

Original Article

The Effects of Thai Massage on Comfort and Symptoms among Female Cancer Patients Receiving Chemotherapy

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ABSTRACT

Background: Chemotherapy is the most common modality for cancer management, but it is associated with many side effects. **Objectives:** This study evaluated the effects of Thai massage on comfort and symptoms among female cancer patients receiving chemotherapy. **Methods:** This randomized clinical trial was conducted in 2017–2018 with a two-group pre-posttest design. Participants were sixty female patients with cancer selected from Bu-Ali Hospital in Tehran, Iran, and randomly allocated to a control and an intervention group. Participants in the control group received routine care, while their counterparts in the intervention group received both routine care and ten-session massage therapy. A demographic questionnaire, the Kolcaba's General Comfort Questionnaire, and the Edmonton Symptom Assessment Scale were used for data collection. Data were analyzed using the Chi-square, Fisher's exact, independent-samples *t*, and paired-samples *t*-tests. **Results:** There was no statistically significant difference between the groups respecting the pretest mean scores of comfort and symptoms ($P > 0.05$). After the intervention, the mean score of comfort in the control group was statistically significantly greater than the intervention group (137.4 ± 6.8 vs. 131.53 ± 9.61 ; $P = 0.008$). Moreover, the posttest mean scores of pain, fatigue, nausea, depression, anxiety, and drowsiness in the intervention group were significantly less than the control group ($P < 0.05$). **Conclusion:** Massage therapy is effective in significantly reducing symptoms among female cancer patients receiving chemotherapy.

KEYWORDS: Cancer, Chemotherapy, Comfort, Massage therapy, Symptoms

INTRODUCTION

Cancer is one of the leading causes of death worldwide. It imposes heavy costs on health-care systems. Cancer affects both genders almost similarly so that 46.1% of all new cases of cancer in Iran in 2014 were females.^[1]

There is no definitive treatment for many types of cancer. Cancer management includes different modalities, including chemotherapy. Although chemotherapy is the most common modality for cancer management, it is associated with many side effects such as vomiting, fatigue, hair loss, pain, discomfort, and anxiety.^[2] Therefore, many different techniques, including complementary and alternative medicine, are used for the management of cancer-related symptoms and chemotherapy side effects.^[3]

Complementary and alternative medicine includes a set of therapies for preventing and managing health problems and improving health status which are used instead or in adjacent to conventional therapies.^[4] Studies show that the rate of using these therapies in European countries increased from 10%–39% in 1997 to 37%–73% in recent years.^[5–8] Health-care professionals, particularly nurses, can use complementary and alternative therapies to fulfil their clients' needs, promote their comfort, and improve their quality of life.^[9–11]

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Massage therapy is one of the complementary and alternative therapies for cancer- and chemotherapy-related symptoms.^[12,13] It includes a series of physical manipulation of the soft body tissues with variable intensity, direction, rate, and rhythm.^[14,15] Through improving blood and lymphatic circulation, massage facilitates the delivery of fresh blood and oxygen to tissues and the removal of toxic substances from them.^[16] It also increases the serum levels of endorphins, serotonin, and cortisol and thereby, helps reduce pain and stress and regulate mood.^[17]

Some earlier studies reported the positive effects of massage therapy. For example, a study on 66 female with Stage 0–III of breast cancers showed that massage therapy could reduce the cancer-related fatigue.^[18] Two other studies reported that it had positive effects on comfort.^[9,19] Nonetheless, there is limited evidence regarding the effects of massage therapy on comfort and symptoms among female patients with cancer who receive chemotherapy. Therefore, the present study was carried out to narrow this gap.

Objectives

The aim of the present study was to evaluate the effects of Thai massage on comfort and symptoms among female cancer patients receiving chemotherapy.

METHODS

Study design and participants

This randomized clinical trial was conducted in 2017–2018 with a two-group pretest-posttest design. Because of the nature of the intervention, the blinding of the participants and the massage provider were not possible. However, those who analyzed the data were blind to the study groups.

The population of this study consisted of all female cancer patients receiving chemotherapy in Bu-Ali Hospital, Tehran, Iran, in 2017–2018. The inclusion criteria were an age of 18 or more, ability to read and write in Persian, no affliction by end-stage cancer, having received chemotherapy for at least three sessions, not receiving any other complementary or alternative therapy during the study, no intake of psychotropic medications, and consent for participation. The exclusion criteria were reluctance to stay in the study, more than one absence from the sessions of the study intervention, development of severe cancer-related complications, and development of metastatic cancer or severe physical or mental problems during the study.

With a power of 0.80, a confidence level of 0.95, and an estimated between-group difference of 6.2 ± 0.65

respecting the total score of comfort, sample size was calculated to be 25 per groups. Sample size was increased to thirty per group to compensate probable withdrawals from the study.

Sample recruitment was done in the respected hospital. After providing explanations about the study by researcher (NM), each patient who agreed to participate was screened based on the inclusion criteria and selected if eligible. The sample selection continued until the expected sample size was obtained. Before the study started, numbers 1–60 were written on cards. The cards were placed in a ball folded so that the number on the paper was not visible. Finally, the numbers were randomly drawn and assigned to the control and intervention groups. During the sampling process, participants were placed into the groups based on their numbers. No participants were excluded and all of them completed the study.

Data collection instruments

Data were collected through a demographic questionnaire, the Kolcaba's General Comfort Questionnaire (GCQ), and the Edmonton Symptom Assessment Scale (ESAS). The demographic questionnaire included items on participants' age, marital status, educational level, employment status, monthly income, and housing status.

Kolcaba's GCQ has 24 negatively worded and 24 positively worded items (48 in total) about comfort in the four dimensions of physical (12 items), psychospiritual (13 items), sociocultural (13 items), and environmental comfort (10 items). Items are scored on a four-point Likert scale from 1 ("Strongly disagree") to 4 ("Strongly agree"). The total possible score of this questionnaire ranges from 48 to 192, with higher scores showing greater comfort. A former study reported the acceptable content validity and reliability of this questionnaire with a split-half correlation coefficient of 0.71.^[20] For validity assessment in the present study, five nurses and five clinical psychologists rated GCQ items and the content validity ratio and index of the questionnaire were calculated to be 0.89 and 0.87, respectively. The Cronbach's alpha of the questionnaire in the present study was 0.813.

ESAS was used for symptom assessment. This scale assesses nine cancer-related symptoms, namely pain, fatigue, nausea, depression, anxiety, drowsiness, appetite, well-being, and dyspnea. Each symptom is scored on a scale from zero ("Not present") to 10 ("Worst").^[21] For reliability assessment, ten eligible patients twice completed this scale with a 2-week interval. Test-retest correlation coefficient was 0.97.

Intervention

Participants in the intervention group received massage therapy in ten 30–45-min sessions. The massages were conducted by a trained female massage therapist (NM) with very little speeches and no music. The time and place of massage therapy sessions were determined based on participants' preferences. A schedule was developed for each participant considering her own preference. It was also possible to change the time and place during the study. Massage was performed at the individual's own home and in the hospital. All sessions in the hospital were held in a quiet private room with a "Don't disturb" sign on the door. Moreover, participants could choose the starting point of massage therapy on the body and whether to receive massage therapy with or without clothes. Olive oil was used for those who preferred a nonclothing style for massage.

In the first session and before the massage, sufficient explanations were provided to justify the participant. Massage therapy was performed twice a week at least 1 day apart from chemotherapy which usually provided once every 2 weeks. Using the palms of the hands and fingers, Thai massage was applied to the back, legs, arms, abdomen, chest, and face and included massage techniques such as effleurage (gentle rhythmic gliding strokes), raking (gentle strokes with the tips of the fingers), thumb stroking (short strokes with the broad side of the thumb), and petrissage gentle kneading). Pressure was applied firmly but gently based on participants' feedback and endurance. Surgical sites on the body were omitted during massage therapy.

For all patients, the baseline assessment was carried out in the training room in the hospital after their agreed to participate in the study. The posttest was performed for the intervention group on the day that the massage therapy sessions were completed. Furthermore, the control group participated in the posttest after 10 weeks, at the hospital's training room.

Ethical considerations

The Ethics Committee of Tehran Medical Branch of Islamic Azad University approved this study (code: IR.IAU.TMU.REC.1397.132). The trial was also registered in Iranian Registry of Clinical Trials (No: IRCT20180803040680N1). Participation was voluntary and questionnaires were anonymous. Informed consent was obtained from all participants.

Data analysis

Data were analyzed using the SPSS software (version 16.0, SPSS Inc, Chicago, US). After confirming the normal distribution of the data using the Kolmogorov–Smirnov test, the Chi-square, Fisher's

exact, and independent-sample *t*-tests were applied for between-group comparisons respecting participants' demographic characteristics and the mean scores of comfort and symptoms. The paired-sample *t*-test was also used for within-group comparisons respecting the mean scores of comfort and symptoms. The level of statistical significance was set at <0.05 .

RESULTS

Groups did not significantly differ from each other in terms of participants' age, marital status, educational level, occupation, income, housing status, and number of children ($P > 0.05$). However, there was a statistically significant difference between the groups in terms of cancer type [$P = 0.015$; Table 1].

There was no significant between-group difference respecting the pretest mean scores of comfort and its dimensions ($P > 0.05$). However, the posttest mean scores of comfort and its psycho-spiritual and sociocultural dimensions in the intervention group were significantly less than the control group ($P < 0.05$). Within-group comparisons showed that the mean scores of comfort and its dimensions did not significantly change during the study in the intervention group ($P > 0.05$), while the mean scores of comfort and its psycho-spiritual and sociocultural dimensions in the control group significantly increased in the control group [$P < 0.05$; Table 2].

There was no statistically significant between group differences respecting the pretest mean scores of the nine symptoms ($P > 0.05$). After the intervention, the mean scores of pain, fatigue, nausea, depression, anxiety, and drowsiness in the intervention group were significantly less than the control group [$P < 0.05$; Table 3]. Within-group comparisons also showed that the mean scores of pain, fatigue, nausea, depression, anxiety, and drowsiness in the intervention group statistically significantly decreased during the study ($P < 0.05$), while the mean scores of none of the nine symptoms significantly changed in the control group [$P > 0.05$; Table 3].

DISCUSSION

Our findings showed that there was no significant differences between the groups concerning the pretest mean scores of comfort and nine cancer symptoms. The mean score of comfort also did not significantly change in the intervention group during the study, denoting the ineffectiveness of massage therapy in promoting comfort. Considering the paucity of evidence about the effects of massage therapy on comfort among cancer patients receiving chemotherapy, drawing a definitive

Table 1: Comparison of the groups respecting participants' demographic characteristics

Characteristics	Groups ^a		P ^b
	Intervention	Control	
Age (years)	43.5 ± 8.01	48.53 ± 30.0	0.081
Marital status			
Married	4 (13.3)	4 (13.3)	0.222
Single	25 (83.3)	21 (70)	
Divorced	1 (3.3)	5 (16.7)	
Education level			
Primary	7 (23.3)	4 (13.3)	0.56
Diploma or associate degree	9 (30)	11 (36.7)	
Bachelor's degree	13 (43.3)	12 (40)	
Master's degree and higher	1 (3.3)	3 (10)	
Occupation			
Homemaker	14 (46.7)	14 (46.7)	0.597
Employed	16 (53.3)	15 (50)	
Self-employed	0	1 (3.3)	
Monthly income (USD)			
<150	9 (30)	6 (20)	0.181
150-250	8 (26.7)	7 (23.3)	
250-350	7 (23.3)	9 (30)	
350-450	6 (20)	8 (26.7)	
Housing status			
Private	15 (50)	13 (43.3)	0.446
Rental	11 (36.7)	11 (36.7)	
Organizational	3 (10)	4 (13.3)	
Living with parents/relatives	1 (3.3)	2 (6.7)	
Number of children			
0	5 (16.7)	6 (20)	0.66
1	6 (20)	4 (13.3)	
2	11 (36.7)	10 (33.3)	
3	7 (23.3)	6 (20)	
4	1 (3.3)	4 (13.3)	
Type of cancer			
Lymphoma	4 (13.3)	3 (10)	0.015
Breast	11 (36.7)	11 (36.7)	
Pancreas	1 (3.3)	1 (3.3)	
Uterus	5 (16.7)	5 (16.7)	
Ovary	5 (16.7)	5 (16.7)	
Stomach	1 (3.3)	1 (3.3)	
Colon	2 (6.7)	3 (10)	
Leukemia	1 (3.3)	1 (3.3)	

^aData presented as *n* (%) or mean ± SD, ^bThe results of the independent-sample *t*- or the Chi-square test. SD: Standard deviation

conclusion in this area is not possible.^[22] Some studies reported that massage therapy had positive effects on cancer patients^[23,24] and reduced their stress, anxiety, and depression,^[25-27] enhanced their mental calmness,^[28,29] improved their sleep quality,^[30] and improved their quality of life.^[27] A study also reported the effectiveness of massage therapy in promoting comfort among hemodialysis patients.^[9] Moreover, some studies suggested that massage therapy can reduce pain and

Table 2: Comparison of the groups respecting the mean scores of comfort and its dimensions

Dimensions/time	Groups ^a		P ^b
	Intervention	Control	
Physical			
Before	31.83 ± 3.24	31.7 ± 2.69	0.863
After	31.06 ± 2.08	32.1 ± 2.15	0.064
P ^c	0.217	0.393	-
Psycho-spiritual			
Before	36.23 ± 4.01	37.8 ± 3.5	0.112
After	37.4 ± 5.31	39.07 ± 3.63	0.161
P ^c	0.251	0.005	-
Sociocultural			
Before	30.33 ± 4.55	31.8 ± 3.21	0.155
After	29.83 ± 3.56	32.67 ± 2.47	<0.001
P ^c	0.375	0.0009	-
Environmental			
Before	32.87 ± 3.99	32.97 ± 3.17	0.915
After	33.23 ± 3	33.57 ± 3.25	0.682
P ^c	0.433	0.169	-
Total			
Before	131.27 ± 11.57	134.27 ± 7.07	0.23
After	131.53 ± 9.61	137.4 ± 6.8	0.008
P ^c	0.871	0.002	-

^aData presented as mean ± SD, ^bThe results of the independent-sample *t*-test, ^cThe results of the paired-sample *t*-test. SD: Standard deviation

improve quality of life and sleep among cancer patients with terminal conditions.^[31,32] However, a review on studies published in 1990–2015 showed that although massage therapy had positive effects on pain, depression, anxiety, and stress, it had no significant effects on cancer patients' quality of life and suffering.^[33] Another study on cancer patients receiving chemotherapy reported the ineffectiveness of massage therapy in significantly reducing pain.^[22] Despite the lack of definitive evidence regarding the effects of complementary and alternative therapies such as massage therapy on comfort among cancer patients, previous studies reported the wide use of these therapies.^[33-35] This wide use can be due to their safety, inexpensiveness, and noninvasiveness.^[36]

The study findings also showed that the mean scores of comfort and its psycho-spiritual and sociocultural dimensions significantly increased in the control group. The groups did not significantly differ from each other respecting participants' demographic characteristics except for cancer type. The relationship between cancer type and the score of comfort was not significant. Therefore, the significant increase in the score of comfort in the control group and its insignificant change in the intervention group is not attributable to demographic characteristics. One of the probable explanation for the significant increase in the score of comfort in the control group may be the fact

Table 3: Comparison of the groups respecting the mean scores of cancer-related symptoms

Symptoms/time	Groups ^a		P ^b
	Intervention	Control	
Pain			
Before	6.56 ± 2.38	6.33 ± 2.33	0.704
After	4.56 ± 1.9	6.3 ± 2.03	0.001
P ^c	<0.001	0.921	-
Fatigue			
Before	7.36 ± 1.51	6.7 ± 2	0.152
After	4.7 ± 1.78	6.8 ± 1.68	0.001
P ^c	<0.001	0.754	-
Nausea			
Before	5.56 ± 2.4	5.5 ± 2.58	0.918
After	4.13 ± 1.52	5.46 ± 2.3	0.01
P ^c	<0.001	0.926	-
Depression			
Before	7.2 ± 2.9	5.96 ± 2.23	0.07
After	4.93 ± 2.08	6.2 ± 2.2	0.026
P ^c	<0.001	0.452	-
Anxiety			
Before	7.26 ± 2.31	6.2 ± 2.21	0.074
After	4.93 ± 1.99	6.4 ± 2.19	0.009
P ^c	<0.001	0.623	-
Drowsiness			
Before	5.63 ± 2.15	4.83 ± 2.3	0.171
After	7.36 ± 1.67	4.26 ± 1.79	0.001
P ^c	<0.001	0.131	-
Appetite			
Before	5.63 ± 2.52	6.23 ± 2.2	0.331
After	5.7 ± 2.19	6.7 ± 1.89	0.064
P ^c	0.875	0.138	-
Well-being			
Before	6.63 ± 2.22	5.6 ± 1.9	0.058
After	6.16 ± 1.64	6.3 ± 2.15	0.788
P ^c	0.31	0.053	-
Dyspnea			
Before	3.16 ± 2.8	2.06 ± 1.57	0.066
After	2.36 ± 1.86	2.1 ± 1.66	0.562
P ^c	0.005	0.891	-

^aData presented as mean ± SD, ^bThe results of the independent-sample *t*-test, ^cThe results of the paired-sample *t*-test. SD: Standard deviation

that psycho-spiritual and sociocultural comfort are very subjective and can easily be affected by many different factors such as family conditions and participation in social events.^[37] Also, it may be due to the nature of intervention. Participants of intervention group needed to spend time and make arrangements for the massage. It is also possible that conditions such as being embarrassed and even being annoyed may have affected the person's feeling of comfort.

We also found that massage therapy significantly reduced six out of the nine cancer-related symptoms, namely pain, fatigue, nausea, depression, anxiety, and drowsiness

and had no significant effects on the remaining three symptoms, namely appetite, well-being, and dyspnea. Some former studies also reported the positive effects of massage therapy on cancer-related symptoms. For instance, a study on cancer patients reported that massage therapy improved all nine symptoms of cancer.^[37] The difference between our findings and the findings of that study regarding the effects of massage therapy on appetite, well-being, and dyspnea may be the fact that participants in that study did not receive chemotherapy while our participants were receiving chemotherapy. Chemotherapy can affect the severity and the prevalence of cancer-related symptoms. Another reason for this difference may be the difference between the participants of the studies respecting cancer type. Other studies reported the positive effects of massage therapy on vital signs^[38] and cancer-related symptoms, particularly chronic pain, anxiety, fatigue, and mood disturbances.^[16,39-42] Some studies also reported the positive effects of massage therapy on nausea among patients receiving chemotherapy.^[43,44]

The sample size of the study was rather small. The groups were not adjusted for potentially confounding psycho-spiritual variables, such as mental health status, family and social support, and other variables that may affect the feelings of comfort. Moreover, the significant between-group difference respecting cancer type might have affected the findings. Therefore, findings should be interpreted and generalized with taking into account this significant between-group difference. Studies with larger samples are needed to produce firmer evidence respecting the effects of massage therapy on comfort and symptoms among patients with cancer.

CONCLUSION

Massage therapy can significantly relieve symptoms among female cancer patients receiving chemotherapy. Massage therapy is a safe, noninvasive, and inexpensive therapy which is easily accepted by most patients. Therefore, its use is recommended for symptom management among patients with cancer, particularly those who receive chemotherapy. Nurses can be trained to use this method for alleviation of the annoying symptoms of chemotherapy in their cancer patients.

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Conflicts of interest

There are no conflicts of interest.

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