

The Effects of Open Heart Surgery (Coronary Bypass) on Depression and Social Adjustment of Hospitalized Heart Patients

Farah Naderi, Alireza Heideri, Marjan Kargarzadeh and Mohammad Tahmasbi
Department of Psychology, Islamic Azad University (Ahwaz Branch),
Farhangshahr Rd., Ahwaz, Iran

Abstract: Problem statement: Post treatment preparation is critical period, as patients may have difficulties with psychosocial adjustment, especially related to dissatisfaction with side effects of medicine taking therapy and a lack of socialization skills/social competence. Different psychological issues arise for patients depending upon where they are in the medical treatment process. **Approach:** The current research was processed with the intention of examining and presenting the effects of open heart surgery (coronary bypass) on male and female hospitalized heart patients' depression and social adjustment in Tehran Shahid Modarress Hospital; regarding age, sex, employment and marital status. The research sample particularized 118 patients (42 female and 76 male) whom were selected by simple random sampling procedure. To obtain data, Beck Depression Inventory (BDI) and Social Adjustment Scale Self-Report (SAS-SR) were implemented a couple weeks before and after surgery procedure as pretest and post test with one group. The research design was quasi-experimental. **Results:** Results were considered significant at p value less than to equal to 0.0001 ($p \leq 0.0001$) and revealed that: Heart surgery decreased social adjustment but had no significant impact on heart inpatients' depression. **Conclusion:** After treatment, it was common for patients to exhibit behavior problems, depression, poor social adaptation and/or noncompliance with the medical regimen. The psychosocial adaptation of surgery procedure can be promoted through support and counseling by one or all members of the surgery team caring for the patients and their families. This process must start during the first visit to the treatment center.

Key words: Open heart surgery (coronary bypass), depression, social adjustment

INTRODUCTION

Open heart surgery is any surgery where the chest is opened and surgery is performed on the heart. The term "open" refers to the chest, not the heart itself. The heart may or may not be opened, depending on the type of surgery. Open heart surgery includes surgery on the heart muscle, valves, arteries, or other structures. The definition of open heart surgery becomes confusing in light of new procedures being performed on the heart through smaller incisions. There are some new surgical procedures being performed that are done with the heart still beating. Minimally invasive heart surgery (MIDCAB, OPCAB, RACAB), including robotic-assisted heart surgery, is still considered open heart surgery. However, these procedures are being used in some patients as an alternative to open heart surgery requiring the heart-lung machine^[1].

Different psychological issues arise for patients depending upon where they are in the medical treatment

process. For example, issues at diagnosis tend to be around medical consultations, assertiveness, information gathering and personal decision making. During the active treatment phase, issues of anxiety and depression around surgery, radiation or chemotherapy are typically present. Patients frequently need help coping with the treatment's iatrogenic effects such as scarring and disfigurement, nausea, weight gain, infertility and/or hair loss as well as the psychological reactions of family members. During the post treatment phase, adjustments to permanent bodily changes, anxiety about recurrence and posttraumatic stress symptoms are frequently observed^[2].

Impending surgery is a stressful event that triggers specific emotional, cognitive and physiological responses of a patient^[3] the amount of stress experienced is usually measured by the level of anxiety reported by the patient and several studies have indeed shown increased anxiety scores in pre surgical patients^[4-6]. The amount of reported anxiety depends on

Corresponding Author: Farah Naderi, No. 19 Kianpars, 10th Eastern St., Ahwaz, Iran

Tel: +98-611-3758019/+98-9166121202 Fax: +98-611-3378961/ +98- 611-3329200

gender^[7,8], age^[8,9] and the motives for surgery^[4] Extensive surgery or surgery with an uncertain outcome also produces more anxiety than surgery with relative little ambiguity about the course of events^[10,11]. Because open-heart surgery is an extensive operation with-at least for the individual patient-a relative uncertain outcome, studies on the experienced preoperative stress also found elevated anxiety scores in cardiac patients^[12-16]. Many pre surgical patients also experience depressive symptoms that have been reported to increase after the operation^[15-18]. Unfortunately, the medical and paramedical staff of the surgery wards does not have the time or the training, to adequately deal with the patients' emotional distress. Recent research, however, indicates a negative relationship between preoperative psychological status and recovery, underlining the importance of emotional factors in medical treatment^[19].

Previous research reported increased depressive symptoms after the operation^[15-18] Speidel used the Hamilton Depression scale (Ham-D)^[20] an instrument for rating depressive symptomatology in adults based upon an interview. Smith *et al.*^[17,18] based their results on the BDI, a self-report questionnaire that was also used in this study. Although these instruments, the Ham-D and BDI, use a different method to assess the level of depression, both scales include items that evaluate somatic and vegetative symptoms, such as weight loss, loss of appetite, insomnia and fatigability, that are commonly found in depressive patients. Medical patients can have similar vegetative and somatic symptoms in the postoperative period that are not necessarily related to depression. The results of this study show that the early postoperative increase in reported depression is entirely attributable to an increase in the somatic complaints of the post surgical patients. Omitting the somatic items from the BDI score reveals that cardiac surgical patients do not experience significant postoperative changes in depression related cognitive-affective symptoms. Although it can be argued that medical patients are more likely to translate feelings of depression into somatic complaints^[21], cardiac surgery remains an invasive operation with justified postoperative somatic complaints. Similar remarks can be made about the research on patient depression after myocardial infarction. Somatic-performance BDI^[22] items cannot evaluate whether a positive response is caused by depression or by the physical status of the post surgical patient and these items should therefore be omitted in the interpretation of the depression score. Beck and Steer^[23] describe cognitive-affective subscale scores >10 as indicative of moderate depression. Unfortunately, the use of cardiac

medication was not systematically assessed and the contribution of beta-blockers on the depression score cannot be evaluated.

Adjustment disorder is defined as clinically significant emotional or behavioral symptoms in response to an identifiable psychosocial stressor or stressors. Patients with this condition may exhibit depressed mood, anxiety or both. By definition, the symptoms of an adjustment disorder do not last more than six months after the stressor has terminated and do not meet severity criteria for major depression or an anxiety disorder (Diagnostic and Statistical Manual of Mental Disorders DSM-IV. American Psychiatric Association, Washington, DC^[24], (recited from: Feder, Adriana MD; SOMATIZATION)^[25].

Objective: The current research was processed with the intention of examining and presenting the effects of open heart surgery (coronary bypass) on male and female hospitalized heart patients' depression and social adjustment in Tehran Shahid Modarress Hospital; regarding age, sex, employment and marital status. This was a quasi-experimental study which stood for assessing the effects of open heart surgery (coronary bypass) on male and female heart inpatients' depression and social adjustment in Tehran Shahid Modarress Hospital. The primary independent variable for our study was the open heart surgery (coronary bypass). Other dependent variables included depression and social adjustment of hospitalized male and female heart patients. The social adjustment was subcategorized into patients' times of leisure adjustment, family relationships adjustment, marital adjustment and economic adjustment. The primary goal of the study was limited to evaluating whether or not the open heart surgery impacts male and female hospitalized heart patients' depression and social adjustment.

Question: The research prospected if the open heart surgery (coronary bypass) has any effects on male and female hospitalized heart patients' depression and social adjustment.

Hypotheses: Concerning the research objectives and principle question the main hypotheses were presumed and postulated into next coming formulations:

- Open heart surgery (coronary bypass) affects hospitalized male and female heart patients' depression in Tehran Shahid Modarress Hospital
- Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' social adjustment in Tehran Shahid Modarress Hospital

Based on the discussed social adjustment sub categories in the research, minor hypotheses were suggested as following:

- Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' times of leisure adjustment in Tehran Shahid Modarress Hospital
- Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' family relationships adjustment in Tehran Shahid Modarress Hospital
- Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' marital adjustment in Tehran Shahid Modarress Hospital
- Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' economic adjustment in Tehran Shahid Modarress Hospital

MATERIALS AND METHODS

Participants: The research sample particularized 118 patients (42 female and 76 male) whom were selected by simple random sampling procedure. One hundred and fifty hospitalized inpatients who were on preoperative open heart surgery (coronary bypass) in Tehran Shahid Modarress Hospital were selected via simple random sampling procedure. Due to either rejection to fill or Incompletion of the inventories by some patients and few deplorable inpatients' mortalities, only one hundred eighteen patients undergoing open heart surgery were prospectively randomized to receive preoperative and postoperative implementation of BDI and SAS-SR as pretest and post test for one group^[23].

Subjects' demographical characteristics: Data were collected considering marital status (single/married), employment(employed/unemployed/retired/housewife/freelancer), sex (male/female) and age of the inpatients. Ages ranged from 20-80 years (M age = 54.86 years). The participants ranged in age domain groups: 20-30, 31-40, 41-50, 51-60, 61-70 and 71-80 year. The 51-60 year age domain group had the maximum percentage of the whole sample with 32.2% while the 20-30 year age domain group was the least frequency of 3.4% of the sample. The Mean, Standard Deviation (SD), Minimum and the Maximum of the subjects' age were respectively 54.86, 12.19, 20 and 80 years and for the male patients 54.37, 12.56, 21 and 77 years. The females possessed 55.74, 11.59, 20 and 80 years as the Mean, Standard Deviation (SD), Minimum and the Maximum of age respectively. 9.30% of the total

sample was singles. All the rest were married. The female patients consisted 35.6% of the overall sample and the rest 64.4% were male. The housewives patients dominated the most frequency of the total sample with 33.1% while retired had the minimum portion of 11.9%. Employed, freelancers and unemployed patients respectively had 21.2, 13.6 and 20.3% of the whole sample frequencies proportions.

Instrumentation: To obtain data, Beck Depression Inventory (BDI) and Social Adjustment Scale (SAS-SR) were implemented a couple weeks before and after surgery procedure as pretest and post test with one group.

Beck Depression Inventory (BDI): The Beck Depression Inventory was developed from clinical observations of the attitudes and symptoms displayed frequently by depressed psychiatric patients and infrequently by non-depressed psychiatric patients^[26]. The original version of the Beck Depression Inventory was revised to reflect the diagnostic criteria of the Diagnostic and Statistical Manual for Mental Disorders-4th Edition^[24], thus resulting in the Beck Depression Inventory-2nd Edn. (BDI-II) and extensive reliability and validity data on the BDI-II have been reported^[27]. BDI-II is a 21 item psychological self-report instrument designed to measure severity of depression in adults and adolescents aged 13 years and older^[27]. The BDI requires only a 5th-6th grade reading age to adequately comprehend the questions^[28]. The BDI reliability has consistently demonstrated high internal consistency with alpha coefficients of 0.86 and 0.81^[29]. Each item includes four response options ranging from 0-3, the sum of which is calculated to produce a total score. It is widely used as a measure of depressive symptomatology, has yielded adequate reliability estimates (mean coefficient alpha of 0.81 in nonpsychiatric populations), has been well validated^[29], has shown high internal consistency among psychiatric outpatients ($\alpha = 0.92$) and good construct validity^[30]. It has also demonstrated stronger factor structure than the previous version^[31]. Cutoff ranges are as follows: Normal/Borderline (0-13), Mild Depression (14-19), Moderate (20-29), Severe (30+). It is widely used and has extensive psychometric data^[23,32,35]. Including acceptable psychometric properties for African Americans^[23,33] and youth with Sickle Cell Diseases (SCD)^[34] This measure yields a total score that was used as a self-report indicator of emotional well-being. BDI-II^[26], broadly assesses the symptoms of depression including the affective, cognitive, behavioral, somatic and motivational components as

well as suicidal wishes^[27,36] reported a high internal consistency in a university population ($\alpha = 0.93$). They also found the BDI-II to possess adequate test-retest reliability and convergent validity with other measures of symptoms of depression.

The BDI has been shown to be useful to screen CPD (chronic dialysis patients) patients for the presence of clinical depression^[37,38], have shown that if CPD patients have scores of 11 or greater on the BDI, then they have a high likelihood of having clinical depression diagnosed on direct patient interview^[39]. In a research^[40] the relationship between meaning and depression in the lives of 30 older adults (age M = 71.7; SD = 7.1) was investigated. Correlation coefficients were calculated to investigate the relationship among the Life Purpose Questionnaire (LPQ), the Meaning in Suffering Test (MIST) and the Life-satisfaction Index-A (LSI-A), with the Beck Depression Inventory II (BDI-II) used as a measure of depression. A strong inverse relationship was found between the BDI-II and the LPQ ($r = -0.73$) as well as the BDI-II and the LSI-A ($r = -0.74$). A stepwise regression analysis revealed that the presence of purpose in life and satisfaction in life significantly predicted the presence or absence of depression in the older persons. The results support the importance of the role played by life-meaning or life-satisfaction in a person's life (Table 1).

Social Adjustment Scale Self-Report (SAS-SR): The social adjustment scale self-report^[41,42] is a self-report scale with 54 questions (SAS-SR-Short: 24 and SAS-SR-Screener: 14 items) that measure instrumental and expressive role performance over the past 2 weeks. It includes questions on work for pay, unpaid work and work as a student; social and leisure activities, relationships with the extended family, the marital partner, one's children and relationships within the family unit and perception of economic functioning. The questions within each area cover performance at expected tasks, friction with people, finer aspects of interpersonal relationships and feelings and satisfactions. Each item is scored on a 5-point scale with higher scores indicating poorer functioning. The social adjustment scale self-report contains skip-outs, so that non applicable items are omitted. Scores for each role area are calculated by averaging the scores for all answered items within that area. The total social adjustment scale self-report score is calculated by averaging all applicable items (however, only the work items pertaining to the primary work role are included). The social adjustment scale self-report was originally developed as an assessment tool for a clinical trial with drugs and psychotherapy for depressed patients in their child-rearing years^[45].

Table 1: Inter-correlations between BDI-II scores and life-meaning measures

✓	MIST	LPQ	LSI-A	BDI-II
MIST	-	0.406*	0.423*	-0.411*
LPQ		-	0.470**	-0.727**
LSI-A			-	-0.740**
BDI-II				-

Note: *: Indicates significant differences (2-tailed) at $p < 0.05$, **: $p < 0.01$; ✓: Meaning in Suffering Test (MIST), Life Purpose Questionnaire (LPQ), Life-Satisfaction Index-A (LSI-A) and the Beck Depression Inventory-Second Edition (BDI-II)

Table 2: the reliability coefficient for overall SAS-SR and subscales

Scale	Cronbach's α method	Halving (split-half) method
Social adjustment scale	0.75	0.49
Leisure adjustment	0.77	0.64
Family adjustment	0.66	0.61
Marital adjustment	0.68	0.56
Economic adjustment	0.64	$r = 0.0001$

This background is reflected in the item content in which instrumental and affective functioning in the extended family with the spouse or partner and with children is assessed separately. Work roles are differentiated so that a person who does not work for pay is also assessed on work. However, it is the longest of the three scales and, like the Social Adaptation Self-Evaluation Scale, does not assess physical functioning or general health status. It measures the level of both behavioral and emotional social adjustment across six major areas (i.e., work, leisure, extended family, primary relationship, parental and family unit). To determine the reliability coefficient in our research, halving (split-half) method based on odd/even items and Coefficient alpha (Cronbach's α) were implemented. 0.49 and 0.75 respectively for both case were quite acceptable adequate reliability (Table 2).

As it is presented in the Table 2, reliability coefficient for overall social adjustment scale spanned from 0.49-0.77, which is relatively accorded with previous researches. Economic adjustment sub scale reliability coefficient was determined by test-retest method due to its single item.

Depression and social adjustment were measured preoperatively as pre-tests before the surgery procedure for a period of two weeks.

By postoperative implementation of BDI and SAS-SR, post test for one group was preceded a couple weeks after treatment.

RESULTS

The findings were summarized and presented into three episodes as selections of the whole findings:

Descriptive findings: Statistical indices such as mean, Standard Deviation (SD), Minimum, Maximum scores and total number of the subjects, which presented for the whole tested variables (Table 3).

The mean and standard deviation of heart patients' depression scores on preoperative and postoperative 15 days period are: 5.27, 5.42 and 4.85, 5.35 respectively. The above named statistical indices for heart patients' social adaptation on pre treatment and post treatment in the order mentioned are: 14.74, 2.88 and 14.26, 2.61.

Findings related to the research hypotheses testing: (Table 4).

Hypotheses testing revealed that:

- As it shown; heart patients' preoperative and postoperative depressions did not significantly differ ($t = 1.18$ and $p \leq 0.241$). That means open heart surgery had no significant impact on underwent coronary bypass surgery patients' depression. Hence the first hypothesis was not confirmed. Open heart surgery (coronary bypass) did not significantly affect hospitalized male and

female heart patients' depressions in Tehran Shahid Modarress Hospital

- As the statistically indicative results revealed post treatment social adaptation scores decreased significantly in the group on postoperative days fifteenth ($t = 2.25$ and $p \leq 0.026$). That means open heart surgery, statistically significant decreased the heart patients' social adaptation. So the second hypothesis was buttressed. Open heart surgery (coronary bypass) significantly impacted hospitalized male and female heart patients' social adaptation in Tehran Shahid Modarress Hospital

Minor hypotheses testing ended to the following conclusions:

- As statistics analysis resulted; pre surgical and post surgical heart patients' times of leisure adaptation significantly varied ($t = 2.0$ and $p \leq 0.047$). In other words open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' times of leisure adaptation in Tehran Shahid Modarress Hospital. Therefore the first sub hypothesis was endorsed

Table 3: Statistical indices for tested variables on preoperative and postoperative tests

Variables	Statistical indices					
	period	Mean	SD	Minimum	Maximum	Subjects' no.
Depression	Preoperative	5.27	5.42	0	29	118
	Postoperative	4.85	5.35	0	29	118
Social adjustment	Preoperative	14.74	2.88	7	21	118
	Postoperative	14.26	2.61	7	19	118
Times of leisure adjustment	Preoperative	3.56	1.03	1	5	118
	Postoperative	3.36	0.97	1	6	118
Family relationships adjustment	Preoperative	4.40	0.45	3	5	118
	Postoperative	4.38	0.46	2	5	118
Marital adjustment	Preoperative	3.79	0.69	2	6	107
	Postoperative	3.53	0.82	2	9	107
Economic adjustment	Preoperative	3.69	1.36	1	5	118
	Postoperative	3.70	1.39	1	6	118

Table 4: Statistical analysis results (t test for mean comparison) pre and post treatment

Variables	Statistical indices						
	period	Mean	SD	Mean difference	df	t	p-value
Depression	Preoperative	5.27	5.42	0.42	117	1.180	0.241
	Postoperative	4.85	5.35				
Social adjustment	Preoperative	14.74	2.88	0.48	117	2.250	0.026
	Postoperative	14.26	2.61				
Times of leisure adjustment	Preoperative	3.56	1.03	0.20	117	2.010	0.047
	Postoperative	3.36	0.97				
Family relationships adjustment	Preoperative	4.40	0.45	0.02	117	0.607	0.545
	Postoperative	4.38	0.46				
Marital adjustment	Preoperative	3.79	0.69	0.29	100	4.120	0.0001
	Postoperative	3.53	0.82				
Economic adjustment	Preoperative	3.69	1.36	0.01	117	-0.245	0.807
	Postoperative	3.70	1.39				

- As it is indicated; heart patients' family relationships adaptation on pre treatment and post treatment periods did not hold significant difference ($t = 0.607$ and $p \leq 0.545$). That means open heart surgery (coronary bypass) had no significant impacts on hospitalized male and female heart patients' family relationships adaptation in Tehran Shahid Modarress Hospital. Consequently, the second minor hypothesis was not reconsolidated
- As it shown pre surgery and post open heart surgery patients' marital adaptation differed significantly ($t = 4.12$ and $p \leq 0.0001$). Therefore the third sub hypothesis was reinforced by the research ends. Accordingly open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' marital adaptation in Tehran Shahid Modarress Hospital
- According to the statistics findings ($t = -0.245$ and $p \leq 0.807$) preoperative and postoperative patients' economic adaptation was not significantly modified. So the findings did not back up the fourth minor hypothesis. That means open heart surgery (coronary bypass) did not make any significant diverse in hospitalized male and female heart patients' economic adaptation

Side particular findings: In addition to the main part of the obtained results that emerged from hypotheses testing, a remarkable supplementary ends as minor incidental concluding were founded:

- There exists a significant difference between male and female heart Inpatients in at least either variable depression and social adaptation

As the results show ($F = 0.070$ and $p \leq 0.791$) no any significant difference was observed between male and female heart patients' depressions but male and female significantly differed in social adaptation ($F = 15.7$ and $p \leq 0.0001$). In other word males compared to females sustained higher social adaptation level on post operative test (Mean score for females = 13.05, Mean score for males = 14.93):

- There exists a significant difference at least in either variable; depression and social adaptation concerning heart inpatients' employment status (employed/ unemployed/ retired/ housewife/ freelancer)

Referring to the statistical data there exist not any significant difference among heart patients depression

($F = 1.58$ and $p \leq 0.186$) with respect to various employment status, On the contrary the heart patients varied significantly in social adaptation ($F = 2.45$ and $p \leq 0.050$) regarding employment status.

Since Multivariate Analysis Of Variance (MANOVA) did not distinguish the significant differences among the exact groups, it was followed by LSD (least significant difference) analysis. Based on the results there exists a significant difference between employed and housewives heart inpatients social adaptation. That means employed ($M = 14.93$) compared to housewives ($M = 13.32$) heart inpatients retained higher mean score in post surgery social adaptation test. There was also significant discrepancy between housewives and retired heart patients in social adaptation. In other word, In reference to Mean score of the retired ($M = 15.37$) and housewives inpatients' Mean ($M = 13.32$) the retired acquired higher social adaptation level. No any significant mutation was obtained for the rest cases of heart patients' employment status.

- There exists a significant difference at least in either variable; depression and social adaptation regarding heart patients' marital status (single/ married)

As it was founded there was a significant difference between the single and married heart inpatients depressions ($F = 3.89$ and $p \leq 0.051$). Singles ($M = 7.82$) attained extending far upward Mean score in depression rather than married ($M = 4.52$) ones. Married ($M = 14.56$) compared to Single ($M = 11.81$) heart inpatients were higher up in social adaptation ($F = 12.30$ and $p \leq 0.001$):

- There exists a significant difference at least in either variable; depression and social adaptation with respect to heart inpatients' age domain groups

No any significant disparities were founded among different heart inpatients' age domain groups concerning depression ($F = 0.432$ and $p \leq 0.825$) and social adaptation ($F = 0.418$ and $p \leq 0.835$).

- There subsisted a negative relationship between depression and social adaptation (and with all its subcategories except marital adjustment). That is higher or more depression means lower or less heart inpatients social adaptation. Inpatients' depression most linked with family relations adjustment sub scale and least associated with heart patients' times of leisure adjustment (Table 5)

Table 5: Simple correlations coefficients between depression and social adjustment (and sub scales)

Variables	Statistical indices		Subjects No.
	Correlation coefficient (r)	p-value	
Depression			
Social adjustment	- 0.41	0.0001	118
Leisure adjustment	- 0.21	0.0230	118
Family relations adjustment	- 0.41	0.0001	118
Marital adjustment	- 0.07	0.4990	107
Economic adjustment	- 0.29	0.0020	118

DISCUSSION

Open heart surgery (coronary bypass) did not significantly affect hospitalized male and female heart patients' depressions in Tehran Shahid Modarress Hospital. Applying a Mean score cutoff of >10 in this study reveals no any clinically relevant depression scores in the sample (n = 118) of the preoperative (M = 5.27) inpatients and (n = 118) on postoperative (M = 4.85) assessments as well. Those whom were depressed sustained depression while inpatients who were not depressed remain un-depressed after underwent coronary bypass surgery. This finding relatively contradicted most previous researches while accorded a few; supporting the linear relationship between preoperative and postoperative arousal in our sample.

In the second dependent variable inquiring, the research ended to that: Open heart surgery, statistically significant decreased the heart inpatients' social adjustment. And; Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' times of leisure adjustment in Tehran Shahid Modarress Hospital. Finally, the statistical analysis revealed that: Open heart surgery (coronary bypass) impacts hospitalized male and female heart patients' marital adaptation in Tehran Shahid Modarress Hospital. Most national and international previous researches confirmed and reconsolidated the current findings on the social, marital and leisure activities adjustment of undergone Open heart surgery (coronary bypass).

Life style changing, smoking quitting, medicine side effects, decreeing erotic activities and sex affairs may impact the social, leisure and marital adjustment in hospitalized male and female heart inpatients. Excessive reassurance-seeking and rejection sensitivity (anxious expectations of rejection)^[43] after treatment in social and marital relations may cause irritability in patients' relationships and so for decrease adjustment.

CONCLUSION

Open heart surgery is an event that affects the patient, spouse, children and significant others. In addition to the physical recovery that the patient undergoes, there is an emotional aspect of adjustment that the patient, as well as family, experience. Facing the possibility of changing one's lifestyle can be quite overwhelming. Some alterations take place immediately, such as diet changes and smoking cessation. Other changes may be more gradual, such as building up to and maintaining an exercise program, or incorporating long term stress management. Of importance to all those involved is realizing that the patient does have control in initiating the changes and in maintaining healthy new habits. This is the patient's responsibility. Spouses, children and significant others often struggle with the impossible task of making sure the patient never deviates off course and stays on the "straight and narrow". Many lifestyle changes that occur as a result of having open heart surgery have a direct impact on the entire household. When a patient is forced to make changes for health reasons, very often all minds start to think along the same lines. This is especially true for others who might possibly be predisposed to coronary artery disease. Therefore, if the recovering patient has stopped smoking, family members who smoke are now motivated to quit. And when meals now need to be prepared in a heart-healthy fashion, chances are those who dine together will also be making these changes out of practicality for the cook resulting from a renewed awareness of the benefits to the heart. Recovering from open heart surgery creates temporary role changes and responsibility shifts among family members. When the recovering patient returns home, he/she will have temporary physical limitations and dependencies which the family members compensate. The husband will need to shop and carry packages for his recovering wife who can neither drive herself to the store nor lift heavy packages. The son or daughter will have to mow the lawn and take out the garbage for their recovering father, who now has to limit exertion while he rebuilds his strength. Just as the family needs to coordinate efforts in assisting the patient during his limitation phase, so should they enable him to increase his independence and regain his level of self reliance. This proves to be a very delicate balance and can be a cause of friction. Staying informed of the doctors recommendations on how the patient should progress can minimize the stress of this transitional period for both the patient and family. Recovery will be a challenge for the open heart surgery patient and his/her family. There will be days of high

energy and of fatigue, accomplishments, moments of temptation, feelings of exuberance and even days of feeling blue or angry, all of which are a part of the physical and emotional healing process that takes place.

Immediately after Open heart surgery and discharges from the hospital, many couples find that they are not able to engage in normal erotic activity due to sexual intercourse requires slightly more energy, therefore a waiting time of 1-3 weeks is generally recommended^[44]. Fear of performance and general depression are two psychological factors that can greatly reduce sexual interest and capacity. These are considered normal during convalescence and in most cases disappear within 3 months. Various medications may affect sexual drive and/or function.

Post treatment preparation is critical period, as patients may have difficulties with psychosocial adjustment, especially related to dissatisfaction with side effects of medicine taking therapy and a lack of socialization skills/social competence. After treatment, it is common for patients to exhibit behavior problems, depression, poor social adaptation and/or noncompliance with the medical regimen. The psychosocial adaptation of surgery procedure can be promoted through support and counseling by one or all members of the surgery team caring for the patients and their families. This process must start during the first visit to the treatment center.

REFERENCES

1. Adam Health care center. Retrieved 27-July -2007. <http://www.About.com>
2. Haber, Sandra, 2002. Coping with cancer: Staying positive when you're feeling negative. *J. Psychosoc. Oncol.*, 14: 9-9. <http://www.drhaber.com/AbPsychandHlth/Cancerand/coping.html>
3. Gil, K.M. 1984. Coping effectively with invasive medical procedures: A descriptive model. *Clin. Psychol. Rev.*, 4: 339-362. DOI: 10.1016/0272-7358(84)90016-3
4. Jelcic, M. and B. Bonke, 1991. Preoperative anxiety and motives for surgery. *Psychol. Rep.*, 68: 849-850. <http://cat.inist.fr/?aModele=afficheN&cpsidt=5031819>
5. Johnston, M., 1980. Anxiety in surgical patients. *Psychol. Med.*, 10: 145-152. <http://www.ncbi.nlm.nih.gov/pubmed/7384316>
6. Spielberger, C.D., S.M. Auerbach and A.P. Wadsworth *et al.*, 1973. Emotional reactions to surgery. *Consult. Clin. Psychiatry*, 40: 33-38. <http://www.ncbi.nlm.nih.gov/pubmed/4688678>
7. Domar, A.D., L.L. Everett and L.G. Keller, 1989. Preoperative anxiety: Is it a predictable entity? *Anesth. Analg.*, 69: 763-767. <http://www.ncbi.nlm.nih.gov/pubmed/2589657>
8. Grabow, L. and R. Buse, 1990. Preoperative anxiety-anxiety about the operation, anxiety about anesthesia, anxiety about pain? *Psychother. Psychosom. Med. Psychol.*, 40: 255-263. <http://www.ncbi.nlm.nih.gov/pubmed/2392514>
9. Ramsay, M.A.E., 1972. A survey of preoperative fear. *Anesthesiology*, 27: 396-402. <http://www3.interscience.wiley.com/journal/119679670/abstract>
10. Johnston, M., R.W. Shaw and D. Bird, 1987. Test-tube baby procedures: Stress and judgments under uncertainty. *Psychol. Health*, 1: 25-38. <http://www.informaworld.com/smpp/ftinterface?content=a788697085&rt=0&format=pdf>
11. Lucente, F.E. and S. Fleck, 1972. A study of hospitalisation anxiety in 408 medical and surgical patients. *Psychosom Med.*, 34: 304-312. <http://www.ncbi.nlm.nih.gov/pubmed/5074956>
12. Gotze, P. and B. Dahme, 1980. Psychopathological Syndromes and Neurological Disturbances Before and After Open-Heart Surgery. In: *Psychic and Neurological Dysfunctions after Open-Heart Surgery*, Speidel, H. and G. Rodewald (Eds.). Thieme, New York, pp: 48-66.
13. Mumford, E., H.J. Schlesinger and G.V. Glars, 1982. The effects of psychological intervention on recovery from surgery and heart attacks: An analysis of the literature. *Am. J. Pub. Health*, 72: 141-151. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1649622>
14. Peden, J.G., 1990. Psychologic Sequelae of Cardiac Valve Implantation. In: *Impact of Cardiac Surgery on the Quality of Life: Neurological and Psychological Aspects*, Willner, A.E. and G. Rodewald (Eds.). Plenum, New York, pp: 49-50.
15. Speidel, H., 1990. Psychiatric Issues: Simple frequencies Pre-and Postoperatively. In: *Impact of Cardiac Surgery on the Quality of Life: Neurological and Psychological Aspects*, Willner, A.E. and G. Rodewald (Eds.). Plenum, New York, pp: 27-37.
16. Strauss, B. and G. Paulsen, 1990. Psychiatric Methods of the International Study: Hamilton Depression and Anxiety Scales. In: *Impact of Cardiac Surgery on the Quality of Life: Neurological and Psychological Aspects*, Willner, A.E. and G. Rodewald (Eds.). Plenum, New York, pp: 19-26.

17. Smith, P.L., T. Treasure and S.P. Newman *et al.*, 1986. Cerebral consequences of cardiopulmonary bypass. *Lancet*, 333: 823-825. <http://www.ncbi.nlm.nih.gov/pubmed/2870314>
18. Mattlar, C.E., L.R. Knuts and E. Engblom *et al.*, 1990. Neuropsychological Findings and Personality Structure Associated with Coronary Artery Bypass Surgery (CABS): An Eight-Month Follow-Up Study. In: *Impact of Cardiac Surgery on the Quality of Life: Neurological and Psychological Aspects*, Willner, A.E. and G. Rodewald (Eds.). Plenum, New York, pp: 211-219.
19. Stengrevics, S., C. Sirois and C.E. Schwartz *et al.*, 1996. The prediction of cardiac surgery outcome based upon preoperative psychological factors. *Psychol. Health*, 11: 471-477. <http://direct.bl.uk/bld/PlaceOrder.do?UIN=008061610&ETOC=RN&from=searchengine>
20. Hamilton, M., 1967. Development of a rating scale for primary depressive illness. *Br. J. Soc. Clin. Psychol.*, 6: 278-296. <http://www.ncbi.nlm.nih.gov/pubmed/6080235>
21. Pimm, J.B. and J.R. Jude, 1990. Beck Depression Inventory scores of Coronary Bypass Patients with or Without Psychological Intervention. In: *Impact of Cardiac Surgery on the Quality of Life: Neurological and Psychological Aspects*, Willner, A.E. and G. Rodewald (Eds.). Plenum, New York, pp: 447-454.
22. Beck, A.T. and R.A. Steer, 1987. Beck Depression Inventory (BDI) Manual. The Psychological Corporation, Harcourt Brace Jovanovich, San Antonio, TX., pp: 52. [http://books.google.com.pk/books?id=1V-iGQAACAAJ&dq=Beck+Depression+Inventory+\(BDI\)+manual](http://books.google.com.pk/books?id=1V-iGQAACAAJ&dq=Beck+Depression+Inventory+(BDI)+manual)
23. Beck, A.T. and R.A. Steer, 1993. Beck Depression Inventory Manual. Harcourt Brace and Co., San Antonio, TX.
24. American Psychiatric Association, 2000. *Diagnostic and Statistical Manual of Mental Disorders*. 4th Edn., Washington, ISBN: 0890420254, pp: 943.
25. Feder Adriana, M.D., 1996. Somatization. <http://www.columbia.edu/~am430/somatization.htm>
26. Beck, A.T., C.H. Ward, M. Mendelson, J. Mock and J. Erbaugh, 1961. An inventory for measuring depression. *Arch. Gen. Psychiatry*, 4: 561-571. <http://www.ncbi.nlm.nih.gov/pubmed/13688369>
27. Beck, A.T., R.A. Steer and G.K. Brown, 1996. Beck Depression Inventory: Manual. 2nd Edn., The Psychological Corporation, San Antonio, ISBN: 0158018389, pp: 38.
28. Beck, A., 1952. Successful outpatient psychotherapy of a chronic schiz-o-phrenic with a delusion based on borrowed guilt. *Psychiatry*, 15: 305-312. <http://www.ncbi.nlm.nih.gov/pubmed/12983446>
29. Beck, A.T., R.A. Steer and M.G. Garbin, 1988. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clin. Rev.*, 8: 77-100. DOI: 10.1016/0272-7358(88)90050-5
30. Steer, R.A., R. Ball, W.F. Ranieri and A.T. Beck, 1997. Further evidence for the construct validity of the Beck depression Inventory-II with psychiatric outpatients. *Psychol. Rep.*, 80: 443-446. <http://journals.indexcopernicus.com/abstracted.php?icid=632191>
31. Dozois, D.J.A., K.S. Dobson and J.L. Ahnberg, 1998. A Psychometric evaluation of the beck depression inventory-II. *Psychologic. Assess.*, 10: 83-89. <http://direct.bl.uk/bld/PlaceOrder.do?UIN=046180537&ETOC=RN&from=searchengine>
32. Carter, C.L. and C.M. Dacey, 1996. Validity of the Beck depression inventory, MMPI and rorschach in assessing adolescent depression. *J. Adolescence*, 19: 223-231. <http://cat.inist.fr/?aModele=afficheN&cpsidt=3128948>
33. Beck, A., A.J. Rush, B.F. Shaw and G. Emery, 1979. *Cognitive Therapy of Depression*. The Guilford Press, New York, ISBN: 0898629195, pp: 425.
34. Burlew, K., J. Telfair, L. Colangelo and E.C. Wright, 2000. Factors that influence adolescent adaptation to sickle cell disease. *J. Pediatr. Psychol.*, 25: 287-299. <http://www.ncbi.nlm.nih.gov/pubmed/10880059>
35. Getzoff Elizabeth, A., 2004. Emotional well-being in young adults with sickle cell disease and matched comparison peers: A longitudinal study. <http://www.ohiolink.edu/etd/view.cgi?ucin1092931699>
36. Moore, M.T. and D.M. Fresco, 2007. Depressive realism and attributional style: Implications for individuals at risk for depression. *Behav. Ther.*, 34: 144-154. <http://www.ncbi.nlm.nih.gov/pubmed/17499081>
37. Peter H.J., Z. Alexander, W. Susan, F. Susan, W. Diane and F.O. Fredric, 2002. Comparison of quality-of-life assessment in Russia and the united states in chronic peritoneal dialysis patients. *Adv. Peritoneal Dial.*, 18: 55-57. <http://cat.inist.fr/?aModele=afficheN&cpsidt=14605176>

38. Wuerth, D., S.H. Finkelstein, J. Ciarcia, R. Peterson, A.S. Klinger and F.O. Finkelstein, 2001. Identification and treatment of depression in a cohort of patients maintained on chronic peritoneal dialysis. *Am. J. Kidney Dis.*, 37: 1011-1017. DOI: 10.1016/S0272-6386(05)80018-6
39. Juergensen, P.H., D.B. Wuerth, D.M. Juergensen *et al.*, 1997. Psychosocial factors and clinical outcome on CAPD. *Adv. Perit. Dial.*, 13: 121-124. http://www.biomedexperts.com/Abstract.bme/9360664/Psychosocial_factors_and_clinical_outcome_on_CAPD
40. Curtis, G., B. Ira, D. Myra and B. Allyn, 2007. Relationships between measures of meaning, well-being and depression in an elderly sample.
41. Weissman, M.M. and S. Bothwell, 1976. Assessment of social adjustment by patient self-report. *Arch. Gen. Psychiatry*, 33: 1111-1115. <http://www.ncbi.nlm.nih.gov/pubmed/962494>
42. Weissman, M.M., B.A. Prusoff, W.D. Thompson, P.S. Harding and J.K. Myers, 1978. Social adjustment by self-report in a community sample and in psychiatric outpatients. *J. Nerv. Ment. Dis.*, 166: 317-326. <http://www.ncbi.nlm.nih.gov/pubmed/650195>
43. Dawn, R.J., 2005. Excessive reassurance-seeking, interpersonal rejection, rejection sensitivity and depressive symptoms: An intervention focusing on mediating mechanisms. <https://repositories.lib.utexas.edu/handle/2152/2054>
44. Burg, M.M., M.C. Benedetto, R. Rosenberg and R. Soufer 2003. Presurgical depression predicts medical morbidity 6 months after coronary artery bypass graft surgery. *Psychosom. Med.*, 65: 111-118. <http://www.ncbi.nlm.nih.gov/pubmed/12554822>
45. Weissman, M.M., M. Olfson, M.J. Gameroff, A. Feder and M. Fuentes, 2001. A comparison of three scales for assessing social functioning in primary care. *Am. J. Psychiatry*, 158: 460-466. <http://ajp.psychiatryonline.org/cgi/content/abstract/158/3/460>