialogic role-playing, self-compassionate meditation, and imagery (Nery-Hurwit, Yun and Ebbeck, 2018). Parallel therapies, including mindful self-compassion therapy, employ similar methods linked to less stress and improved quality of life in terms of health, reduced emotions of shame, emotion control, health-promoting behaviours, such as seeking social support and adhering to a treatment plan and adaptive coping (Sedighimornani, Rimes and Verplanken, 2019).

The duty of nurses includes fostering an environment that supports the best possible expression of health and well-being. It suggests that nurses should actively assist patients in implementing healthy lifestyle behaviors, including enabling them to acquire the information and teach the skills necessary to accomplish their goals. There is currently a demand for advice on nutrition and physical exercise for cancer survivors, as well as assistance with helping cancer patients improve their lives permanently both during and after treatment (Peixoto, Peixoto, Pinto and Santos, 2021)

Significance of the study

Over the past century, the prevalence of cancer has progressively increased on a global basis. Breast cancer, which had been diagnosed in 7.8 million women over the past five years, was the most prevalent cancer around the world as of the year 2020 (Ginsburg et al., 2020). In Egypt, there were around 63.4 thousand breast cancer cases with 5-year prevalence as of 2018. In Egypt, there were around 150 thousand instances of cancer with 5-year prevalence that year, compared to 107 thousand cases among males (Global Cancer Statistics, 2020). More women than any other cancer lose years of life because of impairment due to breast cancer, which also has a detrimental impact on their quality of life, emotions, self-esteem, and self-efficacy (Stoltenberg et al., 2020).

In one research by Sommers - Spijkerman et al., (2018) discovered that the efficacy of compassion-focused management for clients, who had experienced trauma, indicated that those who got compassion-focused therapy had more improvement. It has been discovered that compassion has a range of positive effects on health, such as mental health, emotion control, promoting health behavior, enhancing interpersonal and social interactions (Dunne et al., 2018).

Theoretical framework

A new conceptual model is placed forth that takes understanding intentions to engage in health-promoting actions from the perspective of self-regulation abilities. It combines theory and research in self-compassion, self-regulation, and emotional

regulation, and the Theory of Planned Behavior (Ajzen, 1991). According to the self-regulation resource model (SRRM), self-regulation tools that support the self-regulation necessary to successfully engage in health-promoting activity include high levels of positive affect and low levels of negative affect (Jeffery, 2019).

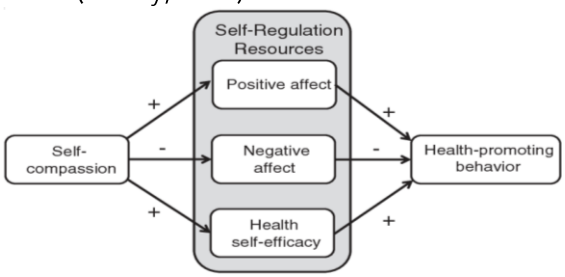

Fig.1 Model of self-regulation resources integrating intentions for healthy conduct and self-compassion.

It is hypothesized that the high levels of self-efficacy, The practice of health is consequently improved by having high levels of positive affect and low levels of negative affect that are associated to self-compassion.

Purpose of the study: to evaluate compassion-based intervention protocol effectiveness on health related outcomes of women with breast cancer.

Health Related Outcomes of Women with Breast Cancer in this study included measuring the self-compassion, cognitive emotional regulation, self-efficacy and health- promoting behaviors.

2. Methods

Study Hypotheses

1. Women with breast cancer who participate in compassion based intervention will have improved level of self- compassion compared to women in control group.
2. Women with breast cancer who participate in compassion based intervention will have improved mean scores of cognitive emotional regulation strategies compared to women in control group.
3. Women with breast cancer who participate in compassion based intervention will have higher level of self-efficacy compared to women in control group.
4. Women with breast cancer who participate in compassion based intervention will have higher level of Health- promoting behaviors compared to women in control group.

Design: A quasi experimental, two groups (study and control group pre/ posttest) research design was utilized for the current study.

Setting: Oncology Hospital out-patient's clinics at Shebin El-Kom, Menoufia Governorate, Egypt.

Subjects

A purposive sampling technique was used to collect the sample of 140 women suffering from breast cancer undergoing treatment and divided randomly into two equal groups, study group (70 patients) receives compassion based intervention protocol and control group (70 patients) receive the routine hospital care.

Inclusion Criteria: Age from 25years and more, with first, second or third stage of breast cancer (I-II-III), agreed to participate in the study, with pre and post mastectomy, and receive any type of treatment protocol.

Exclusion Criteria: Patients in a serious medical condition, patients who had any history of psychiatric illness, have another types of cancer rather than breast cancer.

Sample size calculation

Unmatched Case-Control Study approach OF Epi website Open Source Statistics for Public Health 2021* was used to calculate the sample size required to evaluate compassion-based intervention protocol effectiveness on health related outcomes of women with breast cancer versus control group of women with breast cancer who were followed the routine hospital care, with the following equation,

Sample size (n) = [DEFF*Np (1-p)] / [(d2/Z21-α/2*(N-1)+p*(1-p)]

Where: DEFF = Design effect=1, P = % frequency among women with breast cancer, d = Confidence limits as % of 100 (absolute +/- %) (d) = 5%, Z= 1.96, and α = 0.05.

Were:

a. α) = A two sided confidence level of 95%.
2. 80% = A power (1- β) or (% chance of detecting).
3. 1:2 = Ratio of sample size, unexposed (control)/ exposed (study group).
4. % of unexposed (control) with outcome (self-compassion, cognitive emotional regulation, self-efficacy and health- promoting behaviors) (= 50%)
5. One of two parameters was entered which was % of exposed (compassion focused intervention) = 30% (from a pilot study), and the other parameter, Odd's Ratio (OR).
6. In the current study, results were presented using Kelsey method, with 69 (which was approximated to 70) women with breast cancer as the study group, and 68 (which was approximated to 70 women with breast cancer as control group and the total sample size was 140.

Data Collection Instruments

Five Instruments were used in the present study

Instruments I: Structured Interviewing Questionnaire

The researchers created it after reading the available studies. Its goal was to gather information about breast cancer patients. It had two parts:

First Part: Demographic characteristics of the studied women. It included questions about age, residence, educational level, marital status, occupation and income.

Second Part: Medical history. It included questions about duration of disease, family history discover of the disease, symptoms of breast change, stages of cancer, treatment protocol, mastectomy type of surgery, and complication of treatment.

Instruments II: Self-Compassion Scale (SCS; Neff 2003)

It is a 26-item self-report questionnaire designed to

measure how compassionately respondents view themselves when they're in trouble. It was translated into Arabic by the researchers. The SCS measures six dimensions of self-compassion, including answers that are compassionate or uncompassionate along three categories, which interact to give a measure of overall self-compassion (Neff et al. 2017). These include both positive and negative subscale elements, such as self-kindness, mindfulness, and common humanity, as well as isolation and over-identification. Items were ranked on a 5-point scale, with 1 (almost never) to 5 (almost always), the mean of the subscale item responses is used to calculate subscale scores. Reverse score the negative subscale items of self-judgment, isolation, and over-identification (i.e., 1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1) to calculate a total mean score for self-compassion. Higher self-compassion was indicated by higher overall SCS scores.

Instruments III : Cognitive Emotion Regulation Questionnaire (CERQ), Garnefski et al., (2001)

The questionnaire consists of 36 items, each of which is assessed on a Likert scale with five possible outcomes: 1, never to 5, always. It was translated into Arabic by the researchers to figure out a person's cognitive emotion management mechanisms after they've gone through a distressing incident. It has nine subscales: five for adaptive strategies (acceptance, positive refocusing, refocusing on planning, positive reappraisal, and putting into perspective) and four for maladaptive behaviors (self-blame, rumination, catastrophizing, and blaming others). The total mean score was 180; higher scores denoted greater usage of a particular cognitive strategy.

Instruments IV: Self-related ability for health practice (self-efficacy) scale: Adopted from Becker et al., (1993): The scale has 28 items to assess one's self-efficacy in carrying out the four behavioral components of nutrition, exercise, and psychological well-being and health responsibilities. Each component have seven item, each item has 5 point choice rating from 0= "not at all" to 4 "completely". Each subscale has a range of 0 to 28, and the sum of the subscales determines the overall score (range from 0 to 112). Higher scores reflect greater perceived self-efficacy in engaging in health-promoting activities. There are no reversed scored items. Total mean score of self-efficacy divided into ≥ 74.6 indicate high self-efficiency; 37.5-74.6 indicate moderate self-efficiency and ≤ 37.6 indicate low self-efficiency.

Instruments V: Health - Promoting Behaviors Inventory

It was developed by Walker and Hill-Polerecky, (1996) and used by Ibrahim, AbdouRizk and Reshia (2020) to evaluate actions related to a healthy lifestyle. It comprises 52 items with 6 dimensions which include: health responsibility, physical exercise, nutrition, spiritual development, interpersonal ties, and stress management. Items are rated on a scale of each item has four choice, rating as 1= never, 2= sometimes, 3= frequently, and 4 = routinely. A person's overall health-promoting lifestyle is assessed by taking the mean of all 52 answers; similarly, six subscale scores are determined by taking the mean of responses to subscale items. The sum score range from 52 to 208. A higher score indicate a better implementation of health promotion behaviors.

Instruments validity

All instruments were translated in Arabic format by the researchers after extensive review of the relevant literatures and tested for its content **validity** by five experts in the field of psychiatric mental health nursing, family and community health nursing, psychiatric medicine, obstetric and gynecological nursing and medical surgical nursing, Faculty of Nursing, Menoufia University. Following the experts' assessment, the Instruments were determined to be valid. All required modifications were done.

Instruments reliability

The reliability of the instruments was tested using the internal consistency method. It was found that Cronbach's alpha reliability coefficient was 0.95, 0.91, 0.032, and 0.0516 for instrument II, III. IV and V, respectively.

Ethical considerations

After obtaining written approval from the Menoufia University Faculty of Nursing's Ethical and Research Committee and the hospital's director, participants' consent was obtained after an initial interview in which their cooperation was decided to seek by explaining the goal and procedures for data collection. They were assurance that the data gathered will be treated confidentiality and that it would only be utilized for the purpose of research. The study's women were informed that participation was choice, they could stop to participate at any moment, and there were no fees involved with participating in the study.

Pilot study

A pilot study was done on 14 women (10%) to examine the feasibility and clarity of the instruments that had been used. Necessary modifications were made, and those women were excluded from the study.

Procedure

A formal letter was sent out by the department's head. of Oncology hospital, Menoufia University after explaining the purpose of the study. The dean of Faculty of Nursing, Menoufia University granted permission for the study to be carried out. After comprehensive explanation of the study's purpose, nature, and confidentiality, the studied women gave their informed consent.

-A substantial body of literature on the subject has been produced, including electronic papers, books, articles, and ideas from external sources and journals. The researchers also conducted a literature review in order to develop a knowledge base relevant to the field of study, and they created a guide booklet.

- Data collection was gathered from outpatient clinics of Oncology Hospital- Shebin Elkom, Menoufia University, Egypt from the first of June to the end of November 2022, for duration of six months.
-The studied women with breast cancer asked to fill the study instruments by using the previous prepared instruments within 30 minutes (pretest) for both groups (study and control group).
- The women under research were split randomly into two groups of equal size (study and control group, each group 70 women). Study group was divided into five groups each group contained 14 women. The researchers met the women under study two days per week, three groups per first day (Group1 from 9:00 to 10:00, Group2 from 10:00 to 12:00 and group 3 from 2pm to 3.30) in one day and group 4, group5 in another day in the same week. Each group received one session per week each session lasted approximately from 30 to 45 minutes and received twelve consecutive weekly sessions.
- They set up an inviting, private room for the interviews. There was orientation and explanation. The compassion-focused intervention lasted for a full six months. The study's implementation was divided into four phases (assessment phase, planning phase, implementation phase, and evaluation phase).

Phase (1): Assessment phase

After obtaining approvals to carry out the study, the groups was planned, evaluated using the self-compassion scale, cognitive emotion regulation questionnaire, self-related ability for health practice (self-efficacy) scale, and health-promoting behavior inventory, then, divided randomly two equal group.

Phase (2): planning phase

Groups were set up with careful consideration for the objectives of the compassion-focused intervention, and through the training protocol of the twelve sessions, the researchers provided a detailed description of the intervention.

The following things were established by the researchers during the planning stage

Structure of the sessions: Each session began with an introduction, information about breast cancer, a review of the session before it, and use of the day's subjects and exercises.

Relaxation technique kit.

It was used to facilitate the implementation of intervention and included images and videos of deep breathing, progressive muscle relaxation, and posters explaining relaxation techniques.

Phase (3): Implementation Phase

For twelve weeks a row, the study group met for sessions that lasted between 30 and 45 minutes each. This was accomplished using a variety of instructional techniques, including lectures, conversations, brainstorming sessions, demonstrations, re-demonstrations, offering examples, and modelling. To help with explanation and serve as a reference for them, a data show, video, photographs, and a booklet were used as media. Summary, feedback, and additional clarifications for ambiguous topics were completed at the conclusion of each session, and the researcher assigned the women under study a home assignment.

Compassion-focused intervention

Compassion-focused therapy (CFT) encourages patients to have compassion for both themselves and others in order to facilitate mental and emotional healing. Many people consider the emotional response of compassion—both for oneself and for others—to be a crucial component of wellbeing. Its growth may frequently result in better mental and emotional wellbeing.

Compassionate mind training (CMT) is the main therapeutic method used in CFT. CMT refers to the common methods for assisting people in feeling compassion and fostering various facets of compassion for oneself and others. Through the use of specialized training and supervised exercises created to aid people in further developing non-judging and non-condemning qualities, CMT seeks to foster compassionate motivation, sympathy, sensitivity, and suffering tolerance. (Kolts, Bennett-Levy, Bell, & Irons, 2018).

Contents of the sessions

Session 1: Administering questionnaires, developing an effective therapeutic relationship. Setting the rules of group work; deciding on a treatment strategy, defining duties and objectives. Introduction about purpose of compassion focused intervention.

Session 2: Information on the risk factors for breast cancer, the disease process, effect of breast cancer on psychological status, treatment options, and progression of the disease, community resources, and prevention and management of cancer-related symptoms.

Session 3: Coping with fears, obstacles, and resistances to compassion while, the three flows of compassion are examined (compassion for others, receiving compassion from others, and self-compassion)

.Session 4: demonstrating Soothing Rhythm Breathing and engage in relaxation exercises such as progressive muscle relaxation and deep breathing and perform it at home.

Session 5: Practicing relaxation and mindfulness meditation. By practicing safe place imagery, identify the importance of relaxation, and mindfulness meditation in making the brain more comfortable. Also improving breathing, depression and anxiety and raises the morale of breast cancer women and cope with the side effects of breast cancer treatment. It is combined with a higher quality of life for breast cancer patients.

Session 6: Learning and practicing the compassionate self, using method acting approach. Recognize a woman's certain techniques for exercising her diverse personalities, including their compassionate, furious, nervous, and sad selves that encourage self-compassion.

Session7: Concentrate on the body through a

mindful "relaxation experience". Recognize her thoughts; clarify the distinction between thoughts, feelings and actions. Interaction among thoughts, emotions, and behaviors. Perception of the patients' cancer and clarifying women's thoughts

Session 8: Identifying, naming, regulating, and managing emotions. Interpersonal relationships; the role of the partners, families, society and cancer as a family story.

Session 9: Teach women with breast cancer to identify our ways of coping, learning additional positive coping strategies from the group participants and apply it in a real situation through role play. Practice other complementary medicine mechanisms - such as aromatherapy, reflexology based on massage of the hands and feet, the use of yoga, meditation and mindfulness as auxiliary For one's physical and mental health, it is beneficial to learn about cancer and its treatments. Teach them good communication, problem-solving techniques, prioritizing techniques, and relaxation techniques as ways to deal with cancer-related concerns. Women should be encouraged to engage in physical activity. Additionally, advise them to consume 5 to 9 servings of fruit and vegetables daily as part of a balanced diet in order to maintain a healthy weight. Improving the spirituality of cancer survivors and advising them to do spiritual activities such as prayer, going to church, and figuring out the meaning and purpose of their lives in order to cope with their diseases.

Phase (4): Evaluation phase

Session (12): the researchers thank the participants for their attendance and completing the sessions and distribute the booklet for both groups. The researchers inform the women being studied that this is the final gathering to assess the efficacy of the compassion-focused intervention and deliver the mechanisms with medical drugs and encouraging the women to practice it in the home.

Session 10: Self efficacy

Women are empowering and building their capacity to overcome obstacles and achieve better levels of health by strengthening their relationship with God and seeking assistance. Develop moral character via (Replace negative ideas with positive ones, avoid negative individuals, identify your gift, and let your body language convey how you feel about yourself. Learn new talents and approach people with an open mind.

Session 11: Health promoting lifestyle behaviors

It included a variety of treatments aimed at providing the women with the information and support they needed to improve their health and quality of life.

research instruments for posttest.

Statistical analysis

Data were collected, tabulated, analyzed using version 22 (SPSS, Inc, Chicago, Illinois, USA). Mean and standard deviation (SD) were used to convey quantitative data, whereas numbers and percentages were used to present qualitative data. Chi squared test used for comparison between groups having qualitative variables and Wilcoxon signed rank test (nonparametric test used for comparison between two related groups not normally distributed having quantitative variables, Spearman correlation used for relation between variables and Cohen's test used to test the effect size of intervention with test of significance at P value of <0.05 was considered statistically significant and P value of <0.001 was considered statistically highly significant.

3. Results

Table (1): Distribution of socio demographic characteristics among studied groups (n=140)

Socio demographic characters	Study group (N= 70)		Control group (N=70)		X2	P value
	No.	%	No.	%		
Age / years Mean ±SD	41.6±6.34		43.2±4.38		0.988#	0.323
Residence Rural Urban	31 39	44.3 55.7	32 38	45.7 54.3	0.029	0.865
Marital status Single Married Widowed Divorced	12 34 12 12	17.2 48.6 17.1 17.1	9 28 24 9	12.9 40.0 34.3 12.9	5.43	0.142
Educational level Illiterate Primary Secondary High education	12 16 20 22	17.1 22.9 28.6 31.4	13 21 21 15	18.6 30.0 30.0 21.4	2.06	0.559
Occupation Working House wife	3337	47.152.9	3535	50.0 50.0	0.114	0.866
Income Enough Not enough	38 32	54.3 45.7	36 34	51.4 48.6	0.115	0.735
Mann Whitney test						

Table 1 shows the demographic characteristics among the study (n. =70) and the control (n. =70)

groups. Both groups were comparable for all characteristics. Regarding socio-demographic data, there is no statistical difference between the study group and the control group.

Table (2): Distribution of medical history of breast cancer among the studied groups (n=140)						
Medical history of breast cancer	Study group (N= 70)		Control group (N=70)		X2	P value
	No.	%	No.	%		
Family history Yes No	37 33	52.9 47.1	40 30	57.1 42.9	0.260	0.610
Disease duration One to five years Five to ten years Ten to fifteen years Discover of the disease by chance by doctor Breast self-examination	38 22 10 27 13 30	54.3 31.4 14.3 38.6 18.6 42.9	30 27 1336 12 22	42.9 38.6 18.6 51.4 17.1 31.4	1.84 2.55	0.398 0.279
Symptoms of breast change Lumps Pain Nipple discharge Changes in shape	20 25 14 11	28.6 35.7 20.0 15.7	18 19 1716	25.7 27.1 24.3 22.9	2.14	0.544
Stages of cancer First stage Second stage Third stage	11 27 32	15.7 38.6 45.7	15 28 27	21.4 40.0 38.6	1.05	0.589
Treatment protocol Surgery Chemotherapy Surgical and chemotherapy Radiotherapy Surgical and radiotherapy Surgical, chemotherapy& Radiotherapy	21 27 10 4 3 5	30.0 38.6 14.3 5.70 4.30 7.10	15 17 15 5 7 11	21.4 24.3 21.4 7.10 10.0 15.7	8.23	0.144
Mastectomy Yes No	30 40	42.9 57.1	26 44	37.1 62.9	0.476	0.490
Type of surgery Excision of breast tumor only Radical mastectomy	N=40 26	65.0 35.0	N=44 20 24	45.5 54.5	14 3.23	0.072
Complication of treatment Physical Psychological Social Family problem	17 34 127	24.3 48.6 17.1 10.0	15 39 14 2	21.4 55.7 20.0 2.90	3.39	0.334

Table 2 represents the medical history of breast cancer among studied groups; there is no statically significant difference of both groups regarding medical history of breast cancer. Regarding family history of breast cancer represents more than half of percent in both groups and about forty percent of them have the disease from one to five years. Also, about half of them detect it by chance and about thirty percent of them have a symptom with pain about half of them in the first stage of diseases, Approximately one third of both groups treated by chemotherapy and about forty percent of them make a mastectomy.

Table (3): Comparison between pre and post intervention of self-compassion among the study and control group (n=140).						
Self- compassion	Study group		Wilcoxon test P value	Control group		Wilcoxon test P- value
	Pre intervention	Post intervention		Pre intervention	Post intervention	
	Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD	
Self-kindness	9.00 ±2.83	15.3 ±4.07	7.28 0.001*	9.35 ±2.69	9.13 ±2.59	0.132 0.545
Common humanity	7.28±1.85	11.7 ±2.16	7.33 0.001*	7.00±1.43	7.15 ±1.42	1.36 0.172
Mindfulness	6.62 ±2.25	10.4±2.29	7.35 0.001*	6.30 ±2.28	6.47±1.78	1.68 0.093
Self-judgment	14.1±4.24	9.62±2.92	7.28 0.001*	15.1±5.21	15.0±5.04	1.53 0.905
Isolation	13.5±2.80	8.84±2.45	7.31 0.001*	13.8±2.46	13.6±2.54	0.905 0.365
Over identification	12.9±3.10	8.87±2.41	7.13 0.001*	13.3±2.00	13.2±1.98	1.52 0.127
Total self-compassion	63.4±6.95	67.7±6.96	3.83 0.001*	64.6±5.89	64.3±6.72	0.859 0.390
** High Significant						

Table 3 shows self-compassion between study group and study group. There are statically significant differences in study group between pre and post intervention. As shown there are improvement in all

domains of self-compassion in post intervention than pre intervention and total score of self-compassion increased from 63.4±6.95 to 67.7±6.96. While there is no significant difference between the control group's pre- and post-test scores in any domains for self-compassion.

Table (4): Comparison between pre and post intervention cognitive emotional regulation among the study group and control group (n=140).

Cognitive emotion regulation	Study group		Wilcoxon test P value	Control group		Wilcoxon test P value
	Pre intervention Mean ±SD	Post intervention Mean ±SD		Pre intervention Mean ±SD	Post intervention Mean ±SD	
Adaptive strategies						
Acceptance	8.75±3.87	12.3±3.71	7.18 0.001*	8.11±2.21	8.17±2.54	0.919 0.358
Positive refocusing	9.51±3.10	12.9±2.98	7.32 0.001*	10.4±2.52	10.6±2.57	0.812 0.417
Refocusing on planning	8.01±3.12	10.8±3.15	7.36 0.001*	7.45±1.96	7.65±1.82	1.57 0.115
Positive reappraisal	8.77±2.23	13.7±3.98	7.02 0.001*	9.65±3.22	9.35±3.55	1.84 0.065
Putting into perspective	8.77±2.23	11.9±2.20	7.37 0.001*	9.34±1.70	9.52±1.53	0.978 0.328
Maladaptive strategies						
Self-blame	12.9±2.50	9.25±2.50	7.40 0.001*	13.6±1.73	13.8±2.44	1.76 0.078
Rumination	12.9±3.12	9.87±2.02	5.91 0.001*	12.3±2.98	12.1±2.83	0.681 0.496
Catastrophizing	14.9±2.22	11.2±1.99	7.35 0.001*	14.2±2.07	13.9±2.48	1.40 0.160
Blaming others	14.7±2.08	9.74±1.81	7.30 0.001*	14.4±2.28	14.6±2.85	1.48 0.137
Total cognitive emotional regulation	100.5±13.1	107.5±14.0	3.97 0.001*	99.7±8.49	101.8±10.4	1.75 0.080
** High significant						

Table 4 represents emotion regulation strategies between study group and study group. There are statically significant differences in study group between pre and post intervention. As shown there is improvement in adaptive strategies in post intervention than pre intervention and maladaptive strategies decreased in post intervention than pre intervention. Also, the total score of cognitive emotion regulation increased from 100.5±13.1 to 107.5±14.0. The total score of cognitive emotion regulation and the ratio of adaptive to maladaptive strategies are not statistically different in the control group between the pretest and posttest.

Table (5): Comparison between pre and post intervention self-efficacy among the study group and control group (n=140).

Self- efficacy	Study group		Wilcoxon test P value	Control group		Wilcoxon test P value
	Pre intervention Mean ±SD	Post intervention Mean ±SD		Pre intervention Mean ±SD	Post intervention Mean ±SD	
Nutrition	12.08±3.04	16.63±2.83	7.295 0.001*	11.60±2.83	11.48±2.78	1.641 0.101
Psychological Well Being	10.79±2.26	17.51±2.31	7.327 0.001*	10.26±2.15	10.68± 2.22	1.012 0.317
Exercise	5.17±2.02	16.31±1.96	7.330 0.001*	5.24±1.82	5.51±1.87	0.915 0.360
Responsible Health Practices	10.86±1.88	17.54±1.90	7.414 0.001*	10.80±1.89	10.60±2.00	2.977 0.096
Total Health Self-Efficacy	38.63±4.47	68.00±5.59	7.285 0.001*	38.45±4.34	38.34±4.46	1.641 0.101
*Significant						

Table 5 illustrates self-efficacy between study group and control group. There are highly statically significant differences in study group between pre and post intervention. As shown there is improvement in all subscale in post intervention than pre intervention p = .000. Also, the total score of total self-efficacy increased from 38.63±4.47 to 68.00±5.59. While there is no significant change in any of the self-efficacy subscales in the control group.

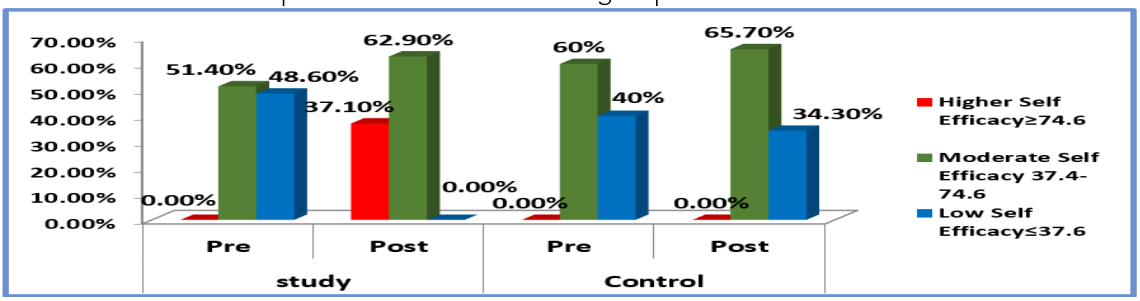

Figure 2: Distribution of Self-Related Ability for Health Practice (Self-Efficacy) among the study group and control group (n=140).

Figure 2: clarifies self-efficacy between study and control group. There are highly statically significant differences in study group between pre and post intervention. As shown there is high percent of the

studied subjects are having high self-efficiency (≥ 74.6) posttest compared to pretest while there is no significant difference in control group pre and posttest.

Table (6): Comparison between pre and post intervention health promoting behaviors among the study group and control group (n=140).						
Health promoting behavior	Study group (70)		Wilcoxon test P-value	Control group(70)		Wilcoxon test P- value
	Pre intervention	Post intervention		Pre intervention	Post intervention	
	Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD	
Health responsibility	12.9±3.09	20.9±4.64	7.29 0.001*	13.3±2.94	13.1±3.01	1.63m0.102
Physical activity	11.4±3.26	18.8±4.24	7.28 0.001*	11.2±2.37	11.1±2.26	0.374 0.709
Nutrition	13.6±3.09	20.0±5.30	7.31 0.001*	14.0±2.61	14.3±2.18	1.36 0.172
Spiritual growth	13.5±3.21	19.7±4.96	7.29 0.001*	14.4±3.15	14.3±4.96	1.23 0.215
Interpersonal relation	13.9±5.04	20.5±6.23	7.28 0.001*	`12.0±2.58	12.0±2.55	1.15 0.248
Stress management	10.7±2.70	15.7±4.67	7.31 0.001*	11.3±2.34	11.4±2.47	0.973 0.331
Total health promoting behaviors	75.0±10.3	115.8±13.8	7.27 0.001*	76.5±6.19	75.8±7.71	1.02 0.316
* Significant						

Table 6 represents health promoting behavior between study and control group. There are highly statically significant differences in study group between pre and post intervention. As shown there is improvement in all domain of health promoting behavior in post intervention than pre intervention p = .000. Also, the total score of it increased from 75.0±10.3 to 115.8±13.8. As opposed to the control group, where no significantly difference in all domain of health promoting behavior and total score in posttest than pretest.

Table (7): Correlation between self-compassion and cognitive emotional, self-efficacy and health promotion post intervention among the study group (N= 70)		
Studied variables	Total post self-compassion	
	r	P value
Health promoting behaviors	0.340	0.001*
Cognitive emotional regulation	0.309	0.009*
Health Self-efficacy	0.291	0.001*

Table 7 illustrates that, there are positive correlation among total score of self-compassion and cognitive emotion regulation, self-efficacy and health prompting behavior in post intervention p > 0.001.

Table (8): Effect size of program intervention among the study group (N= 70)		
Studied variables	Cohen's d	Interpretation
Total post self-compassion	0.51	Medium effect
Cognitive emotional regulation	0.56	Medium effect
Self-efficacy	6.20	Large effect
Health promoting behaviors	6..21	Large effect

Table 8: clarifies the effect size of program intervention among the study group. It showed that, by using Cohen's d, the self-efficacy and health promoting behaviors had large effect (6.20 and 6.21) respectively while total post self-compassion and cognitive emotional regulation had medium effect (0.51and 0.56) respectively

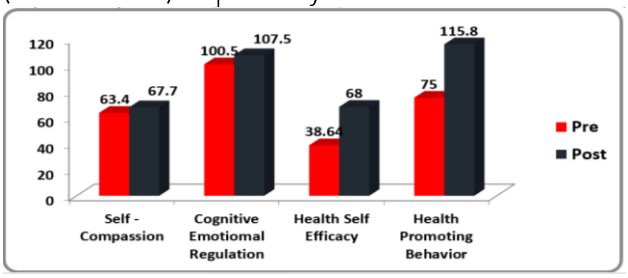

Figure (2): Total means score of self-compassion, cognitive emotional regulation, self-efficacy and health promoting behavior in the study group pre and posttest.

Figure 2 represents a significant difference in the total mean score of self-compassion, cognitive emotional regulation, self-efficacy and health promoting behavior in pre and post intervention among study group.

4. Discussion

Breast cancer is an illness that can be treated more effectively, but it also causes substantial changes in a patient's life and many types of loss such as (strength of body, body integrity, independency, a feeling of control, sexuality, reorganization of family roles, either temporarily or permanently, etc.) demands difficult, extensive therapies that have many negative effects (Johannsen, 2018). Being compassionate means being sensitive to the suffering of others as well as oneself. People who have a long-term physical ailment may find it easier to accept and cope with the obstacles it presents if they have a strong desire to attempt to alleviate and prevent it (Dunne, Sheffield and Chilcot, 2018).

Self-compassion means treating oneself with care and warmth, when faced with challenges in the life. Higher levels of self-compassion can aid individuals in reducing their pain and suffering as well as coping with traumatic life events (such as cancer) in a forgiving, sympathetic, and caring manner (Yip and Tong, 2020). Similar to mindfulness, compassion

may be trained using specific methods and strategies (compassion-based interventions [CBIs]) that are intended to produce specific compassionate emotional and cognitive habits that had a positive change of lifestyle behavior (Abdollahi, Taheri and Allen, 2020). So, the purpose of the study was to evaluate compassion-based intervention protocol effectiveness on health related outcomes of women with breast cancer.

Regarding comparison between pre and post intervention among studied groups, this study found that there has been a substantial improvement in all domains of self-compassion and total score of self-compassion increased in post intervention than pre intervention. In the control group, there was no discernible difference between the pre- and posttest scores for self-compassion across all domains. This finding was consistent with Gonzalez-Hernandez et al., (2018) who showed that study group scored significantly higher on those measures of Self-compassion Scale after implementing cognitively compassion training program compared with a treatment-as-usual control group (TAU) which there was non-significant changes were found among them. This could be related to study group paid more attention to the beneficial intervention they received to achieve adaptation and reduce stress while control group just received the routine hospital care which may be not clarified.

Concerning comparison between pre and post intervention, cognitive emotional regulation among study group and control group. This study demonstrated that maladaptive strategies reduced in post-intervention compared to pre-intervention, and that there was a significant improvement in adaptive strategies and total score of cognitive emotion regulation. While the total score of cognitive emotion regulation and the ratio of adaptive to maladaptive strategies were not significantly different between the pretest and posttest in the control group. These results were consistent with Onyedibe et al., (2021) their results reported that experimental group had a significant increase in adaptive cognitive emotion regulation (CER), in addition to, in comparison to the control group, the level of CER decreased both after treatment and during the 2-month follow-up. This was because the adaptive cognitive emotion regulation of the study group with breast cancer was improved by cognitive behavioral strategies.

In regard to comparison between pre and post intervention, self-efficacy among the study group and control group, the study demonstrated that significant progress was observed in all subscales of Self-Related Ability for Health Practice "Health Self-Efficacy" and total mean score of self-efficacy improved in post intervention than pre intervention. No significant difference in all subscales and total mean score of self-efficacy was observed in the control group in posttest than pretest. These outcomes aligned with Daneshvar et al., (2019) they observed that self-efficacy was significantly increased in study group (P=0.001) of cancer adjustment behaviors after one month of intervention while no significance in the control group. This result could be connected to the fact that this counseling strategy can be employed as a simple, non-invasive, and beneficial way to improve cancer patients' self-worth and self-efficacy.

Concerning Comparison between pre and post intervention health promoting behaviors among studied groups, a significant improvement in all domains of health promoting behavior and the total score of it increased in post intervention than pre intervention in study group and no significant difference was observed in control group in posttest than pretest. These results were in line with Alighanavati et al. (2018) whose research found a substantial distinction between the experimental and control groups in terms of promoting behaviors and quality of life. Moreover, at the post-test stage, the experimental group's health-promoting behavior, happiness levels, and quality of life were considerably better (P 0.001) than those of the control group. This was due to the need of women with breast cancer for healthy promoting behaviors in order to be more independent and achieve better quality of life.

Regarding correlation between self-compassion and cognitive emotional, self-efficacy and health promotion post intervention among the study group. A positive correlation was obtained among total score of self-compassion and cognitive emotion regulation, self-efficacy and health prompting behavior in post intervention $p > 0.001$. These results were in line with Arambasic et al., (2019) who reported significant linear correlations were found in the expected positive direction between each reported cognitive emotions and quality of life, and the components of mindfulness and self-compassion post intervention.

Moreover, these results were consistent with Alizadeh et al., (2018) whose observed a significant association between self-compassion, social support, self-efficacy, and a sense of belonging ($P < 0.01$). This outcome may be explained by the fact that supportive measures were successful in enhancing patients' overall health status and behavior, which had a favorable impact on their cognition, emotions, and sense of self-efficacy.

Concerning effect size of program among the study group, this study presented that total mean score of self-compassion; cognitive emotional regulation, self-efficacy and health promoting behavior were significantly difference in pre than posttest. This result was consistent with Sadeghzadeh Mofrad et al., (2022) whose results clarifies that study group's effect on the components of psychological well-being and cognitive emotional regulation in the post-test had become significant. Also, the study group's effect on the total score of self-efficacy post-test was highly significant. Additionally, the results showed that compassion-focused therapy could significantly positively affect cancer patients'

cognitive emotional regulation and self-efficacy. This was as a result of teaching the elements of self-kindness, a shared sense of humanity, and mindfulness, which compassion-focused treatment does to assist the patients accept challenges, failures, illness, and handicap as parts of shared human experiences.

5. Conclusion

In conclusion, Compassion training intervention protocol represents a potentially beneficial method to support women with breast cancer for improving self-efficacy, health-promoting behaviors as well as cognitive emotional regulation strategies

6. Recommendations

1. Further researches are required to highlight the potential advantages of compassion-based training intervention protocol on a variety of outcomes that health care providers can apply in clinical practice with clients and support by mobile technologies to determine its efficiency.
2. For a more accurate assessment of its advantages and disadvantages, compassion-focused intervention protocol should be contrasted with other management methods.
3. Active health nurses role to set their priorities of breast cancer women for providing education program about self-compassion focused intervention for better health related behavior and quality of life.
4. Developing a standard nursing protocol for incorporating techniques and procedures of intervention to achieve cognitive emotional regulation among women with breast cancer

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