

Critical Care Nurses' Performance Regarding Management of Patients with Ventricular Arrhythmias

Ahmed Ali Abdullah ⁽¹⁾, **Samia Huseiny Gaballah** ⁽²⁾, **Hatem Ahmed Gharib** ⁽³⁾,
Mohamed Goda Elbqry ⁽⁴⁾

(1) Clinical instructor, Technical Nursing Institute, Suez Canal University, Ismailia, Egypt.

(2) Assistant professor of Medical Surgical Nursing-Faculty of Nursing, Suez Canal University, Ismailia, Egypt.

(3) Lecturer of Cardiology Medicine - Faculty of Medicine, Suez Canal University, Ismailia, Egypt.

(4) Lecturer of Medical Surgical Nursing -Faculty of Nursing, Suez Canal University, Ismailia, Egypt. Department of Medical Surgical Nursing, College of Nursing, Qassim University, Saudi Arabia.

Abstract

Background: Ventricular is a life-threatening condition, known as disturbance in the normal rhythm of the electrical activity of the heart arises in the ventricles, which may lead to cardiac arrest. Critical Care Nurses are responsible for early identification and management of ventricular arrhythmias. **Aim:** The current study aimed to assess critical care nurses' performance regarding management of patients with ventricular arrhythmias.

Design & Setting: A descriptive cross-sectional study design utilized to conduct the current study in Cardiac Care Unit at Suez Canal University Hospitals, Ismailia, Egypt.

Sample: A convenient sample of 85 nurses working at Cardiac Care Unit **Tools:** Three tools were utilized: 1) Structured self-administrated questionnaire about nurses' profile sheet and knowledge regarding ventricular arrhythmias. 2) nurses' practice observational checklist 3) Nurses' attitude self-administrated scale.

Results: Current study results revealed that more than half of the nurses studied were females 57%, and had a technical degree. The present study clarified that 69.4% of the studied nurses had unsatisfactory level of knowledge and 63.5% of the studied nurses had unsatisfactory practice, 87.1% had a negative attitude score toward management of VA. **Conclusion:** The studied nurses had unsatisfactory level of knowledge and practice regarding management of patients with VA.

Also, the majority of studied nurses had a negative total attitude. **Recommendations:** There is a need to in-service training programs to improve the performance of nurses working in Critical Care Units and periodic evaluation of nurses' knowledge, practice and attitude.

Keywords: Critical Care, Nurses' Performance, Ventricular arrhythmias.

1. Introduction

Ventricular arrhythmias (VA), also referred to as ventricular dysrhythmias (VD), are a diverse group of heart abnormalities that consist of electrical dysfunction caused by abnormalities in the conduction of nerve signals. As a result, the heart either beats irregularly, excessively quickly, or slowly. **(Surges et al., 2021).**

Ventricular arrhythmias can be caused by problems with the myocardial cell's ability to conduct an impulse (conductivity), problems with the cell's capacity to start and maintain an intrinsic rhythm on its own (automaticity), or a combination of the two. **(András et al., 2021).** Coronary heart disease, cocaine uses for recreational purposes, electrolyte abnormalities, a family history of rhythm disorders, and drug toxicity from digitalis, procainamide, epinephrine, aminophylline, tricyclic antidepressants, beta-adrenergic stimulants, or quinidine are all risk factors to VA. **(Boas et al., 2021).**

Ventricular arrhythmias typically present with palpitations, chest pains, fatigue, activity intolerance, a "fluttering" sensation in their chest, shortness of breath, orthopnea, syncope due to decreased cerebral perfusion, pallor, diaphoresis, hypotension, and dyspnea, whereas changes in cerebral perfusion presented with agitation, anxiety,

lethargy, or coma and required clinical intervention. **(Kim et al., 2021).**

Premature ventricular contractions (PVCs) are an abnormality in the heart's regular rhythm of electrical activity that develops in the ventricles. These PVCs include ventricular tachycardia (VT), which may lead to fibrillation or unexpected cardiac death, ventricular fibrillation (VF), which results in death if not treated right away, and ventricular asystole (cardiac standstill), in which there is no cardiac output and full cardiopulmonary arrest occurs. **(Curtain et al., 2021).**

Effective management of VA depends on rapid diagnosis involved resting and exercise ECG, Holter monitoring, serum electrolytes, serum calcium, ionized calcium, serum magnesium, cardiac enzymes, creatine kinase, complete blood count, arterial blood gases, toxic screen, thyroid stimulating hormone, B-type natriuretic peptide, electrophysiologic studies, echocardiogram, and chest x-ray **(Della Bella et al., 2021).**

pharmacological measures for rate control, pressor, precise antiarrhythmic medicinal drugs, electrical pacing, or cardioversion Intervention must be cautiously tailored to the affected person's particular arrhythmias, its underlying cause,

and the patient's own coexisting medical and surgical condition. **(Salim et al., 2018).**

The role of the critical care nurse that manages fatal arrhythmias focuses on symptomatic relief, comfort-promoting measures, and emergency response. These include assessing a disturbed rhythm, getting a 12-lead ECG to determine the type of arrhythmia, and providing enough oxygen to lessen the workload on the heart. **(Metwaly et al., 2020).**

Additionally, the nurse should undertake targeted nursing interventions and monitor any potential adverse drug responses while giving medication as directed. The nurse should administer quick, safe defibrillation and other cardiac life support procedures in situations like VF and cardiac arrest to keep the oxygen supply to the important organs alive. **(Urden et al., 2017).**

Critical care is provided to patients by a multi-disciplinary team of health care professionals who have in depth education in the specialty field of critical care, the team consists of physician intensivists, specialty physicians, nurses, advanced practice nurses, and other specialty nurse clinicians, critical care is provided in specialized units or departments **(Urden, Stacy &Lough, 2017).**

The cardiovascular Intensive Care Unit (CICU) treats a far greater breadth of disease,

while integrated health care systems utilize the CICU as a landing pad for patients with cardiac arrest, hemodynamically significant heart failure, perioperative management of patients requiring cardiac surgery or advanced intervention, unstable arrhythmias, decompensated valvular heart disease, and mechanical circulatory support, the CICU of today is more than an arrhythmia monitoring unit **(Loughran et al., 2017).**

Nurses offer and contribute to the care of critically ill patients in an expansion of roles, while the most prevalent role for a professional registered nurse is that of direct care provider, moreover nurses must have additional education in caring for the critically ill and must maintain those competencies to maintain practice in high- acuity patient care settings **(Savino & Sierra, 2018).**

Critical care nurses have vital and essential roles towards patients with ventricular arrhythmias who are admitted to coronary care unit, intensive care unit and other critical care units, especially nurses working at cardiac specialty hospitals and centers via assessing hemodynamic status, knowing clinical presentation for patients and how to progress after management through given specifically drugs used that drugs how to act, route of administration, mode of action and side effect of them until patients fully

recovered from their disease (**Urden, Stacy & Lough, 2017**).

The nurses in the emergency rooms are expected to be knowledgeable about the characteristics of the therapy and able to decide related to the management of acute conditions, while nurses have proven their capability not only to reduce cardiovascular risk factors, but also to adhere to treatment guidelines and protocols, decrease hospitalization and reduce morbidity and mortality of acute conditions, moreover the American Heart Association and the World Health Organization recognized the key role that the nurses and other team members play in supporting the goal to reduce cardiovascular diseases and disability by 25% in 2025 (**Mustafa, Bani-Ahmad & Elfaki, 2017**).

1.2. Significance of the study:

ICU patients who encounter heart rhythm disorders make up more than 70%, and they have greater death rates, especially those who have ventricular arrhythmias. (**Rav-Acha, 2021**). The sudden cardiac death (SCD) is the cause of up to 450, 000 deaths around the world each year. The SCD is usually caused by an unstable, fast ventricular rhythm, predominantly VT, and VF.

Between 180,000 and 300,000 SCD cases are thought to occur annually

worldwide. The leading cause of death, sudden and unexpected cardiac death (SCD), accounts for 17 million fatalities annually and accounts for 25% of them. Most patients are found in asystole or VT, and heart block is becoming more and more recognized as an etiology. (**Gómez-Mesa et al., 2022**). Most sudden cardiac deaths in the United States are thought to be caused by VT or VF, which is estimated to be responsible for about 300,000 deaths annually. Approximately four million Egyptians experience cardiac arrhythmias. (**Almahameed & Kaufman, 2020**).

The aim of the study: Assess critical care

$$CI' = p \pm z \times \sqrt{\frac{\hat{p}(1-\hat{p})}{n'} \times \frac{N-n'}{N-1}}$$

where
z is z score
 \hat{p} is the population proportion
n and n' are sample size
N is the population size

nurses' performance regarding management of patients with ventricular arrhythmias.

Research Question:

1. Is the critical care nurses have a satisfied level of knowledge regarding management of patients with VA?
2. Is the critical care nurses have a satisfied level of practice regarding management of patients with VA?
3. Is the critical care nurses have a positive level of attitude regarding management of patients with VA?

2. Subjects and Methods

Study design: A descriptive cross-sectional study design was utilized to conduct the current study.

Study setting: This study was conducted in Cardiac Care Unit (CCU) at Suez Canal University Hospitals, Ismailia, governorate, Egypt.

The sample of the study: A convenient sample of (85) nurses recruited in the study. The total number 85 nurses, 9 nurses were excluded from the study for the pilot study. Sample was calculated based on the following equation using an epidemiological information system with confidence level 95%, margin of error 5%, population proportion 5%, population size 100 and drop factor 10%.

Tools of data collection:

Three tools were utilized to collect data pertinent to the current study.

Tool I: A structured questionnaire for nurses designed by the researcher and written in simple clear language after reviewing recent relevant literatures and scientific references and include two parts:

Part (1): Nurses' profile: It was developed by the researcher, which was composed of 7 closed ended question including (nurses' age,

gender, level of education, years of experience in nursing, years of experience in cardiac care unite, working place, receiving a specific educational program about management of patients with ventricular arrhythmias).

Part (2): Nurses' knowledge structured self-administered questionnaire regarding VA: The researchers developed this tool based on related evidence-based guidelines, textbooks and related previous studies (**Al-Khatib et al., 2018; Hardin & Kaplow. 2019; Sole et al. 2020; and El-Sayed et al. 2020**). It was consisting of (40) questions to assess nurses' knowledge related VA through distributed it to the studied nurses including (definition (2 items), prevalence & incidence (4 items), causes and risk factors (4 items), types (3 items), manifestations (4 items), diagnostic studies (4 items), medical & nursing management (7 items), prevention measures (9 items) and complication (3 items).

Scoring system of nurses' knowledge: Total score was ranged from zero to 40 grade, based on each correct answer given one point, while incorrect answer given a zero grade. Satisfactory level of the studied nurses' knowledge is considered if $\geq 80\%$ with a total points ≥ 32 points (**Sole et al. 2020**).

Tool II: Nurses' practice observational checklists: It was adopted from the related

clinical nursing skills textbooks and related previous studies (Proctor et al., 2017; American Heart Association, 2018; Al-Khatib et al., 2018; Perry, Potter & Ostendorf, 2019 and El-Sayed et al., 2020).

To evaluate the nurses' practice related to VA. It consisted of the following procedure:

The first was recording 12-lead electrocardiogram (15 steps), the second was performing cardiopulmonary resuscitation (13 steps), the third was administering manual external defibrillation (17 steps), the fourth was administering emergency medications (17 steps), the fifth was initiating cardiac monitoring (17 steps) and the sixth was crash cart preparation (10 steps).

Scoring system of nurses practice: The total Nurses' practice score of the checklist were (89 grade), for step done given one point and not done step given zero. It is considered a satisfactory level of practice if total score \geq 80% (El-Sayed et al., 2020).

Tool III: Nurses' attitude self-administered scale: It consisted of 14 items the tool was adopted from (Wiley, 2016, and Shehata, et al. 2023) and translated to Arabic language. It was used to assess nurses' attitude toward management of patients with VA.

Scoring system of nurses' attitude scale: The response was on 5 points Likert scale

ranged from (strongly disagree=1), (disagree=2), (neutral =3), (agree=4) & (strongly agree=5). The total score ranged from 14-70 and divided into two categories as follows: It is considered a positive attitude with a total score \geq 80% or negative attitude with total score \leq 80% (Shehata, et al. 2023).

Tool validity:

The tool was revised by a panel of 7 experts in the Medical-Surgical, 4 from SCU and 1 from Mansoura university (3 lecturers, 2 assistant professors) and Cardiology Medicine (2 Lecturers) faculty of Medicine, SCU to review the tools' clarity, relevance, applicability, comprehensiveness, understanding, and appropriating to achieve the aim of the study for tool I, while tool II and tool III were a valid tool adopted by the researcher. Tool II and tool III modified based on the experts' suggestions.

Reliability of the study Tools:

Coefficient of reliability of the evaluating tools was measured by Cronbach's α alpha test. The reliability scores of the tool's knowledge, practice and attitude as above were (0.88, 0.7 and 0.71 respectively), which indicate high tool internal consistency of the used tools.

Pilot study

A pilot study was conducted on 10% (9 critical care nurses) of the study sample to

examine the clarity and effectiveness of the study tools. It was carried out for one month before the starting the study from the beginning January to the end of January 2022. Data obtained from the pilot study were analyzed. Based on its results, modifications to the study tool were done. The sample used for the pilot study was excluded from the study sample.

Field work:

The purpose of the study was explained briefly by the researcher to nurses who were willing to participate and get consent from nurses who agreed to participate. The actual field work was carried out over a period of four months, starting from the beginning of February 2022 to end of May 2022. **Tool I:** Nurses' profile data was collected via self-administered questionnaire. Moreover: Nurses' level of knowledge was assessed with structured self-administered questionnaire. Two nurses were interviewed per day. **Tool II:** Nurses' level of practice was measured using an observational checklist. The researcher observed nurses' practice related to VA patients. **Tool III:** Nurses' level of attitude was assessed with a self-administered scale using to assess nurses' attitude toward management of patients with VA.

Administrative design:

Official permission was obtained from the administrative directors of Suez Canal University Hospitals to begin data collection by a formal letter submitted from the Faculty of Nursing, Suez Canal University to obtain a permit to conduct this study. The aim of this study was explained to the directors, physicians, and staff nurses working in critical care units of the Suez Canal University Hospital.

The data were collected 4-day week day after day in the morning, afternoon and night shifts. The researcher meets the studied nurses and provide appreciation for their cooperation as well as contacts. The total number of interviewing sessions were 30.

Ethical considerations:

The Suez Canal University Faculty of Nursing's Ethical Committee, code number 141, granted their permission in January 2022. Administrators at the hospital gave their official approval for the study to be carried out. Each nurse was informed of the current study's purpose and importance. The nurses were made aware of their right to refuse participation or to leave the study at any time without consequence. Data coding protects confidentiality and anonymity. Additionally, nurses were made aware that this data would not be used in another study without their consent. The participating

nurses gave their written informed consent before beginning the study.

Statistical design:

Statistical Package for the Social Sciences (SPSS version 23) was used to code, input, and analyze the information gathered through the questionnaire. Chi-square test was used to test the relation between categorical variables and Monte Carlo correction was used for low cell value. Correlations were used to test relationships between different variables. P value was fixed at 0.05 to indicate significant findings.

3. Result.

Table (1): Shows that 55.3% of studied nurses' age was between 26 to less than 31 years old with mean age 26.33 ± 2.53 . Also, 57.6% were females, 63.5% of studied nurses' general experience out Critical Care Unit age between 5 to less than 10 years, and 50.6% of studied nurses' general experience in Critical Care Unit between 5 to less than 10 years.

Table (2): Illustrates that the mean score of the total nurses' knowledge was (29.73 ± 3.97) out of 40. Also, the mean score preventions of VA were (7.61 ± 1.46) out of 10 and the mean score of nursing care was $(2.56 \pm .57)$ out of 3.

Figure (1): reveals that 69.4% of studied nurses had unsatisfactory total score of knowledge regarding management of patient with VA, while 30.6% of studied nurses had a satisfactory total score of knowledge.

Table (3): Illustrates that the mean score of total practice was 65.31 ± 13.24 . Also, the mean of the recording 12-lead electrocardiogram was 15.92 ± 3.25 and the mean of the initiating cardiac monitoring was 6.42 ± 1.79 .

Figure (2): shows that only 36.5% of nurses had a satisfactory total score regarding management of patient with VA practices, while 63.5% of nurses had an unsatisfactory total practice score.

Figure (3): shows that 87.1% of nurses had a negative total attitude score, while only 12.9% of nurses had a positive total attitude regarding management of patients with VA.

Table (4): Show that there was no significant correlation between total nurses' knowledge and their total practice with a p-value = 0.892 but there was significant correlation between total nurses' knowledge and their nurse's attitude with a p-value > 0.05.

4. Discussion

In critical care settings, nurses play a crucial role in the detection and management of patients with ventricular arrhythmias. They

are experts in providing symptom relief, fostering comfort, and implementing emergency measures in cases of deadly arrhythmias. (Metwaly et al., 2021).

Therefore, the present study aimed to assess critical care nurses' performance regarding management of patients with ventricular arrhythmias. Five primary sections will be covered in the following order in order to discuss the current study findings with those from other studies and to further the study's purpose: First, nurses' profile of the studied nurses; Second, nurses' level of knowledge regarding management of patients with ventricular arrhythmias; Third, nurses' level of practice regarding management of patients with ventricular arrhythmias; Fourth, nurses' level of attitude regarding management of patients with ventricular arrhythmias; Fifth, relation and correlations between the study variable.

First part, demographic characteristics of the studied nurses

These results could be explained in the light that the more than half of the studied nurses were females, also more than half of studied nurses who actually on the head of the work had a technical degree, and their age range from twenty-six to thirty-one years old. Also, more than three-quarter of nurses don't

attending any courses regarding management of patients with VA.

The nurses' profile of participants in the current study agree with **El-Sayed et al., (2021)** who clarified that the majority of the studied nurses' age less than thirty years old and more than half were females. Furthermore, results presented by, **Eldsouky et al., (2016)** concluded that the majority of subjects in their study were females and more than half of them have their age below 30 years old. From the researcher point of view, this result could be contributed to majority of the nurses in Egypt are females and most of the nurses who actually on the head of the work had a technical degree.

The current study findings revealed that near two-third nurses' years of experience out critical care unit were about five to ten years, while nearly half nurses' years of experience in the CCU was about five to ten years. These results were supported with a study conducted by, **Metwaly et al., (2021)** who illuminated that more than half of the studied nurses had total years of experience in the hospital less than 5 years in the cardiac care unit.

As regards to the level of education and training course in the results of this study the majority of studied nurses not attended courses regarding management of patients with VA. Also, more than half of them had a

technical Nursing institute degree education. In the same context results presented by **Eldsouky et al., (2016)** illustrated that more than half of studied sample were having a technical degree, with less than one third of the nurses in the study sample had attend training courses. Moreover, **Mohamed et al., (2020)** reports that the majority of nurses, participated in the study had have obtained the technical institute of nursing diploma.

Second part, nurses' knowledge regarding management of patients with VA.

The current study results clarified that about less than three quarter of the studied nurses had unsatisfactory knowledge regarding management of patients with VA. This which might be related lack of Inservice training, non-availability of education resources in CCU and non-availability of access for knowledge refreshment. In addition, nurse's exhaustion and burnout duo to long work hours and increase work load which hinder their ability to read and update their knowledge.

In the same line with over results, **El-Sayed et al., (2021)** reported that more than two third of nurses had unsatisfactory level of knowledge, moreover **Tavan et al., (2020)** showed that had have significant decrees in knowledge related to diagnosis or arrhythmias and had have poor and moderate diagnostic

abilities. In the same context, **Fadalla, (2018)** reported that nurses had have unsatisfactory fundamental knowledge regarding arrhythmia. Other results reinforced with **Mousa et al., (2016)** in a study, illustrated that the overall assessment of nurses' knowledge about VT was low satisfactory.

Third part, nurses' practice regarding management of patients with VA.

The present study results reported that nearly two-third of the studied nurses had unsatisfactory practice regarding management of patients with VA. This could be attributed to lack of nurses' knowledge, which reflects on their practice, inadequate continuous in-service training program and sometimes-insufficient equipment. This result agrees with **Ruhwanya et al., (2018)** about who conclude in his master thesis that the studied nurses had poor skills regarding life threatening arrhythmias (LTVA).

Moreover, **Khalil et al., (2018)** reported that the majority of the studied CCU nurses had unsatisfactory practice related to emergency management of life-threatening VA. Findings of this study showed that nearly one third of the studied nurses had unsatisfactory practice regarding recording 12-lead ECG. This might be due to inadequate training regarding recording 12-lead ECG, absence of guidelines and

supervision. This finding is disagreed with **El-Sayed et al., (2021)** showed that more than three quarter of the studied CCU nurses had satisfactory practice regarding recording 12-lead ECG.

Concerning the nurses' practice regarding cardiopulmonary resuscitation (CPR), the current study revealed that most of the studied nurses had unsatisfactory practice regarding CPR. This might due to lack of training course and inadequate information. This is in congruent with **Thomas, Jex & Thornley, (2017)** reported that CCU nurses had high scores pertaining CPR knowledge but low scores to skills. Also, supported by **Munezero et al., (2018)** reported that the CCU nurses had inadequate CPR skills. However, with **Damkliang et al., (2015)** reported that the majority of the studied emergency nurses had satisfactory practice regarding CPR.

Concerning the nurse's practice related to administration of manual external defibrillators. The present study revealed that more than three quarter of the studied nurses had unsatisfactory practice regarding administration of manual external defibrillators. This might be due to lack of training course, very few refreshes and update their knowledge and skills on the subject. This finding supported with **El-Sayed et al., (2021)**

reported that the more than three quarter of CCU studied nurses had an unsatisfactory practice regarding the defibrillator.

The present study clarified that the more than three quarter of the studied nurses had unsatisfactory practice regarding administering emergency medication. This may be due to insufficient training and unavailability of resources. This finding agreed with **Taha, (2017)** who reported that there was a highly statistically significant differences in nurses' practices between pre and post phase related to monitoring intravenous infusion of emergency drugs. In addition, these findings supported with **Elmeanawi, (2015)** who reported that more than half of the studied nurses had unsatisfactory performance level about emergency medication.

The present study findings showed that near three quarter of the studied nurses had unsatisfactory practice regarding connecting the patient to the monitor. This finding in the same line with **Frydensberg et al., (2018)** Who reported that nurses had insufficient practice regarding connecting the patient to the monitor.

According to crash cart preparation, currant study result clarified that near two-third of the studied nurses had unsatisfactory practice regarding crash cart preparation. This finding

comes in the same line with **Ouseph et al., (2015)** who reported although nurse in their study had attended regular training program but they had unsatisfactory practice in range to crash cart preparing. Also, **El-Sayed et al., (2021)** who found that the majority of the studied nurses had unsatisfactory performance regarding crash cart preparation.

Forth part, nurses' attitude regarding management of patients with ventricular arrhythmias.

As regards data analysis, the present study determines critical care nurses' level of attitude regarding management of patients with ventricular arrhythmias. The majority of studied nurses had a negative total attitude score. It demonstrated that more than three-quarter of studied nurses had strongly agree attitude about the critical care nurse must be qualified scientifically and practically. This might be related to the majority of the studied nurses working in critical care unite must be had bachelor nursing. The present study findings showed near one-quarter of the studied nurses had strongly disagreed attitude about the dealing with a ventricular arrhythmia's patient is very easy. This might be due to the nurses define importance of caring patient with ventricular arrhythmias. Also, nearly half of studied nurses had agree attitude about the way to see the need for a

team spirit among nurses ensure efficient nursing care provided.

On the other hand, less than one-quarter of studied nurses had disagreed attitude about the that the patient's social and economic state affect the nurse-patient relationship and nearly one-third of studied nurses had somehow attitude about that it is not necessary to disturb the patient during sleep either day or night when to perform nursing care. From the researcher point of view this related to their insecurity stemmed from a self-perceived lack of knowledge and confidence in dealing with patient with ventricular arrhythmias the researcher may interpret these results related to many factors as stress caused by an overwhelming workload, inadequate monitors, or machines available to dealing with ventricular arrhythmias patient, and lack of teamwork when caring for patients with ventricular arrhythmias. Also lack of several nursing staff in the critical care units, lack of close supervision, and Lack of previous training and experience years in the critical care units. Which is reflected in their performance. This result in contrary with **chen et al., (2022)** who reported majority of studied nurses had a positive attitude score regarding continuous monitoring, lead placement and intervening prompted by rhythm abnormalities. Also, with **Ibrahim et**

al, (2017) who reported that all nurses followed ethical conduct and respected patient rights after implementation of standards regarding the adherence to ethics and patient rights.

Fifth part, Relations and correlation between the studied variable:

Concerning relation between nurses' knowledge and total practice regarding management of patients with VA, the result of the present study revealed that, no significant correlation between nurses' knowledge and total practice. This could be due to insufficient supervision and lack of retribution. This is in the same line with **El-Sayed et al., (2021)** who clarified that there was no statistically significant relation between nurses' knowledge and nurses' practice.

This finding is inconsistent with **Ibrahim et al., (2017)** who reported that many nurses were aware of their unsatisfactory knowledge and related it to unsatisfactory care practices. Lack of understanding may worsen management of patient's lethal VA. On the other hand, our finding is consistent with **Mousa, (2016)**, who stated that there was no association found between nurse knowledge and practice.

5. Conclusion:

The results of the current study concluded that less than three quarters of the

studied nurses had unsatisfactory knowledge about care of patient with VA. More than half of the studied nurses had unsatisfactory practice level as well as majority of studied nurses had a negative total attitude score regarding management of patients with VA.

Moreover, there was a no statistically significant relation between total nurses' knowledge and practice with their nurses' profile of studied nurses. In addition; there was a statistically significant relation between studied nurses' attitude and their nurses' profile (age and general experience in Critical Care Unite) of studied nurses. Furthermore; there was a statistically significant relation between nurses' total knowledge score and total attitude score.

6. Recommendations:

In the light of the finding of this study, the following recommendations are proposed:

1. Periodic evaluation of nurses' performance regarding VA.
2. In-service training programs for updating nurses' performance working in critical care units for prevention and management of patients with VA.

3. A standard guideline, protocols explaining how to care for patient with life-threatening VA.
4. Specific training courses about basic and advanced life support, ECG monitoring, administration of emergency medication and crash cart preparation must be established for nursing staff to enhance them to develop the management of VA.
5. Educational posters in the critical care units include an outline concerning early

prevention and management of ventricular arrhythmias be beneficial for nurses.

6. Replication of the study on a larger probability sample selected from different geographical areas in Egypt to be generalizable data.

accept my sincere gratitude to my supervisors.

Tables and Figures

Table (1): Frequency and percentage distribution of the studied Nurses' according to their nurses' profile data (n=85).

Nurses' profile data	Total Sample (n=85)	
	N	%
Age (Years)		
● 21:<26	38	44.7
● 26:<31	47	55.3
Mean ±SD	26.33±2.53	
Min-Max	(21-30)	
Gender		
● Male	36	42.4
● Female	49	57.6
Education		
● Diploma	5	5.6
● Technical	47	55.3
● Bachelor	33	38.8
General experience (out critical care unit)		
● <5y	26	30.6

● 5: 10	54	63.5
● >10y	5	5.9
General experience (in critical care unit)		
● <5y	41	48.2
● 5: 10	43	50.6
● >10y	1	1.2
Received training courses		
● Yes	12	14.1
● No	73	85.9

SD: Standard Deviation

Table (2): Average percent and mean scores of the studied nurses' level of knowledge regarding management of patient with VA. (n=85).

Items	Average percent (%)	Total Sample (n=85)
		Mean±SD
1. Definition of VA.	47.06	0.94±.66
2. Incidence and prevalence of VA.	54.71	2.19±.91
3. Risk factors and causes of of VA.	79.41	3.18±.95
4. Signs and symptoms of of VA.	74.41	2.98±.82
5. Types of of VA.	54.90	1.65±1.05
6. Diagnostic tests of VA.	87.06	3.48±.67
7. Medical management of VA.	81.47	3.26±.93
8. Preventive measures of VA.	84.58	7.61±1.46
9. Nursing care of VA.	85.49	2.56±.57
10. Complication of of VA.	62.75	1.88±.85
Total Score (40 Questions)	74.32	29.73±3.97

SD: Standard Deviation

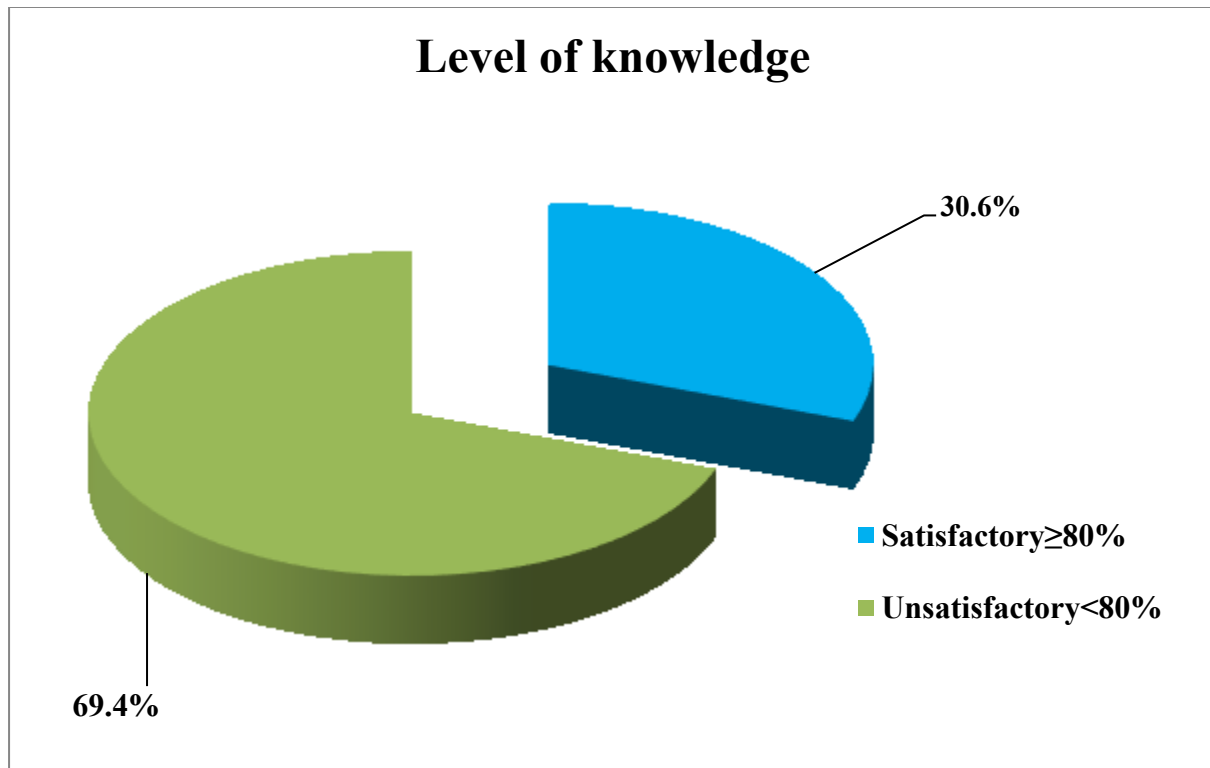


Figure (1): Distributions of the studied nurses' regarding their total knowledge level (n=85).

Table (3): Satisfactory level and mean scores of the studied nurses regarding VA practices (n=85).

Items	Satisfaction level of practices (%)	Total Sample (n=85)
		Mean±SD
1.Recording 12- lead electrocardiogram	36.5	15.92±3.25
2.Cardiopulmonary resuscitation	17.6	9.29±5.08
3.Administering manual external defibrillation	24.7	11.20±2.99
4.Administering emergency medications	23.5	11.15±3.40
5.Initiating cardiac monitoring	24.7	11.46±3.04
6.Crash cart preparation	30.6	6.42±1.79
Total practice	36.5	65.31±13.24

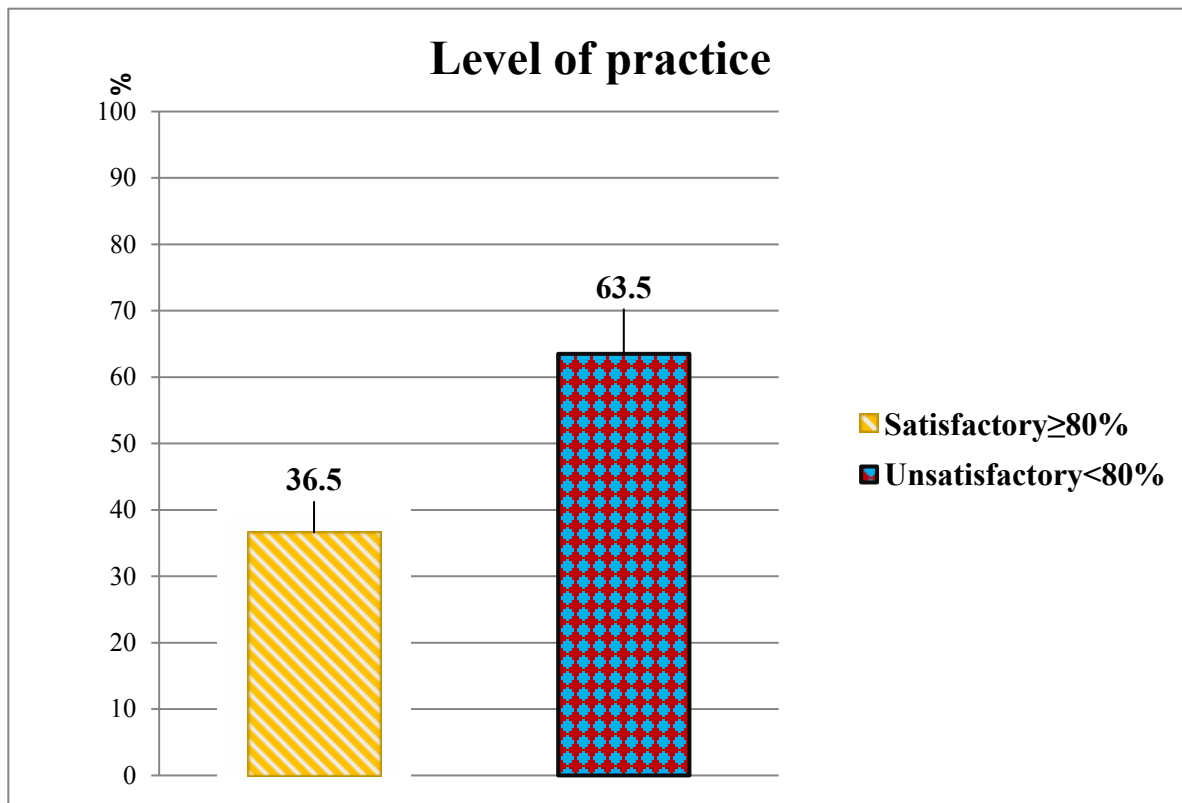


Figure (2): Total level of nurses' total practices related to management of patient with VA (n=85).

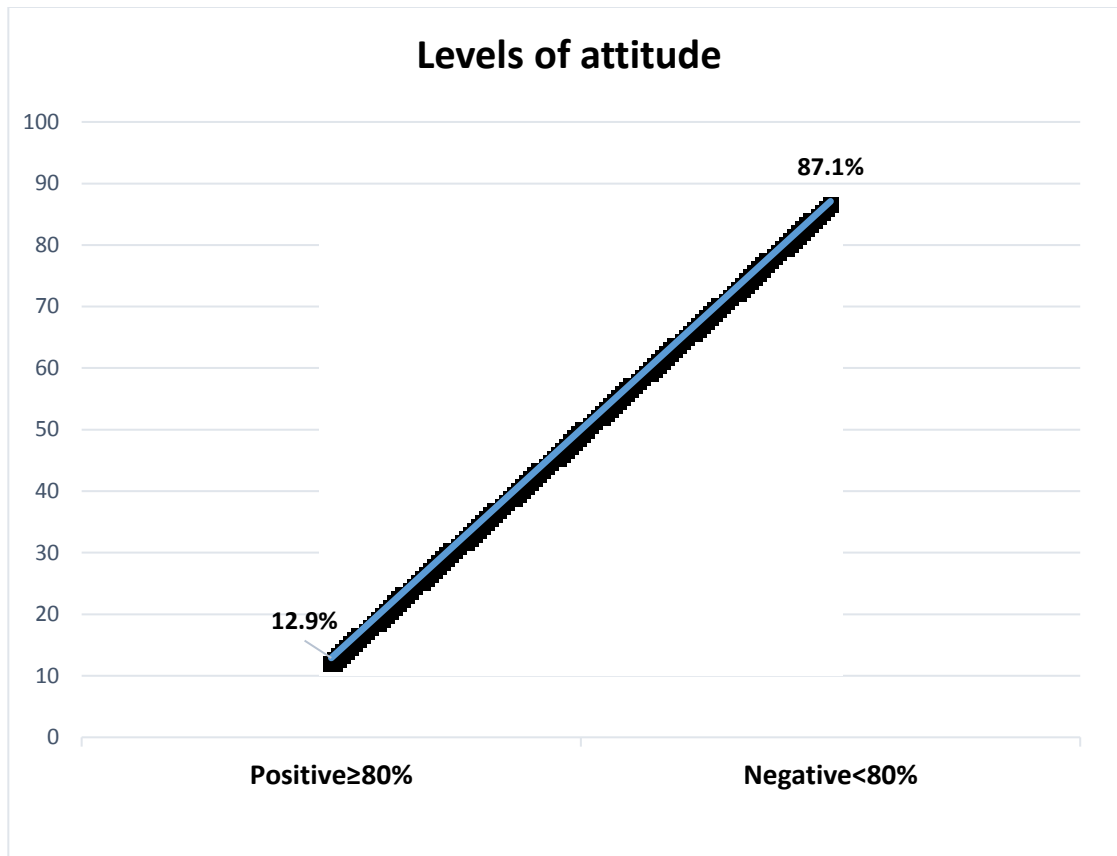


Figure (3): Level of attitude among the studied nurses regarding management of patient with VA (n=85).

Table (4): Correlation between total nurses' knowledge, practice and attitude regarding management of patient with VA (n=85).

Items	Practice		Attitude	
	r	P value	r	P value
Knowledge	.015	.892	.496	<.001*

r: Pearson correlation coefficient p value: proportion probability of error and confidence interval.

7. References

- Al-Khatib, S. M., Stevenson, W. G., Ackerman, M. J., Bryant, W. J., Callans, D. J., Curtis, A. B., ... & Page, R. L. (2018).** 2017 AHA/ACC/HRS guideline for management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Journal of the American College of Cardiology*, 72(14), e91-e220.
- Almahameed, S. T., & Kaufman, E. S. (2020).** Idiopathic ventricular fibrillation: diagnosis, ablation of triggers, gaps in knowledge, and future directions. *The Journal of Innovations in Cardiac Rhythm Management*, 11(6), 4135.
- American heart association, (2018):** Stoelting. Existing disease E- Book, Abnormalities of cardiac conduction and cardiac rhythm, 7th ed., Elsevier, China, P:166.
- András, V., Tomek, J., Nagy, N., Virág, L., Passini, E., Rodriguez, B., & Baczkó, I. (2021).** Cardiac transmembrane ion channels and action potentials: cellular physiology and arrhythmogenic behavior. *Physiological reviews*.
- Boas, R., Thune, J. J., Pehrson, S., Køber, L., Nielsen, J. C., Videbæk, L., ... & Dixen, U. (2021).** Prevalence and prognostic association of ventricular arrhythmia in non-ischaemic heart failure patients: results from the DANISH trial. *EP Europace*, 23(4), 587-595.
- Chen, Y., Kunst, E., Nasrawi, D., Massey, D., Johnston, A. N., Keller, K., & Fengzhi Lin, F. (2022).** Nurses' competency in electrocardiogram interpretation in acute care settings: A systematic review. *Journal of advanced nursing*, 78(5), 1245-1266.
- Curtain, J. P., Docherty, K. F., Jhund, P. S., Petrie, M. C., Inzucchi, S. E., Køber, L., ... & McMurray, J. J. (2021).** Effect of dapagliflozin on ventricular arrhythmias, resuscitated cardiac arrest, or sudden death in DAPA-HF. *European heart journal*, 42(36), 3727-3738.
- Damkliang, J., Considine, J., Kent, B., & Street, M. (2015).** Nurses' perceptions of using an evidence-based care bundle for initial emergency nursing management of patients with severe traumatic brain injury: A qualitative study. *International emergency nursing*, 23(4), 299-305.
- Della Bella, P., Radinovic, A., Limite, L. R., & Baratto, F. (2021).** Mechanical circulatory support in the management of life-threatening arrhythmia. *EP Europace*, 23(8), 1166-1178.

- Eldsouky, S. E., Taha, N. M., & Saleh, M. D. (2016).** Nurses' knowledge and practice concerning fluid and electrolyte balance among patients with congestive heart failure. *Zagazig Nursing Journal*, *12*(1), 114-128.
- El-Meanawi, N. H. K. K. (2015).** Assessment of Nurses Performance During Cardiopulmonary Resuscitation In Intensive Care Unit And Cardiac Care Unit At The Alexandria Main University Hospital. *Nursing management*, *4*(12), 5.
- El-Sayed, F., Fekry, N. M. T., & Metwaly, E. A. (2020).** Nurses' performance regarding life threatening ventricular dysrhythmias among critically ill patients. *Egyptian Journal of Health Care*, *11*(1), 101-114.
- Fadalla, M. M. A. (2018).** *Impact of an educational program on recognition and management of Ventricular arrhythmias guideline among critical care nurses in Khartoum City, Sudan* (Doctoral dissertation, Elbagir Abdulrahman).
- Frydensberg, V. S., Skovbakke, S. J., Pedersen, S. S., & Kok, R. N. (2018).** Body image concerns in patients with an implantable cardioverter defibrillator: a scoping review. *Pacing and Clinical Electrophysiology*, *41*(9), 1235-1260.
- Gómez-Mesa, J. E., Márquez-Murillo, M., Figueiredo, M., Berni, A., Jerez, A. M., Núñez-Ayala, E., . . . Montes, M. C. (2022).** multidisciplinary review on the appropriate use of implantable cardioverter defibrillator in heart failure with reduced ejection fraction. *Journal of Interventional Cardiac Electrophysiology*, 1-19.
- Hardin, S. R., & Kaplow, R. (2019).** *Cardiac surgery essentials for critical care nursing*. Jones & Bartlett Learning.
- Ibrahim, R. A., Abd-Allah, K. F., Arafa, O. S., & Mohammed, S. S. (2017).** Effect of nursing care standards on nurses' performance in caring for patients with cardiac arrhythmias. *Egyptian Nursing Journal*, *14*(3), 251.
- Khalil, A. M., Hammouda, N. Y., & El-Deeb, K. F. (2018).** Implementing sustainability in retrofitting heritage buildings. Case study: Villa Antoniadis, Alexandria, Egypt. *Heritage*, *1*(1), 57-87.
- Kim, Y. G., Choi, Y. Y., Han, K. D., Min, K., Choi, H. Y., Shim, J., ... & Kim, Y. H. (2021).** Atrial fibrillation is associated with increased
- Loughran, J., Puthawala, T., Sutton, B. S., Brown, L. E., Pronovost, P. J., & DeFilippis, A. P. (2017).** The cardiovascular intensive care unit—an evolving model for health care delivery. *Journal of Intensive Care Medicine*, *32*(2), 116-123.

- Metwaly, E. A., & Bayomi, R. R. (2021).** Effect of Training Program on Nurses' Knowledge and Practice Regarding Patients with Cardiac Arrhythmias. *Assiut Scientific Nursing Journal*, 9(26.), 52-61.
- Mohamed, A. B., Abd-Alziz, M. A., & Ahmed, N. A. (2020).** Assessment of nurses' knowledge and practices regarding care for patients with cardiogenic shock. *Assiut Scientific Nursing Journal*, 8(20.0), 55-63.
- Mousa, A. M., Owaid, H. A., Ahmed, R. S., Zedaan, H. A., & Shalal, S. H. (2016).** Nurses' Knowledge Concerning Early Interventions for Patients with Ventricular Tachycardia at Baghdad Teaching Hospitals. *kufa Journal for Nursing sciences*, 6(2), 1-8.
- Munzero, J. B. T., Atuhaire, C., Groves, S., & Cumber, S. N. (2018).** Assessment of nurses' knowledge and skills following cardiopulmonary resuscitation training at Mbarara Regional Referral Hospital, Uganda. *Pan African Medical Journal*, 30(1).
- Mustafa, M., Eldeen, A. S., Bani-Ahmad, S., & Elfaki, A. O. (2017).** A comparative survey on Arabic stemming: approaches and challenges. *Intelligent Information Management*, 9(02), 39.
- Ouseph, M. M., Huang, Y., Banerjee, M., Joshi, S., MacDonald, L., Zhong, Y., ... & Wang, Q. J. (2015).** Autophagy is induced upon platelet activation and is essential for hemostasis and thrombosis. *Blood, The Journal of the American Society of Hematology*, 126(10), 1224-1233.
- Perry, A. G., Potter, P. A., & Ostendorf, W. (2019).** *Nursing Interventions & Clinical Skills E-Book*. Elsevier Health Sciences.
- Proctor, W. R., Foster, A. J., Vogt, J., Summers, C., Middleton, B., Pilling, M. A., ... & Williams, D. (2017).** Utility of spherical human liver microtissues for prediction of clinical drug-induced liver injury. *Archives of toxicology*, 91(8), 2849-2863.
- Rav-Acha, M., Orlev, A., Itzhaki, I., Zimmerman, S. F., Fteiha, B., Bohm, D., ... & Michowitz, Y. (2021).** Cardiac arrhythmias amongst hospitalised Coronavirus 2019 (COVID-19) patients: Prevalence, characterisation, and clinical algorithm to classify arrhythmic risk. *International Journal of Clinical Practice*, 75(4), e13788.
- Ruhwanya, D. I., Tarimo, E. A., & Ndile, M. (2018).** Life threatening arrhythmias: Knowledge and skills among nurses working in critical care settings at Muhimbili National Hospital, Dar es Salaam, Tanzania. *Tanzania Journal of Health Research*, 20(2).
- Salim, A., & Lim, S. (2018).** Recent advances in the metamaterial-inspired biosensors. *Biosensors and Bioelectronics*, 117, 398-402.

Savino, E., & Sierra, L. (2018). Team approach to the critically ill patient—the role of the veterinary nurse. In *BSAVA manual of canine and feline emergency and critical care* (pp. 403-411). BSAVA Library.

Shehata, S. A., Elbqry, M. G., Mostafa, E., Abdelgeleel, N. M., & Elmansy, F. M. (2023). Emergency Nurses' Knowledge and Attitude towards Caring for Carbon Monoxide Poisoned Patients in Ismailia Governate, Egypt. *Egyptian Society of Clinical Toxicology Journal*, 11(1), 72-86.

Sole, M. L., Klein, D. G., & Moseley, M. J. (2020). *Introduction to Critical Care Nursing E-Book*. Elsevier Health Sciences.

Surges, R., Shmuely, S., Dietze, C., Ryvlin, P., & Thijs, R. D. (2021). Identifying patients with epilepsy at high risk of cardiac death: signs, risk factors and initial management of high risk of cardiac death. *Epileptic Disorders*, 23(1), 17-39.

Taha, A. (2017). Impact of a Designed Teaching Protocol about Nursing Management of Coronary Artery Bypass Grafting on Nurse's Knowledge, Practices and Patient's Outcome. *IOSR Journal of Nursing and Health Science*, 6(4), 13-28.

Tavan, H., Norouzi, S., & Shohani, M. (2020). Teaching cardiac arrhythmias using educational videos and simulator software in

nurses: An educational interventional study. *Shiraz E-Medical Journal*, 21(9).

Thomas, D. E., Jex, N., & Thornley, A. R. (2017). Ventricular arrhythmias in acute coronary syndromes—mechanisms and management. *Continuing Cardiology Education*, 3(1), 22-29.

Urden, L. D., Stacy, K. M., & Lough, M. E. (2017). *Critical care nursing-e-book: diagnosis and management*. Elsevier Health Sciences.

Wiley, D., & Green, C. (2016). Why openness in education? *Interdisciplinary Studies: A Connected Learning Approach*.