

Gymnastic Exercise for Breast Cancer Survivor to Overcome Fatigue at National Cancer Dharmais Hospital

ISMARINA¹, DELMI SULASTRI², RIZANDA MACHMUD³, AFRIWARDI⁴, WRISMA ARI⁵

^{1,2,3,4,5}Public Health Department, University of Andalas, Padang, West Sumatra, Indonesia

Correspondence to Ismarina, Email: rinaismarina77@gmail.com, Telephone +62822 19161977

ABSTRACT

Breast cancer patients experience fatigue from cancer: before, during and after chemotherapy. 30-99% of breast cancer sufferers have severe stage of fatigue. The results from early research at Dharmais hospital with 10 breast cancer patients, nearly 100% experienced severe stage fatigue despite receiving various treatment therapies. Fatigue due to breast cancer still received less attention in the treatment than pain, nausea, vomiting and other symptoms. Therapy provided by the health team, 95% was given to reduce pain and only 5% to reduce fatigue from cancer. The aim of this study to reduce fatigue with gymnastic exercise at National Cancer Dharmais Hospital, Jakarta. This research started to focus on quasi-experimental with non-equivalent control group design to reduce severe fatigue we need to give an intervention with physical exercise for a month. Base on all result, we can conclude that education and physical exercise can help survivor breast cancer reducing fatigue and depression and to increase self-efficacy and their knowledge with a p-value less than 0,05. Dyarina Model consistently can reduce fatigue and depression every week and consistently increase self-efficacy and their knowledge as a self-empowerment for survivor breast cancer. For further research, we need to learn how long it takes to minimize fatigue and depression among survivor breast cancer and how to increase physical activity to help the respondent of breast cancer.

Keywords: Fatigue, Breast Cancer, Chemotherapy, Physical Exercise, Cancer

INTRODUCTION

Noncommunicable diseases (NCDs) are now responsible for the majority of global health. Based on the International Agency for Research on Cancer in 2018, there will be an estimated 18.1 million new cancer cases and 9.6 million new cancer deaths. Lung cancer is the most commonly diagnosed cancer (11.6% of the total cases) and the leading causes of cancer death (18.4% of the total cancer deaths), closely followed by female breast cancer (11.6%), prostate cancer (7.1%) and colorectal cancer (6.1%) for incidence and colorectal cancer (9.2), stomach cancer (8.2%), and liver cancer (8.2%) for mortality. Among females, breast cancer is the most commonly diagnosed cancer and the leading cause of cancer death².

Every breast cancer patient will get more than one therapy as follows breast surgery, chemotherapy, radiation, and other therapy. Based on national health research in 2018, there is a 1.8% prevalence of cancer in Indonesia and the majority treatment like breast surgery (61.8%) and chemotherapy (24.9%) (Riskesdas, 2018). Breast cancer patients often experience cancer-related fatigue before, during and after their treatment exclusively after chemotherapy. (Liu et al., 2013)

Fatigue is a common symptom in patients with cancer receiving chemotherapy, radiation therapy, or treatment with biological responses modifiers. According to a survey of 1569 patients, the symptom is experienced by 80% of individuals who receive chemotherapy and/or radiotherapy. Patients with breast cancer who received radiotherapy, fatigue was the most commonly experienced side effect, with 84% of patients reporting fatigue, compared with 75% reporting pain and 25% reporting nausea. A recent study of 763 women who survived breast cancer found that 35% still reporting fatigue 1-5 years after completion of their treatment, and 34% reporting 5-10 years after treatment completion⁴.

The impact of breast cancer patients related to fatigues on the ability to perform activities of daily living in both profound and pervasive. In a study of 379 patients with cancer and a history of chemotherapy, almost all patients with fatigue (91%) felt that it prevented a normal life and 88% felt that their fatigue had changed their daily routine. Patients with fatigue reported significant impairment in their ability to complete a variety of activities of daily living, including preparing food, cleaning the house, light living, and social activities with friends and family. These impairments are likely to be a direct result of the impact of fatigue on the patients physical functioning⁴.

Based on 40 trials with 3694 participants met the inclusion criteria, there is 12 weeks cancer survivor exposed to exercise intervention had a greater positive improvement for their health-related quality of life such as emotional well being and social functioning. This research also shows there is a significant reduction in anxiety and fatigue. (Mishra, Scherer, Snyder, Geigle, & Gotay, 2015)

One of the interventions must be the focus on an exercise to reduce fatigue because if we want to create a successful treatment, we have to reduce fatigue to improve their quality of life. There is so many exercise suggestions such as flexibility exercise, aerobic exercise, and resistance training but there is no specific exercise for a breast cancer survivor to reduce fatigue. Dyarina gymnastic exercise is one a gymnastic movement developed to reduce fatigue for breast cancer patients. This exercise will be an alternative for physical exercise which can be an effective way to reduce fatigue, moreover this exercise can improve their quality of life as improve their physical ability, improve balancing who can reduce possibility to fall and broken bones, keep muscles from wasting due to inactivity, lower the risk of heart disease, reduce osteoporosis, make less dependent on others for help with normal activities of daily living, improve self-esteem, reduce anxious and

depressed, improve an ability to keep social contact, and help to control weight.

METHODS

Design Study and Participants: This research uses quasi-experimental design with pre and post-test control group design. We are invited participant women with breast cancer stadium 2B, whose already finished all chemotherapy process in Dharmais Hospital. All participant age below 60 years, with educational background minimum in senior high school and they have karnofsky score more than 80. Between March – April 2018, these women were invited to participate in this study. In total 35 women for intervention and 35 women in the control group were invited.

At the beginning intervention and control group filled out a questionnaire on socio-demographic, characteristics, medical history, fatigue, efficacy, and depression index. After that, all participant in the intervention group were followed up at regular time interval (once a week for a month). Women who reported can do anything needs repeated chemotherapy, and whom can't join regular time exercise will be excluded.

Measures: Fatigue was assessed using the short form of multidimensional of the Piper Fatigue Scale (PSF) and to reduce the total number of PSF with 12 items and each item is rated on a 10 point scale indicating how true the statement was during the last week. The range of possible scores for each subscale is 0 to 10 and the range for total score is 0 to 120, with higher scores indicating severer fatigue and the lowest scores indicating less fatigue. This PSF has been validated and is a reliable tool for assessing the full spectrum of breast cancer-related fatigue symptoms in a research application.

Data Analysis: Descriptive statistics (mean, standard deviation, minimum and maximum score and p value) were calculated for all outcome at both time points. Pair t-test was used to examine the difference between pre and post-test and between the patient and control group. This modeling approach accounts for correlations in repeated measure within a subject.

Intervention: The exercise intervention ranging from four weeks with 4 trials were led by a sports trainer professional with a duration of exercise session ranged from 25-35 minutes. This exercise starts with warming up and

endurance exercise or core movement to reduce fatigue and cooling down. Every respondent should joint this intervention one a week.

RESULT

In total 29 women from the intervention group who's following all-inclusive and exclusive criteria will be compared with 35 women from the control group who's didn't get any intervention. The characteristic from both group quite such as education and stadium of breast cancer background and also karnofsky score background. This research shows that there was significant between pre and post-test for fatigue, the score of depression level and self-efficacy variable in the intervention group with p-value less than 0.05. For the control group, there was not significant between pre and post test for every variable.

Based on table 1.1, show the score of pre and post-test of fatigue from group intervention and group control. As we can see, there are differences between mean from each group in pre and post-test. For the intervention group, all score slowly decrease from 32.60 to 20.51 but for group control increase from 28.55 to 30.78. That data also shows there are a significantly reduce the level of fatigue with p values less than 0,05. For the group control show that there are no significant differences between pre and post-test.

In the depression level variable, presented a significantly higher level in the intervention group in pre and post-test. As we can see mean of depression level plunge from 20.52 to 12.15 in 4 weeks intervention. In the control group for depression level variable illustrated increasing mean score in pre and post-test. For self-efficacy variable also show the different cases with another variable. They presented a significantly higher level in intervention with a moderately climb from 75.32 to 86 of mean score. But in control group design there presented not significant before and after the test. Mean score in the control group are decrease and p-value also show there was not significant in pre and post-test (Table 1)

After gymnastic exercise intervention, almost all respondent giving positive feedback such as they feel happy, fresher and fit, flexibility was an increase, eliminated stress and can do a normal activity because before gymnastic exercise there are so many participants feels like they can't do a daily routine, not easy to walk or move.

Table 1: Score Pre and Post Test of Fatigue, Depression Level, and Self Efficacy From Two-Group Design

Variable	Mean	SD	Min-Max	p-value
FATIGUES (Intervention group)				
Pre Test	32,70	18,26	7,50-75,83	0,005
Post Test	20,51	11,24	0-42,50	
Control group				
Pre Test	28,55	16,08	1,67-75	0,409
Post Test	30,78	15,40	10-75,83	
DEPRESSION LEVEL (Intervention group)				
Pre Test	20,52	12,80	0-50,79	0,000
Post Test	12,15	10,24	0-25,40	
SELF EFFICACY (Intervention group)				
Pre Test	75,32	14,82	42,40-100	0,001
Post Test	86	11,36	61,20-100	
Control group				
Pre Test	79,56	11,42	52,80-100	0,065
Post Test	77,06	14,76	42,40-100	

DISCUSSION

Based on table 1.1 we can see fatigue in breast cancer survivor can be reduced with gymnastic exercise with 4 times regular training in a month (once a week). This activity is also can encourage breast cancer survivor to be more empowered of their self. Degrade the level of fatigue is also can support other variables such as depression level and self-efficacy. There are so many suggestions to reduce fatigue apropos we have to do an exercise and have to eat healthy food, none about specific suggestion for exercises. For an example there was a gymnastic exercise for coroner hearth disease, gymnastic exercise for elderly, but for reducing fatigue in breast cancer patient mostly health provider just giving suggestion to do an exercise without giving more information which exercise can reduce fatigue in a breast cancer patient. With this Dyarina Gymnastic exercise hopefully it can be a solution for all breast cancer patient because all movement in this exercise is focused on chest, flexibility and capable to ensure the whole body can move to increase an endurance for every patient step by step with stretching, endurance training, cooling down, flexibility training and resistance training at the same times. Resistance training can be done after endurance training if the patient already felt to carry out the activities.

CONCLUSIONS

The current finding indicates that the Dyarina Gymnastic exercise well received by a breast cancer survivor to reduce fatigue, depression level, and also increasing mean of self-efficacy level. This exercise is a reflection of an effectivity during the pilot study. This treatment must be continuing in further research and evaluation to see another specific impact on the breast cancer survivor.

REFERENCES

1. Baumann, F. T., Bloch, W., Weissen, A., Brockhaus, M., Beulertz, J., Zimmer, P., . . . Zopf, E. M. (2013). Physical Activity in Breast Cancer Patients during Medical Treatment and in the Aftercare - a Review. *Breast Care (Basel)*, 8(5), 330-334. doi: 10.1159/000356172
2. Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68(6), 394–424. <https://doi.org/10.3322/caac.21492>
3. Hoffman, A. J., von Eye, A., Gift, A. G., Given, B. A., Given, C. W., & Rothert, M. (2009). Testing a theoretical model of perceived self-efficacy for cancer-related fatigue self-management and optimal physical functional status. *Nurs Res*, 58(1), 32-41. doi: 10.1097/NNR.0b013e3181903d7b
4. Jean-Pierre, P., Hofman, M., Morrow, G. R., Figueroa-Moseley, C. D., & Ryan, J. L. (2007). Cancer-Related Fatigue: The Scale of the Problem. *The Oncologist*, 12(suppl_1), 4–10. <https://doi.org/10.1634/theoncologist.12-s1-4>
5. Liu, L., Rissling, M., Neikrug, A., Fiorentino, L., Natarajan, L., Faierman, M., ... Ancoli-Israel, S. (2013). Fatigue and Circadian Activity Rhythms in Breast Cancer Patients Before and After Chemotherapy: A Controlled Study. *Fatigue: Biomedicine, Health & Behavior*, 1(1–2), 12–26. <https://doi.org/10.1080/21641846.2012.741782>
6. Mishra, S. I., Scherer, R. W., Snyder, C., Geigle, P., & Gotay, C. (2015). Are Exercise Programs McClellan, R. (2013). Exercise programs for patients with cancer improve physical functioning and quality of life. *Journal of Physiotherapy*, 59(1), 57. doi: 10.1016/s1836-9553(13)70150-4
7. Effective for Improving Health-Related Quality of Life Among Cancer Survivors? A Systematic Review and Meta-Analysis. *Oncology Nursing Forum*, 41(6), e326–e342. <https://doi.org/10.1188/14.ONF.E326-E342>
8. NCCN.org. (2014). Cancer-Related Fatigue.
9. Shiraz I. Mishra, M., Ph.D., Roberta W. Scherer, P., Claire Snyder, P., Paula Geigle, P., Ph.D., & Carolyn Gotay, P. (2015). The Effectiveness of Exercise Interventions for Improving Health-Related Quality of Life From Diagnosis Through Active Cancer Treatment. *Oncol Nurs Forum*, 42(no. 1), E33-E53.
10. Society., A. C. (2009). Getting help for fatigue.pdf.
11. Stanford. Chronic Disease Self Efficacy Scale.
12. Riskedas. (2018). Hasil Utama Riskedas di Indonesia 2018. <https://doi.org/1/1/Desember2013>.