

Psychological disturbances among Patients Undergoing Heart Procedures

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Abstract

Background: Heart Procedures such as Heart surgery and Coronary catheterization are like any other type of surgical procedure for a stressful patient and anxiety and depression are common and important disorders in these patients. Aim of the study: **This study aimed** to assess the psychological problems among patients undergoing heart procedures. **Research Design:** A descriptive design was utilized in this study. **Setting:** The study was conducted at the cardiac department and cardiac catheter units at Benha university hospital in Benha city, Kaluobia Governorate. **Sample:** A convenience sample consisting of 100 patients undergoing heart procedures. **Tools:** In this study three tools were used for data collection: I) A structured interviewing questionnaire included socio-demographic data and clinical data. II) Depression, Anxiety and Stress Scale (DASS-21). **Results:** The results revealed that, less than half of the studied patients had mild depression and one fifth of patients had extremely severe depression, less than half of the studied patients had extremely severe anxiety and more than one third of them had moderate anxiety, less than one third of patients had severe stress. **Conclusion:** The study concluded that patients who are undergoing heart procedures are more prone to have psychological problems such as; depression, anxiety and stress. **Recommendations:** Supportive groups to help patients and their parents to overcome any psychological disturbances. Relaxation training programs have to be part of treatments programs for patients undergoing heart procedures.

Key words: Heart procedures, Psychological disturbances

Introduction

Cardiovascular disease (CVD) is a group of diseases that include the heart and blood vessels, thereby including coronary heart disease (CHD) and coronary artery disease (CAD), and acute coronary syndrome (ACS). ACS is a subcategory of CAD, whilst CHD results CAD. On the other hand, CAD is characterized by atherosclerosis in coronary arteries and can be asymptomatic, whereas ACS always presents with a symptom, such as unstable angina, and is frequently associated with myocardial infarction (MI) regardless of the presence of CAD. Finally, CAD is usually used to refer to the pathologic process affecting the coronary arteries (usually atherosclerosis) whilst CHD includes the diagnoses of angina pectoris, MI and silent myocardial ischemia *Rashad, (2020)*.

Heart procedure, is surgery on the heart or great vessels performed by cardiac surgeons. It is often used to treat complications of ischemic heart disease (for example, with coronary artery bypass grafting); to correct congenital heart disease; or to treat valvular heart disease from various causes, including endocarditis, rheumatic heart disease, and atherosclerosis, it also includes heart transplantation *Tapiero et al., (2017)*.

Heart surgery is like any other type of surgical procedure for a stressful patient, anxiety, depression are common and important disorders in these patients and these feelings may cause prolonged recovery and compromise the quality of

life following the surgery. After CABG, patients often report pain, discomfort, feelings of depression, lack of patience, loss of general well-being, and inability to function *Moghtader, (2018)*. Coronary catheterization can be a stressful experience and causes anxiety symptoms for many patients because of its invasive nature and potential risks *Mohammed, (2019)*.

Nurses caring the patients undergoing heart procedures in the pre-operative period often notice the overwhelming anxiety, fear, depression and stress that many of their patients experience. Information on how these patients experience anxiety, depression and stress before heart surgery is important in order to plan some effective interventions that can be applied and may aid patients to decrease their anxiety, depression and stress levels, resulting in a faster recovery potentially. The findings of this study will also provide additional evidence about pre-operative anxiety, depression and stress to the nurses and health professionals in creating health care policies and implementing appropriate interventions *Ramesha et al., (2018)*.

Psycho educational intervention has been found to reduce anxiety and depression in patients with Heart Failure, and educational interventions in the intensive care unit reduce anxiety and increase family satisfaction. The strategies of psycho-educational intervention include an evaluation of the advantages and disadvantages of different types of behavior and coping styles. Further, it involves

sharing of information as well as support from the health care team to obtain positive beliefs and better decision making *Meretoja et al., (2019)*.

Significance of the study

Heart disease is responsible for more than 30% of deaths worldwide each year *Zambrano, (2020)*. Development of new treatments such as thrombolytic therapy, and interventional procedures such as percutaneous trans-luminal angioplasty, coronary bypass and valve replacements had improved the medical management of cardiac diseases *Silva et al., (2016)*. Symptoms of anxiety, stress, depression, and pain are usual disturbances among patients with CAD, including those undergoing the heart surgery. Anxiety and depressive symptoms, occurred in 30% and 18% respectively of patients before heart surgery. All these factors aggravate the symptoms of the prevailing disease, affect physiological parameters adversely before and during anesthesia, and these feelings can seriously impair the patient's quality of life *Zolfaghari, (2018)*. So, the present study could be helpful to assess the psychological problems among patient undergoing heart procedures.

Aim of the study

The study aimed to assess the psychological disturbances among the patients undergoing heart procedures.

Research Question

1. What are the psychological disturbances among patients undergoing heart procedures?

Subject and methods

A descriptive design was utilized in this study.

Setting

The study was conducted at cardiac department and the cardiac catheter unit at Benha university hospital in Benha city, Kaluobia Governorate, which is affiliated with the ministry of higher education. The cardiac catheter unit includes three sections: the first section for male patients, a capacity of this is 12 beds and the second section for females have 4 beds and the third section for females have 12 beds. The cardiothoracic department includes two rooms; one for male has 4 beds and another room for female have four beds.

Sample

A convenient sample consisting of 100 patients undergoing heart surgery in the cardiac department and cardiac catheter unit at Benha university hospital who fulfilled the following criteria:- All available patients in the department of both sexes, agreement to participate in the study and are free from psychiatric disorders.

Tools of data collection

In order to achieve the aim of the study the following tools were being used:

Tool one:- Structured Interview Questionnaire Sheet:

Structured interview questionnaire was developed by researchers based on a scientific review of literature which consists of two parts:

- **Part I:** Socio-demographic data which includes age, gender, educational level, marital status, occupation, cohabitation& residence.
- **Part II:** Clinical data which includes age at the onset of the disease, number of times of hospitalization, disease duration, presence of chronic diseases and type of surgical operation.

Tool two: Depression, Anxiety and Stress Scale (DASS-21):

This scale developed by *Lovibond & Lovibond, (1995)*. It set of three self-report scales designed to measure the emotional status of depression, anxiety and stress. Each of three DASS-21 scales contains 7 items, the rating scale from (0 to3) as follows: (0) did not apply to me at all,(1) applied to me some degree or some of the time,(2) applied to me to a considerable degree or a good part of the time,(3) applied to me very much or most of the time. The total equals 63 points. The higher the score the worst the DASS.

Scoring system of DASS

1. Depression: normal 0-9, mild 10-13, moderate 14-20, severe 21-27, extremely severe 28 and more.
2. Anxiety: normal 0-7, mild 8-9, moderate 10-14, severe 15-19, extremely severe 20 and more.
3. Stress: normal 0-14, mild 15-18, moderate 19-25, severe 26-33, extremely severe 34 and more.

Content validity of the tools

The developed tool was reviewed for the appropriateness of items and measuring the concepts through 5 experts in psychiatric & mental health nursing and medicine specialists to assure content validity and modification was done accordingly.

Reliability of the tools

The study tools were tested for their internal consistency by Cronbach's Alpha. The Reliability of DASS is 91.

Ethical considerations

Approaches to ensure the ethical issues were considered in the study regarding confidentiality and informed consent. Confidentiality was achieved by the use of locked sheets without the names of the participants and replaced by numbers. All the participants were informed that the information they provided during the study would be kept confidential and used only for statistical purposes and after finishing the study. Each patient was informed that participation in the study was voluntary, and had the right to withdraw from the study at any time.

Pilot study

A pilot study was conducted to test the applicability of the instruments, the feasibility of the study and estimate the time needed for collecting the data. It was conducted on 10% of the total sample (10

patients) according to the selection criteria. All patients who participated in the pilot study were excluded from the study sample because the researcher rephrased some questions and sentences and then set the final fieldwork schedule.

Actual study

1. After appraisal of the protocol of the study for the ethical and scientific committee an official permission letter was obtained from the dean of the Faculty of Nursing, Benha University and official permission was obtained from the director of Benha University hospital to conduct the proposed study.
2. The purpose of the study was simply explained to the patients who agree to participate in the study before any data collection.
3. Each patient was interviewed and assessed individually.
4. Each patient was handed the questionnaire and answered it under the observation of the researcher. For Patient who can't read well, the researcher helps them to record their answers.
5. The first instrument Structured Interview Questionnaire Sheet filled in about 10 minutes and the second instrument (Depression, Anxiety and Stress Scale) was filled in about 20-25 minutes.
6. The process of data collection occurred 2 days per week and took about 11 months starting on 10 October 2019 and ending on 20 August 2020.

Statistical analysis

Data Upon completion of data collection, the collected data were organized, tabulated; statistically analyzed by using an IBM personal computer with Statistical Package of Social Science (SPSS) version 22. Data were presented using descriptive statistics in form of numbers and percentages, mean, standard deviation, and Qualitative variables were compared using the chi-square test. For quantitative data, the person correlation coefficient (r) was used for correlation analysis and the degree of significance was identified. A statistically significant difference was considered if p -value was < 0.05 . A highly statistically significant difference was considered if p -value was < 0.001 .

Results

Table (1): This table reveals that, more than half (54%) of the studied patient's ages ranged between 40 -<50 years with a mean \pm SD (43 ± 6.86) and less than two thirds (65%) of them were male. More than three quarters (78%) of patients were married and more than one third (36%) of them had a university education. Less than half (49%) of patients were not working, majority of them (88%) were living with their families, and the majority (82%) of them lived in rural.

Table (2): reveals that, less than half (43%) of the studied patients had 40 years and more regarding

their age at the onset of the disease and less than half (49%) of them had 1-3 times regarding the number of times of hospitalization, three quarters (75%) of them had 1-<5 years of disease duration. Also, more than half (56%) of patients suffered from chronic disease, and more than half (53%) of them had open heart surgical operations.

Figure (1) shows that, less than half (40%) of the studied patients had mild depression and one fifth (21%) of patients had extremely severe depression. And this figure shows that less than half (41%) of the studied patients had extremely severe anxiety, a minority (6%) of them had severe condition, also more than one third (37%) of them had moderate anxiety. Regarding the level of stress this figure shows that less than one third (31%) of the studied patients had normal stress levels while, less than one third (28%) of patients had severe stress.

Table (3): This table illustrates that, there were a highly statistically significant relationship between total depression the level among the studied patients and their age, educational level, and residence. Also, there were a statistically significant relationship between patients' depression levels and their marital status, while there was no statistically significant relation between total depression levels among the studied patients gender and occupation.

Table (4): This table shows that, there were a highly statistically significant relationship between total anxiety level among the studied patients and their marital status and occupation. Also, there were a statistically significant relation between total anxiety level and their age, gender, educational level, cohabitation, and residence.

Table (5): This table illustrates that, there were a highly statistically significant relationship between total stress levels among the studied patients and their age, gender, marital status, educational levels, occupation and cohabitation. Also, there were a statistically significant relationship between total stress levels among the studied patients and their residence.

Table (1): Percentage distribution of socio-demographic characteristics of the studied patients (n=100).

Socio-demographic characteristics	No.	%
Age (years)		
- 20 -<30 years	5	5
- 30 -<40 years	7	7
- 40 -<50 years	54	54
- 50 years and more	34	34
Mean ± SD	43 ± 6.86	
gender		
- Male	65	65
- Female	35	35
Marital status		
- Single	7	7
- Married	78	78
- Widowed	10	10
- Divorced	5	5
Educational level		
- Illiterate	26	26
- Basic education	13	13
- Secondary education	25	25
- University education	36	36
Occupation		
- Employee	35	35
- Free worker	16	16
- Not working	49	49
Cohabitation		
- Alone	4	4
- With family	88	88
- With his relatives	8	8
Residence		
- Rural	82	82
- Urban	18	18

Table 2: Percentage distribution of the studied patients according to their clinical data (n=100).

Clinical data	No.	%
Age at the onset of the disease (years).		
- 20 -<30 years	16	16
- 30 -<40 years	41	41
- ≥ 40 years	43	43
Number of times hospitalization		
- 1-3 times	49	49
- 4-6 times	33	33
- ≥ 7 times	18	18
Disease duration		
- 1-<5 years	75	75
- 5-<10 years	20	20
- 10-<15 years	5	5
Presence of chronic disease		
- Yes	56	56
- No	44	44
Type of surgical operation		
- Open heart	53	53
- Cardiac catheterization	47	47

Figure (1): Percentage distribution of total level of depression, anxiety and stress among the studied patients (n=100)

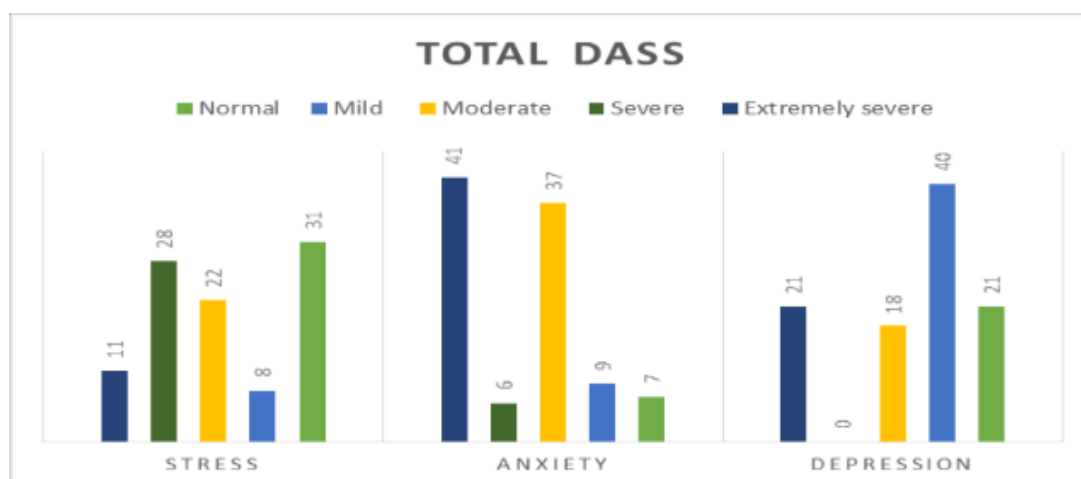


Table 3: relationship between patients' socio-demographic characteristics and total depression levels (n=100)

Socio-demographic characteristics	no	Normal	Mild depression	Moderate depression	Severe depression	Extremely severe depression	X ²	P-Value
Age (years)								
-20 <-30 years	5	0	5	0	0	0	48.5	.000**
-30 <-40 years	7	0	0	7	0	0		
-40 <-50 years	54	13	20	11	0	10		
-≥50 years	34	8	15	0	0	11		
gender								
-Male	65	13	29	13	0	10	4.27	.233
-Female	35	8	11	5	0	11		
Marital status								
-Single	7	2	5	0	0	0	17.1	.002*
-Married	78	16	29	18	0	15		
-Widowed	10	0	4	0	0	6		
-Divorced	5	3	2	0	0	0		
Educational level								
-Illiterate	26	11	10	0	0	5	31.7	.000**
-Basic education	13	0	7	0	0	6		
-Secondary education	25	2	13	5	0	5		
-University education	36	8	10	13	0	5		
Occupation								
-Employee	35	8	14	8	0	5	7.2	.292
-Free worker	16	2	4	5	0	5		
-Not working	49	11	22	5	0	11		
Cohabitation								
-Alone	4	0	4	0	0	0	22.1	.003*
-With family	88	21	34	18	0	15		
-With his relatives	8	0	2	0	0	6		
Residence								
-Rural	82	8	33	5	0	16	22.9	.000**
-Urban	18	3	7	3	0	5		

Table 4: relationship between patients' socio-demographic characteristics and their total anxiety levels (n=100).

Sociodemographic characteristics	no	Normal	Mild anxiety	Moderate anxiety	Severe anxiety	Extremely severe anxiety	X ²	P-Value
Age (years)							22.3	.018*
-20 -<30 years	5	0	0	5	0	0		
-30 -<40 years	7	0	0	2	0	5		
-40 -<50 years	54	2	4	23	2	23		
-≥50 years	34	5	5	7	4	13		
gender							17.9	.004*
-Male	65	4	2	32	2	25		
-Female	35	3	7	5	4	16		
Marital status							36.5	.000**
-Single	7	0	2	5	0	0		
-Married	78	7	6	28	2	35		
-Widowed	10	0	0	0	4	6		
-Divorced	5	0	1	4	0	0		
Educational level							29.8	.002*
-Illiterate	26	3	5	4	4	10		
-Basic education	13	2	0	2	0	9		
-Secondary education	25	2	2	9	2	10		
-University education	36	0	2	22	0	12		
Occupation							37.4	.000**
-Employee	35	0	2	26	0	7		
-Free worker	16	2	0	2	2	10		
-Not working	49	5	7	9	4	24		
Cohabitation							20.3	.042*
-Alone	4	0	0	2	2	0		
-With family	88	7	9	33	4	35		
-With his relatives	8	0	0	2	0	6		
Residence							8.33	.036*
-Rural	82	2	4	24	6	26		
-Urban	18	5	5	3	0	5		

Table 5: relationship between patients' socio-demographic characteristics and their total stress levels (n=100).

Sociodemographic characteristics	no	Normal	Mild stress	Moderate stress	Severe stress	Extremely severe stress	X ²	P-Value
Age (years)							61.7	.000**
-20 -<30 years	5	0	0	5	0	0		
-30 -<40 years	7	0	0	5	2	0		
-40 -<50 years	54	19	4	8	23	0		
-≥50 years	34	12	4	4	3	11		
Gender							43.3	.000**
-Male	65	23	2	12	28	0		
-Female	35	8	6	10	0	11		
Marital status							28.2	.000**
-Single	7	2	0	5	0	0		
-Married	78	26	4	15	28	5		
-Widowed	10	0	4	0	0	6		
-Divorced	5	3	0	2	0	0		
Educational level							51.6	.000**
-Illiterate	26	12	4	2	3	5		
-Basic education	13	2	0	5	0	6		
-Secondary education	25	9	4	5	7	0		
-University education	36	8	0	10	18	0		
Occupation							42.1	.000**
-Employee	35	13	0	2	20	0		
-Free worker	16	4	2	5	5	0		
-Not working	49	14	6	15	3	11		
Cohabitation							49.9	.000**
-Alone	4	2	2	0	0	0		
-With family	88	29	6	20	28	5		
-With his relatives	8	0	0	2	0	6		
Residence							15.9	.002*
-Rural	82	21	8	17	10	6		
-Urban	18	0	0	5	8	5		

Discussion

Psychological problems are common before cardiac surgery, Technical advances; heart surgery remains a major adaptive challenge, especially for the increasing number of older and otherwise more vulnerable heart surgery patients. Depression is recognized as being associated with physical illness, and is particularly prevalent in patients with heart disease. Anxiety may reflect forms of psychosocial vulnerability during the period preceding surgery. Stress also can affect directly the physiological response to a medical illness and hospitalization and has been documented to significantly increase in the first month after surgery ((Murphy, et al., 2020)). So, the current study aimed to assess the psychological

disturbances among patients undergoing heart procedures.

Regarding the socio-demographic characteristics of the studied patients, the current study results showed that, more than half of the studied patients ages ranged from 40 -<50 years. From the researcher's point of view, this result may be due to the majority of people age ranging between 40 -<50 years were at high risk of heart disease. This result was agreement with *Akbari & Celik, (2018)* who reported that more than half of patient had 40:50 years. Conversely, this result were in disagreement with *Trevizan, et al., (2017)* who reported that more than half of patient's age was more than 50 years.

Regarding patient gender, the current study showed that, less than two thirds of them were male. This

result might be due to, the majority of the patients who had heart disease were males due to stress and smoking, Cardiovascular disease in women is generally manifested 10 years later than in men. This result was supported with *Abassi et al., (2020)* who reported that, more than half of the patients were males. On the other hand, this result was disagreement with *Guzelhan et al., (2020)* who reported that, more than half of the patients were females.

Regarding patients marital status, the current study showed that, three quarters of the patients were married. This result might be due to normal people of their ages were married and consisted of family. This result was agreement with *Takemoto et al., (2020)* who reported that, majority of the patients were married. Also, this result was supported with *Guzelhan et al., (2020)* who reported that, the majority of patients were married.

Regarding patients educational level, the current study showed that, more than one third had a university education. This result might be due to Egyptian society's value the education. This result was agreement with *Trevizan et al., (2017)* who reported that, more than one third of the patients had high educational level and worked at governmental jobs. On the other hand, these finding disagreement with, a study carried out by *Takemoto et al., (2020)* who revealed that, more than half of patients had secondary education.

Regarding patients cohabitation, the current study showed that the majority of them were living with their family. It might be due to the presence moral values and ethics and following social habits among people in the Egyptian community to have stable families. This result was agreement with *Murphy et al., (2020)* who reported that the majority of patients were living with their families.

Regarding patients job, the current study showed that, less than half of patients were not working. From the researcher's point of view, this result might be due to more than half of them were lived in the rural areas and retirement age. This result was agreement with *Kaur et al., (2018)* who reported that, half of the patients were not working.

Regarding patients residence, the current study showed that, more than half of them lived in the rural areas. This result might be due to like the life with their families and providing emotional support from life in the rural areas and Benha city near from the rural areas. This result was agreement with *Akbari & Celik, (2018)* who reported that, more than half of the patients were lived in a rural areas. Conversely, this result was disagreement with *Trevizan et al., (2017)* who revealed that, more than half of the patients lived in the urban areas.

Regarding the total level of depression among the studied patients, the current study showed that, less than half of the studied patients had mild depression and one fifth of them had extremely severe

depression. This result might be due to cardiac disease affect negatively on mood of patients before surgery and isolate them from others that consequently affecting depression level. This result was supported with *Jackson et al., (2018)* who reported that, more than one third of patients had mild depression. Conversely, this result was in disagreement with *Indja et al., (2017)* who revealed that ,the majority of patients had extremely severe depression.

Regarding total level of anxiety among the studied patients, the current study showed that less than half of the studied patients had extremely severe anxiety, minority of them had sever condition, also, more than one third had moderate anxiety. This result may be due to patients increasing felling of fear of death, fear of unknown origin, financial loss and results of operation, the waiting time before the surgical operation this feeling caused anxiety before cardiac surgery and obviously affecting patients. This result is accordance with *Woolf et al., (2017)* who reported that nearly half of patients had extremely severe anxiety. Also, this result is in agreement with *Kolaitis et al., (2017)* who revealed that more than one third of patients had moderate anxiety.

Regarding to total level of stress among the studied patients, the current study showed that less than one third had severe stress. From the researcher point of view, this result may be due to heart surgery is a Stressful experience threatening all dimensions of life of many patients and health conditions of patients before cardiac surgery were unsuitable and effect on their mood. This result is in agreement with, *Richards et al., (2017)* who stated that, one third of patients had severe stress after heart disease. Conversely, this result is in disagreement with *Weinrib et al., (2017)*who revealed that more than half of patients had stress before heart procedures.

Regarding relation between patients' socio demographic characteristics and total depression level, the current study illustrated that, there was a highly statistically significant relation between total depression level among the studied patients and their age, educational level, and residence. From the researcher point of view, this result may be due to age of peoples from 40-50 years are more prone to depression. This result is accordance with *Murphy et al., (2020)* who reported that there was a highly statistically significant relation between total depression level among the studied patients and their age and educational level. Conversely, this result is in disagreement with *DeMaso et al., (2017)* who found that there was no statistically significant relation between total depression level and their ages and residence.

The result showed that, there was a statistically significant relation between patients' depression level and their marital status. From the researcher

point of view, this result may be due to marriage can add extra burden and need more efforts that can consequently leads to depression. This result is in agreement with *Murphy et al., (2020)* who reported presence of statistically significant relation between patients' depression level and their marital status.

The result revealed, there was no statistically significant relation between total depressions level among the studied patients and their sex and occupation. This result is accordance with *Jobson & Rajendran, (2020)* who reported that there was no significant relation between depression level among the studied patients and their job. Conversely, this result is in disagreement with *Gomes et al., (2019)* who found that there was statistically significant relation between total depression level among the studied patients and their sex.

Regarding relation between patients' socio demographic characteristics and their total anxiety level, the current study illustrated that, there was a highly statistically significant relation between total anxiety level among the studied patients and their marital status and occupation. From the researcher point of view, this result may be due to anxiety symptoms were most prevalent among those unemployed and mirage people, and job stressors have many conflicting issues that increase anxiety level of the participants. This result is in agreement with *Allabadi et al., (2019)* who reported that there was a highly statistically significant relation between total anxiety level among the studied patients and their marital status and occupation. Also, this result is supported with *Paredes et al., (2020)* who found that there was a statistically significant relation between total anxiety level among the studied patients and their marital status and occupation.

Concerning to patient's age, there was a statistically significant relation between total anxiety level and their age. From the researcher point of view, this result may be due to with increase person's age is more prone to anxiety and these characteristics had different roles that changed with age, education and participants' cultures that drives from their residence areas. This result is in agreement with *Fathi, et al., (2019)* who reported that there was a statistically significant relation between total anxiety level among the studied patients and their age. Conversely, This result is in disagreement with, *Gomes et al., (2019)* who reported that there was no a statistically significant relation between total anxiety level among the studied patients and their age.

Also, there was a statistically significant relation between total anxiety level and their sex, educational level. From the researcher point of view, this result may be due to the most of patients in this study were men and married, and they are the first breadwinner for their families and the

presence of the disease, which leads to their fear of death, this factor increased levels of anxiety. And most of patients had higher educational level so, they aware about the disease and complication of disease and surgery, that increase level of anxiety. This result is in agreement with, *Gomes et al., (2019)* who reported that there was a statistically significant relation between total anxiety level among the studied patients and their demographic characteristics such sex, educational level. *Tung (2008)* found that that there was no statistically significant relation between anxiety level among the studied patients and their demographic characteristics as sex.

Regarding relation between patients' socio demographic characteristics and their total stress level, the current study illustrated that, there was a highly statistically significant relation between total stress level among the studied patients and their sex, educational level. From the researcher point of view, this result may be related to the differences in social roles and responsibilities in home management performed by women compared with men, the higher the educational level of patients demonstrated the higher anxiety score in the preoperative period due to higher level of education of patient, this patient aware at a complications of surgery which increased level of stress. This result is congruence with *Ahmed et al (2020)* who shown that, there was a highly statistically significant relation between total stress level among the studied patients and their sex and educational level. Concerning to age and marital status, there was a highly statistically significant relation between total stress level among the studied patients and their age and marital status, From the researcher point of view, this result may be related to the most of patients in this study were married, their age at 40 years and more, and they are the first breadwinner for their families and the presence of the disease, which leads to their fear of death, this factor increased levels of stress and stress increased with aging . This result is in disagreement with *Ahmed et al (2020)* who shown that, there was no a highly statistically significant relation between total stress level among the studied patients and their age. And this result is in disagreement with *Dahlawi et al., (2020)* who revealed that there was no statistically significant relation between total stress levels among the studied patients and their marital status.

Regarding their occupation, the current study illustrated that, there was a highly statistically significant relation between total stress level among the studied patients and their occupation. From the researcher's point of view, these result may be the pressure of working and the presence of conflict in occupation, this factors lead to stress. This result is congruence with *Kaseda & Levine, (2020)* who showed that, there was a highly statistically significant relation between total stress level among

the studied patients and their occupation. Conversely, this result is in disagreement with *Dahlawi et al., (2020)* who revealed that there was no statistically significant relation between total stress level among the studied patients and their occupation.

Also, there was a statistically significant relation between total stress level among the studied patients and their residence. From the researcher's point of view, this result may be due to different residence areas such as rural and urban is very different from each other and each of them has its stressors that let the resident to suffer from different stress levels. This result is in agreement with, *Jobson & Rajendran, (2020)* who reported that there was a statistically significant relation between total stress level among the studied patients and their living areas. Conversely, this result is in disagreement with *Dahlawi et al., (2020)* who revealed that there was no statistically significant relation between stress levels among the studied patients and their residence.

Conclusion

From the result of the present study , one can conclude that:

Findings confirmed that, less than half of the studied patients had mild depression, one fifth of them had extremely severe depression. Less than half of the studied patients had extremely severe anxiety; also more than one third of them had moderate anxiety. Furthermore, one third of the studied patients had normal stress levels and less than one third of patients had severe stress. The study concluded that patients who are undergoing heart procedures are more prone to have psychological problems such as depression, anxiety and stress.

Recommendations

Based on the previous findings and conclusion of the present study the following recommendations were suggested:

- Psycho-educational programs should be integrated as a nursing interventions for patients before surgery to enhance their psychological well-being and quality of life.
- Supportive groups to help patients and their parents to overcome any psychological problems.
- Routine assessment of patients' psychological status before surgery is recommended to determine which patients are at risk for increased anxiety and depression after surgery.
- Preoperative education should be incorporated into routine practice to prepare cardiac patients for surgery to reduce anxiety and stress.
- Relaxation training programs have to be part of treatments programs for patients undergoing heart procedures.

- Liaison psychiatric nurses must be available to deal with the psychiatric problems of those patients.
- Further studies by using a larger probability sample for generalization of the result

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