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Effect of Implementing Standardized Nursing Care on Outcomes of Patients with Cardiogenic Shock

Hala Mostafa Hamed[1], Moggeda Mohamed[2], Tark Abd Elhamied[3] & Naglaa Ahmed Ahmed[4].
1. Nursing Supervisor in Pediatric I.M.C.U. Assuit University Pediatric Hospital, Egypt.
2. Assist Professor of Critical Care and Emergency Nursing Department, Faculty of Nursing at Assuit University, Egypt.
3. Lecture of Coronary and Cardiology Unit Egypt.
4. Lecturer in Critical Care and Emergency Nursing Department, Faculty of Nursing at Assuit University, Egypt.

Abstract
Introduction: Application and implementing standardized nursing care on patients with cardiogenic shock had a positive effect on critically patient outcomes, took a shorter time and is more economical. **Aim:** To evaluate the effect of implementing standardized nursing care on outcomes of patients with cardiogenic shock at the Coronary Care Unit. **Design:** Quasi-experimental research design. **Setting:** the study was conducted in the Coronary Care Unit at Assuit University Hospital. **Sample:** 60 critically ill patients were included in the study. They were categorized into two groups**,** study group who received standardized nursing care from both sex study and control group who received routine care (30 in each). **Tools**: Two tools developed by the researcher after reviewing the literature to assess the patient condition to form baseline data these tools were Tool I: patient demographic and medical data, tool II: patients outcomes assessment sheet. **Results:** the findings of the current study revealed there was a significant difference between study and control group regarding patients outcomes p.value<0.05. **Conclusion:** The application of standardized nursing care for a patient with cardiogenic shock had a statistically significant positive effect on their outcome. **Recommendation:** Application of standardized nursing care for the patient with cardiogenic shock in the Coronary Care Unit.

Keywords: Cardiogenic Shock, Standard Nursing Care & Patients' Outcomes.

Introduction
Shock is a life-threatening medical condition as a result of insufficient blood flow throughout the body. Shock often accompanies severe injury or illness. Medical shock is a medical emergency and can lead to other conditions such as lack of oxygen in the body's tissues (hypoxia), heart attack (cardiac arrest) or organ damage. It requires immediate treatment as symptoms can worsen rapidly. Medical shock is different than an emotional or psychological shock that can occur following a traumatic or frightening emotional event. **(Richard, et al, 2017)**

Shock is a life-threatening condition of circulatory failure. The effects of shock are initially reversible but rapidly become irreversible, resulting in multiorgan failure **(MOF)** and death. When a patient presents with undifferentiated shock, it is important that the clinician immediately initiates therapy while rapidly identifying the etiology so that definitive therapy can be administered to reverse shock and prevent MOF and death. Shock is defined as a state of cellular and tissue hypoxia due to reduced oxygen delivery and/or increased oxygen consumption or inadequate oxygen utilization. This most commonly occurs when there is circulatory failure manifested as hypotension (reduced tissue perfusion). **(Singer, et al, 2016)**

Cardiogenic shock is a physiologic state in which inadequate tissue perfusion results from cardiac dysfunction, most often systolic. It is a major, and frequently fatal, the complication of a variety of acute and chronic disorders, occurring most commonly following acute myocardial infarction (MI). The clinical definition of cardiogenic shock (CS) is decreased cardiac output (CO) and evidence of tissue hypoxia in the presence of adequate intravascular volume. Hemodynamic criteria for cardiogenic shock (CS) are sustained hypotension (systolic blood pressure < 90 mm Hg for ≥30 min) and a reduced cardiac index (< 2.2 L/min/m2) in the presence of normal or elevated pulmonary capillary wedge pressure (>15 mm Hg) or right ventricular end-diastolic pressure (RVEDP) (>10 mm Hg). **(Gil, 2018)**

Cardiogenic shock (CS) is a complex and highly morbid entity conceptualized as a vicious cycle of injury, cardiac and systemic decompensation, and further injury and decompensation. The generally accepted definition of CS is a state in which ineffective cardiac output (CO) due to primary cardiac dysfunction results in inadequate

end-organ perfusion. Current CS-defining criteria used in clinical trials and guidelines are varied, and recommendations are largely based on data from patients with CS due to acute coronary syndrome (ACS). **(Jones et al., 2019).**

The most common cause of cardiogenic shock (CS) is an acute coronary syndrome **(ACS)** that accounts for about 80% of CS cases. Other etiologies include mechanical complications (ventricular septal or free wall rupture, acute severe mitral regurgitation caused by papillary muscle rupture), acute myocarditis, cardiac tamponed, arrhythmias as ventricular fibrillation (an arrhythmia in which the lower chambers fibrillate or quiver) and ventricular tachycardia (an arrhythmia where the ventricles beat too fast), cardiomyopathies, high-risk pulmonary embolism (sudden blockage of an artery in the lung), drug overdoses can also affect your heart's ability to pump blood and may lead to a CS and decompensation of chronic congestive heart failure or chronic valvular heart disease. **(Glenn, 2017)**

The incidence of CS is in decline which can be attributed to increased rates of use of primary PCI for acute MI. However, approximately 5% to 8% of ST-segment elevation myocardial infarction (STEMI) and 2% to 3% of non- ST-segment elevation myocardial infarction (NSTEMI) cases can result in cardiogenic shock. This can translate to 40,000 to 50,000 cases per year in the United States**. (Kumar & Cannon, 2009).**

The CS has a higher incidence in the following classes of patients; elderly population, a patient population with diabetes, prior history of left ventricular injury, female gender previous history of myocardial infarction (MI) (heart attack), plaque buildup in the coronary arteries and long-term valvular disease. **(Rab, et al., 2018)**

Cardiogenic shock signs and symptoms include rapid breathing, severe shortness of breath, sudden, rapid heartbeat (tachycardia), loss of consciousness, weak pulse, low blood pressure (hypotension), sweating, pale skin, cold hands or feet and urinating less than normal or not at all. **(El Sibai, et al, 2018)**.

Significance of the Study

Cardiogenic shock is a low-cardiac- output state resulting in life-threatening end-organ hypo perfusion and hypoxia. Acute MI with left ventricular dysfunction remains the most frequent cause of CS. Advances in reperfusion therapy have been associated with environments in survival, but significant regional disparities in evidence-based care have been reported and in-hospital mortality remains high (27% - 51%). **(Kalmanovich et al., 2018).**

Cardiogenic shock remains the most common cause of death in patients with acute MI although mortality could be reduced from formally 80% to 40-50% in addition to percutaneous coronary intervention or coronary artery bypass grafting. **(Holger, et al., 2015)**.90 patients admitted to Orman University Hospital with cardiogenic shock in 2018 **(Hospital record of Orman University hospital, 2018)**

Aim of the study

The present study aims to

Evaluate the effect of Implementing Standardized Nursing care on outcomes of patients with cardiogenic shock at the coronary care unit through the following: 1- Improve patient outcomes.

2- Decrease length of stay on the coronary care unit.

Operational definition

1- standardized nursing care Provide continuous observation and nursing care according to patient health status and documentation result in the record every 2 hours for providing high- quality nursing care.

2- Patient outcomes means patient hemodynamic status, patient neurological status, oxygenation, occurrence of complications, length of hospital stay and discharge criteria or death.

Hypotheses

To fulfill the aim of the study the following research hypotheses were being formulated;

1- There is a statistically significant difference will be found between the study and the control groups among patient complications.

2- There is a significant improvement will be observed in the outcomes of patients in the study group than those in the control group.

Subjects & Method

Research Design

The quasi-experimental research design was adopted to conduct this study.

Setting

The study was conducted in the coronary care unit at Assiut university hospital and Orman university hospital from (1/10/2018 to 31/7/2019).

Sampling

A purposive sample consisted of 60 adult patients (male and female) in the study; their number was divided equally into two groups 30 patients for each. The control group who was received routine hospital care is application the nursing care without recommendation. The study group received standardized nursing care and vital signs follow up.

Inclusion criteria: all patients admitted to CCU with cardiogenic shock their age >18 years old.

Exclusion criteria

Patients with obesity**,** bone fracture or skin lesions (e.g, burns), end-stage malignancy**,** and diseases with

systemic vascular involvement such as lupus skin lesions and Patient with a chest infection.

Tools:

Two tools were designed and used by the researcher for collecting data of the study.

Tool I: **patient demographic and medical data.**

This tool was developed by the researchers after a review of the literature to assess the patient condition to form baseline data to be compared with this tool compromised of two parts.

Part (1): Assessment of demographic data of patients that included: the patient's code, names, age, sex, level of education, marital status, and occupation.

Part (2): Assessment of patient's clinical data that include: the medical diagnosis, past and present history and date of admission.

Tool 2: patient's outcomes assessment sheet.

This tool was developed by the researcher based on the literature review. This tool consists of six parts.

Part (1): Hemodynamic status which included: Respiratory system (rate of respiration, spo2), cardiovascular system (heart rate, systolic and diastolic blood pressure), temperature (hypothermia or hyperthermia, arterial blood gases, and fluid intake and output.

Part (2): Neurological status by using Glasgow coma scales which included: Eye-opening response, best verbal response, and motor response.

Part (3): Assessment of oxygenation tool included: O2 (types, concentration, way, intuition date, and removal date), a manifestation of hypoxia, cyanosis, apnea.

Part (4): Occurrence of complications: Hemodynamic instability, respiratory system disorder, cardiovascular system disorder, acute kidney injury, and multisystem organ failure.

Part (5): Stay in CCU: Length of stay.

Part (6): Assessment of discharge criteria included: patient discharge after patient improvement (to home, to department), discharge as patient order or death.

Method

The data were collected by the researchers through three phases:

A) Preparatory phase.

B) Implementation phase.

C) Evaluation phase.

A) Preparatory phase

Ethical considerations

- Official permission was taken from the head of general and coronary care units as well as relevant of the patients to carry out this study.
- The tools of the study were developed by the researcher based on the relevant literature reviewing.
- The developed tools were tested for content related validity by selected six critical care medical staff and three critical care nursing professionals to assess the adequacy of items of the tools.

A pilot study

- Carried out on 10% of the study subjects to test the applicability of the tools appropriate study modification was done before data collection for the actual study.
- Every conscious patient was reassured that the information obtained would be confidential and used only for the study.
- The tools developed by the researcher were tested for reliability level were (tool one 82% - tool two 85%) which were acceptable to assess the consistency and stability of the tools.

B) Implementation Phase

For both groups

- Assessment of the patient's profile and clinical data by using (tool 1).
- Assessment of hemodynamic status six times per day for five days by using (tool 2).
- Assessment of arterial blood gases by using (tool 2).
- Assessment of fluid intake and output by using (tool 2).
- Assessment of neurological status by using Glasgow coma scales (tool 2).
- Assessment of methods of oxygen therapy by using (tool 2).
- Assessment of the complication by using (tool 2).
- Assessment of outcomes by using. (Tool 2).

B- 1. Implementation Phase for the control group

The patient received the routine hospital care and follow up for vital signs (blood pressure, heart rate, temperature, and respiration) and giving medication.

B- 2. Implementation Phase for study group

The patient received standardized nursing care as a following:

- Follow up of the patient respiratory rate during hypoxia every 2 hours.
- Follow up of the patient heart rate and blood pressure every 2 hours.
- Observe the patient for any signs of change in the level of consciousness as headache; restlessness is early signs of cerebral hypoxia.
- Evaluate the patient for cyanosis or pallor by examining the skin perfusion.
- Follow up fluids intake and output to reduce signs of overload on the heart.
- Follow up for arterial blood gasses if increasing paco2 and decreasing pao2 are a sign of hypoxemia and respiratory acidosis.
- Measuring pulse ox meter and maintain the normal level of oxygen saturation at 90% or higher.

- Chest auscultation for the patient when coughing and suction when the patient needed the suction to removes secretions if the patient is unable to cough effectively to clear the airway.
- Put the patient on an elevated bed position to facilitate ventilation.
- Put the patient on oxygen as ordered and prepare the patient for mechanical ventilation if oxygen therapy is ineffective.
- Give the patient medication as ordered.

Guidelines for discharged patients to avoid the recurrence of cardiogenic shock.

- Control hypertension, maintain a healthy weight and limit salt and alcohol intake.
- Avoid smoking to reduce the risk of recurrence the cardiogenic shock.
- Maintain a healthy weight to help to lower the cholesterol level and Blood Pressure.
- Diet; eats less saturated fat and cholesterol to reduce heart disease.
- Exercise; maintains daily exercise to improve the overall health of the blood vessels and heart.

Techniques of data collection

Each patient from both groups evaluated three times as baseline at admission (first day) at the mid-period from CCU stay (third day) and (fifth day) discharge by using a study tool every days three times in the morning, in the afternoon, and in the evening , results of the assessment are documented every 2 hours in the patient record.

C) Evaluation phase

This study was conducted to investigate the effect of standardized nursing care on outcomes of a patient with cardiogenic shock at the coronary care unit including the length of stay in CCU, complications and discharge criteria.

Statistical analysis

- The data entry and data analysis were done using SPSS version (19).
- Data were presented as number, percentage, and mean standard deviation.
- A chi-square test was used to compare qualitative variables.
- Spearman correlation was done to measure the correlation between quantitative variables.
- P-Values considered statistically significant when P <0, 05.

Results

Table (1): Frequency distribution of the patient in the study and the control groups according to the demographic data and past medical diagnosis (total number of patient 60).

	Study		Control		P. value
	No.	%	No.	%	
Gender					
Female	8	26.7	8	26.7	0.614
Male	22	73.3	22	73.3	
Marital					
Married	28	93.3	29	96.7	0.500
Unmarried	2	6.7	1	3.3	
Medical Diagnosis					
Myocardial infarction (MI)	15	50.0	16	53.3	0.997
Ischemic heart disease(IHD)	7	23.3	16	53.3	0.033*
Hypertension	6	20.0	3	10.0	0.469
Diabetes mellitus(DM)	3	10.0	**6**	20.0	0.469

Chi-square test was used to compare percentages and independent t-test was used to compare means

* *There is a significant difference (p<0.05)*

** *There is a significant difference (p<0.01)*

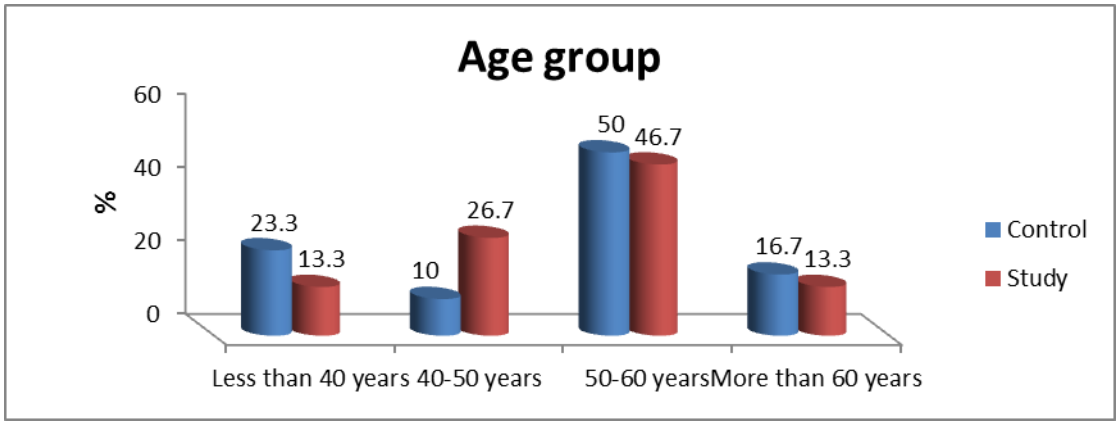

Figure (1): Shows the frequency distribution of the study and control groups regarding age.

Table (2): Mean ±SD distribution of vital signs among patients in the study and the control groups at the first, third, and fifth days (n=60).

vital signs	Study(n=30) Mean ±SD	Control(n=30) Mean ±SD	P. value
Temperature			
1st day	37.15±0.13	37.1±0.12	0.120
3rd day	37.14±0.14	37.1±0.05	0.252
5th day	37.12±0.14	37.02±0.06	**0.001****
Pulse			
1st day	75.24±7.4	82.45±5.64	**0.000****
3rd day	80.86±7.38	86.95±6.16	**0.001****
5th day	87.05±11.78	81.87±17.24	0.184
Respiration			
1st day	18.94±5.7	23.03±6.29	**0.011***
3rd day	21.52±3.25	25.58±7.55	**0.009****
5th day	22.89±5.32	23.2±5.9	0.834
Systolic blood pressure			
1st day	81.48±7.33	80.62±8.12	0.667
3rd day	97.14±7.7	94.7±4.3	0.135
5th day	103.34±11.77	97.44±12.69	0.072
Diastolic blood pressure			
1st day	51.03±2.9	51.38±3.78	0.125
3rd day	56.9±4.99	60.95±3.52	**0.001****
5th day	63.67±8.98	59.87±7.99	0.095
SPO2			
1st day	90.19±4.11	91.46±1.47	0.119
3rd day	92.45±3.3	92.4±2.85	0.950
5th day	92.11±6.05	89.61±6.22	0.127

Independent t-test was used to compare means
** There is a significant difference (p<0.05)*
*** There is a significant difference (p<0.01)*

Table (3): Mean distribution of ABG among patients in the study and the control groups at the first, third and fifth days.

ABG	Study	Control	P. value
	Mean ±SD	Mean ±SD	
PH			
1st day	7.44±0.08	7.34±0.55	0.327
3rd day	7.45±0.08	7.42±0.08	0.231
5th day	7.44±0.05	7.31±0.62	0.279
Pao2			
1st day	91.5±35.88	93.43±37.77	0.840
3rd day	95.3±28.78	87±36.55	0.333
5th day	93.5±26.84	87.17±43.64	0.515
Paco2			
1st day	29.33±10.92	32.78±13.13	0.274
3rd day	31.4±13.54	32.8±13.11	0.686
5th day	30.53±11.2	35.46±14.61	0.167
HCO3			
1st day	19.92±5.08	20.87±7.75	0.578
3rd day	22.3±5.67	21.35±6.98	0.565
5th day	21.97±5.45	23.16±5.33	0.422
Sao2			
1st day	93.5±7.15	94.83±3.93	0.375
3rd day	94.67±4.75	94.13±4.58	0.660
5th day	95.53±3.27	89.17±10.88	**0.004****

Independent t-test was used to compare means
** There is a significant difference (p<0.05)*
*** There is a significant difference (p<0.01)*

Table (4): Mean distribution of fluid intake and output among patients in the study and the control groups at the first, third and fifth days.

	Study	Control	P. value
	Mean ±SD	Mean ±SD	
Intake			
1st day	2275±654.79	2246±701.32	0.869
3rd day	2600±683.55	2610±639.69	0.954
5th day	2533.67±570.85	2596.43±646.95	0.696
Out Put			
1st day	2040±782.06	1954.83±865.23	0.691
3rd day	2230.67±748.31	2440±641.58	0.250
5th day	2310.33±669.02	2512.82±1018.43	0.372

Independent t-test was used to compare means
** There is a significant difference (p<0.05)*
*** There is a significant difference (p<0.01)*

Table (5): Mean distribution of Glasgow coma scale among patients in the study and the control groups at the first, third and fifth days.

Glasgow coma scale	Study(n=30)	Control(n=30)	P. value
	Mean ±SD	Mean ±SD	
1st day	12.77±1.17	11.6±2.53	**0.025***
3rd day	13.77±2.03	11.6±3.82	**0.008****
5th day	12.6±3.43	9.83±5.38	**0.021***

Independent t-test was used to compare means
** There is a significant difference (p<0.05)*
*** There is a significant difference (p<0.01)*

Table (6): Frequency distribution of patients in the study and the control groups according to the method of oxygen therapy.

	Study		Control		P. value
	No.	%	No.	%	
Oxygen					
Nasal cannula	5	16.7	13	43.3	**0.038***
T-piece with veturi	10	33.3	10	33.3	
MV	0	0.0	1	3.3	
Room air	15	50.0	6	20.0	

Chi-square test was used to compare percentages and independent t-test was used to compare means
** There is a significant difference (p<0.05)*
*** There is a significant difference (p<0.01)*
*** There is a significant difference (p<0.01)*

Table (7): Frequency distribution of patients in the study and the control groups regarding complications at the first, third and fifth days.

Complications	Study		Control		P. value
	No.	%	No.	%	
Hypoxemia					
1st day	2	6.7	11	36.7	**0.005****
3rd day	0	0.0	6	20.0	**0.010***
5th day	0	0.0	4	13.3	**0.038***
Dysrhythmias					
1st day	2	6.7	20	66.7	**0.000****
3rd day	1	3.3	16	53.3	**0.000****
5th day	1	3.3	13	50.0	**0.000****
Bradycardia					
1st day	24	80.0	17	56.7	0.052
3rd day	16	53.3	17	56.7	0.795
5th day	6	20.0	17	56.7	**0.003****
Hypotension					
1st day	29	96.7	24	80.0	**0.044***
3rd day	19	63.3	23	76.7	0.260
5th day	8	26.7	20	66.7	**0.002****
Cardiopulmonary arrest					
1st day	2	6.7	0	0.0	0.150
3rd day	3	10.0	0	0.0	0.076
5th day	2	6.7	0	0.0	0.150
Respiratory arrest					
1st day	1	3.3	0	0.0	0.313
3rd day	1	3.3	0	0.0	0.313
5th day	4	13.3	8	26.7	0.197
Pulmonary edema					
1st day	1	3.3	0	0.0	0.313
3rd day	1	3.3	0	0.0	0.313
5th day	1	3.3	0	0.0	0.313

Table (8): Frequency distribution of patients in the study and the control groups according to the discharge criteria.

Outcome Criteria	Study(n=30)		Control(n=30)		P. value
	No.	%	No.	%	
Death	10	33.33	18	60.00	**0.048***
discharge to department	12	40.00	10	33.33	
At home	8	26.67	2	6.67	
CCU stay	6.27±1.39		6.13±3.31		6.27±1.39

Table (1): Regarding the age, the results of the current study revealed that there was no statistically significant difference between the two groups.

Regarding gender; it was noticed that a high percentage of patients in the control and study group were males and there was no statistically significant difference between the two groups (p .value > 0.05).

Regarding marital status, the results of the current study revealed that there was no statistically significant difference between the two groups (p .value >0.05).

Regarding medical diagnosis: the results of the current study revealed that there was no statistically significant difference between the two groups in the (MI, DM, and hypertension) (p .value >0.05).

There was a statistically significant difference between the two groups in the (IHD) (p .value <0.05).

Table (2): Showed the comparison between the two groups according to vital signs in the first, third and fifth days. This table showed that there was a statistically significant difference between the two groups

Regarding temperature, there was a statistically significant difference between the two groups on the fifth day (p<0.001).

Regarding pulse, there was a statistically significant difference between the two groups at the first and third days (p<0.001)

Regarding respiration, there was a statistically significant difference between the two groups at first (p<0.05) and third days (p<0.001).

Regarding diastolic blood pressure, there was a statistically significant difference between the two groups on the third day (p<0.001).

Regarding systolic blood pressure, there was no statistically significant difference between the two groups at first, third and fifth days (p>0.05).

Table (3): Showed the comparison between the two groups according to arterial blood gases in the first, third and fifth days.

This table showed that there was no statistically significant difference between the two groups. Regarding (PH, Pao2, paco2, Hco3) of arterial blood gases (p>0.05).Regarding spo2 there was no statistically significant difference between the two groups at first, third and fifth days (p>0.05).

Regarding (Sao2) of arterial blood gases there was a statistically significant difference between the two groups on the fifth day (p<0.05).

Regarding spo2 there was no statistically significant difference between the two groups at first, third and fifth days (p>0.05).

Table (4): Showed mean distribution among the patient in study and control groups regarding Fluid intake and output at the first, third and fifth days. Whereas there was no statistically significant difference between the two groups (p>0.05)

Table (5): Showed the comparison between the two groups regarding the Glasgow coma scale, whereas there was a statistically significant difference between the two groups (P. value <0.05).

Table (6): Showed the comparison between the study and control groups among methods of oxygen therapy, where is there was a statistically significant difference between the two groups (p-value <0.05).

Table (7): Showed the comparison between study and control patients regarding complications

There was statistical significant differences between the two groups in the (Hypoxemia**)** (p<0.05), (Dysrhythmias)(p<0.001) at the first, third and fifth days

(Bradycardia**)** on the fifth day (p<0.05) and (Hypotension**)** on the first and fifth days (p<0.05). Meanwhile, there was no statistically significant differences between the two groups were found in the (Cardiopulmonary arrest, Respiratory arrest, Pulmonary edema) at the first, third and fifth days (p>0.05).

Table (8): Showed the comparison between study and control patients groups regarding (death, discharge to the department, at home) discharge criteria, where are there was a statistically significant difference (p<0.05). There was no statistically significant difference in CCU stay (p>0.05).

Discussion

Cardiogenic shock (CS) is a common cause of mortality, and management remains challenging despite advances in therapeutic options. The CS is caused by severe impairment of myocardial performance that results in diminished cardiac output, end-organ hypo perfusion, and hypoxia. Clinically this presents as hypotension refractory to volume resuscitation with features of end-organ hypo perfusion requiring pharmacological or mechanical intervention (**Van Diepen, et al., 2017)**. Acute myocardial infarction (MI) accounts for 81% of patients in CS**. (Harjola, et al., 2015)**

The study aimed to evaluate the effect of implementing Standardized nursing care on outcomes of patients with Cardiogenic Shock.

The discussion will cover the following

Regarding socio-demographic characteristics

The results of the current study revealed that most of the patients in both groups were in the age group ranged from 50 to 60 years; this is compatible with **Jan-Thorben et al., (2018)**.

As regarding studied patient gender, it was noticed that a high percentage of patients in the control and study groups were males this may be attributed to estrogen and progesterone hormones in females that

protect them from cardiac disease. This was in the same line with **Behnam & Alexander, (2019)** who mentioned in their study "Standardized Team-Based Care for Cardiogenic Shock" that the mean age of the studied patients was 61 ±13 years, 70% were males, 46% had diabetes mellitus, 58% had renal insufficiency, and 30% required dialysis.

Despite, this not matched with **Saraschandra, et al., (2019)**, who mentioned that the cohort receiving palliative care services (PCS) was older, of the white race, female sex, and with higher comorbidity and acute organ failure.

Regarding past medical diagnosis data between control and study groups of patients, most of the patients in both groups were having myocardial infarction (MI) and ischemic heart disease (IHD). This was agreed with **Rashmee & James, (2016)**, who illustrated that among 112,668 acute myocardial infarction (AMI) survivors, 4.9% (n = 5,555) experienced cardiogenic shock during the index hospitalization. The patients with cardiogenic shock were younger, and had a similar sex distribution compared with non -cardiogenic shock patients, and were less likely to have had a prior myocardial infarction, *Percutaneous intervention*, or CABG.

Regarding vital signs; this study shows a comparison between the two groups related to vital signs in the first, third and fifth days. There was a statistically significance difference between the study and control groups regarding temperature, Pulse and Respiration of the vital signs through the first, third and fifth days ($p<0.05$) result may be attributed to standardized nursing care had a positive effect on hemodynamic status of study group. This is in the same line with **Sayed, et al., (2017)** who revealed that significant changes among control and study groups from admission to discharge regarding mean scores of body temperature, pulse and respiration rate where $P<0.05$.

Concerning arterial blood gases in the first, third and fifth days; this study showed that there was no statistically significant difference between the two groups regarding almost items of arterial blood gases. However, there was a statistically significant difference between the study and the control groups regarding Sao2 in fifth days (95.53±3.27, 89.17±10.88) of arterial blood gases ($p<0.05$) this may be patient in both groups receive the same oxygen therapy.

Wijesinghe et al., (2018) reported that in uncomplicated MI, high-flow oxygen was associated with a non-significant increased risk of death (risk ratio 2.9, 95% CI 0.8 to 10.3, $p=0.08$) and a greater serum aspartate aminotransferase level (difference 19.2 IU/ml, 95% CI 0 to 38.4, $p=0.05$) than room air.

The study results showed that there was statistically significant difference between the study and control groups regarding almost of items of Glasgow coma scale in the first day (12. 77± 1.77, 11.6±2.53), third (13.77±2.03, 11.6, 11.6±3.82) and fifth days (12.6±3.43, 9.83 ±5.38) with (P. value <0.05).

Tomasz et al., (2015) in their study found that all the patients fulfilled the extracorporeal rewarming criteria and in all of them veno-arterial extracorporeal membrane oxygenation (ECMO) was implanted. The duration of ECMO support was between 8 and 144 h (average 43.7 h, median 24 h). Cardiorespiratory stability and full neurologic recovery were achieved in all the patients (Glasgow Coma Scale 15, Cerebral Performance Category 1).

Regarding the assessment of fluid intake and output, the current study revealed that there was no statistically significant difference ($p>0.05$) between the two groups this may be due to the patients of both groups received diuretic therapy and receive the same medication regiment .this is not in the same with **Yaron et al., (2017)** who mentioned that patients with positive fluid balance were older and more likely to be treated by intra-aortic balloon counter-pulsation and antibiotics. These patients were more likely to develop acute kidney injury and to need new intubation and were less likely to have renal

This study result showed distribution of the patients in study and control groups regarding to assessment of complication there was statistical significant difference ($p<0.05$) regarding hypoxemia, Dysrhythmias Hypotension Bradycardia at the first, third, and fifth days this may be attributed to patient of study group gained benefits from the standardized nursing care.

In this respect, **Richet et al., (2014)** revealed that twenty studies were included in the analyses encompassing 1,866 patients. Seven studies reported survival to hospital discharge. The researchers' estimate rates of complications were as follows: lower extremity ischemia, fasciotomy or compartment syndrome, lower-extremity amputation, and significant infection.

Also, **Srikanth & Abdallah, (2019)** concluded that: during heart failure hospitalizations (HFHs) in the United States, non–acute coronary syndrome (ACS)-related cardiogenic shock (CS) occurred infrequently but was associated with substantial mortality. Non–ACS-related CS incidence and certain mechanical circulatory support (MCS) utilization rates increased, and in-hospital mortality rate decreased. These trends were generally homogenous across age, sex, and race groups. The observed trends in incidence and mortality may be a reflection of increased identification of CS during HFHs.

The results of this study showed the distribution of the patient study and control groups regarding discharge criteria there was a statistically significant difference (0,047). This is disagreed with **Dagmar, et al., (2017)** who resulted that at 30 days, mortality in patients treated with either intra-aortic balloon pump (IABP) or percutaneous mechanical circulatory support (PMCs) was similar (50% and 46%, respectively; hazard ratio with PMCs: 0.96; 95% confidence interval: 0.42 to 2.18; p = 0.92). At 6 months, mortality rates for both PMCs and IABP were 50% (hazard ratio: 1.04; 95% confidence interval: 0.47 to 2.32; p = 0.923).

Also, **Cannon et al., (2017)** revealed that the rate of mortality decreased after guidelines applied practice (GAP) for each interval studied: hospital, 10.4% versus 13.6%; 30-day, 16.7% versus 21.6%; and one-year, 33.2% versus 38.3%; all p < 0.02.

Conclusion & Recommendation

- The standardized nursing care has a great effect on the outcomes of a patient with cardiogenic shock.
- This study recommended the applying of standardized nursing care for all patients with cardiogenic shock in all the coronary care units of different hospitals
- Providing training programs for newly joined CCU nurse about the standardized nursing care of cardiogenic shock in the future.
- Reapplication of the study on a large probability of sample from different CCU is required and evaluates the effect of standardized nursing care application on long range.

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