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Effect of Deep Tissue Massage on Alleviating Pain Among Breast & Lung Cancer Patients at a Selected University Hospital-Egypt

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Abstract:
Background: Cancer increased worldwide. Pain is the most significant problem related for such patients; it affects all aspects of life. **Aim of the current study** was to examine the effect of deep tissue massage on alleviating pain among breast & lung cancer patients at a selected university hospital, Egypt. **Design:** A quazi-experimental design was utilized, the study conducted at the Nuclear Medicine Unit at Kasr Al-Aini Educational Hospital, affiliated to Cairo-University. **Research questions: 1-**Is massage significantly decreased the mean pain intensity scores among study group when compared to control group among patients with breast and lung cancer? **2-**Is massage significantly decreased the mean pain quality scores among study group when compared to control group among patients with breast and lung cancer? **3-**Is massage significantly decreased the mean sleeping difficulty scores among study group when compared to control group among patients with breast and lung cancer? **4-**Is massage significantly decreased the mean symptom burden scores among study group when compared to control group among patients with breast and lung cancer? **Sample:** A convenient sample of 60 adult male and female patients with breast and lung cancer over 6 consecutive months were randomly assigned into two equal groups, 30 patients each, the control group received only the routine hospital pain management and the study group received deep tissue massage in addition to the hospital routine pain management. **Tools**: Five tools were utilized to gather data as follow: 1) Demographic data sheet, numeric pain rating scale, pain quality assessment scale, the memorial symptom assessment scale and the difficulty sleeping scale. The study group received 3 sessions of massage per week for about 15 minutes each. All patients were followed up for 6 weeks. **Results**: The study results concluded that there was no statistical significant difference between study and control groups in relation to demographic variables, intensity and quality of pain, sleeping difficulties and symptom burden in the 1st reading as both groups were homogeneous, while by the end of the 6th week, there was a statistical significant difference between the study & control groups regarding intensity, quality of pain, sleeping difficulties and symptom burden. **Conclusion**: The study concluded that deep tissue massage is an effective method to decrease pain intensity; improve quality of pain; symptom burden as well as sleeping difficulties.
Key words: Lung/breast cancer, massage, Knuckle technique, pain & sleeping difficulty.

Introduction:

Oncology is the study of cancer; which is simply defined as an abnormal mass of cells that grow uncontrolled in the body (oncology-massage, 2009). Cancer pain is the way the body responds to tumor growth or the injury and damage that cancer is causing. There are several different kinds of cancer pain, some pain lasts only a short time while other kinds last the whole time of cancer. Everybody reacts to cancer pain in different ways (Drugs, 2014).

Pain in cancer may arise from a tumor compressing or infiltrating tissue; treatments and diagnostic procedures; other changes caused by either the body's immune response or hormones which released by the tumor (Sheinfeld, Krebs, Badr, et al., 2012). Two thirds of patients with advanced stage cancer experience significant pain (Breivik, Cherny, Collett, de Conno, Filbet , Foubert and Dow, 2009) Unfortunately, nearly 80 percent of people with cancer receive either little or no pain medication that diminishes their quality of life (Hanna, Magdi, Zylicz & Zbigniew, 2013). Cancer pain affects every part of life; patient may feel it is impossible to get rid of pain. It affects appetite, how well patient sleep, energy, and ability to do things. It can also affect mood and relationships with others. This may cause an endless cycle of suffering, sleeplessness and sadness (Drugs, 2014). Many patients with lung cancer can develop shoulder and back pain either due to tumor direct pressure on the body structure or by irritate nerves traveling through the chest or the lining of the lungs which can be interpreted by the brain as shoulder or back pain (Eldridge, 2014). In addition, Haiken (2011) reported that most breast tumors develop pain which may be felt in the back rather than in the breast.

Generally massage is a "hands-on" therapy in which muscles and other soft tissues of the body are manipulated to improve health and well-being (Heit, 2009). There are several massage therapeutic techniques as Swedish which is the most popular massage for the whole body and it is used to release tension and smooth out muscle knots; aromatherapy which is incorporated by using special plant oils; shiatsu which is using “finger pressure”. Furthermore, one of the most effective massage is deep tissue massage, its primary objective is to loosen and realign tissue and muscles deep beneath the surface of the skin. The main benefits of deep tissue

massage therapy that it provides relaxation for really tense body parts. Also it helps with chronic muscular pain and injury rehabilitation and reduces inflammation-related pain. (Massage-Therapy, 2014 & MacDonald, 2014).

Massage for persons with cancer has a vital and useful role. It can assist in pain control, decrease perceived stress levels, and create a general parasympathetic state through reduced blood pressure and decreased muscle tension. It can also improve appetite and the quality of sleep. Perhaps most of all, it provides for a basic human need: nurturing, caring, informed touch at a time when many cancer patients feel isolated and dehumanized." (Michael, 2006). Many research studies have concluded that massage therapy considered safe and beneficial for treating cancer pain (Garland, Valentine, Desai, Li, Langer, Evans & Mao, 2013 & Corbin, 2005). The American Cancer Society at 2008 confirmed that more than 61% of cancer survivors used some form of complementary or alternative medicine, including massage therapy (Rosenthal & Gilman, 2011).

Moreover Woolrich (2014) reported that message considers one of a safe management to control cancer pain. Studies of massage for cancer patients suggest that it decreases pain, anxiety, depression, and fatigue. These benefits are promising for those who have cancer and must deal with not only the stress of a serious illness but also the unpleasant side effects of the medical treatments. There are additional studies that go beyond the obvious benefits of receiving massage therapy from professionals. Also he added that at 2007 a study published in the Journal of Integrative Oncology found cancer patients whose their partners apply massage for them reported decreased pain, anxiety, nausea and other side effects of cancer treatments by 44%. At the same time a study out of Cedars-Sinai Hospital found that gentle massage not only led to chemical changes that reduces pain and stress but also increases cancer fighting white cells known as lymphocytes. One of the largest published studies comes out of Memorial Sloan–Kettering Cancer Center in New York City that study reviewed symptom scores for pain, stress, fatigue, depression and nausea. It involved over 1,200 cancer patients and a dozen licensed massage therapists. Swedish, light touch and foot massage were used. Symptom scores declined in severity by nearly 50%.

To conclude, since the aim of the nursing management is to relive suffer and improve quality of life though safe nursing practices; thus the aim of the current study was to examine the effect of deep tissue massage on alleviating pain among breast & lung cancer patients at a selected university hospital, Egypt.

Significance of the study:

Dramatically the cancer increased and symptom relief is an important part for those patients. Patients with malignant cancer usually experience pain that causes physical and emotional distress, and they take either sedation, narcotic or ani-inflammatory to control the pain intensity but, they are still suffer from pain which affects dramatically aspects of life. It was found that using additional natural remedy to control the pain might help such patients to improve health and well-being. Deep tissue massage has been practiced as a healing therapy for centuries in nearly every culture around the world. In general; massage is considered safe. Also it helps relieve muscle tension, reduce stress, and evoke feelings of calmness. Oncology-message, (2009) added that lately massage has increasingly and become accepted as a complementary form of treatment for cancer patients. Therefore, the current study was to examine the effect of deep tissue massage on minimizing pain among patients with breast & lung cancer.

Subjects & Methods:

Aim of the study:

The aim of the current study was to examine the effect of deep tissue massage on alleviating pain among breast & lung cancer patients at a selected university hospital, Egypt.

Research questions:

1. Is massage significantly decreased the mean pain intensity scores among study group when compared to control group among patients with breast and lung cancer?
2. Is massage significantly decreased the mean pain quality scores among study group when compared to control group among patients with breast and lung cancer?
3. Is massage significantly decreased the mean sleeping difficulty scores among study group when compared to control group among patients with breast and lung cancer?
4. Is massage significantly decreased the mean symptom burden scores among study group when compared to control group among patients with breast and lung cancer?

Research design:

A quazi–experimental design was utilized to guide and achieve the aim of the current research.

Setting:

The study was conducted at the Nuclear Medicine Unit at Kasr Al-Aini Educational Hospital; affiliated to Cairo-University -Egypt.

Subjects:

A convenient sample of 60 adult male & female patients was included over 6 consecutive months. The inclusion criteria were as follows: 1) patients diagnosed with lung or breast; either has been started or did not start yet the chemotherapy or the radiotherapy. 2) Patients who rated their pain on verbal descriptor scale, on the level of (moderate to severe pain level). The sample divided randomly into two equal groups, control group (n =30 patients) received the routine hospital pain management, and study group (n =30 patients) received routine hospital pain management in addition to the deep tissue massage. Study and control groups' sample homogeneity was maintained.

Tools

In order to achieve the purpose of the research five tools were utilized to gather data pertinent to the study variables as follows:

Tool I: Demographic and medical data sheet: it consisted of items seeking information about the background of the subjects such as age, gender, marital status, occupation & medical diagnosis.
Tool II: Numeric pain rating scale (NPRS) Cleland, Childs & Whitman (2007): it was used to measure intensity of pain. The NPRS scaled from 0 – 10 whereas "0" means no pain & "10" mean the most intense pain. Patients were instructed to select a value that is most in line with the intensity of pain that they experienced. The NPRS had an excellent reliability based on Bijur, Latimer & Gallagher (2003) as it was (cronbach's alph = 0.94).
Tool III: Pain Quality Assessment Scale (PQAS) Galer, Gammaitoni & Jensen, (2010): it was used to assess quality of pain. The PQAS begins with an introduction that describes how people often experience pain sensation differently, and how pain unpleasantness differs from pain intensity. After the introduction, the PQAS asks respondents to rate the severity of each of 20 pain descriptors by using 0 to 10 numeric rating scales, in which "0" no pain and "10" the most pain sensation imaginable. The reliability test of the scale is (cronbach's alph = 0.859).
Tool IV: The memorial symptom assessment scale; short form (MSAS): it is an instrument designed to assess the physical symptoms experience and distress by persons with cancer by (Chang, Hwang, Feuerman, Kasimis, Thaler, 2000). It includes 32 items for which the patient report on whether a symptom occurred as well as distress it may have caused. Occurrence is documented on a yes / no basis, while symptom distress is measured on a 5 – point rating scale whereas "0" means not at all the symptom distressing me and "4" means very much distress. The reliability of the tool for cancer patients was tested by Browall, Sarenmalm, Nasic, Wengström & Johansson (2012) and it was (r = 0.90).
Tool V: The difficulty sleeping scale: it is used to assess the sleeping difficulties. It is a likert scale which scaled from 0 up to 4. "0" means no sleeping difficulty and "4" indicate severe difficulty in sleeping. The reliability test of the scale was measured on the current study sample as (cronbach's alph = 0.766).

Ethical consideration:

An official permission was taken from the hospital administrators. Each participant was informed about the nature and purpose of the study. Then consent was obtained from all patients for participation in the study. The researchers emphasized that participation in the study is entirely voluntary; anonymity and confidentiality are assured though coding the data. Moreover, the intervention used in the current study (deep tissue massage) is safe.

Pilot study:

Once permission was granted to proceed with the proposed study, a pilot study was carried out before starting data collection on 6 of targeted patients to evaluate the clarity, feasibility and applicability of the tools as well as estimate the time needed to collect data. Also panel of three juries' expertise were review the utilized tools for its validity. The used tools were valid and reliable. But as it was performed on different sample the researchers found that it was crucial to re-test its reliability to have reliable results so reliability re-conducted and it was as follows. cronbach's alph = 0.90, 0.86, 0.75 & 0.77 for the utilized tools NPRS, PQAS, MSAS & the difficulty sleeping scale respectively. No tool modification was needed. Data which obtained from the pilot study was excluded from the study results.

Procedure:

The sample was collected (from September/2013 to February/2014). Once official permission was granted from the head of the department to proceed the study, the researchers initiated data collection. Patients, who fulfilled the inclusion criteria, were interviewed individually and assigned randomly into two equal groups, study group and control group (30 patients for each). During the 1st interview for all patients, demographic data sheet, numeric pain rating scale, pain quality assessment scale, memorial symptom assessment scale and difficulty sleeping scale were filled in to gain base line information. After that all these tools, except the demographic and the medical data sheet, were filled again in the 3rd & 6th week for both groups. All patients

were followed up for 6 consecutive weeks. Study group in addition to routine hospital pain management which was prescribed as pain killer and anti-inflammatory; they received the deep tissue massage sessions after the 1st interview for around 15 minutes per each session; three times/week by the researchers; while the control group was only receiving the routine hospital pain management, which was as prescribed pain killer and anti-inflammatory. The time taken to fill the tools was approximately (from 20 to 30) minutes.

-The given regimen to the study group:

The study group was taking the routine hospital pain management, in addition to the deep tissue message which performed by the current study's researchers.

Technique of deep tissue massage: Krystle, May, Sondra, (2014) & Williams (2014).

There are many used types of deep massage techniques. However one of the massage which causing less hurts is the Knuckle technique as it does not allow the care provider to cause much pressure over the patients' body. The areas of the Knuckles are wider comparing of using the tips of fingers which are sharper than the knuckles. The knuckle technique was performed as follows:

1. Knuckle technique is performed on muscles around the backbone and also on the shoulders & the scapulas.
2. Patients can be either on prone position or sitting position (based on his/her condition).
3. The dominant hand should be kept in a neutral position and elbows should be flexed to minimize pressure
4. The Non-dominant hand supports/holds the dominant wrist while doing the massage.
5. Move the Knuckles of the dominant hand in circle movement around shoulder and the back gradually/slowly.
6. Then move the Knuckle of the dominant hand in straight movement along back sides (as imagining drawing a straight line).
7. Use gradual pressure to not causing muscles sores, pain or tension.
8. Increase pressure gradually based on patient tolerance as pressure should be applied more due to gravity rather than through effort.
9. DO NOT ever perform deep tissue massage over the cancer area.
10. DO NOT ever perform deep massage technique at the same day of receiving chemotherapy session.
11. Each session takes around (10-15) minutes, three times/week at least for two consecutive weeks.

N.B. For the current study the researchers applied the deep tissue massage three times/week for six consecutive weeks.

Photos by Knuckle massage therapy, (2014)

-The given regimen to the control group:

The control group would take only their routine hospital pain management.

Statistical analysis:

The data was coded and tabulated using a personal computer. Statistical Package for Social Science (SPSS) version 16 was used. Data was presented using descriptive statistics in the form of frequencies and percentage. T-test was utilized as an inferential statistics to compare means between study and control groups in relation to research variables. Statistical significance was considered at P-value $\leq$ 0.05.

Results:

Findings of this study will be presented in three main sections: **I)** Description of the study subjects' characteristics and the medical related data. **II)** Pain intensity & quality of pain differences between study & control groups on the base line, after 3 weeks & after 6 weeks. **III)** Sleeping difficulties & symptoms distress differences between study & control groups on the base line, after 3 weeks & after 6 weeks.

Section I:

Table 1:

Frequency distribution of the demographic variables among study and control group (N= 60).

Variables	Study group (n=30)		Control group (n=30)		X^2	p-value
	No.	%	No.	%		
Age:						
20- >35	3	10%	6	20%	1.64	0.97
35- >50	16	53.4%	12	40%		
50 –	11	36.6%	12	40%		
Gender:						
-Male	15	50%	15	50%	0	0
-Female	15	50%	15	50%		
Marital status:						
-Single	1	3.3%	3	10%		
-Married	20	66.7%	19	63.3%	1.16	0.97
-Divorced	4	13.3%	3	10%		
-Widow	5	16.7%	5	16.7%		
Occupation:						
-Office employee	4	13.3%	5	16.7%	0.24	0.99
-Laborer	12	40%	12	40%		
-House wife	14	46.7%	13	43.3%		

Table (1) shows that the study and the control groups had age 35 years and more (90% & 80% respectively), with an equal percentage of male and female in both groups. Regarding marital status, both study & control group were married (66.7% & 63.3% respectively). In addition, (40%) of the study and control group were laborers. The study and control group seems to be homogeneous group as there was no statistical significant difference between both groups in relation to demographic characteristics.

Figure (1) Percentage distribution of the study and control group regarding medical diagnosis. (n=60).

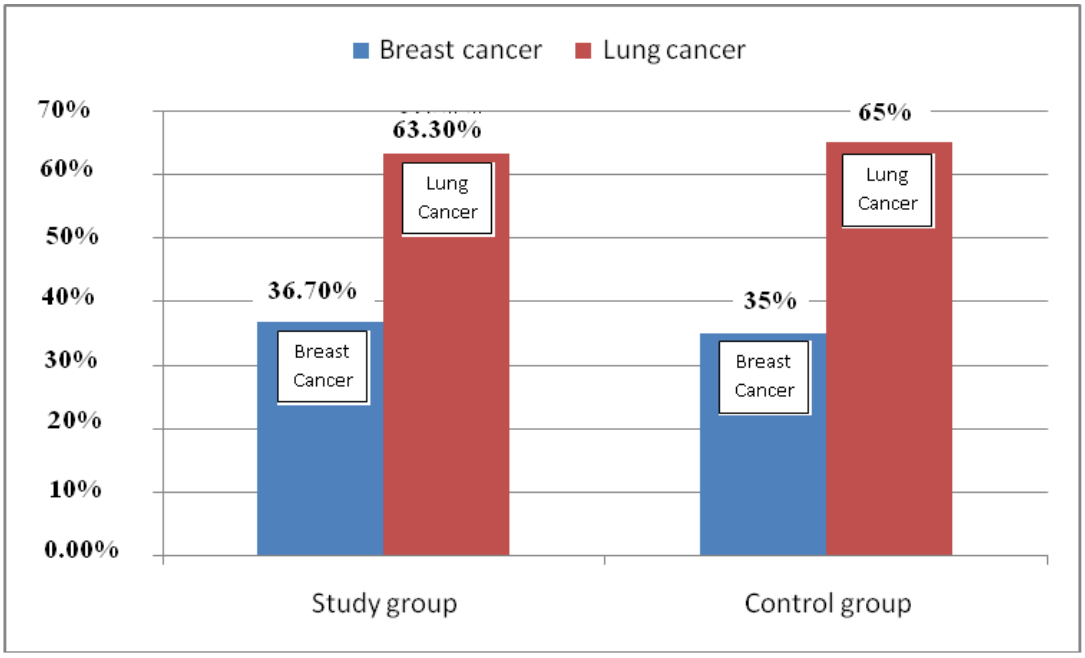

Figure (1) shows that more than half of the study group and control group (63.3% & 65% respectively) had lung cancer. In addition, there was no statistical significant difference between study and control groups in relation to diagnosis.

Section II:

Pain intensity & quality of pain differences between study & control groups on the base line, after 3 weeks & after 6 weeks:

Table 2:

Comparison of total mean scores between study and control groups in relation to intensity of pain as measured by NPRS in the three observational periods. (n=60).

Observational periods	Study group X ± SD	Control group X ± SD	t-test	p-value
Base line	8.1 ± 1.4	7.9 ± 1.2	.569	.569
After 3 weeks	7 ± 1.2	7.7 ± 1.3	1.984*	.057
After 6 weeks	6 ± 1	7.9 ± 1.2	6.366**	.000

***P Value ≤ 0.05**

Regarding intensity of pain, there was no statistical significant difference between study & control groups at the 1st interview, while at the 3rd & 6th week readings and after applying massage, the total mean score of pain intensity decreased significantly in the study group when comparing to control group. But it was more statistically significant at the 6th week as t-test= 6.366.

Table 3:

Comparison of total mean scores between study and control groups in relation to quality of pain measured by PQAS in the three observational periods. (n=60).

Observational periods	Study group X ± SD	Control group X ± SD	t-test	p-value
Base line	105.2 ± 22.5	99 ± 20.6	1.172	.251
After 3 weeks	97.7 ± 13.8	101.7 ± 22	1.016	.318
After 6 weeks	91.5 ± 12.3	105.7 ± 19.8	3.411**	.002

***P Value ≤ 0.05**

The above table shows that there was no statistical significant difference between study & control groups in the baseline data collection and after 3 weeks in relation to quality of pain, while there was a statistical significant difference between study & control groups by the end of the 6th week, t-test= 3.411.

Section III:

Sleeping difficulties & symptoms distress differences between study & control groups on the base line, after 3 weeks & after 6 weeks:

Table 4:

Comparison of total mean scores between study and control groups in relation to sleeping difficulties in the three observational periods. (n=60).

Observational periods	Study group X ± SD	Control group X ± SD	t-test	p-value
Base line	3.2 ± 0.7	3 ± 0.6	.961	.344
After 3 weeks	2.3 ± 0.5	2.8 ± 0.4	3.49**	.002
After 6 weeks	2.3 ± 0.7	2.7 ± 0.5	2.69*	.012

***P Value ≤ 0.05**

Regarding sleeping difficulties, table (4) shows that there was no statistical significant difference between study & control groups in the initial assessment. While after 3 weeks & 6 weeks of implementing massage, the total mean scores of sleeping difficulty decreased in the study group in comparison to control group. T-test shows statistical significant mean of difference after 3 weeks as t-test= 3.49.

Table 5:

Comparison of total mean scores of symptom distress/burden between study and control groups measured by MSAS in the three observational periods. (n=60).

Observational periods	Study group X ± SD	Control group X ± SD	t-test	p-value
Base line	37.3 ± 8.3	40.7 ± 8.2	1.64	.110
After 3 weeks	34.7 ± 10.4	41.2 ± 8.2	2.94**	.006
After 6 weeks	31 ± 9.5	42.3 ± 7.5	5.8**	.000

***P Value ≤ 0.05**

The above table represents that there was no statistical significant difference between study & control groups in relation to symptom distress in the base line interview. While there was a statistical significant difference between study and control groups by the end of the 3rd & 6th weeks in relation to symptom distress, t-test= 2.94 & 5.8 respectively.

Discussion:

The research aim was to examine the effect of deep tissue massage on alleviating pain among breast & lung cancer patients at a selected university hospital, Egypt. In order to accomplish this aim, sixty patients divided equally into study and control groups were recruited. The majority of the sample allocated in the middle age whereas age ranged between 35 to less than 60 years, with an equal percentage of male and female in both groups. Regarding marital status, about two thirds of the study group was married and almost the same results found for the control group. In addition, about four fifth of the studied sample for the both groups were either house wife or laborers. Furthermore the researchers did not find any difference between study and control groups related to diagnosis factor as almost the both groups had equal distributions of lung and breast cancer; however the lung cancer represented more than half of both groups. Apparently it seems that control and study groups were homogeneous as there was no statistical significant difference between both groups in relation to socio-demographic variables.

Regarding pain intensity, the study results answered the **1st research question**, that there was no statistical significant difference between study and control groups in the 1st reading, while there was a statistical significant difference between study and control groups after implementation of deep tissue massage whereas; the study group had decreased total mean pain intensity scores when compared to control group in the 3rd & 6th weeks. The researchers interpreted these results as deep tissue massage induces muscle relaxation which might lead to decrease pain intensity. Also this finding gave a clue that the more applying deep tissue massage the more the pain intensity will be decreased. A study done by Kutner, Smith, Corbin, Hemphill, Benton, Mellis, Beaty, Felton, Yamashita, Bryant & Fairclough (2008) comes into the same line with the current study results as they examined 60 cancer patients who were equally randomly assigned into two groups, one of them received 30 minutes of massage therapy and the other one received 30 minutes of simple touch, both groups received 3 sessions per week of their assigned interventions for two weeks. The researchers concluded that therapeutic massage promotes relaxation and alleviates the perception of pain and anxiety. Also, Cleveland Clinic (2014) recommended that implementation of complementary therapy as massage is helpful even with deteriorated cancer patients with moderate up to severe pain. Moreover, recent studies have confirmed the findings and others indicate positive effects for massage in decreasing pain intensity among cancer patients. (Griffith, 2012).

In relation to quality of pain, there was no statistical significant difference between study & control groups in the baseline data collection and after 3 weeks, while the researchers found that there was a statistical significant difference between study & control groups by the end of the 6th week, therefore, the results answered the **2nd research question.** A study done by Gorman, Forest, Stapleton, Hoenig, Marschke, Durham, Suarez, Wilkie & Endowed (2008) supported the same finding which revealed that among such adjuvant interventions, in general massage has been one of the most popular intervention that improve pain, enhance mood and relaxation. So this will have a positive impact on the pain quality as pain sharpness, hotness, dullness…etc. Moreover and based on another studies of systematic review and meta-analysis done by Deng, Rausch, Jones, Gulati, Kumar, Greenlee, Pietanza & Cassileth (2013) they reported that massage therapy as one of safe therapy for patients with lung cancer, can reduce symptoms such as pain, anxiety, mood disturbance, and cancer treatment-related side effects. Also; Fox , Butler , Coughlan, Murray , Boland, Hanan, Murphy, Forrester, Brien & Sullivan (2013) congruent with the current research findings, as they have been studied women with breast cancer in Ireland and they recommended that complementary therapy as massage should be the method of choice when planning health services research for women with breast cancer.

While regarding sleeping difficulties, the researchers found that almost the entire studied sample reported that they suffered from sleeping difficulties because of cancer pain. Based on National Sleep Foundation (2014), it is estimated that one-third to one-half of people with cancer experience sleep disturbance. (Palesh, Roscoe & Mustian, et al., 2010). Berger (2009) added that physical illness, pain, hospitalization, treatments for cancer, and the psychological impact of a malignant disease may disrupt the sleeping patterns of persons with cancer.

Moreover, and related to **the 3rd research question** of the current study; the researchers found that there was no statistical significant difference between study & control groups in the initial assessment, while after 3 weeks & 6 weeks of implementing deep tissue massage technique (knuckle), the sleeping difficulty is markedly decreased in the study group in comparison to control group. The researchers deducted that the deep tissue massage improved the blood circulation around the pain area that decreased the pain feeling which leading to enhance normal sleeping as well. A supported study was conducted for about one month in a referral chemotherapy clinic of a teaching hospital in Isfahan, Iran. The participants consisted of 57 women with breast cancer who were selected by simple random sampling. They were randomly assigned to two groups of control and study. The control group was treated only by usual medical therapy, whereas the study group was treated by combined medical massage therapy. The results showed significant differences in the mean scores of quality of sleep before and after the intervention in the study group (Kashani & Kashan, 2014).

In relation to symptom distress, the researchers found that there was no statistical significant difference between study & control groups in the base line interview. However there was a statistical significant difference between study and control groups by the end of the both the 3rd weeks & the 6th weeks whereas study group had less total mean scores when compared to control group which indicating that study group who received deep tissue massage had less symptom distress than control group, which answered **the 4th and the last research question**. This finding congruent with other many researches which revealed that massage therapy may interrupt the cycle of distress through the induction of a relaxation response, increased blood and lymphatic circulation, potentiation of analgesic effects, decreased inflammation and edema, manual release of muscle spasms, increased endogenous endorphin release, and competing sensory stimuli that override pain signals (Kutner, et al., 2008).

The current research highlighted that those patients who have been received deep tissue massage can expect improvement in their: level of pain (intensity & quality); sleeping & overall mood. Also it minimizes burden distress symptoms of pain.

Conclusion of the study:

In conclusion; the study results answered the four suggested research questions whereas; deep tissue message technique improved intensity and quality of pain, decrease the symptom burden as well as decreased sleeping difficulty among patients with breast and lung cancer.

Recommendation of the study:

1-Include the deep tissue message technique (complementary therapy) as one of additional line of treatment for cancer pain management.

2-Repeat the deep tissue message technique (Knuckle technique) on another cancer types.

3-Further studies may be needed to examine the effect of deep tissue message technique on other different types of patients with pain such as amputation pain or low back pain…etc.

Nursing Implication of the study:

The massage is considered a safe nursing management and it could be used as a complementary treatment to minimize the pain intensity among patients with breast and lung cancer. It could be given to the patients either at hospital or at home as it does not need any equipment rather than well trained care giver on the deep tissue massage therapy.

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