

Psychiatric Disturbances among Patients after Heart Surgery

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Abstract

Background: Heart surgery is one of the most effective methods of treating cardiovascular diseases. Meanwhile, the anticipation of heart surgery is severely distressing for patients and may cause psychiatric disturbances. **Aim:** This study aimed to assess the psychiatric disturbances among patients after heart surgery. **Design:** A descriptive research design was utilized in this study. **Setting:** This study was carried out in cardiac departments in Ain-Shams specialized hospital. **Subjects:** Convenient sample of 108 patients immediately after transferring from the critical care unit to the cardiac ward. **Data collection tools:** 1) Interviewing Questionnaire to assess socio-demographic data and medical history of the patient after heart surgery. 2) Depression, Anxiety, and stress scale, and 3) Brief psychiatric rating scale. **Results:** Slightly more than half of the studied sample have mild depression, severe stress, and anxiety, and moderate psychiatric symptoms after heart surgery. Also, there were positive correlations between total stress, depression, and anxiety and the total levels of psychiatric symptoms. **Conclusion:** This study concluded that more than half of the studied patients have mild depression, severe anxiety, severe stress, and moderate psychiatric symptoms after heart surgery. **Recommendations:** Constructing and implementing a counseling program geared toward patients after heart surgery to support and guide them on how to avoid and/or deal with stress, depression, and anxiety after heart surgery.

Keywords: Heart surgery, Psychiatric disturbances, Patients.

Introduction

Heart surgery is one of the most effective methods of treating cardiovascular diseases. Heart surgery is common and may be lifesaving for patients (Gao, 2021). Anticipation of heart surgery is distressing for patients and families, and surgical recovery is physically and psychologically demanding. Psychiatric disturbances are common after open-heart surgery, especially depression, anxiety and stress and are associated with long-term outcomes including readmission, poor functional status, and mortality (Davydova, et al., 2018).

Meanwhile postoperative psychiatric problems are among the important causes of morbidity and mortality following cardiac surgery that are usually associated with poor patient's outcome and have been noted in a considerable number of patients after heart surgery (Spinelli, et al., 2020). However, a great discrepancy exists in the literature regarding the frequency and the course of psychiatric symptoms, and mental health among those patients' (Pham, et al., 2019).

After heart surgery, up to 60% of patients experienced depressive symptoms, and about 23% of patients suffer from major depression which is usually associated with poor quality of life. These syndromes require timely assessment and treatment to minimize adverse clinical outcomes such as increased morbidity (e.g., recurrent hospitalizations and impaired quality of life) and mortality (Stenager, et al., 2020).

There is a paucity of specific literature on psychotherapeutic management after cardiac surgery, so the psychiatric nurse has a pivotal role in caring for and supporting those patients, accordingly, it was deemed necessary to evaluate psychological problems and psychiatric symptoms among patients after cardiac surgery and the psychiatric mental health nurses are in a good position to improve patients' acceptance of their condition, making patients' expectations more positive and, reducing anxiety about recovery.

Significance of the study

Surgical recovery is physically and psychologically demanding. Psychiatric disturbances are common after cardiac surgery especially depression, anxiety, stress disorder,

and other psychiatric symptoms (Stenager, 2020). The incidence of psychiatric disorders is high after cardiac surgeries, ranging as high as 90%.3, 4 Aside from increased mortality. Psychiatric issues are accompanied by a prolonged hospital stay, increased nursing needs, longer rehabilitation duration, higher risks of falls, inability to return to work, impaired cognitive functions, poor quality of life, and long-term care. (Fatehi et al, 2021) Hence, it should be considered to address psychiatric disturbances and intervention for these symptoms, describing factors that decrease the risks for the co-occurrence of mental health problems. So, the current study aims to assess psychiatric disturbances among patients after heart surgery in order to develop psychosocial and mental preparation as one of the essential parts of nursing care.

Aim of the study:

The aim of this study was to assess the psychiatric disturbances among patients after heart surgery.

This aim was achieved by answering the following **research questions**:

1. What are the levels of depressive symptoms among patients after heart surgery?
2. What are the levels of anxiety symptoms among patients after heart surgery?
3. What are the levels of stress symptoms among patients after heart surgery?
4. What are the psychiatric symptoms among patients after heart surgery?

Subject and Methods

A descriptive design was used in this study to assess psychiatric disturbances among patients after heart surgery

Research setting

The study was conducted in cardiac departments in Ain-Shams specialized hospital. The cardiac department consists of 24 separate rooms. Each room has a fully equipped bed with a monitor screen, air, and oxygen supply. Cardiac departments provide many services for patients after heart surgery such as physiotherapy and rehabilitation program to help the patient on recover and improve their quality of life, and other services such as consultation services, lab and radiology services.

Sample type

A convenient sample of all available patients (108 patients who agreed to participate in the study) after recovery from cardiac surgery and transferred to the cardiac departments in Aim shams specialized hospital (2 to 3 days ago)

Data Collection tools

Tools used for data collection were the following:

A) Interview questionnaire sheet

This questionnaire was constructed by the researcher in simple Arabic language after reviewing related literature in the field of psychological disturbance after heart surgery. Socio-demographic characteristics of patients included (age, marital status, educational level, occupation, income, place of residence, religion, and duration of illness....)

B) Depression, Anxiety, and stress scale (DASS-21) (Appendix II):

This scale developed by lovibond, (1995). It set of three self-report scales design to measure the emotional states of depression anxiety and stress. Each of three DASS-21 as scales contains 7 items, the rating scale from (0 to 3) as follows: (0) did not apply to me at all, (1) applied to me some degree or some of time, (2) applied to me to considerable degree or a good part of time, (3) applied to me very much or most of the time.

Each of three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/ Involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/ agitated, irritable/ over-reactive and impatient. Scores for depression, Anxiety and stress are calculated by summing the scores for relevant items.

❖ Scoring system

Recommended cut-off scores are as follows

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

C) Brief psychiatric rating scale (BPRS)

This scale was developed by: **Overall, J. E., & Gorham, D. R. (1962). The Brief psychiatric rating scale (BPRS)** is used to measure psychiatric symptoms. The BPRS assesses the level of 18 symptom constructs (1. hostility, 2. suspiciousness, 3. hallucination, 4. grandiosity, 5. somatic concern, 6. anxiety, 7. emotional withdrawal, 8. conceptual disorganizations, 9. guilt feelings, 10. tension, 11. mannerisms, 12. posturing, 13. depressive mood, 14. motor retardation, 15. uncooperativeness, 16. unusual thought content, 17. blunted affect, 18. excitement, and disorientation).

It is based on the clinician's interview with the patient and observations of the patient behavior over the previous (2-3) days. The patient's family can also provide the behavior report.

The rater enters a number for each symptom construct that ranges from 1(not present) to 7 (extremely severe). The time necessary to complete the interview and scoring can be as little as 20- 30 minutes.

❖ Scoring system for (BPRS)

The scale was contained of 18 items, the total scores of the scale ranged from 0 to 126 grades. Responses of participants were measured at 7 points Likert scale ranged from not assessed, not present, very mild, mild, moderate, moderately severe, severe, and extremely severe. Not assessed was scored as "0", while extremely was scored as "7" for the items of all dimensions of the present scale the scores of each item were summed up and converted into 3 categories:

- Mild level if score from 0-54 grades.
- Moderate level if score from 55-90 grades.
- Severe level if score from 91-126 grades.

Tools validity and reliability

Validation of the Scales:

To achieve the criteria of trustworthiness of the tools of data collection in this study, the tools were tested and evaluated for their face content validity, and reliability. Face and content validity are tested by five different experts from faculty members in the nursing field from Ain Shams and Alfayom University.

Reliability of the Scales:

The reliability of the tools was assessed using the developed questionnaires. Measuring internal consistency by determining the Cronbach alpha coefficient, proved to be high as indicated in the following table:

Reliability of scales:

Scale	No. of items	Reliability
Depression, Anxiety, and Stress Scale	21	0.835
Brief Psychiatric Rating Scale	18	0.811

Pilot study

The aims of the pilot study were to

- Identify any unexpected obstacles and problems.
- Ensure the clarity of the assessment sheet

A pilot study was carried out on 10% of the sample to test the clarity, and applicability of the data collection tools and estimate the time needed to fill in the sheet.

Eleven patients were selected and included in the main sample size as no necessary modifications were done. The pilot study took two weeks duration from the beginning of February to 15 of February 2021. Then the tools were applied according to the findings of the pilot study.

Fieldwork

The actual fieldwork took three months from the beginning of February 2022 until the end of April 2022, 4 days weekly, 2 hours daily from 12 pm to 2 pm in order to collect the total sample. The researchers introduced themselves to the hospital administrator and the other health team which will help them in data collection to save time and also gain the trust of the patient.

The researchers explained the aim of the study to medical staff and patients and started to collect the patient's data. The data collection took about 30 minutes using the DAS scale and the brief psychiatric rating scale. Patient assessed and an interview was done after recovery after two or three days from that surgical operation when the patient's condition was stable, the levels of consciousness were stable and the patients became oriented to time place and person .

All patients are interviewed separately in their rooms (after 2 or 3 days from cardiac surgery). Each interview with one patient lasted from 20 to 30 minutes depending on the response of the interview. Every day I meet about two or three patients until I finished data collection.

Ethical considerations

After securing official requirements for carrying out this study, the subjects were informed about choosing to participate or not. The researcher took oral consent from the patients if they need to participate, besides, they were informed about the patient's right to withdraw at any time without giving a reason.

Data were anonymous and only used for the study. The researcher explained the aim and nature of this study to the patients with reassurance about the confidentiality of the information given and that it will be used for scientific research only.

III. Administrative Design:

To obtain approval to conduct the research study, the researchers received official permission from the following authorities:

Official approval was obtained from dean of faculty of nursing Ain-Shams university, a letter containing the title and aim of the study was explained to the director of Ain shams specialized hospital to obtain the approval.

Statistical Design

The statistical analysis of data was done by using the Statistical Package for Social Science (SPSS), version 22. The first part of the data was descriptive data which was revised, coded, tabulated, and statistically analyzed using numbers and percentages. Qualitative variables were compared using the chi-square

test (X^2), P-value to test the association between two variables, and R- test to the correlation between the study variables.

The degree of significant results was: -

- P. Value > 0.05 (Not Significant)
- P. Value ≤ 0.05 (significant)
- P. Value ≤ 0.001 (Highly Significant)

Results:

Table (1): showed that slightly more than half (50.9%) of the studied patients their age were 50-<60 years with a mean SD of 56.7±12.1 years. As regards to marital status, more than two-thirds (68.5%) of them were married. In addition, less than three-quarters (72.2%) of the studied patients were working, and more than half (55.1%) of them were employees. Moreover, the majority (83.3%) of the studied patients had health insurance, more than two-thirds (68.5%) of them had free health insurance with some expenses (lab tests - x-rays).

Figure (1): showed that, the majority (81.5%) of the studied patients were male. While less than one-fifth (18.5%) of them were female.

Table (2): showed that less than two-thirds (64.8%) of the studied patients have coronary artery bypass surgery, the majority (90.7%) of them were the first time. Also, around three-quarters (77.8% & 74.1%) of them had a history of hypertension and diabetes mellitus, respectively. Moreover, the majority and all (85.2% & 100%) of them felt palpitation while walking and when making an effort, respectively. Furthermore, the majority (88%) of them felt chest pain when making an effort.

Figure (2): showed that, more than half (51.9%) of the studied patients had mild level of depression. Also, the minority (14.8% & 11.1%) of them had moderate and severe level, respectively. Moreover, the minority (9.2%) of them had extremely severe level of depression. While, the minority (13%) of them were normal.

Figure (3): showed that, half (50%) of the studied patients had severe level of anxiety. Also, the minority (10.2% & 13%) of them had a mild and moderate levels, respectively. Moreover, less than one-fifth (18.5%) of them

had extremely severe level of anxiety. While, the minority (8.3%) of them were normal.

Figure (4): showed that, half (50.9%) of the studied patients had severe level of stress. Also, the minority (11.1% & 16.7%) of them had a mild and moderate level, respectively. Moreover, the minority (12%) of them had an extremely severe level of stress. While, the minority (9.3%) of them were normal.

Figure (5): showed that, more than half (53.7%) of the studied patients had moderate level of psychiatric symptoms. Also, the minority (16.7%) of them had severe level. While more than one-quarter (29.6%) of them had mild level of psychiatric symptoms.

Table (3): presented that, there was a highly statistically significant positive correlation between total depression, total anxiety, total stress, and total psychiatric symptoms at ($P < 0.01$).

Table (1): Distribution of the studied sample according to socio-demographic data (N=108).

Items	No.	%
Age (years)		
20-<30	4	3.7
30-<40	8	7.4
40-<50	20	18.5
50-<60	55	50.9
≥ 60	21	19.4
Mean SD	56.7±12.1	
Marital status		
Single	11	10.2
Married	74	68.5
Widowed	16	14.8
Separated	7	6.5
Occupation		
Working	78	72.2
Don't work	30	27.8
Nature of work (n=78)		
Manual work	8	10.3
Paid work	12	15.4
Business owner	15	19.2
Employee	43	55.1
Health insurance		
Yes	90	83.3
No	18	16.7
The costs of the treatment		
Free (at the state's expense)	16	14.8
Free of charge with some expenses (lab tests - x-rays)	74	68.5
Own expense	18	16.7

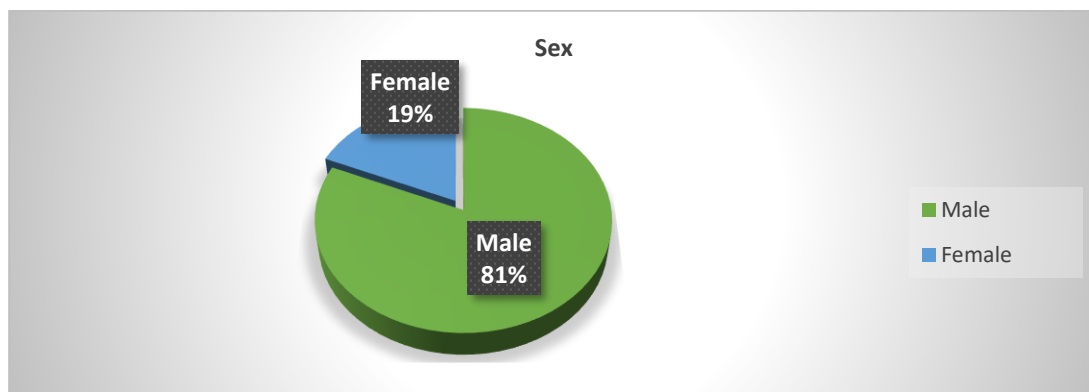


Figure (1): Percentage distribution of the studied patients according to their sex (n=108).

Table (2): Distribution of the studied sample according to medical history data (N=108)

Items	No.	%
Diagnosis		
Coronary artery bypass surgery	70	64.8
Valve surgery	27	25
Combined	11	10.2
Times of heart surgery		
First time	98	90.7
Twice	7	6.5
More than twice	3	2.8
History of hypertension		
Yes	84	77.8
No	24	22.2
History of diabetes mellitus		
Yes	80	74.1
No	28	25.9
Feeling palpitation while walking		
Yes	92	85.2
No	16	14.8
Feeling palpitation when making an effort		
Yes	108	100
No	0	0.0
Feeling chest pain when making an effort		
Yes	95	88
No	13	12

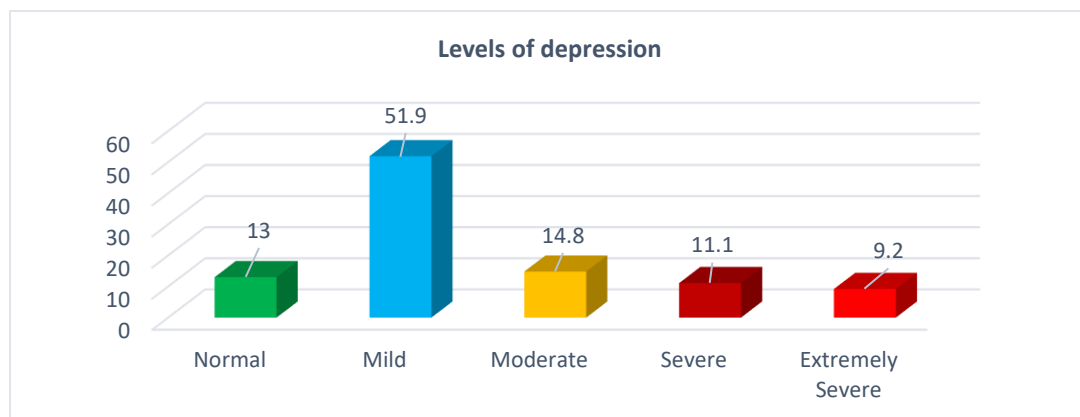


Figure (2): Distribution of the studied patients according to the level of depression (n=108).

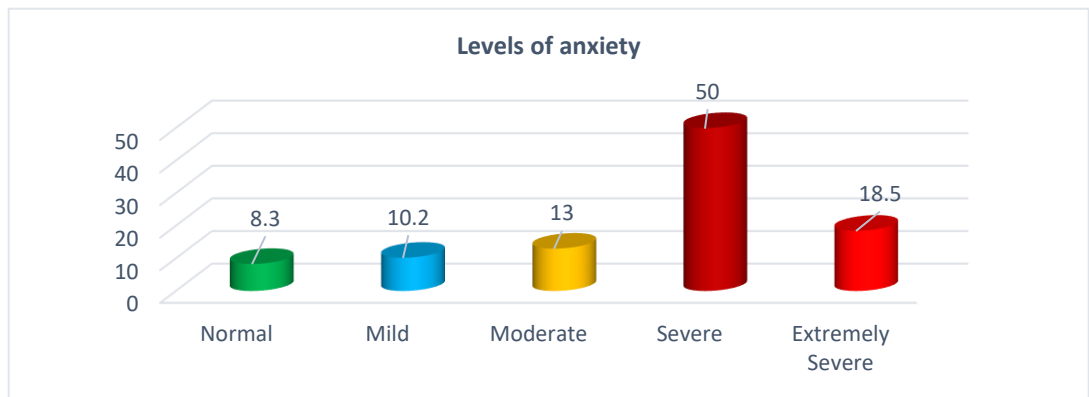


Figure (3): Distribution of the studied patients according to level of anxiety (n=108).

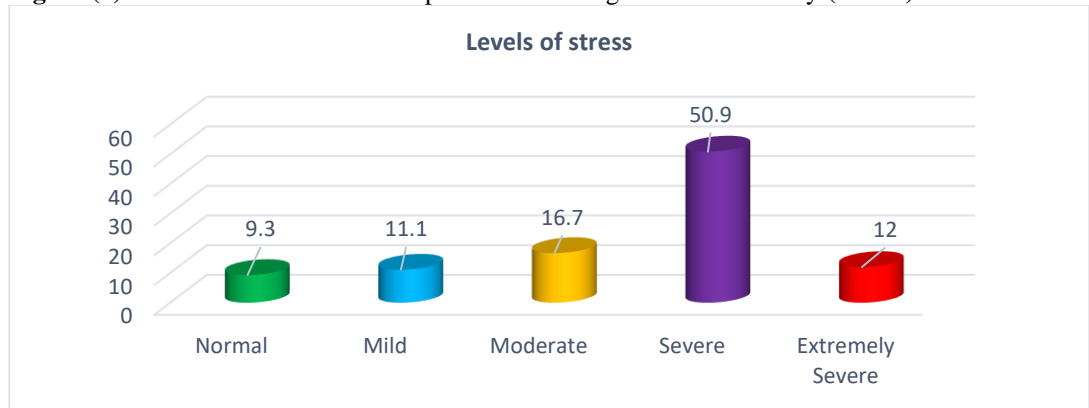


Figure (4): Distribution of the studied patients according to level of stress (n=108).

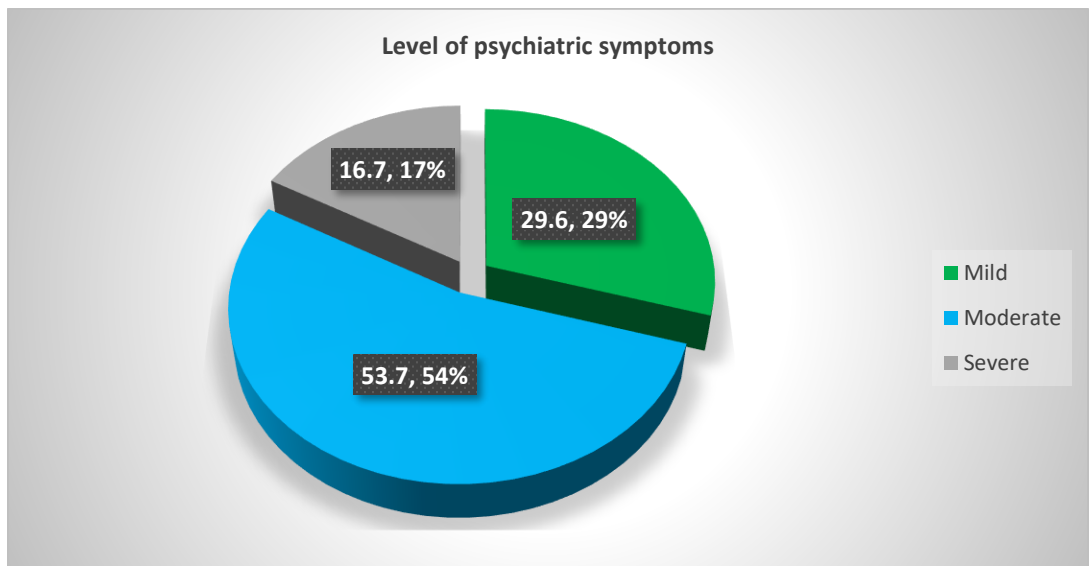


Figure (5): Distribution of the studied patients according to their level of psychiatric symptoms. (n=108).

Table (3): Correlation between total psychiatric symptoms and total depression, anxiety and stress among the studied patients (n=108).

Variables	Total psychiatric symptoms	
Total depression	R	0.713
	p-value	0.000**
Total anxiety	R	0.730
	p-value	0.000**
Total stress	R	0.719
	p-value	0.000**

r=correlation coefficient test **highly significant at $p < 0.01$.

Discussion

Regarding to age of the studied patients, the findings of the current study revealed that slightly more than half of the studied patients their age were 50- <60 years with mean SD 56.7 ± 12.1 years. This may be due to increasing the risk factors of cardiovascular diseases among adults, such as obesity, physical inactivity, poor diet, smoking, and substance abuse. This result is supported with **Elkaday et al., (2022)** who carried out a study to assess "Psychological problems and quality of life among patients undergoing heart procedures" which reflected that more than half of the studied patients their age ranging between 40 - <50 years .

Concerning marital status of the studied patients, the results showed that, more than two-thirds of them were married. This finding could be explained that more than half of the studied patients were above 40 years. This result is consistent with **Afify et al., (2022)** who carried out a study entitled " Psycho-social problems and coping strategies among patients undergoing coronary catheterization at Benha university hospital " and found that three quarters of the studied patients were married .

Regarding occupation of the studied patients, the present study found that less than three-quarters of the studied patients were working and more than half of them were employee. This result may be because they are male and males according to our culture should be work because they are the main responsible and their children .

This finding is consistent with a study conducted by **Abdelraof et al., (2022)** and entitled " Relationship between psychosocial care and ICU trauma among patients underwent open-heart surgery " which showed that more than three quarters of the studied patients were

working. On the other hand, this result is contraindicated with the study of **Abdelatif et al., (2019)** who represented that about three quarters of the studied patients not working.

Related to the sex of the studied patients, the present study presented that the majority of the studied patients were male. This may be due to unhealthy habits among males such as smoking and consuming unhealthy diets and work stress. Also, it is thought that males are more prone than females to develop heart disease due to protective hormonal influences such as estrogen, progesterone, and the use of hormonal contraception. This finding is in the line with a study conducted by **Elgazzar, S., & Keshk (2018)** and entitled "Effect of a construction educational protocol on nurses' knowledge, performance, and its effect on patient satisfaction undergoing cardiac catheterization" and reported that the majority of the patients were male.

Concerning medical history of the studied patients, the present study results showed that less than two-thirds of the studied patients had coronary artery bypass surgery, the majority of them were the first time. Also, around three-quarters of them had history of hypertension and diabetes mellitus. Moreover, the majority and all of them felt palpitation while walking and when making an effort, respectively. Furthermore, the majority of them felt chest pain when making an effort. These finding could be due to diabetes and hypertension are predisposing factors to heart disease. In addition to the cardiac disease and the patient health have an impact on their daily life.

These results agree with **Younes et al., (2019)** who studied "Psychiatric disturbances in patients undergoing open-heart surgery" and found that less than one third of the patients

were hypertensive and were diabetic. More than two thirds of them undergone valve replacement surgery and felt fatigue with any work.

Also, the present study showed that the majority of the studied patients suffered from chronic diseases other than heart, the majority of them suffered from hypertension and diabetes mellitus. Also, more than half of them had history from heart disease, less than three-quarters of them were the first degree. In addition, the majority of them had family history from chronic diseases and suffered from hypertension. In addition, more than two-thirds of them were smokers. Also, the majority of them were eating fast food.

These findings might be due to hypertension considered one of the risk factors for all types of cardiac diseases and the negative effect and complication from cardiac diseases. These results are in agreement with **Rawashdeh & Alshraideh (2019)** at a study entitled "Physiological and psychological determinants of quality of life for patients after cardiac surgery and the associated factors" and revealed that cardiac surgery is common in people who suffered from medical diagnosis (ischemic heart disease) and coronary heart disease associated with hypertension, diabetes mellitus and smokers.

As regard to level of depression among the studied patients, the findings of the current study showed that more than half of the studied patients had mild level of depression. Also, the minority of them had moderate and extremely severe level of depression. While, the minority of them were normal. This result may be due to cardiac disease affect negatively on mood of patients before surgery and isolate them from others that consequently affecting depression level and their mood may be improved after cardiac surgery and the patients deal well.

This result is supported by **Jackson et al., (2018)** at their study entitled "Depressive and anxiety symptoms in adult congenital heart disease: Prevalence, health impact, and treatment" who clarified that more than one-third of patients had mild depression. Conversely, this result is in disagreement with **Indja et al., (2017)** who studied "Neurocognitive and psychiatric issues post

cardiac surgery" and revealed that the majority of patients had extremely severe depression

As regards to level of anxiety among the studied patients, the current study illustrated that half of the studied patients had severe level of anxiety. Also, the minority of them had mild and moderate level. Moreover, less than one-fifth of them had extremely severe level of anxiety. While, the minority of them were normal. 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 approve with the study achieved by **Elkady et al., (2022)** who clarified 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. Also, this result is in agreement with **Moghtader et al., (2018)** who studied " Depression and anxiety in patients undergoing open heart surgery: age and sexual differences" and reported that nearly half of patients had extremely severe anxiety.

For level of stress among the studied patients, the present study results revealed that half of the studied patients had severe level of stress. Also, the minority of them had mild and moderate level, respectively. Moreover, the minority of them had extremely severe level of stress. While, the minority of them were normal. 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 a study entitled "Psychological interventions for coronary heart disease" and conducted by **Richards et al., (2018)** 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 done a study entitled "The psychology of cardiac disease surgical pain: new frontiers in risk factor identification, prevention and

management" and revealed that more than half of patients had stress before heart procedures till post-surgery.

Concerning the level of psychiatric symptoms among the studied patients, the current study represented that more than half of the studied patients had a moderate level of psychiatric symptoms. Also, the minority of them had severe level. While, more than one-quarter of them had mild level of psychiatric symptoms. These results ascertain that despite its numerous benefits for patients, cardiac surgery is also an invasive technique that brings about a lot of physical and psychological problems due to its aggressive nature.

These results are in agreement with the study of **El Afify et al., (2022)** who indicated that half of the studied patients had severe level of psychological and social symptoms. Also, one third of them have moderate level. While, the minority of them have mild level of psychological and social symptoms. Also, These finding are in same line with study carried out by **Molazem et al., (2018)** who studied "Effects of a peer-led group education on fear, anxiety and depression levels of patients undergoing coronary angiography" and revealed that the mean scores of psychiatric symptoms as fears, anxiety and depression in both experimental and control groups before intervention were moderate to high.

For correlation between total depression, total anxiety and total stress among the studied patients, the current results revealed that there was a highly statistically significant positive correlation between total depression, total anxiety and total stress among the studied patients. This result may be due to anxiety, stress and depressive symptoms, which occurred in substantial percentage of patients undergoing heart procedures. This result is in agreement with **Elkady et al., (2022)** who reported that there was highly statistically significant negative correlation between total depression, anxiety, and stress and total quality of life among the studied patients.

Conclusion

The findings of the present study concluded that

The psychological problems more than half of the studied patients have mild depression, severe anxiety and sever stress and, more than half of the studied patients have moderate psychiatric symptoms such as somatic concern and Guilt feelings. Also, this study concluded that, there was appositve correlations between total stress, depression and anxiety and the total levels of psychiatric symptoms.

Recommendations

On the basis of the present study findings, the following recommendations can be suggested:

For patients

- 1) Specialized Counseling room (to provide mental health interventions) can be settled at cardiac department to meet every patient psychological needs individually and identify factors that contribute to poor prognosis.

For Nurses

- 2) Development of workshops to increase the nurse's awareness regarding the potential for psychiatric disturbances that may occurs after heart surgery and develop strategies to prevent them.
- 3) Training program for nurses in the cardiac department to be able to implement reassurance and psychological support for the patients during the postoperative period.

For research

- 1) Replication of the study using a large sample in different geographical areas to generalize results is recommended.

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