

Impact of Relaxation Techniques on Depression, Wound Healing and Physical Recovery among Cardiac Patients after Coronary Artery Bypass Surgery (CABG).

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Abstract

Background: Depression both before and after coronary artery bypass grafting (CABG), has been associated with poorer outcomes. Studies have specifically shown that higher rates of rehospitalization occur within 6 weeks after surgery and that higher rates of rehospitalization for cardiac reasons, and death occur for up to 2 years after surgery.

Aim: to evaluate the impact of relaxation techniques on depression, wound healing and physical recovery among cardiac patients after coronary artery bypass surgery.

Design: A quasi-experimental research design (non randomized clinical trial) was followed in this study.

Setting: This study was carried out in critical care department at El - Manial University Hospital.

Subject: The present study included 60 adult male and female patients undergoing CABG. was recruited for the study.

Methods: The current study was carried out on three phases: preparation, implementation, and evaluation phase. The preparation phase was concerned with managerial arrangements to carry out the study in addition to construction and preparation of different data collection tools, and guided relaxation techniques. Patients who matched the inclusion criteria were randomly assigned to either the study group or control group (30 patients in each group). The data were collected five times. Preoperative, postoperative, before discharge, one & two months after discharge for both the study and control groups. In addition the guided relaxation techniques were provided to the study group subjects (Preoperative).

Results: The study results revealed that, the application of relaxation techniques could help in reduction of depression, improve wound healing, and physical recovery. Depression was inversely correlated with the physical recovery among the study group subjects after one and two months post relaxation techniques. Furthermore, nutrition, sleep and depression were negatively correlated among both study and control groups after one and two months post relaxation techniques. To concluded, the present study findings add to the accumulating body of evidence for high levels of psychological morbidity after CABG and support the association between depression and poor postoperative outcomes after surgery. The study findings that physical recovery was diminished in patients with depression provide meaningful information that clinicians can use to provide patients with specific support and intervention to improve recovery outcomes.

Conclusion: Prevention and treatment of complications consequently improve patient's quality of life. Strategies to minimize depression and its antecedent anxiety and to elevate mood are needed. Continued research to determine the effect of these relaxation techniques on surgery outcomes is essential

Key words: Relaxation Techniques, Depression, Wound Healing, Physical Recovery.

Introduction

The treatment of coronary heart diseases (CHD) has evolved significantly over the past several years due to improvement in surgical and medical

methods of improving blood flow to the heart muscle and decreasing the development of narrowing in coronary arteries. Coronary artery bypass graft

surgery, or CABG (pronounced "cabbage"), is a revascularization technique that uses the patient's own veins (usually from the legs) or arteries to bypass narrowed areas and restore blood flow to heart muscle. Thus, bypass surgery can effectively relieve angina pectoris (chest pain) for most patients, and can prolong life for those with certain patterns of severe coronary heart disease (Burker *et al.*, 1995).

In the past decade, there has been an increasing awareness of presence of psychosocial distress, such as depression and anxiety, after coronary artery bypass grafting (Rymaszewska *et al.*, 2003). The relief of cardiac symptoms is one of the major indicators of the cardiac surgery success or of the successful revascularization (Bari 1997). Therefore, any factors that potentially interferes with this symptoms relief have important consequences for estimated 800,000 coronary artery bypass grafting surgeries performed every year worldwide (Borowicz, 2006).

Previous reports indicated that approximately one-third of all patients are depressed at the same time point shortly after the time of coronary artery bypass surgery (Saur *et al.*, 2001). Notably, up to 50% of the patients who were depressed before surgery are depressed one month after surgery (McKhann, 1997). This important because accumulating evidence suggests that depression is associated not only with greater risk of developing coronary disease (Willner & Rodewald, 1999), but also with greater morbidity (Ford, *et al.*, 1998), a risk of heart failure (Aromaa, *et al.*, 1994; Abramson, *et al.*, 2001), and mortality after myocardial infarction (Barefoot & Schroll, 1996). Depression, both before and after coronary artery bypass grafting, has been associated with poorer outcomes. Study have specifically shown that higher rates of rehospitalization occur within 6 weeks after surgery (Saur *et al.*, 2001), and that higher rates of rehospitalization for cardiac reasons, and death occur for up to 2 years after surgery (Connerney *et al.*, 2001).

Physiological responses to depression include stimulation of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis, with resultant higher

circulating levels of catecholamines and glucocorticoids, reduced release of growth hormone, suppression of natural killer cell activity, reduced production of antigen-specific antibodies, altered coagulation, and altered autonomic tone (Arber, 1991, Berntson, *et al.*, 1997). Depression induced by using visual images also alters regional cerebral blood flow in brain areas associated with cognition and affect and may alter behavioral response and produce increased vigilance (Fredrikson & Fischer 1997).

A biobehavioral model of relationships depicts theoretical relationships between physiological, psychological, and behavioral alterations in critically ill patients. The association between depression and increased morbidity and mortality is described in a growing body of research. (Smith, 1991, Steptoe, *et al.*, 1996). Johnston, 1988, & Mathews, 1881, found that higher preoperative depression levels were associated with a longer, more complicated postoperative course. Subsequent investigators (Devine, 1991, Suls & Wan, 1998), used psychological interventions to reduce depression, and postsurgical outcomes were improved. Delayed wound healing, greater levels of postoperative pain, and the development of postoperative delirium are all associated with greater reported depression (Abbott & Abbott 1995, Okano, *et al.*, 1998).

A number of studies have linked depression and subsequent stress response to delays in wound healing; standardized wounds took 24% to 40% longer to heal in anxious, stressed subjects than in control subjects (Marucha *et al.*, 1998, Padgett, *et al.*, 1998, McKhann, 1997). Clearly, depression and the subsequent physiological alterations that result can markedly influence outcome. The effects of depression may be particularly important to critical care patients. The effective management of depression by critical care nurses may improve patients' outcomes by reducing sympathetic and neuroendocrine activation. Several investigators (Smith, 1991, Chlan, 1998, Okano *et al.*, 1998, Saur *et al.*, 2001) explored the effectiveness of psychological preparation for surgery or diagnostic testing and the use of music therapy, guided

imagery, empathetic or therapeutic touch, reassurance, biofeedback, and sedation in the management of depression.

In the recent years, the potential benefits of relaxation training have generated widespread interest in both the lay and professional literature, particularly in the area of stress management. Relaxation training strives to relieve depressive symptoms, improve function status, and quality of life for patients with Coronary artery bypass graft surgery (Rafanelli *et al*, 2006). Other positive effects of progressive relaxation technique includes improving problem solving and increasing the likelihood that positive adaptive ideas will reach consciousness, strengthening the nurse- patient relationship through individualized attention, increasing confidence, a sense of control in coping with anxiety and pain, increasing the effectiveness of other pain relief measures, improving the patient's mood and flexibility, and decreasing distress or fear during postoperative physical recovery (Miller & Sarafino, 1994). Therefore, the aim of this study is to evaluate the impact of relaxation techniques on depression, wound healing and physical recovery among cardiac patients after coronary artery bypass surgery.

Significance of the study

With the current state of knowledge about depression and the profound implications that depression has for patients' outcomes, it is vital that nurses understand the effects of depression and become educated and proficient in depression management. Development of evidence-based approaches to depression management is a critical need. The problems of individuals with CABG are multifaceted and health care required by these individuals has become increasingly complex. CABG has the potential to affect every aspect of a person's life, from performance of the simplest self-care tasks to ability to process information and interact meaningfully with others.

Individuals with CABG often lack the knowledge about disease that could help them deal with its much component.

Through education, patients can learn methods of control depression and anxiety. Education can also provide information regarding the need for exercise and proper use of relaxation techniques. Moreover, education of individuals with CABG and their support people will continue to be of primary importance to nurse. It is important for nurses to assess CABG patients and strategies they use to cope with it.

It has observed that CABG patients' rehabilitation has received little attention in critical care units. In such situation, nurses are becoming responsible for leading different aspects of CABG patients rehabilitation and recovery from acute care to re-entry the community. Therefore this study aimed to evaluate the impact of relaxation techniques on depression, wound healing and physical recovery among cardiac patients after coronary artery bypass surgery.

Aim of the Study

The aim of this study is to evaluate the impact of relaxation techniques on depression, wound healing and physical recovery among cardiac patients after coronary artery bypass surgery.

Hypotheses:

To fulfill the aim of the study, the following research hypotheses were formulated:

1. Depressive symptoms mean scores of the study group will be lower than that of those of a control group.
2. Wound healing of the study group will be better than that of those of a control group.
3. Physical recovery mean scores of the study group will be higher than that of those of a control group.

Subjects and Methods

Design: A quasi-experimental research design (non randomized clinical trial) was followed in this study.

Research Variables: The independent variable in this study was guided relaxation techniques, while the dependent variables were depression symptoms, wound healing and physical recovery.

Setting: This study was carried out in critical care department at El - Manial University Hospital.

SUBJECTS: The present study included 60 adult male and female patients undergoing CABG, were recruited for the study. The subjects divided randomly into two equal groups (30 each) to constitute study and control groups. They were matched according to age, sex, marital status, education. Criteria for inclusion include the following: no history of pharmacologically treated psychiatric disorders, were free of cognitive impairment that could interfere with their ability to participate, had no cardiac serious or life-threatening comorbidity conditions, such as stroke, sepsis, diabetes mellitus, or acute renal failure.

Tools:

1. Multiple Affect Adjective Check List (MAACL) by (Zuckerman, 1983).

The MAACL, a self-report measure consisting of 45 alphabetically arranged adjectives, was used to assess emotional states of anxiety, depression, and hostility. Higher scores mean that subjects has higher symptomatic levels of given dysphoria. Subjects receive a separate score for anxiety, depression, and hostility. The MAACL has been used extensively in the research and clinical practice and has established reliability and validity.

2. Wound Healing Assessment Sheet (WHAS).

This sheet was developed by Flanagan (1997), modified and then piloted by the investigators. It provides qualitative and quantitative evaluation of the wound, and includes nine items as follows: (a) wound observation for presence of and the extent of inflammation, presence of and type of discharge, (b) wound description (length, width, & depth), (c) assess the skin condition if it is intact, fair or poor, (d) wound dimension, if it is increasing, decreasing, or static, (e) the wound margin if intact, edematous, dry, fragile, (f) presence of pain.

3. Functional Status Scale (FSS) by (Weaver & Narsavage, 1989).

The FSS is an 64 item questionnaire measuring daily behaviors in the areas of personal care, daily activities, interpersonal relationship, nutrition and sleep. A total score of 100 constituting the summation of the maximum scores obtained in relation to each area of ADL. This study is concerned with measuring changes in functional activities overtime, Face validity was tested in two researches with a standardized alpha of 0.83, 0.81 in item. Test- retest reliability was demonst-rated with correlation of $r=0.67$ ($P=0.002$).

Guided relaxation techniques:

The goal of relaxation techniques are to give the patient mastery over feeling of depression and anxiety to enable him to be more easily engaged in useful, satisfying activities that give meaning to his/her existence. It includes three types; a) Progressive muscle relaxation; it requests that the patient progressively tense and relaxes different muscle groups (Halperin & Murphy, 1992), b) Mediation, it is a mental and physical method of relaxation including repetition of words or sounds. The exclusion of thoughts, quiet environment and attention to position. An advantage of this approach is that it can be learned and practiced in the home without supervision. There are almost no contraindications for this arousal- reducing technique (Benson, 1985), and c) visual- guided imagery in the subjects is taught to focus on a pleasing visual image retrieved from the memory. It is often used in conjunction with progressive muscle relaxation (Cassmeyer & Lehman, 1996). These three techniques were translated into Arabic and piloted on five patients. Then given to the study group as handout in an illustrated booklet.

Procedure:

The current study was carried out on three phases: preparation, implementation, and evaluation phase. The preparation phase was concerned with managerial arrangements to carry out the study in addition to construction and preparation of different data collection tools, and guided relaxation techniques. The implementation phase was once an official permission was granted. A total number of 60 patients who fulfilled the criteria of inclusion were

recruited into the present study. Patients' informal acceptance to be included in the study was obtained, after clarification of the nature and purpose of the study and the emphasizing that the participation is voluntary and each patient have the right to withdraw from the study at any time with assuring of anonymity and confidentiality.

Patients who matched the inclusion criteria were randomly assigned to either the study group or control group (30 patients in each group). The data were collected five times. Preoperative, postoperative, before discharge, one & two months after discharge for both the study and control groups. On admission socio-demographic, medical data were obtained from both groups, followed by assessment depressive symptoms and patients physical recovery preoperatively (utilizing tools, 1&3) and one & two months after hospital discharge, to determine infectious complications and wound-healing problems were conducted postoperatively (at time of discharge from the hospital) and after one months. In addition the guided relaxation techniques were provided to the study group subjects (Preoperative). Patients' teaching relied on informal discussion with patients and their caregivers. It was provided on an individualized base and according to patients' tolerance and they allowed asking questions.

The practical part of how to demonstrate and return demonstration techniques carried as, each teaching session lasted from 30-45 minutes, with total four sessions (during hospitalization), teach patient according to his/her level of understanding. The booklet was supplied to patients to help mastery of learned techniques. After 4 weeks, all the subjects (study & control groups) were interviewed individually to fill out the designed tools. The study group subjects were encouraged to continue practicing the relaxation techniques. After two months data were collected for both groups to constitute the last assessment.

The evaluation phase, each patient either in the study or the control group had been met, postoperatively, one and two months after hospital discharge. This to enable the investigators to obtain the needed data that could confirm progress,

maintenance or deterioration in the patients' condition. Moreover, the evaluation phase could not be separated from the previously stated phase because the study phases are overlapping, as during the implementation phase immediate evaluation of presence of wound complications as well was evaluated after discharge, and during periods of follow up.

Results

Hypothesis₁: Depressive symptoms mean scores of the study group will be lower than that of those of a control group.

Comparison between the study and control group subjects on the categorical background variables of gender, marital status, education and diagnosis as well on numerical variable of age indicated no statistically differences between the two groups ($t=0.03$, $P=0.16$; $t=1.23$, $P=0.13$; $t=0.61$, $P=0.37$; $t=1.41$; $P=0.51$; $t=1.04$, $P=0.18$; $t=0.33$; $P=0.67$ & $t=0.22$, $P=0.59$ respectively).

As clear from table (1), depression and anxiety symptoms were differed significantly between study and control group subjects only by the end of the second month with the following t/p values ($t= 11.42$, $P<0.0001$) with tendency of control group subjects to have a higher mean scores ($x= 39.66\pm 3.78$ compared to 29.08 ± 2.72 , & 32.50 ± 3.79 compared to 19.77 ± 0.47 respectively). On the other hand, hostility symptoms did not differ significantly between two groups. Table (1), also illustrated that both the study and control groups have depressive symptoms preoperatively with no statistically significant differences detected between them. Post techniques by the end of one and months, the study group subjects showed a highly significant statistically difference improvement in depressive and anxiety symptoms with following F ratios & p values ($F^2_{87}= 14.23$, $P<0.0001$ & $F^2_{87}= 13.29$, $P<0.0001$). However, a gradual increase in both depressive and anxiety symptoms with no significant difference among them. Hostility symptoms were improved among the study group with significant statistically ($F^2_{87}= 13.02$, $P<0.001$), also control group subjects showed an improvement in the 1st month

assessment and regressed again by the end of two months postoperatively.

Hypothesis₂: Wound healing of the study group will be better than that of those of a control group.

Table (3) displays a comparison between the two studied groups as regards wound healing assessment before discharge and after one month. A statistically significant relations were found between two studied groups and the extent of wound inflammation before discharge and one month after discharge were (X^2 8.44 & 12, respectively). Also, a statistically significant relations were found between two studied groups as regard inflammation area and purulent exudates, before discharge and one month after discharge were (X^2 6.77 & 8.28 and X^2 5.58 & 7.28 respectively). However, no significant differences were found regarding the site of exudates before discharge and one month after discharge.

Hypothesis₃: *Physical recovery mean scores of the study group will be higher than that of those of a control group.*

As regards total functional status scale of both studied groups, table (3) documented functionally unable pre techniques (preoperatively) with no statistically significant differences between them ($x=130.43\pm 25.30$ & 128.82 ± 28.32). However, after one month and two months of the intervention, the study group subjects showed an improvement in the total functional ability mean scores (121.4 ± 22.50 & 110.61 ± 20.70 respectively), with a highly statistically significant difference

was detected between the pre-intervention, one and two months post-intervention ($F^2_{87} = 22.03$, $P < 0.001$). Analysis of differences between was the two groups in relation to the total physical ability mean scores revealed a statistically significant difference between them after one and two months ($t=2.33$, $P < 0.01$ & 4.06 , $P < 0.0001$ respectively). Furthermore, two month post-intervention techniques Personal care, Interpersonal relationship, Nutrition & Sleep $6.27, P=0.001$; 5.33 , $P=0.0001$, $9.39, P=0.001$; $3.71, P=0.001$; $4.36, P=0.0001$ respectively.)

Table (4) shows depression was inversely correlated with the physical recovery of in both studied group (i.e. the higher depression, the more impairment in physical recovery). After one and two months post relaxation techniques were r -value = -0.678^{***} , -0.651^{***} and -0.790^{***} , -0.741^{***} respectively). Depression was positively correlated with the wound infection among the studied group subjects before discharge and after one month post relaxation techniques ($r=0.46^{**}$ & 0.59^{**} and 0.65^{**} & 0.92^{**} respectively).

Furthermore, depression was negatively correlated with nutrition and sleep among studied group before and one month after discharge pre, one and two month post relaxation techniques ($r=-0.655^{**}$, -0.70^{***} , -0.64^{***} , -0.73 , -0.71^{***} , -0.69^{***} & -0.51^{**} , -0.56^{**} , -0.70^{***} and -0.73^{***} respectively).

Table (1): Comparison Between the Study and Control Groups as Regards Total and Subtotal Multiple Affect Adjective Check List mean scores preoperatively, 1st and 2nd month after hospital discharge.

Subscale Variables Groups	Study group (n=30)		Control group (n=30)		t- test P-value
	Mean ± SD		Mean ± SD		
Depression					
Preoperative	34.33	3.96	35.16	3.24	1.52 (0.10)
One month	31.36	3.28	38.27	4.45	1.60 (0.11)
Two months	29.08	2.72	39.66	3.78	11.42 (0.0000) ***
ANOVA test (P-value)	14.23 (0.0000) ***		2.11 (0.04)		
Anxiety					
Preoperative	24.33	2.28	23.54	3.53	1.46 (0.14)
One month	22.14	2.23	26.16	2.36	1.91 (0.06)
Two months	19.77	0.47	32.5	3.79	12.53 (0.0001) ***
ANOVA test (P-value)	13.29 (0.0000) ***		3.21 (0.30) ***		
Hostility					
Preoperative	53.91	4.9	57.33	6.0	1.22 (0.98)
One month	51.15	6.8	53.43	7.6	0.14 (0.74)
Two months	45.44	5.8	55.06	7.8	2.89 (0.07)
ANOVA test (P-value)	13.02 (0.000) ***		0.21 (0.82)		

*P=0.05 **P=0.001 ***P=0.0001

Table (2): Comparison between the Study and Control Groups as Regards Wound Assessment before discharge, and 1st month postoperatively.

Frequency Groups	Before discharge					One month				
	Study (n=30)		Control (n=30)		X ² & P	Study (n=4)		Control (n=4)		X ² & P
	N	%	N	%		N	%	N	%	
Extent of inflammation										
Very slight(<0.5 wide)& slight (<1cm ide)	10	33.3	2	6.7	8.44**	18	60	7	23.3	12**
Moderate (1-2cm width)	9	30	18	60		6	20	19	63.3	
Extensive (3cm wide or more)	11	36.7	10	33.3		6	20	4	13.3	
Inflammation area										
Surrounding half of the suture	10	33.3	12	40	6.77**	6	20	18	60	8.28**
Surrounding al of the suture	8	6.7	9	30		5	16.7	12	40	
At the drain site only	12	40	10	33.3		10	33.3	18	60	
Type of the wound exudates										
Purulent	9	30	11	36.7	5.58*	6	20	18	60	7.28**
Non Purulent	12	40	10	33.3		10	33.3	14	6.7	
Site of exudates										
At the drain site only	4	13.3	7	23.3	0.49	4	13.3	8	26.7	1.46
At suture & incision	8	26.7	9	30		5	16.7	9	30	
Sutures , incision & the drain site	7	23.3	6	20		7	23.3	8	26.7	

Table (3): Comparison between the Study and Control Groups as Regards Total and Subtotal Functional Status Scale scores preoperatively, 1st and 2nd month postoperatively.

Subscale Variables	Study group (n=30)		Control group (n=30)		t-test P-value
	Mean ± SD		Mean ± SD		
Personal care					
Preoperatively	13.75	2.5	14.5	4.5	
One month	12.91	3.3	15.6	5.0	1.88 (0.09)
Two months	11.33	3.5	16.3	5.0	2.36 (0.04)*
ANOVA test (P-value)	10.38 (0.001) **		1.72 (0.37)		6.27 (0.001) **
Daily activities					
Preoperatively	23.70	2.6	22.86	3.0	
One month	20.63	5.2	24.70	3.4	1.64 (0.06)
Two months	17.36	4.4	26.65	5.4	1.15 (0.40)
ANOVA test (P-value)	12.48 (0.001) **		1.72 (0.18)		5.33 (0.0001) ***
Interpersonal relationship					
Preoperatively	14.45	2.6	13.3	2.1	
One month	13.34	2.7	16.8	3.0	1.79 (0.25)
Two months	12.16	3.9	18.2	3.7	1.12 (0.37)
ANOVA test (P-value)	11.29 (0.001) ***		2.38 (0.10)		9.39 (0.001) **
Nutrition					
Preoperatively	12.41	0.49	10.13	1.6	
One month	10.4	1.70	11.45	1.8	0.36 (0.13)
Two months	9.7	1.33	13.0	2.0	2.04 (0.01)*
ANOVA test (P-value)	23.51 (0.0001) ***		2.06 (0.13)		3.71 (0.001) **
Sleep					
Preoperatively	12.43	1.30	10.82	1.3	
One month	10.42	1.50	11.33	1.5	0.07 (0.63)
Two months	8.61	1.70	13.98	1.8	2.43 (0.01)*
ANOVA test (P-value)	11.00 (0.0001) ***		1.06 (0.11)		4.36 (0.000) ***
Total scores					
Preoperatively	130.43	25.30	128.82	28.32	
One month	121.42	22.50	137.33	30.51	1.97 (0.50)
Two months	110.61	20.70	146.98	38.83	2.33 (0.01)*
ANOVA test (P-value)	22.03 (0.001) **		2.77 (0.091)		4.06 (0.000) ***

*P=0.05 **P=0.001 ***P=0.0001

Table (4): correlation coefficient between depression and the studied variables (physical recovery, wound infection, nutrition & sleep) pre-relaxation techniques, one & two months postoperatively.

r- values	Study group (n=30)	control group (n=30)
Variables	r- value	r- value
Depression & Physical Recovery		
Pre-techniques	0.413	0.322
One month	-0.678***	-0.790***
Two months	-0.651***	-0.741***
Depression & wound infection		
Before discharge	0.46**	0.65**
One month	0.59**	0.92**
Depression & nutrition		
Pre-techniques	-0.655**	-0.733**
One month	-0.70***	-0.71***
Two months	-0.64***	-0.69***
Depression & sleep		
Pre-techniques	-0.05	-0.07
One month	-0.51**	-0.70***
Two months	-0.56**	-0.73***

*P=0.05 **P=0.001 ***P=0.0001

Discussion

Cardiac rehabilitation strives to relieve depressive symptoms, improve physical recovery, and enhance psychosocial adjustment for patients with cardiac diseases. It is initially developed to address physical impairment and disability related to CABG. Many patients with CABG have numerous medical, physical and psychological problems. These problems can severely tax the coping ability of patients and families. A multidisciplinary approach is needed to assist them in achieving their highest potential and surgical outcomes (Vingerhoets, 1998).

The present study supported that; application of relaxation techniques carried out by a professional nurse can help in reduction of depression and improve wound healing. As documented, highly statistically significant differences between the study and control group subjects all through the study period. Jellic & Bonke (1991) commented that progressive muscle relaxation appears to have benefit in reducing depression and anxiety in patients with CABG. Also, it has been shown to be effective in helping patients to reduce depressive symptoms.

The present study revealed the positive association between depression and infections and impaired wound healing. Doering *et al.* (2005) indicated the positive association between depressive symptoms and infections and impaired wound healing. This finding supports a biobehavioral model in which psychological, behavioral pathway influence wound healing (Glaser *et al.*, 1999). In the model, surgery is a form of stress. Patients' responses to stress of surgery are influenced by psychological states, such as depression and anxiety. Together with the stress of surgery, dysphoria may act indirectly via the hypothalamic- pituitary- adrenal axis to modulate immune functions or may affect immune cells directly so that secretion of proinflammatory cytokines becomes deregulated. In addition, adverse behavioral changes such as poorer hygiene, nutrition, self care and reduced adherence to medical recommendations, are often associated with depression. These factors may act directly to increase the likelihood that patients who are depressed after surgery will have postoperative complications (Doering *et al.*, 2005).

The independence of association is consistent with the results of earlier experimental studies (Marucha *et al.*, 1998 & Glaser *et al.*, 1999) in which investigators showed that stress has a large effect on wound healing. This finding is important because wound healing and postoperative infections are a major source of postoperative morbidity and dramatically increase the cost of CABG. The overall incidence of infections at surgical site and of impaired healing of incisions used to obtain saphenous vein can be as high as 9.9% and 43.8% respectively (Jenney *et al.*, 2001).

The study findings indicated a remarkable improvement among the study group subjects in the physical recovery mean scores over the post relaxation techniques period. It showed a gradual pattern of improvement all through the subscales especially for personal care, activities, interpersonal relationship, nutrition and sleep. This indicates that patient who feels confident in ability to manage or influence his pain and stress experience a sense of control, while lack of perceived control contributes to feelings of inadequacy and anxiety. A feeling of helplessness increases tension perception depletes inner strength and leads to overreacting. The more of a sense of control patient's experience, the more power they feel, they have to affect outcome and more willing they are to participate in self-initiated activities. In this respect, Speidel (1999) mentioned that limitation of physical activities is a major problem, facing the patient because the CABG is often associated with inadequate nutritional status and anemia resulting in activities intolerance and fatigue. Therefore, the patient's physical activities and behavior in environment are restricted. On the same line, Peden (1999) mentioned that the problem of activities impairment in CABG is linked not only to the physical dimensions of patient adaptation but also exerts an impact on patients psychological and social functioning. The result of the present study is consistent with Speidel (1999), who reported that, social interaction also may be altered as a result of the disease. Social isolation is one of the more pernicious effects of disease. The ability to

control or effectively deal with symptoms of disease can affect one's involvement in social activities and interactions. In addition, Berg and Cassell (1990) explained that chronic illness may limit an individual's capacity to live independently or initiating relationships, pursuing career, goals or enjoying leisure activities.

Baker *et al.* (2001) hypothesized that patient with CABG who are depressed also tend to have high level of anxiety. The closeness of relationship found in depression and anxiety tends to occur simultaneously in patients with CABG. Also, Timberlake *et al.* (2001) added that the presence of depression and/or anxiety would adversely affect the physical recovery of a patient with CABG. When the level of cardiac dysfunction was taken into consideration, Mangelli *et al.*, (2005) mentioned that optimal nutritional status is essential for effective breathing and for functioning of immune system. Malnourishment puts patients at risk for cardiac muscle fatigue and for infections affecting the wound and other body systems. Also, weight loss and malnutrition are commonly seen with CABG patients.

The study findings denoted that there was a negative correlation between depression and sleep. Burg *et al.* (2003) clarified that of depression and/or anxiety would adversely affect the sleep pattern is one probable cause for sleep disturbances. In agreement with the current results Sofaer, and Walker (1994), advocated that relaxation techniques may help to lower anxiety. This may be helpful for anxious patients. A further point is that a relaxation technique can act as a distraction, so that the patient's mind is taken off the pain. He also added that muscle relaxation training has been found to decrease "state anxiety" that is anxiety which may be present in patients facing potential stressful events. Relaxation may help a patient to sleep. Seers and Carroll (1998) added that, it is not surprising that relaxation technique has been effective in treatment and prevention of insomnia, fatigue and headache. Relaxation technique enables the patient's to fight fatigue and sleep restfully, thus increasing energy, improving the patient's mood and flexibility and decrease heart and respiratory rate.

Progressive relaxation techniques helps the patient to get a sleep faster, improving the quality of sleep by decreasing physiological changes such as decreased muscle tension, increased blood flow, decreased heart and respiratory rate, and producing a state of increased susceptibility to suggestions of comfort (Cannon, 1995).

It is worth mentioning that findings demonstrated a strong negative association between depression and physical recovery. The direct influence of depression on physical recovery is consistent with findings of other studies done by Jenkins *et al.* (1996) and McCrone, *et al.* (2001) who explained that depression has frequently been identified by patients as limiting their ability to function and linked to emotions.

The study revealed that nutrition and depression were negatively correlated between depression and nutrition among both study and control groups. This highlights the fact that appetite and eating can be adversely affected by number of factors including fatigue, anxiety, insomnia and exhaustion.

In conclusion, findings add to the accumulating body of evidence for high levels of psychological morbidity after CABG and support the association between depression and poor postoperative outcomes after surgery. The study findings that physical recovery was diminished in patients with depression provide meaningful information that clinicians can use to provide patients with specific support and intervention to improve recovery outcomes. The findings that depression is associated with increased postoperative infectious complications and impaired healing further provision of different relaxation techniques for patients at risk for depression after surgery are of a crucial benefit in improvement surgery outcomes. Prevention and treatment of complications consequently improve patient's quality of life.

Recommendations

Finding of this study suggest that:

1. Strategies to minimize depression and its antecedent anxiety and to elevate mood are needed.
2. Studies designed to test specific immune pathways that most likely influence the

development of infectious complications and impaired wound healing after CABG.

3. Efforts to improve the physical recovery of individuals with CABG should focus on intervention that influences exercise capacity, depression and psychological status.
4. Rehabilitation programs must continues to be developed to help CABG patients live in a productive life.
5. Continued research to determine the effect of these relaxation techniques on surgery outcomes is essential.

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تأثير تقنيات الإسترخاء على حالة الإكتئاب ، إلتئام الجروح والشفاء الجسماني لدى مرضى القلب بعد جراحة تغيير الشرايين التاجية

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المقدمة يعاني مرضى القلب بعد جراحة تغيير الشرايين التاجية من أعراض الإكتئاب التي تؤثر على حالتهم المزاجية والجسمانية وتضعف مناعتهم مما يؤثر على التئام الجروح بعد العملية ، أثبتت الدراسات أن إجراء برامج الإسترخاء لهؤلاء المرضى لها تأثير فعال في معالجة الضغوط النفسية وخاصة حالة الإكتئاب وما يصاحبها من مضاعفات جانبية .

الهدف من الدراسة تهدف هذه الدراسة إلى تقييم تأثير تقنيات الإسترخاء على حالة الإكتئاب ، التئام الجروح والشفاء الجسماني لدى مرضى القلب بعد جراحة تغيير الشرايين التاجية .

تصميم البحث : بحث تجريبي

العينة البحثية : تكونت العينة البحثية من ستين مريضاً أجريت لهم عملية تغيير الشرايين التاجية وليس لديهم أى أمراض نفسية أو صحية أخرى تؤثر على الحالة الجسمانية والوظيفية لهم . وقد قسمن عشوائياً إلى مجموعتين . تكونت كل مجموعة من ثلاثين مريضاً أحدهم كمجموعة ضابطة والأخرى تم تدريبهم على الإسترخاء .

مكان الدراسة : أجريت الدراسة في قسم رعاية الحالات الحرجة بمستشفى المنيل الجامعي .

أدوات البحث : استخدمت الأدوات التالية لجمع البيانات

- 1 - مقياس التوصيف الشعوري للمرضى .
- 2 - استمارة تقييم إلتئام الجروح .
- 3 - مقياس الحالة الوظيفية للمرضى .

خطوات البحث :

- تم اختيار المرضى المطابقين للمواصفات المطلوبة للدراسة تم تقسيمهم إلى مجموعتين عشوائياً ، مجموعة أجريت عليهم الدراسة والأخرى أعتبرت العينة الضابطة .

- الإختبارات السابقة الخاصة بمقياس التوصيف الشعوري والحالة الوظيفية أجريت ثلاث مرات : مرة قبل بدأ تنفيذ تقنيات الإسترخاء ، وبعد شهر ثم شهرين من إجراء العملية أما بالنسبة لتقييم إلتئام الجروح تمت قبل مغادرة المرضى مباشرة من المستشفى وبعد شهر من إجراء العملية .

النتائج :

قد أسفر البحث عن النتائج التالية :

- وجد أن تطبيق تقنيات الاسترخاء قد ساعدت على تحسن الشعور بالإكتئاب وكذلك تحسن الحالة الجسمانية ومعدل التئام الجروح لهؤلاء المرضى .
- وجود علاقة موجبة ذات دلالة إحصائية بين التكييف النفسى والحالة الجسمانية بالنسبة لعينة الدراسة والعينة الضابطة .
- وجد أن العلاقة بين الإكتئاب تتناسب عكسياً مع إلتئام الجروح .

الخلاصة

خلصت هذه الدراسة إلى أن مرضى القلب الذين أجريت لهم جراحة تغيير الشرايين التاجية يحتاجون إلى تحسين حالتهم المزاجية والجسمانية ومناعتهم عن طريق إمدادهم بالمعلومات وطرق الإسترخاء المناسبة التى تساعد على تقليل حالة القلق والإكتئاب لديهم وتحسن حالتهم الجسمانية وجهازهم المناعى .

التوصيات

وقد أوصى البحث بما يلى :-

- يجب أن تركز الجهود المبذولة لتحسين الحالة المزاجية والنفسية لهؤلاء المرضى .
- من الضروري تطبيق الاستراتيجيات التى تساعد على تقليل حالة الإكتئاب وكذلك القلق المصاحب لهؤلاء المرضى .
- برامج التأهيل يجب تطويرها لكى تساعد هذه الفئة من المرضى على حياة منتجة وفعالة .