Relationship between Psychosocial Care and ICU Trauma among Patients underwent Open-Heart Surgery

Azza Ibrahim Abdelraof [(1)], Amina Mohamed Abdelfatah Sliman [(2)], Adel Al- Wehedy Ibrahim[(3)], Rania Rabie El-Etreby [(4)]

(1) Lecturer, Psychiatric and Mental Health Nursing, Faculty of Nursing, Mansoura University, Egypt.
(2) Lecturer, Critical Care and Emergency Nursing, Faculty of Nursing, Mansoura University, Egypt.
(3) Professor, Public Health Department, Faculty of Medicine, Mansoura University, Egypt.
(4) Assistant professor, Psychiatric and Mental Health Nursing, Faculty of Nursing, Mansoura University, Egypt

Abstract

Patients in intensive care units (ICUs) reported having trauma that is commonly linked to the ICU environment. Using a psychosocial approach in the ICU helps to reduce ICU trauma. **Aim:** To determine the relationship between psychosocial care and ICU trauma among patients underwent open-heart surgery. **Design:** Descriptive cross-sectional research design was followed in the current study. **Methods:** The study subjects consisted of 130 patients who underwent open-heart surgery. The study was conducted at a Cardiothoracic Intensive Care Unit and a vascular surgery center. Tools of data collection included tool I: Health profile assessment tool which included two parts, patients' socio-demographic interview schedule, and patients' health-relevant data, tool II: ICU psychosocial care scale, and tool III: ICU trauma scale. **Results:** 76.2% of the studied patients had higher levels of ICU trauma and 23.8% had lower levels of ICU trauma. Also, the mean ± SD of the total psychosocial care was 49.03 ± 9.21. **Conclusion:** There is a negative statistically significant relationship between psychosocial care variables and ICU trauma.

Keywords: ICU trauma, open-heart surgery, psychosocial care.

Introduction:

Hospitalization, particularly in the intensive care unit (ICU), can result in a series of negative emotional consequences that might emerge or worsen after the patient is discharged. The Coronary Artery Bypass Graft (CABG) is a surgical treatment that requires patients to spend four to six days in the ICU, during which the recovery process is closely monitored. **(Benstoem, et al., 2017)**. The Intensive Care Unit (ICU) is a therapeutic setting where critically ill patients are monitored. The modern ICUs are equipped with highly advanced technological machines and equally skilled doctors and other medical/ paramedical professionals who strive to provide effective, rational, and individualized care **(Malelelo-Ndou, et al., 2019)**.

Critical illness, such as CABG, is recognized to be extremely stressful, and treatment in an intensive care unit (ICU) is a painful experience for many patients. Despite receiving the greatest medical treatment, a patient in ICU becomes a passive receiver of confusing intrusive operations and jargon-filled discussion among physicians, beeps of devices linked to oneself and neighbor patients, and is left to experience worry and stress in isolation. **(Nesami et al., 2016).**

According to research, individuals who have spent time in the intensive care unit have physical, psychological, and social problems that are traumatic. ICU trauma is a condition that occurs as a result of a patient's stay in the intensive care unit (ICU) of a hospital. It is the patient's powerful emotional experience, such as helplessness, shock, acute terror, or emotional numbness, that affects the patient's cognition and behavior, manifesting as cognitive confusion, avoidance behavior, and a variety of other negative manifestations **(Chivukula et al., 2017)**. Isolation from family, deprivation of knowledge, interference with human dignity and privacy, unappealing physical surroundings, lack of sleep, immobility, feelings of powerlessness, weakness, and vulnerability, and inability to speak are some of the primary causes of trauma cited by patients **(Chivukula et al., 2014)**.

In addition to continuous medical therapy, the management of such distress in the ICU involves psychosocial care and intervention. Psychosocial Treatment is a method of providing patients with comprehensive care. It offers emotional support to patients and their families, and it is a type of 'all-inclusive' care in

which the patient's rights are honored, his or her dignity is preserved, and emotional, cultural, and spiritual needs are met. **(Fan et al., 2017).**

Biopsychosocial care is a crucial step in medical treatment because it broadens the scope of health and sickness that may be discussed in clinical settings. Quality nursing practice requires a competent practitioner for the patient's physical, social, spiritual, and psychological care in the preventive, promotive, curative, and rehabilitative spheres. This dynamism in nursing also applies to intensive nursing care **(Bulechek., 2016).** There is excessive literature that illustrates those patients undergoing cardiac surgery go through psychosocial distress and these issues can be addressed by extending Psychosocial Care.

Significance of the problem

The most prevalent cause of death worldwide is cardiovascular disease, with coronary artery disease being the greatest common of all cardiovascular diseases. They reported for 50% of deaths in industrial countries. Cardiac surgeries intend to lessen disability, morbidity, physical symptoms, and quality-of-life improvement. Triage and treatment of patients in the Open-Heart Surgery Department deserve priority **(Salzmann et al, 2020).**

Psychosocial care, which addresses patients' psychological and social issues via the use of psychological concepts and techniques, must be incorporated into the treatment plan for patients having CABG. Psychosocial care may convey truthful information, change beliefs and habits, and empower patients to take control of their health. **(Savio, & Hariharan, 2020)**. As a result, this study was developed to determine the relationship between psychosocial care and ICU trauma among patients who had open-heart surgery.

Aim of the study:

To determine the relationship between psychosocial care and ICU trauma among patients underwent open-heart surgery.

Research questions:

1. What are the levels of ICU trauma among patients underwent open-heart surgery?
2. What is the relationship between psychosocial care and the occurrence of ICU trauma in open-heart surgery patients?

Method:

Research Design: A descriptive cross-sectional research design was conducted in this study.

Setting: This study was conducted in the cardiothoracic ICU and vascular surgery center at Mansoura University Hospital. This ICU consists of one room and has 13 beds, and it is well equipped with sophisticated technology. In proportion to the hospital records, through 2020, this unit received about 500 patients annually from Mansoura city and other small cities around Mansoura. Coronary artery bypass grafting and valvular surgeries are the frequent operations carried out in this unit. The nurse-patient proportion in this ICU is virtually 1:2.

Sample size: The sample size was calculated via DSS Research sample size calculator software. The average psychiatric care score was 65.32 ± 6.17 in one hospital and it was 62.00 ± 6.19 in another hospital **(Chivukula et al., 2014).** With the alpha error of 1% (99%significance) and β error of 5% (study power 95%), the calculated sample size is 118. By adding 10% for better data quality, so the number will be 130 patients.

Subjects:

A convenience sample of (130) open heart surgery patients that had been admitted to the Cardiothoracic Intensive Care Unit and vascular surgery center and met the following inclusion criteria: Patients aged 20 years or above, both sexes, conscious and able to can communicate verbally, undergo CABG, and stay at least two days in the ICU, patients who are ready to partake in the study, with no psychiatric disorders and not receiving psychiatric treatments.

Tools of data collection:

Three tools were used for collecting data pertinent to the study

Tool one: Health profile assessment tool: The researchers developed this tool after reviewing the relevant literature. it integrated two parts as follows:

Part 1: patients' socio-demographic Interview Schedule included: patient's socio-demographic data such as age, gender, occupation, marital status, and educational level.

Part 2: patients' health-relevant data. This part aimed to gather health data that can influence ICU trauma. It concerned medical data such as patients' diagnosis, date of admission, length of ICU stays, previous ICU admission, past medical history, co-morbidities such as hypertension, DM, Smoking, and family history.

Tool two: ICU Psychosocial Care Scale:

The ICU psychosocial scale was a revised version of the Intensive Care Experience Rating Scale **(Hariharan &Chivukula., 2011),** It is reliable and valid in assessing ICU psychosocial care (r= 0.75). The scale consisted of 18 statements, each evaluated with a 5-point rating scale ranging from "Never to Always". The scale assessed psychosocial care in three dimensions: protection of human dignity, family–patient communication channel, and family-patient anxiety prevention. The protection of human dignity has 7 items 9, 10, 11, 12, 13, 14, and 16. There were 6 items for family–patient communication channels 1, 2, 3, 4, 6, and 8. Five items measured family patient anxiety Prevention 5, 7, 15, 17, and18. The item numbers 1, 2,4,6,7,8,10.11,12,13,14,15,16,and 18 are positively scored and items 5, 9 and 17 which negative items the scores are reversed. The scores of all the three dimensions were summed up to obtain a score on ICU psychosocial care. The overall score varied from 18 to 90, the higher score indicates better psychosocial care.

Tool three: ICU Trauma Scale:

The ICU Trauma Scale was designed to evaluate trauma in cardiac ICU patients who had open-heart surgery. The scale was developed by **Davidson et al., (1997)** and was translated into Arabic by **Thabet & Vostanis**, (2005). The internal consistency of the scale was 0.86. The scale consisted of 17 items, each with a 5-point rating. The scale items are categorized as follows: re-experience, emotional numbing and avoiding, and hyperarousal. There are five items in the re-experience dimension: 1, 2, 3, 4, and 17. Emotional numbing and avoidance has seven items: 5, 6, 7, 8, 9, 10, and 11. Hyper-arousal was measured using five items: 12, 13, 14, 15, and 16. The total scores for each dimension were calculated by summing the dimension's item scores. The scores from all three aspects were added together, to get the score of ICU trauma. The overall score runs between 17 to 85, with a higher score indicating more severe Trauma. To discriminate between positive and negative situations, a cut-off point of 40 was utilized (Mohamed A & Yousef, 2021).

Validity and reliability

The researchers translated Tool II (ICU psychosocial care) into the Arabic language, and they were tested for content validity by a panel of five psychiatric and critical care nursing experts to ensure that the incorporated items are clear and appropriate for achieving the current study's aim. The test-retest method was used to assess the tools' reliability Pearson coefficient correlation r = (0.80).

Ethical Considerations:

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing- Mansoura University. Verbal consent was obtained from the patients after providing them with details about the study's aim, and nature of the study. they were assured that the data would be reserved confidential and that they had the right to withdraw from the study with no responsibility.

Pilot Study:

A pilot study was accomplished on 10% of the study sample to explore the applicability, and simplicity of the study tools and to verify the time necessary to complete the instruments. Participants involved in the pilot study were excluded from the study sample.

Data collection:

The data were collected by the researchers within four months from September 2021 to the end of December 2021. The current study was conceded in two phases, the preparation and implementation phase.

Preparation phase

Official approvals were obtained from the director and the head nurse of the cardiothoracic ICU who were knowledgeable about the study

aim, data collection time, and details to acquire their cooperation during the process of data collection. Presently, the study tools were expanded through a broad review of pertinent literature**.**

Implementation phase

The researchers visited the cardiothoracic ICU on daily basis, then obtained a list of patients organized for cardiac surgery. Afterward, the aim and nature of the study were described to patients who met the criteria of selection to get their collaboration. Structured interviews were done by the researchers with each patient postoperatively after extubation for 30 minutes during the first two days in ICU. The researchers reassessed and filled out the study tools. Furthermore, medical and nursing records were reviewed by the researchers to obtain medical data.

Statistical analysis

Collected data were coded, computed, and statistically analyzed using SPSS (statistical package of social sciences), version 26. Data were presented as frequency and percentages (qualitative variables) and mean ± SD (quantitative continuous variables). The student's t-test was used for comparison of continuous quantitative variables (two groups) and one-way ANOVA (F test) was used for comparison of continuous quantitative variables (more than two groups). Multiple regression analysis was used for predicting ICU trauma through psychological care dimensions. Also, Pearson's correlation was used to find correlation confidence between two quantitative variables. The difference was considered significant at $P \leq 0.05$.

Result:

Table 1 demonstrates that (79.2%) of the studied patients were above the age of 40, and men represented (64.6%) of the studied sample. Furthermore, most of the study subjects (94.6%) were married. Slightly less than half (46.9%) of the participants had a secondary educational level. Also, slightly more than three–quarters (75.4%) of the studied patients were working.

In terms of hospital stay length, more than half (53.8%) of the patients stayed in the hospital for more than 4 days, and 73.1% had no previous ICU admission. More than one-third (36.9%) had hypertension as a co-morbid disease.

Table 2 shows that among the variables of the trauma scale, the mean ± SD was slightly high among the avoiding traumatic experience variable 18.22 ± 4.05 compared to other variables. The table also shows that more than three-quarters (76.2%) of the studied patients had high levels of ICU trauma and less than one-quarter (23.8%) experienced low levels of ICU trauma.

Table 3 represents that the mean ± SD was high among the protection of human dignity variable 19.67 ± 4.20 compared to other psychosocial care variables. Also, the mean ± SD of the total psychosocial care was 49.03 ± 9.21.

Table 4 shows a statistically significant relationship between the studied patients' sociodemographic characteristics (age, educational level), and the trauma score (P = 0.041, 0.001respectively). Also, the table represents a statistically significant relationship between patients' clinical characteristics (days of hospital stay, co-morbidity) and the trauma score (P = 0.023, 0.001 respectively). Regarding psychosocial care, the table demonstrates a statistically significant relationship between the studied patients' sociodemographic characteristics (age, marital status, educational level,) and the psychosocial care score (P = 0.001, 0.001 & 0.001 respectively). However, there is a statistically significant relationship between patients' clinical characteristics (previous ICU, co-morbidity) and the psychosocial care score (P = 0.001, 0.001 respectively).

Figure 1 shows that there is a strong, negative, significant correlation between total trauma score and psychosocial care score among studied patients, r = - 0.754, P<0.001)

Table 5 reveals that psychosocial care score and total ICU trauma score have a statistically significant negative relationship R^2 = 0. 570, F = 55.598, P<0.001. stating that with the increase in psychosocial care, the trauma among ICU patients decreased.

Table (1): Socio-demographic characteristics of the studied patients (130)

Characteristics	Items	No	%
Age (years)	≤ 40	27	20.8
	>40	103	79.2
Sex	Males	84	64.6
	Females	46	35.4
Marital status	Single	7	5.4
	Married	123	94.6
Education	Primary education	50	38.5
	Secondary	61	46.9
	University	19	14.6
Occupation	Working	98	75.4
	Not working	32	24.6
Length of stay (days)	≤ 3	60	46.2
	4+	70	53.8
Previous ICU admission	Yes	35	26.9
	No	95	73.1
Type of operation	CABG	63	48.5
	Vulvular	67	51.5
Co-Morbidity	Hypertension	48	36.9
	Heart diseases	18	13.8
	DM	21	16.2
	Family history	21	16.2
	Smoking	22	16.9

Table (2): Average score on the ICU trauma scale among the studied patients (130)

Variables	Standard maximum score	Reported Min – Max	Reported Mean ± SD
Relive the traumatic experience	20.0	7.0 – 18.0	13.32 ± 3.24
Avoid traumatic experience	28.0	10.0 – 24.0	18.22 ± 4.05
Excitability (hyper-arousal)	20.0	12.0 – 19.0	15.35 ± 2.64
Total Trauma Score	68.0	31.0 – 60.0	46.88 ± 8.06
Trauma Level:	No	%	
Low (≤ 40)	31	23.8	
High (> 40)	99	76.2	

Table (3): Average score of psychosocial care among the studied patients (130)

Variables	Standard maximum score	Reported Min – Max	Reported Mean ± SD
Protection of human dignity	35.0	9.0 – 32.0	19.67 ± 4.20
Family patient communication	30.0	12.0 – 28.0	17.73 ± 4.43
Family patient anxiety prevention	25.0	8.0 – 18.0	11.63 ± 2.20
Total Psychosocial care score	90.0	35.0 -75.0	49.03 ± 9.21

Table (4): Relationship between the average score of ICU trauma and psychosocial care and characteristics of the studied patients (130)

Characteristics	Items	No	Trauma Score	Psychosocial care score
			Mean ± SD	Mean ± SD
Age (years)	≤ 40	27	49.70 ± 2.23	42.81 ± 4.86
	>40	103	46.15 ± 8.85	50.66 ± 9.40
Significance test			t=2.066, P 0.041	t=4.183, P<0.001
Sex	Males	84	47.81 ± 7.18	48.75 ± 5.94
	Females	46	45.20 ± 9.32	49.54± 13.3
Significance test			t=1.782, P 0.077	t=0.468, P 0.640
Marital status	Single	7	46.00 ± 0.73	43.71 ± 0.49
	Married	123	46.93 ± 8.29	49.33± 9.38
Significance test			t=1.251, P 0.213	t=6.490, P<0.001
Education	Primary	50	52.66 ± 4.58	44.50 ± 5.01
	education	61	46.30 ± 5.91	47.10 ± 5.32
	Secondary	19	33.58 ± 3.47	67.16 ± 5.38
	Bachelor			
Significance test			F=96.104, P<0.001	F=137.979, P<0.001
Occupation	Working	98	47.20 ± 8.83	49.87 ± 9.32
	Not working	32	45.91 ± 5.03	46.47± 8.50
Significance test			t=1.030, P 0.306	t=1.916, P 0.060
Length of stay (days)	≤ 3	60	45.15 ± 8.74	49.73 ± 12.84
	4+	70	48.37 ± 7.17	48.43 ± 4.08
Significance test			t=2.308, P 0.023	t=0.804, P 0.423
Previous ICU	Yes	35	48.54 ± 6.29	44.20 ± 8.58
	No	95	46.27 ± 8.57	50.81 ± 8.83
Significance test			t=1.644, P 0.104	t=3.815, P<0.001
Type of operation	CABG	63	48.21 ± 8.24	49.81 ± 5.62
	Vulvular	67	45.64 ± 7.76	48.30 ± 11.6
Significance test			t=1.828, P 0.070	t=0.934, P 0.352
Co- morbidity	Hypertension	48	45.04 ± 6.38	49.54± 7.55
	Heart diseases	18	50.44 ± 6.08	46.55 ± 2.73
	DM	21	50.43 ± 4.48	44.76 ± 4.28
	Family history	21	41.71 ± 12.7	57.90 ± 15.6
	Smoking	22	49.54 ± 6.41	45.54 ± 4.90
Significance test			F=6.108, P<0.001	F=8.898, P <0.001

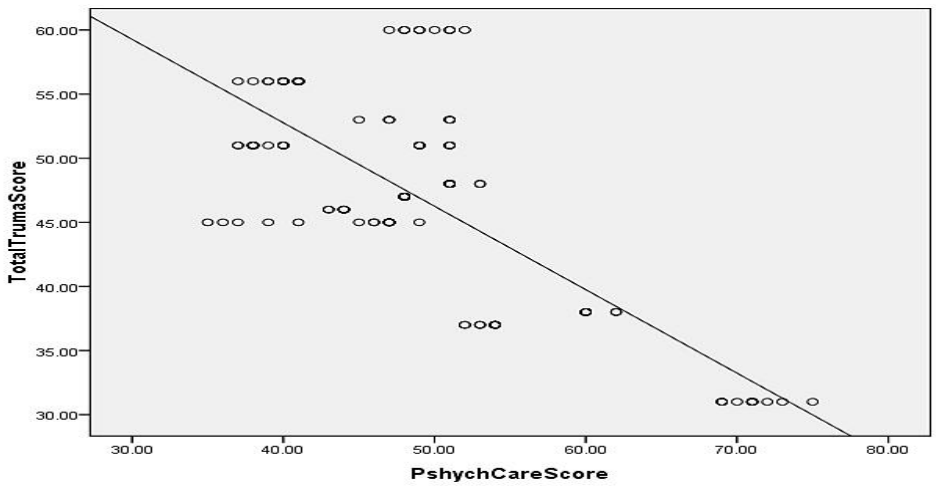

Figure (1): Correlation between total trauma score and psychosocial care score

Table (5): Summary of multiple regression analysis for dimensions of psychosocial care predicting ICU trauma in studied patients

Predictors	B	SEB	B
Protection of human dignity	-0.960	0.149	-0.528
Family patient communication	-0.601	0.248	-0.164
Family patient anxiety prevention	-0.351	0.168	-0.183
Constant = 77.810 R^2 = 0.570 F = 55.598, P<0.001			

B (unstandardized beta coefficient), **SEB** (Standard error of beta),**β** (Standardized beta coefficient).

Discussion:

Emotional and behavioral problems have been prominent in a significant proportion of patients after open-heart surgery. A well-designed psychosocial care intervention in the ICU can have a stronger influence on overall patient outcomes since post-operative treatment and psychological preparation can improve a patient's quality of life. **(Chivukula et al., 2017)**. Consequently, the current study was designed to determine the relationship between psychosocial care and ICU trauma among patients underwent open-heart surgery.

The current study found that (79.2%) of the studied patients were above the age of 40 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 finding is in line with research carried out in Xinjiang, China, where individuals with heart disease had an average age of 34.12 years **(Ming et al., 2021)**. Moreover, **Abd El-gafour et al., (2021**) in Egypt revealed that the average age of the studied patients was 40 years (range 20-55). The current study also, revealed that male patients made up less than two-thirds of the participants and this may be due to unhealthy habits such as smoking and consuming unhealthy diets. Also, it is thought that males are more prone than women to develop coronary heart disease due to hormonal influences, such as estrogen, progesterone, and the use of hormonal contraception. This finding was in line with a study conducted in Egypt by **Ahmed et al, (2017),** which looked at the stressors faced by patients undergoing open-heart surgery and discovered that the majority of the patients were men.

In terms of educational level, the results of this study revealed that slightly less than half of the patients investigated had only secondary education. This was supported by **Mosleh et al, (2017)** who found that about one-half of the sample had secondary education. However, **AbdelGhany, et al, (2016)** found that nearly a third of subjects were university graduates. The present study also revealed that the majority of the studied patients were married, and this could be explained that (79.2%) of the studied patients were above 40 years. Research by **Fredericks and Sidani (2012)** confirmed this finding, revealing that the majority of the samples were married.

Post-traumatic stress disorder (PTSD) is a prevalent mental disorder that affects people who have experienced or witnessed a life-threatening or violent incident. Re-experiencing symptoms such as intrusive thoughts, nightmares, or flashbacks; avoiding stimuli or reminders of the incident; and physiological arousal are three of the most severe symptoms experienced by people with PTSD (e.g., hypervigilance, exaggerated startle response) **(Kessler et al, 2011).** More than three-quarters of the patients in the current study experienced a high level of ICU trauma, according to the findings. It could be explained that the ICU stay is the most difficult period for patients because they are in a new situation, surrounded by equipment, their physical condition deteriorates, they are unable to communicate with their families, and they are afraid of death. All these factors can lead to increased posttraumatic symptoms in those patients. According to **Parker et al. (2015),** after critical care, up to 50% of patients or more have symptoms consistent with post-traumatic stress disorder (PTSD) anxiety, or depression. Furthermore, according to a comprehensive review and meta-analysis of 48 types of research, one out of every five adult survivors of critical care (19.83 %) develop PTSD symptoms. In the

United States, 5.7 million patients are hospitalized in intensive care units (ICUs) each year, with a mortality rate ranging from 10% to 29%. According to **Morina et al., (2018)**, roughly 1 million patients develop PTSD after ICU admission each year.

Previous research has reported numerous predictors of PTSD including sociodemographic factors (e.g younger age, being female, educational status, premorbid psychiatric diagnoses, ICU stay, and poor social support **(Pedersen et al., 2011)**. The findings of the present study support prior research showing that younger individuals are more likely to develop PTSD, with a statistically significant relationship. It may be explained that young adult age is a productive age to work, and it is the period at which an increase in welfare begins. So, during ICU stay they fear of die, not knowing what to do, or can't do simple tasks without becoming overly tired, they think of their future, and will not be able to take care of their families. Moreover, female patients reported lower trauma scores than male patients with no statistically significant relationship. On either hand, **Jackson et al, (2007)** contradict this result and found a link between gender and PTSD symptoms, with women experiencing them more frequently.

Post-traumatic stress disorder is a common side effect of ICU stays that have been overlooked or dismissed for far too long. Every nurse should focus on preventing PTSD by reducing its risk factors or at least providing psychological care to patients at risk **(Savio & Hariharan, 2020).** The results of the current study indicated the significant contribution of psychosocial care in reducing ICU trauma of patients who underwent open-heart surgery. The results of multiple regressions specified that psychosocial care is a strong indicator of ICU trauma. So, psychosocial care can be involved in the patients' care plan to decrease their ICU trauma by plain nursing responses similar to checking into the factors that raise and lessen anxiety, encouraging the family/relatives to visit more frequently, informing patients, using nonverbal communication to improve communication, and training alternative communication strategies to the patients. These results agreed with **Deja et al, (2006),** who stated that without psychosocial support, the patient becomes worried, confused, unsure, insecure, neglected, and maybe unventilated and suppressed. This will manifest as dreams, flashbacks, re-experience, avoidance, and numbness, resulting in trauma that may mimic PTSD long after they have been discharged from the ICU. Moreover, **Peris et al (2011)** added that PTSD symptoms can be reduced by the nursing intervention that begins in the ICU and include education, counseling, stress management, emotional support, and coping skills to assist patients and their families cope with anxiety, despair, fear, hopelessness, and helplessness. According to **Davidson et al. (2007),** Patients and their families require a place to wait, communicate, and share their worries and anxieties with other family members, as well as spiritual needs. Sharing their issues with others would help them in emotional venting and drawing social support. Shared decision-making may decrease family stress and help families to cope**. Chivukula et al. (2013)**, mentioned that social support is a beneficial intervention in reducing anxiety and depression.

Conclusion:

Based on the findings of this study, three-quarters of the patients studied had a high degree of ICU trauma, and there is a strong, negative, and significant association between overall trauma score and psychosocial care score among the patients studied. **Recommendations:**

1- Incorporating anxiety and depression symptom evaluations, as well as other psychosocial risk factors into routine medical care.

2- Hospitals should consider the psychosocial benefits and incorporate them as a key component of ICU treatment.

3- A well-planned psychosocial care intervention in the ICU improve ICU trauma and overall patient outcome.

4- Including mental health professionals on the cardiac team to help make decisions about the best treatment for each patient.

5- ICU nurses and other healthcare professionals should be prepared to provide psychosocial support and other psychological treatments to patients.

References:

Abd El-gafour A., Younis G., & Gad S.(2021): Assessment of Patients' Needs Pre and Post Open Heart surgery. Tanta Scientific Nursing Journal; 22 No. 3ISSN 2314 – 5595, Online ISSN 2735 – 5519) Vol.

Abdel-Ghany S., Soliman S., & Abdel-Raoof S. (2016): Knowledge and Daily Living Activities of Post Liver Transplant Clients. IOSR Journal. Vol 5. PP 56-64.Available at: www.iosrjournals.org DOI: 10.9790/1959-0505035664. Accessed on 12-Sep.2017.

Ahmed A., Khalil N., & Morsy W.(2017): Stressors encountered by patients undergoing open-heart surgery at a Cairo University Hospitals. Egyptian Nurs J 14:78–86.DOI: 10.4103/ENJ.ENJ_23_17

Benstoem C., Stoppe C., Liakopoulos O., Ney J., Hasenclever D., Meybohm P., & Goetzenich A. (2017): Remote ischaemic preconditioning for coronary artery bypass grafting (with or without valve surgery). The Cochrane database of systematic reviews, 5(5), CD011719. https://doi.org/10.1002/14651858.CD011719.pub3

Bulechek G., Butcher H., Dochterman J., Wagner C. (2016): Nursing Interventions Classification (NIC) 6th ed. Mosby Elsevier, editor. St. Louis.

Chivukula U., Hariharan M., Rana S., Thomas M., & Swain S. (2014): Role of psychosocial care on ICU trauma. Indian journal of psychological medicine, 36(3), 312–316. https://doi.org/10.4103/0253-7176.135388

Chivukula U, Hariharan M, Rana S, Thomas M & Andrew A. (2017): Enhancing Hospital Well‐being and Minimizing Intensive Care Unit Trauma: Cushioning Effects of Psychosocial Care. Indian Journal of Critical Care Med; 21:640-5.

Chivukula, U., Swain, S., Rana, S, and Hariharan, M. (2013): Perceived social support and type of cardiac procedures as modifiers of the hospital anxiety and depression *Psychological Studies, 58* (3), 242-247. DOI 10.1007/s12646-013-0199-5

Davidson J., Book S., Colket J., Tupler L., Roth S., David D., Hertzberg M., Mellman T., Beckham J., Smith R., Davison R., Katz R., & Feldman M. (1997): Assessment of a new self-rating scale for post-traumatic stress disorder. Psychological Medicine, 27, 153-160.

Davidson J., Powers K., Hedayat K., Tieszen M., Kon A., Shepard E., Spuhler V., Todres I., Levy M., Barr J., Ghandi R., Hirsch G., Armstrong D.(2007): Clinical practice guidelines for support of the family in the patient-centered intensive care unit: American College of Critical Care Medicine Task Force 2004-2005. Crit Care Med, 35:605-622.

Deja M., Denke C., Weber‐Carstens S., Schröder J., Pille C., Hokema F., et al. (2006): Social support during Intensive Care Unit stay might improve mental impairment and consequently the health‐related quality of life in survivors of severe acute respiratory distress syndrome. Crit Care;10:R147.

Fan S., Lin I., Hsieh J., & Chang C.(2017): Psychosocial Care Provided by Physicians and Nurses in Palliative Care: A Mixed Methods Study. journal-of-pain-and-symptom-management, 53, (2), 216-223.

Fredericks S & Sidani S.(2012): The impact of socio-demographic characteristics and health profile on self-care behaviors after heart surgery. British Journal of nursing, 7(2):77. Available at: https://www.magonlinelibrary.com/ DOI/abs/10.12968/bj

Hariharan M., Chivukula U. (2011): Patient care in Intensive Care Units (ICUs). Biopsychosocial assessment. J Indian Health Psychol;5:25-35.

Jackson J., Obremskey ., Bauer R., Greevy R., Cotton B., Anderson V., et al.(2007): Long-term cognitive, emotional, and functional outcomes in trauma intensive care unit survivors without intracranial hemorrhage. J Trauma;62(1):80-8.

Kessler R., Ormel J., Petukhova M., McLaughlin K., Green J.., Russo L., Stein D., aslavsky A ., Aguilar-Gaxiola S., Alonso ., et al.(2011): Development of lifetime comorbidity in the world health organization world mental health surveys. Arch. Gen. Psychiatry, 68, 90–100.

Malelelo-Ndou H., Ramathuba D ., & Netshisaulu, K. (2019): Challenges experienced by health care professionals working in resource-poor intensive care settings in the Limpopo province of South Africa. Curationis, 42(1), e1–e8. https://doi.org/10.4102/curationis.v42i1.1921

Ming J., Wei X., Han M., et al. (2021): Genetic variation of RNF145 gene and blood lipid levels in Xinjiang population, China. Sci Rep;11: 5969.

Mohamed A., & Yousef A. (2021): Depressive, anxiety, and post-traumatic stress symptoms affecting hospitalized and home-isolated COVID-19 patients: a comparative cross-sectional study. Middle East Current Psychiatry 28:28 https://doi.org/10.1186/s43045-021-00105-9.

Morina N., Stam K., Pollet T., & Priebe S.(2018): Prevalence of depression and posttraumatic stress disorder in adult civilian survivors of war who stay in war-afflicted regions. A systematic review and meta-analysis of epidemiological studies. J Affect Disord. 239:328–38.

Mosleh S., Eshah N., & Almalik M.(2017): Perceived learning needs according to patients who have undergone major coronary interventions and their nurses. Journal of clinical nursing. 26(3-4): 418-26.

Nesami M, Shorofi S, Jafari A, Khalilian A& Tabari S.(2016): The Relationship Between Stressors and Anxiety Levels After CABG in Sari, Iran Iran Red Crescent Med J. 18(5):e25407.

Parker A, Sricharoenchai T, Raparla S, et al.(2015): Posttraumatic stress disorder in critical illness survivors: a meta-analysis. Crit Care Med;43:1121–9.

Pedersen S., den Broek, K., Theuns D., Erdman ., Alings M., Meijer A., Jordaens L.& Denollet J.(2011): Risk of chronic anxiety in implantable defibrillator patients: A `multi-center study. Int. J. Cardiol. 147, 420–423.

Peris A., Bonizzoli M., Iozzelli D & et al.(2011): Early intra-intensive care unit psychological intervention promotes recovery from post-traumatic stress disorders, anxiety, and depression symptoms in critically ill patients. Crit Care;15(1): R41.

Salzmann S., Djufri S., Wilhelm M & Euteneuer F.(2020): Psychological Preparation for Cardiac Surgery, Current Cardiology Reports 22: 172

Savio M., & Hariharan M.(2020): Impact of psychosocial intervention on the prognosis of cardiac surgery Patients. Health Psychology Research; 8:8887 doi:10.4081/hpr.2020.8887.

Thabet A., Vostanis P. (2005): The validity and reliability of Arabic version of general health questionnaire in the Gaza strip. Palest Med J 1: 33-36.