

## Effectiveness of Preoperative Psycho-educational Program on Stress of Cardiac Surgery Patients

فاعلية برنامج إعداد نفسي ما قبل العملية على الشد النفسي لمرضى جراحة القلب

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### الخلاصة:

الهدف : تهدف الدراسة الى ايجاد فاعلية برنامج اعداد نفسي ما قبل اجراء عملية القلب المفتوح (زرع شرايين تاجية وتبديل صمامات القلب) على المعلومات ومستوى الشد النفسي وكذلك ايجاد علاقة بين الشد النفسي وبعض المتغيرات. المنهجية: أجريت دراسة شبيه تجريبية لتحديد فاعلية برنامج تثقيفي قبل إجراء العملية على الشد النفسي لمرضى جراحة القلب في مدينة بغداد واعطاء محاضرات في مستشفى ابن البيطار قسم الباحث العينة الى مجموعتين ( مجموعة الدراسة والمجموعة الضابطة ) . وفي المدة من الـ ٢٨ من آذار ٢٠١٠ الى ١٩ من أيلول ٢٠١١ ، تم بناء برنامج التهيئة النفسية ما قبل العملية الجراحية وكذلك إستمارة الإستبيان كأداة لجمع المعلومات لغرض الدراسة. تم تحليل البيانات باستخدام التحليل الأحصائي الوصفي ( التوزيع التكراري ، النسبة المئوية ، والوسط الحسابي ) ، والتحليل الأحصائي الأستنتاجي ( معامل بيرسون ، الأختبار الثاني ، وتحليل التباين ) .

أظهرت نتائج الدراسة إن هناك فروقات مقارنة بين معلومات المرضى تجاه العملية الجراحية في مجاميع الدراسة والضابطة من خلال الاختبارات القبلي والبعدي ، الاول والثاني ، بالإضافة الى أن هناك بعض الفروقات بين معلومات المرضى في مجموعة الدراسة وبعض الصفات الديمغرافية أيضاً الشد النفسي كان أقل بعد تطبيق البرنامج بالاختبار البعدي الاول . أوصت الدراسة بتطبيق البرنامج على شكل محاضرات تعطى للمرضى قبل إجراء العملية الجراحية لإعدادهم للتعامل مع الشد النفسي.

### Abstract

**Objective:** The study aimed to determine the effectiveness of preoperative psycho - education al program on cardiac surgery patients information and their level of stress. And find out the differences in the Psycho educational

program with regard to patients demographic characteristics such as age and gender.

**Methodology** Aquazi-experimental study was carried out to determine the effectiveness of preoperative education program on stress for cardiac surgery patients in Baghdad city from the 28<sup>th</sup> of March, 2010 , to 19<sup>th</sup> of September, 2011.

The preoperative psycho - educational program, as well as the questionnaire was constructed as a tool of data collection for the purpose of the study. Purposive (non probability) samples of 40 patients who have undergone cardiac surgery (CABG &VR) are selected from Ibn AL-Bitar Specialized Center for cardiac surgery. The researcher divided the samples into two equal groups (the study and control groups) .

Data was analysis through the use of the suitable statistical methods.

**Results:** The results of the study indicates that there are significant differences in the patients knowledge towards cardiac surgery in the study & control groups through pre-test, post-test.

**Recommendations:** The study recommended that such program should be implemented in the form of session for the patients before undergone cardiac surgery to prepare them to cope with the stress and improve their knowledge.

**Key words:** Stress, preoperative cardiac surgery

## Introduction:

Cardiovascular disease is the leading cause of mortality and morbidity<sup>(1)</sup>.

The perspective of being submitted to heart surgery frightens any human being. The heart has cultural meaning as an organ that is responsible for emotions and controls life, and surgery of this organ emotionally wears out patients and their families due to the threat it poses to the future and to the restructuring of daily life<sup>(2)</sup>.

Many patients describe the intensive care unit as a stressful and as very noisy environment with little differentiation between night and day, all worried up, people everywhere patient screaming, scared to sleep, unable to move and alarms ringing<sup>(3)</sup>.

When cardiac surgery is indicated, it is usually experienced with ambivalent feeling; on the one hand, patients perceive a magical, miraculous intervention that will free them from the risk of heart disease. On the other, is the fear of death during and after the anesthetic –surgical procedure<sup>(4)</sup>.

Previous studies have demonstrated that open heart surgery is associated with high levels of stress. And the nurse should evaluate the preoperative stress from hospital admission until discharge and the possibility of pre-operative stress reduction through provision of extensive medical information<sup>(5)</sup>.

Ideally patients should be admitted days prior to surgery for the preoperative work up. This ensures that the necessary preparation for cardiac surgery is completed, and could reduce the patient's anxiety. So anxious and tense patient may make a recovery post-operative due to psychological and physiological stress<sup>(6)</sup>. The nurse's responsibility in giving pre-operative information to reduce patient anxiety has been recognized as being compatible with other roles, such as being a provider of emotional support an advisor<sup>(7)</sup>.

Research has shown that providing information decreases patients' anxiety and

stress by increasing feelings of control and this might help to shorten hospital stay<sup>(8)</sup>.

Nurses are ideally placed to provide health education advice, information and support, they need to be equipped with appropriate knowledge, skills to deliver per-operative education to the client<sup>(9)</sup>.

## Methodology:

A Quasi-experimental design was carried out from the period of 28<sup>th</sup> of March, 2010 to 19<sup>th</sup> September, 2011. The study was conducted on patients who undergone Cardiac Surgery at only one hospital " Ibn AL-Bitar Specialized Center for Cardiac Surgery "A questionnaire was constructed as a result of review of literature and the assessment phase (based on patients information, and their feeling about surgery).

The part I includes: gender, age, part II: evaluation of patient's information about the heart and cardiac surgery. This instrument comprised of 62 items which are concerned with the domains of patients' information about the heart and heart disease, open heart surgery, Preoperative open heart surgery preparation, Intensive care unit after surgery, preoperative instruction. Part III: Evaluation of patient's information about stress and stress management instrument.

The preoperative stress and stress management was used to achieve the study objective. It comprised of 50 items which are concerned with the domains of stress, causes of stress, symptoms of stress, ways to reduce stress and stress management.

Part IV: psychological stressors related to the cardiac surgery scale. A psychological stressors related to the cardiac surgery instrument was constructed by the researcher based on (Sekemen, 1999) and review of relevant literature.

this new instrument was used to measure the preoperative stress, it consists of 26 items measuring the level of stress before surgery.

The validity of questionnaire was determined by exposing it to 18 experts in the different field, reliability was determined

through a pilot study Purposive sample of 10 patients are selected from cardiac surgery units (males and females)at Ibn-Al-Bitar hospital. Test –retest reliability is computed for the determination of the instrument reliability which is  $r = 0.80$ .

The data were collected from 40 patients (both study and control groups) from 16<sup>th</sup> February 2011through 19<sup>th</sup> February, 2011.by using a private room in the surgical ward and conduct the interview. And it took approximately (20-30) minuets. Appropriate statistical measures were employed such as (Frequencies, Percentage, Mean, and Mean of score, Standard deviation and inferential statistics through chi- square and t-test).

**Results :****Table 1.** Distribution of the patients according to demographic characteristics and Type of operation

Demographic information		Study		Control	
		F	%	F	%
Gender	Male	10	50.0	10	50.0
	Female	10	50.0	10	50.0
Age (years)	<30 years	2	10.0	2	10.0
	30--39	6	30.0	6	30.0
	40--49	5	25.0	5	25.0
	50--59	5	25.0	4	20.0
	=>60 years	2	10.0	3	15.0
Education levels	Illiterate	-	-	-	-
	Read & Write	1	5.0	1	5.0
	Primary	5	25.0	5	25.0
	Intermediate	4	20.0	3	15.0
	Secondary	6	30.0	7	35.0
	Institution	3	15.0	3	15.0
	Graduated	1	5.0	1	5.0
Marital status	Married	20	100.0	20	100.0
	Unmarried	-	-	-	-
	Widowed	-	-	-	-
	Divorced	-	-	-	-
Occupation	Student	-	-	1	5.0
	Earnar	4	20.0	4	15.0
	Retired	2	10.0	1	5.0
	Employee	5	25.0	4	20.0
	Housewife	9	45.0	9	45.0
	Jobless	-	-	1	5.0
Operation	Valve replacement	16	80.0	16	80.0
	CABG	4	20.0	4	20.0

F= Frequency , % = percentage

Findings of this table indicates that male and female were equally distributed (50%).The highest percentage of the study and control groups are aged between 30-39 years old (30%).Large number of them study and control group are secondary school graduates (30%,35%) respectively. In regard to occupation the highest percentage of the study and control groups are housewives (45%).Regarding the type of operation the most of the study and control groups have valve replacement (80).

**Table 2.** Comparative differences between study and control groups related to their information toward heart surgery and stress and stressors related to cardiac surgery through the pre and post-test

Domain		Study		Control		t;Df.;P
		Mean±SD	Range	Mean±SD	Range	
2.1: Patients' information about the heart and disease.	Pre-test	37.05±6.49	21-47	39.15±6.32	29-49	1.037;38;0.306
	Post-test	50.65±3.50	45-54	37.75±6.49	27-48	7.827;38;0.0001*
	t;d.f.;P	11.918;19;0.0001*		0.811;19;0.494		
2.2:Open heart surgery.	Pre-test	15.05±3.03	12-23	16.25±2.38	11-21	1.391;38;0.172
	Post-test	27.75±2.15	24-30	17.45±3.49	11-27	11.247;38;0.0001*
	t;d.f.;P	17.951;19;0.0001*		1.512;19;0.147		
2.3:Preoperative open heart surgery preparation.	Pre-test	23.25±3.35	16-29	24.20±4.02	16-31	0.811;38;0.422
	Post-test	31.35±1.57	28-33	24.40±3.99	15-31	7.248;38;0.0001*
	t;d.f.;P	10.283;19;0.0001*		0.809;19;0.428		
2.4:ntensive care unit after surgery.	Pre-test	23.85±4.17	15-32	22.15±4.31	13-30	1.268;38;0.213
	Post-test	38.55±0.94	36-39	22.90±4.51	14-32	15.202;38;0.0001*
	t;d.f.;P	15.675;19;0.0001*		2.032;19;0.056		
2.5:Preoperative instructions.	Pre-test	13.90±5.14	10-25	13.95±2.37	10-18	0.040;38;0.969
	Post-test	28.60±1.54	25-30	14.40±2.37	10-19	22.482;38;0.0001*
	t;d.f.;P	13.329;19;0.0001*		1.339;19;0.197		
3.1:Stress and it causes .	Pre-test	25.50±4.51	17-32	23.55±4.43	14-31	1.379;38;0.176
	Post-test	31.25±1.71	28-34	24.65±3.77	18-31	7.122;38;0.0001*
	t;d.f.;P	6.173;19;0.0001*		2.132;19;0.066		
3.2:Symptoms of stress.	Pre-test	18.85±4.89	10-27	18.55±4.37	10-25	0.205;38;0.839
	Post-test	28.30±2.13	22-30	18.75±4.89	10-27	8.012;38;0.0001*
	t;d.f.;P	9.246;19;0.0001*		0.593;19;0.560		
3.3:Way to reduce stress.	Pre-test	16.85±4.11	8-21	16.35±1.73	13-20	0.502;38;0.619
	Post-test	23.35±0.99	21-24	16.50±2.04	12-19	13.520;38;0.0001*
	t;d.f.;P	6.578;19;0.0001*		0.318;19;0.754		
3.4:Stress management.	Pre-test	38.30±4.44	28-45	39.30±4.90	28-46	0.676;38;0.503
	Post-test	55.50±2.37	51-59	39.10±4.78	32-46	13.747;38;0.0001*
	t;d.f.;P	15.253;19;0.0001*		0.249;19;0.806		
Psychological stressors related to the cardiac surgery.	Pre-test	71.15±3.79	62-78	70.25±5.99	60-78	0.568;38;0.573
	Post-test	58.90±3.21	55-65	69.45±6.72	57-78	6.338;38;0.0001*
	t;d.f.;P	17.521;19;0.0001*		1.428;19;0.169		

t= t-test , Df= Degree of freedom , P= P-value significance\* at  $\leq 0.05$  ,SD=Standard deviation ,MS=Mean of scores

The results reveal that there are significant differences between pre and post test of the study group from one side and between the post test of the study and control groups for all the items at  $P \leq 0.05$ .

**Table 3.** Comparative gender differences in patients' information and psychological stressors related to the cardiac surgery with regard to pre and post test for the study

Domain	Study					
	Pre-test			Post-test		
	Male	Female	t;D.f;P	Male	Female	t;D.f;P
2.1: Patients' information about the heart and disease.	41.10±3.73	33.00±6.22	3.534;18;0.002*	52.90±2.18	48.40±3.13	3.726;18;0.002*
2.2:Open heart surgery.	16.90±3.21	13.20±1.23	3.401;18;0.003*	29.00±1.25	26.50±2.17	3.155;18;0.005*
2.3:Preoperative open heart surgery preparation.	23.80±3.91	22.70±2.79	0.724;18;0.478	31.50±1.51	31.20±1.69	0.419;18;0.680
2.4:ntensive care unit after surgery.	26.50±2.72	21.20±3.71	3.647;18;0.002*	38.30±1.16	38.80±0.63	1.197;18;0.247
2.5:Preoperative instructions.	16.90±5.82	10.90±1.37	3.173;18;0.005*	29.10±1.29	28.10±1.66	1.504;18;0.150
3.1:Stress and it causes .	28.20±3.77	22.80±3.55	3.299;18;0.004*	31.90±1.29	30.60±1.90	1.793;18;0.090
3.2:Symptoms of stress.	19.90±4.15	17.80±5.55	0.958;18;0.351	28.60±1.43	28.00±2.71	0.620;18;0.543
3.3:Way to reduce stress.	15.80±5.57	17.90±1.45	1.153;18;0.264	23.60±.70	23.10±1.20	1.140;18;0.269
3.4:Stress management.	39.40±3.78	37.20±4.96	1.116;18;0.279	56.20±2.04	54.80±2.57	1.347;18;0.195
Psychological Stressors related to the cardiac surgery.	72.10±3.00	70.20±4.39	1.130;18;0.273	58.40±2.95	59.40±3.53	0.687;18;0.501

t= t-test , Df= Degree of freedom , P= P-value significance\* at  $\leq 0.05$   
,SD=Standard deviation ,MS=Mean of scores

The results indicate that there were not significant differences between male and females in all items of patients' information and psychological stressors related to cardiac surgery except the items 1, 2 for the study group post test at  $P \leq 0.05$ .

**Table 4.**Comparative age differences in patients' information and psychological stressors related to the cardiac surgery with regard to pre and post test for the study

Domain	Study					
	Pre-test			Post-test		
	<40 years	=>40	t;d.f;P	<40 years	=>40	t;d.f;P
<b>2.1: Patients' information about the heart and disease.</b>	36.25±5.78	37.58±7.13	0.440;18;0.665	51.63±3.34	50.00±3.59	1.019;18;0.322
<b>2.2:Open heart surgery.</b>	14.88±2.95	15.17±3.21	0.205;18;0.840	27.63±2.72	27.83±1.80	0.207;18;0.838
<b>2.3:Preoperative open heart surgery preparation.</b>	24.50±2.67	22.42±3.60	1.394;18;0.180	31.75±1.58	31.08±1.56	0.930;18;0.365
<b>2.4:ntensive care unit after surgery.</b>	23.75±3.69	23.92±4.62	0.085;18;0.933	38.38±1.19	38.67±0.78	0.667;18;0.513
<b>2.5:Preoperative instructions.</b>	12.25±2.55	15.00±6.18	1.185;18;0.252	28.75±1.49	28.50±1.62	0.348;18;0.732
<b>3.1:Stress and it causes .</b>	23.50±5.18	26.83±3.64	1.696;18;0.107	31.63±1.60	31.00±1.81	0.791;18;0.439
<b>3.2:Symptoms of stress</b>	20.38±4.90	17.83±4.82	1.148;18;0.266	28.63±1.60	28.08±2.47	0.547;18;0.591
<b>3.3:Way to reduce stress.</b>	19.13±0.64	15.33±4.75	2.222;18;0.039	23.63±0.74	23.17±1.11	1.017;18;0.323
<b>3.4:Stress management.</b>	39.88±3.56	37.25±4.79	1.321;18;0.203	55.25±2.31	55.67±2.50	0.376;18;0.711
<b>Psychological Stressors related to the cardiac surgery.</b>	71.88±4.22	70.67±3.58	0.689;18;0.499	58.88±3.36	58.92±3.26	0.028;18;0.978

t= t-test , Df= Degree of freedom , P= P-value significance\* at  $\leq 0.05$  ,SD=Standard deviation ,MS=Mean of scores,>=equal, > =greater than, < =less than.

The results indicate that there were not significant differences between age in all items of patients' information and psychological stressors related to cardiac surgery.

## Discussion

Analysis of the patient's demographic characteristics indicates that half of the sample was Male and other half was Female in the study group and control group. This finding was emerged due to the numbers of the patients admitted to the two wards equally.

The finding of present study's supportive evidence is available in the study that reported 70% of their sample were Male when they demonstrate the pre-operative information for patients undergoing cardiac surgery.<sup>(11)</sup> Related to the age distribution, the highest age group were from age 30-39 years old. The finding of present study's supportive evidence is available in the study that showed that the most age group was at age 38 years old<sup>(12)</sup>. The finding of present study's supportive evidence is available in the study that reported the almost half of the patients had completed secondary education<sup>(13)</sup>.

In relation to marital status, the findings of the present study represent that all the patients were married. this result was agree with a study which determined that most of their patients in their study were married.<sup>(14)</sup> The finding of present study's supportive evidence is available in the study reported that CAG was the most frequent surgery and cardiac valve surgery was increasingly performed on the patients<sup>(15,16)</sup>.

Table (2) the differences between study and control groups related to their information toward heart surgery and stress and psychological stressors related to cardiac surgery through the pre-test and post-test, revealed that there were significant difference between the study and control groups related to their information and psychological stressors regarding to cardiac surgery thought the pre- test and post -test .The finding of present study's supportive evidence is available in the study that examine the effect of a multidimensional preoperative preparation or intervention on the patients with cardiac surgery .They found that during the waiting period, the patients received exercise training, education was offered to the patients to improve their outcome<sup>(17)</sup>.

The supportive evidence is available in study that showed that in view point that psychological preparation prior to surgery, and received information about the surgical procedure

and its effects was instructed in a cognitive coping technique. These enhanced knowledge and cognitive coping appeared to have most effect on indices of recovery<sup>(18)</sup>.

Moreover, The finding of present study's supportive evidence is available in the study that reported the effects of psychological preparation for surgery can facilitate recovery thus psychological preparation supplies information which reduced uncertainty<sup>(19)</sup>.

In the point of view, psychological preparation will vary according to the nature of the situation as well as the personality of the patient but opportunities for coping can facilitate recovery.

The finding of present study's supportive evidence is available in the study that reported that found the impact of planned psychological education on patients may assist to reduce their discomfort, and the potentially beneficial effect on outcomes has been explored after implementing the preoperative education program for the patients having cardiac surgery and also noticed that reduction of stress through a preoperative related information program is expected<sup>(20,21,22)</sup>.

The supportive evidence is available in study that showed that in view point that examines the effect preparation of patients for cardiac surgery, they found a significant highest level of stress on admission, but these differences of the level of stress became non-significant when the patients receive knowledge after implementing the preoperative education program<sup>(23)</sup>.

The finding of present study's supportive evidence is available in the study that reported that information available about psychological functioning is limited<sup>(24,25)</sup>.

The finding of present study's supportive evidence is available in the study that reported that event of cardiac surgery correlates with increased preoperative stress they found that extensive preoperative oral information have significant influence on the stress reduction<sup>(26)</sup>.

Table (3) shows that there were not significant differences between male and females in all items of patients' information and psychological stressors related to cardiac surgery, such results provide an evidence which is supported study found that there were no

significant differences between stress and patients variables<sup>(27)</sup>.

Such issues also are supported by study reported that there is no statistically significant effect of preoperative information to patients according to their gender on their stress of cardiac surgery. This result supports the scientific cause of stress which is associated with sympathetic nervous activities.<sup>(11)</sup> Also this result is in line with the study stated that preoperative teaching which contributes to meet patients information needs would help in lowering stress<sup>(28)</sup>. Nevertheless, the fact of gender difference in physiological responses to stress deserves attention in the preparation of patient for surgery.

Table ( 4) comparative age differences in patients' information and psychological stressors related to the cardiac surgery with regard to pre and post test for the study and control group. The results indicate that there were not significant differences between age in all items of patients' information and psychological stressors related to cardiac surgery. This result is inconsistent with the study found that surgical patients knowledge and stress correlated with age<sup>(13)</sup>.

The finding of present study's supportive evidence is available in the study that reported there was no any significant correlation between age and stress<sup>(12)</sup>.

In the point of view, the researcher believes that the undergoing cardiac surgery is very stressful experience for many patients; but there is usefulness and effectiveness of information prior surgery on stress through the result of differences with educational level. The finding of present study's supportive evidence is available in the study reported that stress is a universal phenomenon and an emotional experience by almost all the cardiac surgical patients during preoperative period of heart surgery; but preoperative preparation can help patients to be prepared for surgery and reduce the stress of the situation especially in the postoperative period<sup>(29)</sup>.

In current study the stress prior to the implementation of the psychological preoperative program was high among patients who have undergone cardiac surgery such as results provide an evidence and believe that reducing patients

stress and preparing them for surgery are preoperative nursing targets.

#### Recommendations:

1. Information resources should be made available pre operatively for cardiac surgery patients and explaining predictable risks for this group during recovery time in hospital and at home.
2. The presence of psychiatrists, psychiatric nurses and psychologist is useful in the employment of education of patient and stress management techniques can maximize the complication of heart surgery by reducing patients stress.
3. Clinicians should pay particular attention to the process of care such as counseling, that are likely to prepare patients for the intensity of cardiac surgery experience and for the works they will have to do as part of the recovery process.
4. Future research should be directed toward the impact of Psychological education program on preoperative stress reduction.

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