Assessing the Quality of Life with Cardiovascular Training and Pilates for Breast Cancer Survivors

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Abstract

Introduction: It has been estimated that over 15 million women suffer from breast cancer. Consequently, there is a lot of interest in physical treatment for breast cancer recovery. This study aims to find the impact of aerobic exercises and Pilates on improving QoL, fatigue, pain and physical fitness in breast cancer patients. The study is focussed on assessing the quality of life with cardiovascular training versus Pilates exercise for breast cancer survivors.

Methods: Total of 12 participants were chosen from Saveetha hospital (Chennai) and Global Hospital (Madanapalle), by random sampling. They were asked for a written consent form. The patients were randomly divided into two groups after completing pre-tests for QoL and FACIT-F. GROUP A received cardiovascular training (aerobic exercise program) alone and GROUP B received a combined program (aerobic exercise and Pilates). After 8 weeks of training with combined exercise and aerobic exercise alone QoL and FACIT-F scores were re-evaluated and post-test was reported. The collected data were tabulated and analysed. (Study period : September 2022 to June 2023).

Result: A significant difference in terms of statistics was found between GROUP A and GROUP B as well as within the group, based on the statistical examination of the quantitative data.

Conclusion: The findings of the present study demonstrate improvements in both Pilates exercise and cardiovascular training among women with breast cancer. However, GROUP B shows an extremely significant improvement compared to GROUP A.

Keyword : Fatigue, quality of life, breast cancer, aerobic exercise, Pilates exercise

Introduction

Breast cancer is the most prevalent cancer diagnosed in women and the second most common cause of cancer-related mortality. It is also regarded as a chronic sickness with a prolonged survival time.¹ In fact, it has been estimated that over 15 million women suffer from problems brought on by this cancer.² Surgery, systemic chemotherapy, and radiation therapy are all cancer treatments that have successfully decreased mortality rates, but the elevated levels of weariness during treatment compromises their physical performance and quality of life, continue to be a concern.³-⁶ Cancer-
related fatigue (CRF) is a complex concept that is believed to be the most common adverse impact for cancer patients; it has a profound negative effect on patients’ quality of life (QOL). In cancer patients, performing physical activity has been suggested as a significant component of adjuvant therapy in BC care to improve QOL. We are going to compare the effectiveness of Pilates and aerobic exercise in a variety of interventional approaches. Running, jogging, cycling, and walking are all forms of aerobic exercise that primarily rely on the aerobic energy-generating mechanism. The Pilates method consists of exercises inspired from karate, yoga, zen medication helps in achieving physical and mental perfection. The promotion of Pilates, a form of mind-body training, helps to build core muscle strength, which can then improve posture. The chances of cancer patients being cured and surviving are expected to increase as a result of improving the QOL. Thus, the purpose of this study was to identify how CRF affected breast cancer patients’ quality of life.

Purpose

Assessing the quality of life with cardiovascular training versus Pilates for breast cancer survivors.

Materials and Methods

It was an experimental pilot study conducted on 12 participants from Saveetha Medical College and Global hospital using Random sampling. The participants were separated into two equal groups based on random allocation.

Inclusion Criteria:

- Breast cancer survivor women treated with chemotherapy or radiotherapy. Age group: 45 to 60 years.
- Not mixed with other forms of exercises.
- Currently not undergoing any chemotherapy or radiation therapy.
- Having a fatigue score above 2.

Exclusion Criteria:

- Patients undergoing active therapy.
- People with uncontrolled cardiovascular or vascular disease.
- Patients regularly exercise.

Outcome Measure:

- FACIT-F Scale
- EORTC QLQ C-30 Scale

Procedure

The study participants who met the inclusion and exclusion criteria were selected from Saveetha medical college and hospitals, Chennai, and Global hospitals, Madanapalle. Because of a lack of individuals who were willing to commit themselves to the training period, a total of 12 subjects were selected which were divided into two groups. Before beginning the treatment procedure, the individuals and caretakers are educated well about the study and obtained a formal written informed consent. After obtaining pre-test measurement of QoL and FACIT-F the patients who are having fatigue score greater than 2 are selected and were categorized into two groups using random sampling technique. Control group received cardiovascular training (aerobic exercise program) alone and the experimental group received a combined program (aerobic exercise and Pilates). After 8 weeks of training with combined exercise and aerobic exercise alone QoL and FACIT-F scores were re-evaluated and post-test was reported. The results, as well as the data gathered were tabulated and analysed. The pre-test and post-test values are compared and evaluated statistically. And comparison is done within the groups.

TREATMENT PROTOCOL:

Pilates GROUP B - Pilates exercise along with cardiovascular training. Group B was given Pilates exercise for 2 sets every session and each set contains 10 repetitions. Treatment given for 3 days a week continued for 8 consecutive weeks.

PROCEDURE: The treatment session is divided into 3 phases.

PHASE 1:

NOTE: Maintain pain free ROM

- Breathing exercises - Get the body ready for workout
- Neck stretches
  - left and right neck
  - yes and no stretch
  - ear to shoulder stretch.
GOAL: stretching neck muscles improve neck and shoulders mobility as well as flexibility

- Seated chest opener

GOAL: to stretch the shoulder and chest muscles, strengthen middle back muscles and improve posture

- Interlace hands in front and overhead
- Standing wall angels

GOAL: to increase shoulder range of motion and to stretch the pectoralis major and minor muscles

- Pendulum
- Seated biceps curl

GOAL: to stretch your forearms, wrist, upper back, and shoulders

PHASE II: For regaining strength, power, endurance.

- Shoulder shrugging exercise
- Mermaid stretch

GOAL: stretches and engages our mid-lower back muscles as well as your primary breathing muscles

- Toe taps
- Leg circles

GOAL: help strengthen hip flexors and leg muscles including the quadriceps, hamstring, abductors, and adductors.

- Single leg kick
- Double leg kick

GOAL: works on the hamstrings and helps with stretching the muscles and improving endurance.

- Criss cross
- Side lying chest opener

GOAL: Improves overall posture and shoulder flexibility while requiring minimal effort.

PHASE III:

- Breathing exercise
- Slow march
- Marching with arm lift
- Mild stretches

Data analysis

The collected data were tabulated and assessed using descriptive and inferential statistics. The parameter was subjected to a mean and SD calculation. The analysis of significant variations between pre-and post-test measures were done using a paired t-test. A significant change between two groups was examined using an unpaired t-test. Within the groups, P value of <0.05 was used.

Graph 1

Graph 2

Graph 3
Results

When compared to the pre-assessment, the post assessment shows that there is a significant decrease in fatigue and increase in quality of life using FACIT-F and EORTC QLQ-C30 scales. The Statistical mean value for FACIT-F cardiovascular training pre intervention was 23.83 and SD was 2.93. Whereas statistical mean value for cardiovascular post intervention was 27.83 and SD was 2.79. There is a significant P value less than 0.0001 with a T value of 15.4919. The Statistical mean value for FACIT-F Pilates pre intervention was 24.33 and SD was 3.27. Whereas statistical mean value for Pilates post intervention was 38.00 and SD was 1.67. There is a significant P value less than 0.0001 with a T value of 12.5930. Hence the post intervention Pilates mean value show higher significant value than the post intervention cardiovascular mean on FACIT-F. The Statistical mean value for EORTC QLQ C-30 cardiovascular training pre intervention was 65.50 and SD was 2.88 whereas statistical mean value for cardiovascular post intervention was 73.50 and SD was 3.08. There is a significant P value less than 0.0001 with a T value of 30.9839. The Statistical mean value for EORTC QLQ C-30 Pilates pre intervention was 65.83 and SD was 2.48 whereas statistical mean value for Pilates post intervention was 81.50 and SD was 1.22. There is a significant P value less than 0.0001 with a T value of 19.5171. Hence the post intervention Pilates mean value shows higher significant value than the post intervention cardiovascular mean on EORTC QLQ C-30.

Discussion

This study sought to identify the elements that contributed to cancer patients’ QoL and the degree of their weariness. In results there is a significant improvement on increasing QoL and decrease in fatigue, were observed. For breast cancer patients, the study’s proposal is to present a Pilates and cardiovascular training protocol for women with breast cancer and compare its effects between two groups. The main conclusions of the current literature are that an organized program in Pilates technique exercises is appealing to a clinically applicable. There is a significant increase in physical standards, such as shoulder mobility, as well as improvements in psychological parameters, such as QoL, have been noted in the experimental group (Pilates with cardiovascular training). The impact for aerobic exercise (particularly walking) in Breast cancer survivors, the findings demonstrated that improving the physical activity, quality of life, and sleep characteristics with Aerobic activity was superior to standard treatment. The observed rise in physical activity levels significantly corresponds to an improvement in quality of life. Cancer patients undergoing biological response modifiers, radiation therapy, or chemotherapy for their disease frequently have CRF (cancer-related fatigue).15,16 With a prevalence rate of up to 99%, fatigue is a common side effect of cancer treatment for almost all patients. Significant improvements on increasing QoL and decrease in fatigue were observed. The majority of cancer patients reported that weariness prevented them from engaging in social activities like hanging out with friends or going out to eat as well as performing their routine daily responsibilities 17,18. A patient’s QoL may also be significantly impacted by weariness brought on by chemotherapy, which also exacerbates and causes a number of side effects. Additionally, treatment dissatisfaction and anxiety about metastases may lower quality of life (QoL).20 Courneya et al (2007), shows evidence that physical activity in general improves QoL, mood, fatigue. According to Murtezani (2014), there are significant improvements on increasing QoL and decrease in fatigue, which were observed with aerobic exercise, particularly walking. Saarto et al., (2012) reported no change in significance between the exercise and control groups. This is accounted for by the patients in the control group’s high levels of motivation and active lifestyles, which had a ceiling impact on the recognition of the health advantages of exercise. (2003), Papalargo and Reggio,19 discovered that weariness affected patients’ daily activities, lowering their quality of life. The results of the logistic regression study showed that patients with breast cancer who received combination regimens were four times more likely than those who received a single regimen to have extreme fatigue. Quality of life can be an important predictor of better treatment outcomes. Over the past ten years, there have been numerous developments in the tools used to measure the standard of living for those with breast cancer. In
the study by Eyigor et al (2010), The six-minute walk test, depression, quality of life, and functional scores for the Pilates group all show statistically significant improvements following the intervention, but not for the control group. Only the six-minute walk test revealed a statistically significant improvement after the intervention, favoring the Pilates group over the control group.20 There has been a lot of interest in studies and reviews on physical activity over the last ten years. Reviews revealed that physical activity-based treatments could lessen symptoms such as breast, arm, and early menopausal symptoms in addition to improving standard of living for breast cancer patients. Following the practice of physical activity following breast cancer therapy, systematic studies have noted better quality of life, cardiorespiratory capacity, and reduced fatigue. Given that these are two types of activities that value mind and body and can have a variety of effects and benefits. Daniela L. Stan et al, according to this study they observed at both follow-up visits, the data showed a strong correlation between the degree of weariness and QoL domains. This study has conducted for 12 weeks on structured Pilates mat exercises for 15 breast cancer patients. The principal findings of this study are that a structured program in Pilates is of 60 % clinically relevant. However, combining Pilates exercise with cardiovascular training for an 8 weeks intervention program yields far greater outcomes than cardiovascular training alone in terms of reducing fatigue and enhancing standard of life.

**Conclusion**

The findings of the present study demonstrate improvements in both Pilates exercise and cardiovascular training among women with breast cancer. However, (GROUP B) Pilates with cardiovascular exercise shows an extremely significant improvement compared to (GROUP A), cardiovascular training, which was found to be supportive in enhancing breast cancer survivors’ quality of life.

**Ethical Clearance:** Taken from the institution of ethical committee

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**References**


