Research Article

MUSKAR-T for Improving Mental Health and Cancer-Related Symptoms in Women Diagnosed with Breast Cancer Undergoing Chemotherapy: A Queasy Experimental Design

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Abstract

Aims: Women diagnosed with breast cancer suffer from significant psychological distress, mainly depression and anxiety, fatigue, and sleep disturbance. The effects of music therapy and progressive muscle relaxation training on the quantity and quality of sleep, as well as on levels of anxiety and fatigue, in patients undergoing chemotherapy for breast cancer.

Objectives: The aim of the study was to determine the effects of MUSKAR-T (combination of music therapy and progressive muscle relaxation training) on sleep quality, anxiety, and fatigue in breast cancer patients undergoing chemotherapy.

Methods: The study employed a two-group, pre- and post-test experimental design. Patients in the intervention group had two sessions of 30-minutes of music therapy and progressive muscular relaxation per day for five days prior to hospital discharge. Pittsburgh Sleep Quality Index (PSQI), State Trait Anxiety Index (STAI), and Cancer-related Fatigue Assessment (C-RAFA) were used to evaluate the results (CFS). Anxiety, tiredness, and sleep quality were measured and compared between groups using a univariate approach that also took into account the effects of group, time, and the interaction of group and time.

Results: This study had 100 participants, 50 in the intervention group and 50 in the control group. The majority of respondents were married (70 percent), unemployed (24 percent), had completed at least middle school (68 percent), were not menopausal (76 percent), and had illness at stage III (46 percent). The intervention group's anxiety, fatigure, and sleep quality scores fell to 76.1112.42, 45.1214.76, and 4.363.36 on the day preceding hospital discharge.

Conclusions: The culturally-based music therapy and progressive muscle relaxation effective for reducing anxiety, fatigue, and enhancing the quality of sleep in breast cancer patients undergoing chemotherapy.

Keywords :
Progressive muscle relaxation, fatigue, breast cancer, music therapy, sleep quality

INTRODUCTION

More than 1.67 million new cases of breast cancer are diagnosed every year, making it the second most common malignancy among women around the world. Breast cancer is the most prevalent cause of death from cancer among women (14.3 %) in underdeveloped countries, whereas it is the second most common cause of cancer death in industrialized countries (15.4 %). About one-third of breast cancer patients experience considerable psychological discomfort, primarily despair and anxiety, despite significant advances in early detection, diagnosis, and therapy. (1), which can persist over the years following completion of treatment (1,2). Cancer-related fatigue (CRF) seems to be the most common and debilitating symptoms encountered by cancer patients. It is commonly used by breast cancer patients with a range of between 27% and 96% based on the stage or type of medication received and the method of measurement (3). Sleep problems are very common in breast cancer patients before surgery, throughout continuous chemotherapy, and even after treatment has been completed (4) and during antihormonal therapy (5). These conditions can worsen the burden of symptoms and have a significant impact on life quality (6).

Many interventions, like as music therapy, are used to help women with breast cancer cope with exhaustion, lower anxiety, and have a better night's sleep (7), relaxation exercise (8,9), excercise (10), cognitive-behavioral intervention (11), and supportive intervention (12). The combination of music therapy and relaxation training, among the aforementioned interventions, has been shown to improve anxiety, fatigue, and sleep quality through progressive muscle relaxation. (13) suggests that relaxation therapy would be more successful if done on two levels, namely body and mind (14) suggests that progressive muscle relaxation alone without being combined with other interventions is viewed by some patients as energy-consuming and calorie-consuming.

MUSKAR-T is a non-pharmacological treatment that combines culture-based music therapy with progressive muscle relaxation, which are both relaxation methods that integrate body and mind. Music may have a beneficial influence on the physiological, emotional and spiritual dimensions of humans (7). Music will trigger changes in stress hormones in the patient, as the music is listened to and captured by sensory fibers and then transmitted to the cerebral cortex, there will be a decrease in frontal lobe activity that causes cortisol hormone secretion and a decrease in stress hormones that can increase comfort and cause a pleasant sensation (15). In Indonesia, especially in West Java, Sundanese gamelan is often played, especially at events such as wedding receptions, circumcisions or other official and is presented instrumentally with a tempo of 60-100 beats per minute, has tone and rhythm components that can have a psychological and physiological influence on the body (16). According to Herawan (2009) the musicality of gamelan is very soft so that when listening to it, the mind becomes more relaxed. By selectively stimulating the sympathetic and parasympathetic nerve systems, progressive muscle relaxation (PMR) can be used to increase physical work capacity and decrease functional limits.(17). Patients undergoing hemodialysis may benefit from practicing progressive muscle relaxation to enhance their sleep. We did a systematic review to see if PMR helps with anxiety, sleep, and quality of life in various people groups. (18,19).

METHODS

Study design

The study was queasy experimental with two group pre-post-test design.

Sample

Patients diagnosed with breast cancer were the participants. 100 patients were recruited Estimasi sampel use G-Power software versi 3.1.9.7 with F-test, ANCOVA: Fixed effect, main effect and added 10% to anticpated drop out. Women diagnosed with breast cancer between the ages of 25 and 65 were eligible at least 6 months, and undergoing chemotherapy. If patients had diseased-associated with voice, such as epilepsy, they were excluded because they did not prefer to listen to music or refused to provide written informed consent.

Intervention procedure

Patients in the intervention group received MUSKAR-T training. MP3 players and headphones were used in music therapy. A music therapist trained the researchers in music collection, volume control, time-based listening to music, and other music therapy-related topics. Sundanese gamelan is used and presented instrumentally with a tempo of 60-100 beats per minute, has tone and rhythm components that can have a psychological and physiological influence on the body (16). Two times a day, between the hours of 6:00 AM and 8:00 AM, and again around 8:00 PM, music was played (9:00 a.m.-11:00 p.m.), for 30 minutes per session. All intervention group subjects performed music therapy and accomplished it as required.

A technique known as progressive muscle relaxation training is one that entails gradually increasing the amount of time spent strengthening and relaxing various muscle groups until the entire body is at ease (20). Participants were given the instruction to perform 16 repetitions of flexing and extending their abdominal core. Right hand and forearm; left and upper arm; left biceps; upper arm; upper cheek and nose; lower cheek and nose; neck and throat; abdomen; shoulders and upper back; pelvic region and stomach; right thigh; calf; right foot; left thigh; calf; left foot; right thigh; calf; left foot; and left thigh; calf; left foot. Prior to being released from the hospital, patients underwent progressive muscle stimulation training for 30 minutes twice a day, morning and night. So, patients were given the instruction to engage in muscle stimulation while listening to music. Patients who reported pain when engaging specific muscle groups were counseled to shift their focus to other muscle groups or to listen to calming music. Patients were given gradual muscle relaxation training in phases, based on their individual conditions, until they were able to exercise without experiencing any negative emotions. The lesson was completed by both patients in the intervention group.

Instrument

Age, age at diagnosis, stage of disease, menopausal status, marital status, education level, employment status, and monthly income were all factors that were taken into account when compiling demographic and clinicopathological data. *Pittsburgh Sleep Quality Index (PSQI)* was used to asses sleep quality, Consisting of 7 factors, this scale evaluates how long it takes to get asleep, how well you sleep once you do, how often you wake up during the night, how often you have trouble falling asleep, how often you use sleeping pills, and how impaired you feel during the (21). The overall score is determined by a score of 7 components. For each part, 0–3 points are provided with a total score of 0–21. Lower overall score suggests worse sleep quality. The baseline is a ranking of 5 points. A score of five or more suggests a sleeping problem (21). The cronbach's alpha in the current study was 0.82 (good).

The State Trait Anxiety Index (STAI) has been used to assess the presence, severity and prevalent anxiety symptoms through self-report. The STAI consists of 40 questions, with 20 questions devoted to measuring either the state or trait of anxiety. Each section of the test can be scored from 20 to 80, with higher numbers indicating greater anxiety (18). The cronbach's alpha in the current study was 0.78 (good).

Fatigue of the subjects has been measured by a short self-rated scale for cancer-related fatigue assessment (CFS). The scale is made up of 15 different components and three different subscales: cognitive, emotional, and physical. On a scale of one (not at all) to five, every object is ranked as follows: (very much). For each of the three subscales, the best answers range from 0 to 28 on the physical dimension, 0 to 16 on the emotive dimension, and 0 to 16 on the cognitive dimension. The highest possible score is sixty. Scores closer to 100 indicate higher weariness (22). The cronbach's alpha in the current study was 0.83 (good).

Data analysis

Categorical data were analyzed using frequencies and percentages, whereas continuous data were analyzed using mean and standard deviation (SD). Using t-test and chi-square testing on independent samples, differences in baseline data between groups were identified. Changes in anxiety, exhaustion, and sleep quality were identified as the related post-test to pre-test outcomes. Changes in anxiety, exhaustion, and sleep quality were examined using univariate analysis to assess the effects of group, time, and group-time interaction, as well as the differences across groups. p-values under 0.05 are statistically significant (two-sided). All statistical analyses were carried out using SPSS 20.0 (IBM Corp., Armonk, NY, USA).

RESULTS

This study included 100 participants, 50 in the intervention group and 50 in the control group. The majority of respondents (70 %) were married and unemployed (24 %), graduated from minimum middle school (68%), not in menopausal status (76%), stage III of disease (46%). The intervention group's average age is 46.71 years, with a standard deviation of 5.41. The control group's average age was 46.53 years, with a standard deviation of 6.09. The mean age at diagnosis in the intervention group was 42.59 (SD=6.72) and 43.02 (SD=5.14) in the control group.

Table 1.
Demographic characteristics of breast cancer women by group (n=100) (n, %)

Characteristics	Intervention Group n=50, (%)	Control group n=50, (%)	p-value
Age in year (Mean ± SD)	46.71 ± 5.41	46.53 ± 6.09	0.477
Age at diagnosed (Mean ± SD)	42.59 ± 6.72	43.02 ± 5.14	0.246
Education level			
Middle school and below	34 (68)	30 (60)	0.077
Middle school and below	16 (32)	20 (40)	
Marital status			
Married	30 (60)	35 (70)	0.089
Single	20 (40)	15 (30)	
Working status			
Empolyed	38 (76)	40 (80)	0.674
Unemployed	12 (24)	10 (20)	
Monthly income in USD (Mean ± SD)	100.95 ± 17.37	105.26 ± 13.04	0.372
Meanopasusal status			
Yes	12 (24)	14 (28)	0.456
No	38 (76)	36 (72)	
Stage of disease			
II	15 (30)	12 (24)	0.056
III	23 (46)	19 (38)	
IV	12 (24)	19 (38)	

The intervention group anxiety, fatigure, and sleep quality scores decreased to 76.11±12.42, 45.12±14.76, and 4.36±3.30, respectively. The intervention group patients had significant improvement in anxiety, fatigue, and sleep quality in the effects of group (F=10.34; p<0.001, F=9.38; p<0.001, F=7.51; p<0.001, respectively), time (F=43.75; p<0.00, F=33.75; p<0.001, F=56.23; p<0.001, respectively), and group*time interaction (F=4.56 p<0.001; F=3.72; p<0.001, F=4.35; p<0.001, respectively) (Table 2).

Table 2.
Between-group comparison of anxiety scores, fatigue, and sleep quality (mean ± SD): a general liner model with univariate analysis[a]

	Anxiety		Fatigue		Sleep quality	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Total (N=100)	83.72±13.52	76.11±12.42	53.04±11.12	45.12±14.76	6.89±4.41	4.36±3.30
Intervention group	81.34±11.80	72.56±12.01	51.43±10.43	45.04±13.01	6.32±3.75	4.04±3.42
Control group	83.01±13.65	80.17±12.30	54.66±11.76	49.93±14.25	6.45±4.58	5.97±4.65
Group	F=10.34		F=9.38		F=7.51	
	p<0.001		p<0.001		p<0.001	
Time	F=43.75		F=33.75		F=56.23	
	p<0.001		p<0.001		p<0.001	
Group*time	F=4.56		F=3.72		F=4.35	
	p<0.001		p<0.001		p<0.001	

Note: [a] Anxiety, fatigue, and sleep quality were the independent variables in the general linear model, with group and time serving as fixed factors for the purpose of examining the effects of time on anxiety, fatigue, and sleep quality.

DISCUSSION

Women with breast cancer who have not yet responded to treatment showed improvement in anxiety, exhaustion, and sleep quality after participating in a program that combined culturally-based music therapy with progressive muscle relaxation (both group and time effect). The main findings of this research concerned the impact of both the intervention and the passage of time. First, while patients in both groups experienced worry, exhaustion, and poor sleep quality in the pre-test, subsequent assessments revealed steady improvement across the board. Second, the intervention group improved more in terms of anxiety, fatigue, and sleep quality over time, implying when compared to routine nursing care alone, the combination of culturally-based music therapy, progressive muscle relaxation, and routine nursing care was found to be more successful in lowering anxiety, exhaustion, and improving the quality of sleep.

For the following purposes, the patients have been advised to relax muscle parallel to music therapy. First of all, music may have a beneficial influence on the physiological, emotional and spiritual dimensions of humans through the changes in cortisol hormone secretion and a decrease in stress hormones that can increase comfort and cause a pleasant sensation (7,15). While, progressive muscle relaxation could relaxing certain parts of the muscles by inducing the sympathetic and parasympathetic nervous system (17). Second, a constant and systematic deformation and relaxation of muscles, i.e., from physical to mental relaxation, will amplify despair and terror (23,24). By combining the two therapies, patients had a major improvement in anxiety, fatigue and sleep quality.

Results from this study showed that fatigue scores fall below the clinically significant fatigue cut-off for women.

Despite high fatigue during the study, compliance to the procedure was outstanding, with more than 80% of the participants completing the provided task. This is noteworthy because fatigue is normally a major obstacle to involvement in activity procedures in cancer patients, including progressive muscle relaxation, not designed explicitly to treat fatigue. We believe that unique combination of progressive muscle relaxation serves a vital role in ensuring compliance to the trial for exhausted individuals and using advice and tips that allow these pose to be conducted easily or stress-free.

It's important to keep in mind that there were bounds to this study. Second, there was insufficient biological information about levels of worry, exhaustion, and quality of rest. Second, patients in the intervention group may have better anxiety, exhaustion, and sleep quality because of their greater focus, which was not accounted for in the study. Third, the study only included participants from West Java, limiting extrapolation to all Indonesian women with breast cancer receiving chemotherapy.

CONCLUSION

The combining culturally-based music therapy with progressive muscle relaxation were effective significantly to reduce patients' anxiety levels, levels of weariness, and the quality of sleep among breast cancer patients who going through chemotherapy as a result of the combination of these two therapies. The use of music therapy and progressive muscle relaxation exercise is widespread among breast cancer patients undergoing chemotherapy. To confirm these findings further studies using more robust methods with broad sample sizes are required.

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