Effect of Massage Therapy on Stress, Anxiety, and Pain among Cardiac Surgical Patients

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Abstract: "Cardiovascular diseases have the highest death rates and will remain the primary cause of death in the world until 2020. One of the most important aspects of the recovery period after cardiac surgery is the patient's mental state, which has an indispensable role in the other aspects of social functioning and resumption of work and activities. Massage therapy is a safe, noninvasive therapy that has significant effects in reducing pain, anxiety and stress". The aim of study was to evaluate the effect of massage therapy on stress, anxiety, and pain among cardiac surgical patient Material & Methods: Research design Quasi-experimental design (the case group and control group) was used to achieve the aim of the study. Setting the study was conducted at medical department in Menoufia University hospital and Shebin El-kom teaching hospital. Sample a purposive sample of 97diagnosed patients were included .Results: it was found that, (88.7%) were in the age group (40-60) years, the majority of studied patients (91.8%) were female, 59.8% had secondary education , The highest frequency (76.3%) were married. There were highly statistically significant difference between pre and post intervention program regarding pain, anxiety and stress score levels in case group than control group, also there was highly statically significant positive relationship between pains, stress and anxiety (.000) i.e., when stress and anxiety increased, pain increased. Conclusion: Implementation of message therapy has a positive effect on improving stress, anxiety and pain. Recommendation: Based on the results of this study we recommend use of message therapy or improving stress, anxiety and pain among cardiac surgical patients.

Keywords: cardiac surgery, pain, anxiety, stress.

1. INTRODUCTION

"In recent years, the dominance of chronic diseases as major contributors to total global mortality has emerged" [1] and [2]. "The total number of cardiovascular disease (CVD) deaths had increased globally to 17.5 million from 14.4 million in 1990. Of these, 7.6 million was attributed to coronary heart disease and 5.7 million to stroke. More than 80 percent of the deaths occurred in low and middle income countries by 2005" [3]. According to [4] "It estimates there will be about 20 million CVD deaths in 2015, accounting for 30 percent of all deaths worldwide".

According to [5] "Pain is defined as an unpleasant feeling and emotional experience that is related to real or potential tissue damage. Pain is a common symptom intended for seeking aid .Today, non-pharmacological treatment and complementary therapy can be useful in pain management". "Postoperative pain is one of the most important problems found among the patients undergoing surgery. Mild to moderate pain reported by patients although they were taken sedative drugs. Physiological response to pain may negatively influence on the recovery of the body after cardiac surgery" [6].

"The patient's mental state is one of the most important aspects of the recovery period after cardiac surgery, which has an indispensable role in the other aspects of social functioning and resumption of work and activities" [7]. " moderate symptoms of anxiety such as fatigue, sleep disorders, stress, fear, confusion, agitation, irritability, and anger and symptoms of depression such as feelings of worthlessness, lack of control and self-esteem can be faced the patients In the early period of recovery " [8] And [9].

Some researchers have illustrated that "different reasons for mood swings and anxiety when the patient undergoing open-heart surgery. Among these reasons, severe chest pain and fatigue, Fear of death, disability, the continuation of the symptoms despite treatment, and lack of preparation of the patient prior to surgery "[10]. On the other hand, "the heart is one of the body's organs, which reacts easily and naturally to a variety of mental states" [11]. "Anxiety and apprehension increase the activity of the sympathetic nervous system, which lead to increase the heart rate and ventricular pressure. The heart's requirement of oxygen also increased and this can exacerbate the patient's cardiovascular symptoms" [12].

"Although using pharmacologic agents to reduce stress and anxiety in heart patients, these methods can have some side effects"[13]. "Thus, comprehensive attention of the nurse to psychological needs of patients has particular importance "[14]. "Using complementary therapies after heart surgery can meet the physical and psychological needs of patients " [15].

"Massage therapy is techniques of manual manipulation of the soft tissues of the body through pressure and movement"[16]. "massage therapy is one of the most popular forms of complementary medicine, which considered in third place among the complementary therapies according to the prevalence of use by patients"[17]. "It is the most common of the CAM therapies in nursing. It is easy, safe, non-invasive, and relatively cheap" [18]. "Massage therapy is useful non pharmacological adjunct to standard postoperative treatment of cardiac surgery patients and have significant effects in reducing pain, discomfort, anxiety, psychological stress, blood pressure, and heart rate" [16].

Significance of the study:

"Cardiovascular diseases have the highest death rates in human society. Coronary artery disease is among the most important of these diseases. No treatment of cardiovascular disease has as much impact on the quality of life of the patients as the heart surgery. Cardiac surgery patients often complain of back, shoulder, and neck pain from manipulation of the body during the surgical procedure and from physical manifestations of tension and stress. The recovery from heart surgery is associated with symptoms of pain, psychological distress and moderate symptoms of anxiety and depression"[19] and [20].

"Various measures of nursing, as complementary therapy practices have been used to help the patients in overcoming the physical and psychological needs. One of these methods, in recent years has been the use of complementary and alternative therapies, particularly massage therapy, after heart surgery" [19]. "when massage therapy is incorporated as part of the post surgical protocol, fewer medications may be needed, providing an added advantage of fewer adverse side effects and acting as an effective adjunct or alternative to pharmaceuticals" [21]. So, the aim of the study was to evaluate the effect of massage therapy on stress, anxiety, and pain among cardiac surgical patients.

2.   SUBJECTS AND METHODS

The aim of the study is to evaluate the effect of massage therapy on stress, anxiety, and pain among cardiac surgical patients

Research hypothesis: application of massage therapy with cardiac surgical patients will reduce stress, anxiety, and pain

Research design: -Quasi-experimental design (the case group and control group) was used to achieve the aim of the study

Research setting: -The study was conducted at medical clinics in Menoufia University Hospital and Shebin El-kom teaching hospital, Menoufia Governorate

Subjects:-Non probability sampling (Purposive sampling) was selected in the chosen setting. The total number of the sample 97 (inpatient) because three patient from control group refuse to complete

Tools of the study:

Tool (1):Semi-structured interviewing questionnaire: Which include socio-demographic characteristics, including: age, sex, education, occupation

Tool (2): **The depression, anxiety and stress scale (DASS) by** [21].

-The DASS is a 42- questionnaire which includes three self report sub-scales designed to measure the negative emotional states of depression, anxiety and stress. Each of the three sub scales contains 14 items, depression (14 items), anxiety (14 items), stress (14 items) the researcher took only anxiety and stress scale The anxiety scale assess autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale assesses difficulty relaxing, nervous arousal, and being easily upset, irritable and impatient.

Subjects are asked to use 4 –point severity /frequency responses range from: did not apply to me at all, to apply to me very much, or most of the time, in order to rate the extent to which they have experienced each state over the past two to three weeks. The modified Arabic tool was developed by [22]. Scores for anxiety and stress are calculated by summing the scores for the relevant items. The total score ranges from 14-42. The higher score indicates negative emotional status.

Tool (3): **Faces rating scale (FRS)**

Faces pain scale can be assisted with the use of the six facial expressions suggesting various pain intensities. The patients choose the face that best describes how they feel. The far left face indicates 'No hurt' and the far right face indicates 'Hurts worst'.

Method:

- Ethical consideration: Official letter obtained from faculty of nursing and delivered to responsible authorities of hospital to conduct this study   .

- Consent: Verbal and written consent from patients to participate in the study. The researchers initially introduced themselves to all potential subjects and they were assured that the collected data were absolutely confidential.

- Reliability of the tools: Intra-class correlation coefficient was used. Reliability of scales is considered adequate and test-retest reliability is likewise considered adequate with..79 for anxiety .

- Pilot study: A pilot study conducted on 10 patients to test feasibility, clarity and applicability of the tools then necessary modifications were done. Data obtained from the pilot study were not included in the current study.

- Data collection: was extended from January to June 2014

- The researcher collected data to study group in four consecutive phases namely: assessment, planning, implementation and evaluation.

  1. **Assessment phase:** The aim of this phase was to assess socio demographic data and knowledge about disease process by using (tool I). Each members of study and control group was observed two times in the morning shift using tool II and III.

  2. **2- Planning phase:** Individuated plane for each participant from study group was developed based on the findings of assessment and review of related literature. It included the goals,   expected outcome and methods of applying massage. A colored booklet was developed and it contain (purpose of massage therapy, types of massage and sites of implementation of massage on the patients)

  3. **3-Implementation phase**: The researcher made the patient and the patient's environment ready before the massage intervention. This study was performed using the techniques of Swedish massage stroke level for 20 minutes with soothing baby oil on the legs (quadriceps muscles and legs), hands (palms up to the end of the shoulder) and back (the first vertebra of the spine to the spine, the lumbar area of the shoulders). It was conducted in four sessions in 4 consecutive days, 3 to 6 days after the open-heart surgery and during the hours of 10 am to 2 pm.

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-Patients in the control group had all of the conditions of the case group, without any intervention.

4- Evaluation phase: every participant's of study and control groups were assessed two times during the research period using three tools (1, 2, and 3) pre and post intervention.

Statistical analysis:

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 20 where the following statistics were applied.

a- Descriptive statistics: in which quantitative data were presented in the form of mean ($\overline{X}$), standard deviation (SD), range, and qualitative data were presented in the form numbers and percentages.

b- **Analytical statistics:** used to measure association between studied factors and the targeted disease. The used tests of significance included:

Pearson correlation (r): is a test used to measure the association between two quantitative variables.

Spearman correlation(r): is a test used to measure the association between qualitative and quantitative data.

P value of <0.05 and <0.001 was considered statistically

3. RESULTS

Regarding to basic data among studies group , as shown in **(table 1**), it was found that, (88.7%) were in the age group (40-60) years, the majority of studied patients (91.8%) were female, 59.8% had secondary education , The highest frequency (76.3%) were married , regarding occupation 28.9% of them were farmer and only 5.2% were housewife.

As shown in **the figure (1**), There were highly statistically significant difference between pre and post intervention program regarding pain score levels in case group than control group

As illustrated **in the figure (2),** There were highly statistically significant difference between pre and post intervention program regarding anxiety score levels in case group than the control group

As represented **in the figure (3),** There were highly statistically significant difference between pre and post intervention program regarding stress score levels in case group than control group

Table (2) illustrated that there was highly statistically significant difference only between   anxiety and sex while there were no statistically significant difference between   anxiety and   age, marital status, education, and occupation

Table (3) showed that there were highly statistically significant difference only between   stresses and there were no statistically significant difference between   stress and   age, marital status, education, and sex

Table (4) represented that there was highly statistically significant difference only between   pain and education while there were no statistically significant difference between   pain and   age, marital status, occupation, and sex

Table (5), found that there was highly statically significant positive relationship between pains, stress and anxiety (.000) i.e., when stress and anxiety increased, pain increased

 (1): Sociodemographic characteristics of study group (N=97):

Socio demographic characteristics	No.	%
Age:		
- 20-40	8	8.2
- 40-60	86	88.7
- >60	3	3.1
Gender:		
- Female		

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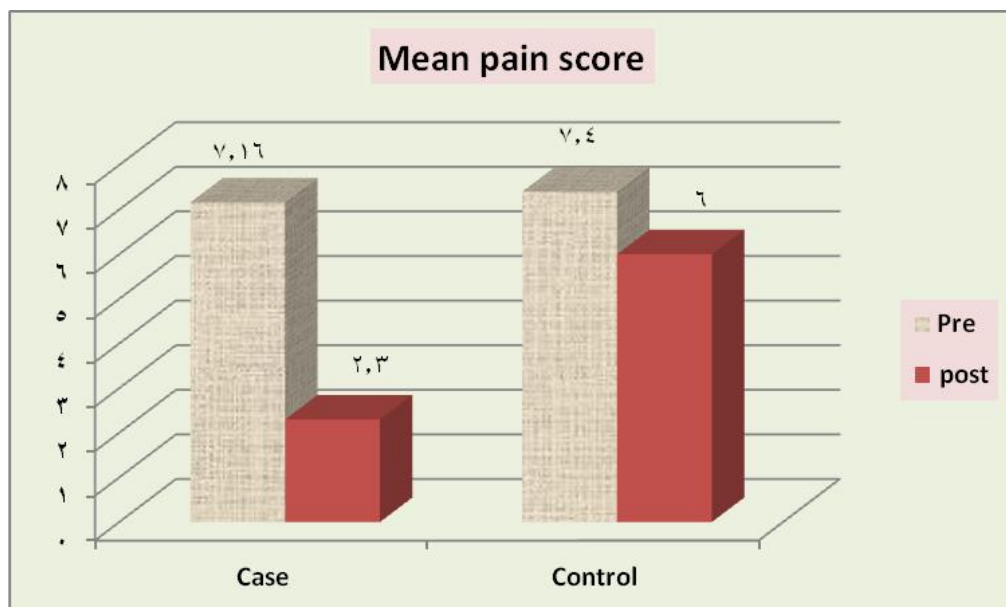|		
- Male	89	91.8
	8	8.2
Marital state:		
- Single		
- Married	5	5.2
- Widow	74	76.3
- Divorced	7	7.2
	11	11.3
Educational level:		
- Illiterate		
- Read and write	18	18.6
- primary	6	6.2
- preparatory	3	3.1
- Secondary	6	6.2
- University and above	58	59.8
	6	6.2
Occupation:		
- Farmer		
- Manual work	28	28.9
- Administration	23	23.7
- Not work	28	28.9
- House wife	13	13.4
	5	5.2
Studied group:		
- case		
- control	50	51.5
	47	48.5

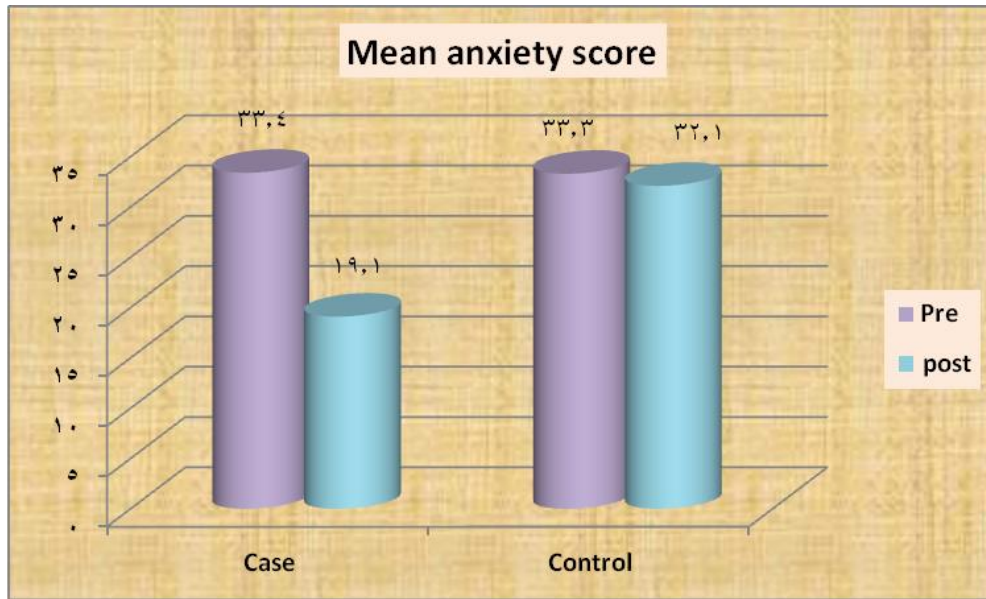**Figure (1): Mean pre and post pain score among studies group**

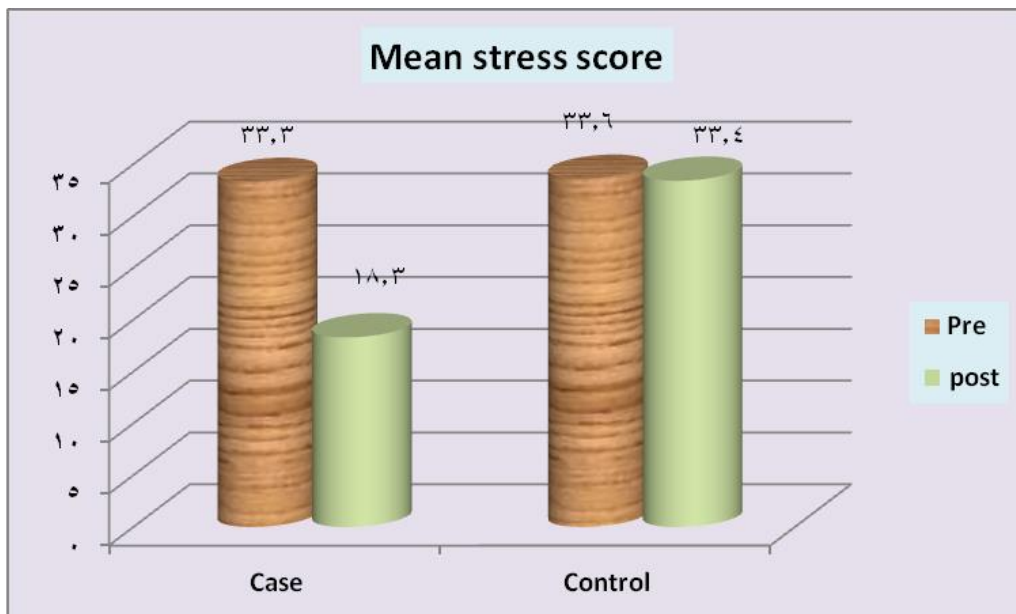**Fig (2): Mean pre and post anxiety score among studies group**

Fig (3): Mean pre and post stress score among studies group

Table (2): spearman Correlation between anxiety and socio demographic characteristics of studied group (N=97):

	Anxiety	
	Test value	**P value**
Age	-0.04	0.661
Gender	0.26	**0.001**
Social status	-0.13	0.192
Educational level	0.07	0.489
Occupation	0.11	0.300

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Table (3): Correlation between stress and social demographic characteristics of study group (N=97):

	stress	
	Test value	**P value**
Age	-0.04	0.676
Gender	0.15	0.130
Social status	0.08	0.420
Educational level	-0.01	0.908
Occupation	0.18	0.059

Table (4): Correlation between pain and socio demographic characteristics of studied group (N=97):

	Pain	
	Test value	**P value**
Age	0.01	0.908
Gender	-0.02	0.871
Social status	-0.08	0.408
Educational level	0.19	0.055
Occupation	0.06	0.575

Table (5): Pearson correlation between pain, stress and anxiety of study group (N=97):

	Pain	
	r	**P value**
Anxiety	0.623	**<0.001**
Stress	0.639	**<0.001**

4. DISCUSSIONS

"By 2030, researchers project that CVD alone will be responsible for more deaths in low income countries than infectious diseases"[24]. "Thus, CVD is today the largest single contributor to global mortality and will continue to dominate mortality trends in the future"[3].

Our study showed that above three quarters of the studied patients were in an age group (40-60) years. This result was congruent with "[25]. Stated that "Genetic or lifestyle factors and Older age, cause plaque to build up in your arteries as you age. By the time you're middle-aged or older, enough plaque has built up to cause signs or symptoms. In men, the risk for CHD increases after age 45. In women, the risk of CHD increases after age 55.The results of the present study revealed that more than three quarter of them were female". This result incongruent with"[26]. Who found that "In general, women consume an excess of fat and carbohydrates, do not exercise regularly and have less time to rest. Those presenting with CAD are more likely to have a history of diabetes mellitus, hypertension, and hyperlipidemia than the male counterparts". In other hand "[27].   Reported that "Cardiovascular disease develops 7 to 10 years later in women than in men and is still the major cause of death in women".

The results of the present study revealed that more than three quarter of them were married. This may be due to the married exposed to more stressful situations which considered risk for cardiovascular disease". Also about two third had secondary education. This is in agreement with "[28].   Who found that "high risk for cardiovascular disease associated

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with lower levels of education and higher education may be the best predictor of good health". Regarding occupation the results of the present study revealed that about one third of them were farmer. This may be due to the farmer have low level of education so; use bad habit of nutrition, which considered risk for cardiovascular disease.

The present study showed that There were highly statistically significant difference between pre and post intervention program regarding pain score levels in case group than the control group. This is congruent with [16]. Who found that "Massage therapy produced a significantly greater reduction in pain". In other hand [29]. Found that "Statistically and clinically significant decreases in pain were observed for patients who received a 20-minute massage compared with those who received standard care". Also [30]. Stated that "Compared with the control group, patients in the massage group experienced short-term (pre intervention vs post intervention) decrease in pain intensity (P=. 001), pain unpleasantness (P_.001), and anxiety (P=. 007) ".

The result illustrated that there was highly statistically significant difference between   pain and education. On the contrary [31]. Reported that "no significant difference was observed between the two groups regarding level of education", while the result illustrated that there were no statistically significant difference between   pain and age, marital status, occupation, and sex this is congruent with [31]. Who reported that "no significant difference was observed between the two groups regarding the demographic characteristics, including age, sex, level of education, and marital status".

"The use of massage therapy as an effective nursing intervention can improve the patients' mood after open heart surgery because of the low cost and simplicity of massage therapy, it is postoperative interventions used as a complement to drug therapy in these patients" [20]. The current result agreed with this statement where the result revealed that there were highly statistically significant difference between pre and post intervention program regarding anxiety and stress score levels in case group than the control group. This is congruent with [16]. Who found that "One hundred and fifty-two patients participated. Compared to rest time, massage therapy produced a significantly greater reduction in pain (p=0.001), anxiety (p<0.0001), muscular tension (p=0.002) and increases in relaxation (p<0.0001) and satisfaction (p=0.016) ". In other hand [19]. Reported that "The results showed that there is a significant difference in the mean overall mood ratings (before and after the intervention) in the control group (p<0.001) " in addition [30].   Stated that "Compared with the control group, patients in the massage group experienced short-term (pre intervention vs post intervention) decrease in anxiety (P=. 007) ".

5. CONCLUSION

According to the results of the present study, it can be stated that the use of massage therapy as an effective nursing intervention can improve the mood of patients and pain after open-heart surgery

6. RECOMMENDATIONS

Application of massage therapy supported with medication regimen is useful in improving the mood of patients and pain after open-heart surgery. Also, increase duration of follow up time in future studies for at least one month, to ascertain better improvement rate. Further researches are needed to cover this area of concern because of less studies was conducted in Egypt.

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