

Factors Affecting Nurses' Performance toward Life-Threatening Arrhythmias for Critically Ill Patients

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Abstract

Background: Arrhythmias are one of the common presentations to critical units after ischemia or electrolytes imbalance, any rhythm apart from sinus rhythm is called arrhythmia. Timely interpretation of arrhythmia saves life mostly of the person who is the first responder to CCU, or ICU setup, which are the nursing staff. **Aim of the study:** The current study was conducted to assess factors affecting nurse's performance toward life-threatening arrhythmias for critically ill patient. **Research Design:** A descriptive design was used. **Study Settings:** the study was conducted at cardiac intensive care units, General Intensive Care Units at Ain Shams University Hospitals. **Subject:** convenient sample of all available nurses working in pre mentioned settings and the study sample composed of 50 nurses. A purposive sample of 100 patients in pre mentioned setting. **Result:** (56%) of the studied nurses had total unsatisfactory knowledge about life-threatening arrhythmias. Also (76%) of them had total satisfactory practice. Additionally (58%) of the studied group had positive attitude towards the care of patients with life-threatening arrhythmias. Related to work environment (64%) of the studied nurses demonstrated negative regarding effect total factors related to work environment. **Conclusion:** More than half of the studied nurses had total unsatisfactory knowledge of life-threatening arrhythmias. Also more than three quarters of them had total satisfactory practice. Additionally more than half of them had positive attitude towards the care of patients with life-threatening arrhythmias and less than two thirds of them demonstrated negative effect regarding total factors related to work environment. **Recommendations:** An orientation program should be prepared to help the newly appointment nurses to revise, acquire and develop their knowledge and practice regarding CPR, ECG. Specific courses about the recognition and management of Life-Threatening arrhythmias must be establish for critical care nurses to enhance them to be more knowledgeable, practice and attitude.

Key words: Factors Affecting, Nurses' Performance, Life-Threatening Arrhythmias, Critically Ill Patients.

Introduction:

Arrhythmias are one of the common presentations to critical units after ischemia or electrolytes imbalance, any rhythm apart from sinus rhythm is called arrhythmia. Timely interpretation of arrhythmia saves life mostly of the person who is the first responder to CCU, or ICU setup, which are the nursing staff. Patients either come with arrhythmias or they develop abnormal rhythm while on monitor or ECG. If the nursing staff identifies the abnormal and able to differentiate between critically dangerous rhythms, timely manage accordingly the rhythm, it directly affects life saving. An abnormal rhythm of heart is called arrhythmias

due to disturb heart conduction system and may lead to death when not managed timely. Arrhythmias directly effect on pumping of heart outcome to decrease cardiac output (Ullah et al., 2021).

Disorders that are potentially life threatening require expert clinical judgement and vigilance on the part of the nurse, patients with dysrhythmias that disrupt their activities of daily living or are potentially lethal are often anxious and need nurse, who understand how the dysrhythmia affects their quality of life. Caring practices are considered the soul of nursing care, identifying patients at high risk for developing lethal dysrhythmias is the first step

in providing excellent care. In hospital, the care the patient receives, armed with nurses knowledge of medical and nursing language, biochemistry, human anatomy and physiology (Peate & Wild, 2018).

The effective CPR procedure is highly significant to markedly improve mortality rate, and this will be improved by continuous medical education or hospital capacity building programs. Now at the present era ECG tracing is the most common tool to detect arrhythmias. The nurses almost involves with this condition to save the life so ECG interpretation of life threatening arrhythmias is very significant for nursing staff in critical units for decreasing mortality rate in hospitalized patients (Ullah et al., 2021).

The role of critical care nurse in dysrhythmias management specializes in symptomatic relief, promotion of comfort and taking emergency actions in fatal dysrhythmias which include assessment of disturbed rhythm, obtaining 12-lead ECG to identify the type of dysrhythmia, and turning in adequate oxygen to reduce heart workload. As well, while administering medication as prescribed, the nurse should monitor the possible adverse drug reactions and be performing aimed nursing interventions. In cases such as VF and cardiac arrest, the nurse should perform rapid and safe defibrillation and other cardiac life support protocols to maintain oxygen supply to vital organs (Urden, Stacy & Lough, 2020).

Significant of the study:

According to the world health organization arrhythmias are the most common complications that lead to death worldwide, it was exacts a significant mortality with approximately 70,000 to 90,000 sudden cardiac deaths related to dysrhythmias especially VT and VF, when either dysrhythmias occur, the heart cannot pump enough blood throughout the body. Unless treatment is delivered inside some minutes, death is eminent. Long-run treatment options for patients who survive life-threatening ventricular rhythms embrace medication, surgery, implantable cardioverter electronic

device or a mixture of treatments (El-Sayed et al., 2020).

Cardiac arrhythmias require quick management for saving life (Woodruff, 2020). Among the arrhythmias ventricular fibrillation is the leading arrhythmias, which cause sudden cardiac death. Sudden cardiac death around the world is caused by cardiac arrhythmias; a thousand of lives declared death by cardiac arrhythmias and this are the most common cause of mortality in the index society by 2020 (Ullah et al., 2021). So the present conducted to assess factors affecting nurse's performance toward life-threatening arrhythmias for critically ill patient.

Aim of this study

The current study was conducted to assess factors affecting nurse's performance toward life-threatening arrhythmias for critically ill patient through:

1. Assess nurses' related factor regarding knowledge about identification and management of life threatening arrhythmias among critically ill patient.
2. Assess nurses' related factor regarding practice about identification and management of life threatening arrhythmias among critically ill patient.
3. Assess nurses' related factor regarding attitude about identification and management of life threatening arrhythmias among critically ill patient.
4. Assess environmental related factors affect nurses performance toward life-threatening arrhythmias for critically ill patient.
5. Assess patient related factors affect nurses performance toward life threatening arrhythmias for critically ill patient.

Research question

What are the factors affecting nurses' performance toward life-threatening arrhythmias for critically ill patient?

Subjects and Methods

The subject and methods of the current study were designed under the following main four designs:

- I. Technical Design

- II. Operational Design
- III. Administrative Design
- IV. Statistical Design

A. Technical Design:

It included research design, study settings, subject and tools of data collection.

Research Design:

A descriptive design was used to conduct this study.

Study Settings:

The study was conducted at cardiac intensive care units, General Intensive Care Units at Ain Shams University Hospitals.

Subject:

Convenient sample of all available nurses working in pre mentioned settings and the study sample composed of 50 nurses.

A purposive sample of 100 patients in pre mentioned setting.

The sample size was calculated by adjusting the power of the test using the following Stephen Thompson's equation:

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times (d^2 + z^2) \right] + p(1-p) \right]}$$

Where:

N=Community size

Z=Class standard corresponding to the level of significance equal to 0.95 and 1.96

d=The error rate is equal to 0.05

p=Ratio provides a neutral property=0.125

Inclusion criteria:

- Adult patient
- Conscious, alert and able to communicate verbally
- Free from congenital anomalies and mental disorders.
- Patient have life-threatening arrhythmias.
- Willing to participate in the study.
- Both sex will be involved

Exclusion criteria

- Patients not have life-threatening arrhythmias
- Patients who received psychotherapy
- Refusal to participate
- Patient with seriously impaired hearing

Sample size:

According to the following formula:

$$n = 1043 \times 0.12(1-0.12)$$

$$\frac{[1043-1 \times (0.05^2 + 1.96^2)] + 0.12(1-0.12)}{}$$

$$N=1043 \quad P=0.125$$

$$d=0.05 \quad z=1.96 \quad n=100$$

Based on the above formula, the sample size required was 100 patients.

Tools of data collection:

Three tools were used in this study and classified as the following:

1st tool: Nurses related factor assessment tool:

1.Nurses knowledge assessment questionnaire:

It was developed by the investigator after reviewing related recent literature **Patton,K.T. (2020) Baired, M.S(2019), Elkin et al.,(2019)**

to collect the required data. It was written by investigator in simple Arabic language and it consisted of two parts:

Part I: Demographic characteristics of nurses: such age, gender, marital status, level of education, years of experience, occupation and attendance training courses Total questions (7).

Part II: Nurses knowledge regarding life-threatening arrhythmias: such as anatomy and function of the heart total questions (10), knowledge about life-threatening arrhythmias and nursing care total questions (7), knowledge about arrhythmia total questions (8), knowledge about ECG total questions (7), Knowledge

about CPR total questions (6), knowledge about the necessary procedures before starting CPR total questions (5), knowledge about opening airway total questions (4), knowledge about breathing total questions (3), knowledge about chest compression total questions (7), knowledge about electric shock device total questions (3) and knowledge about procedures after completion of CPR total questions (3).

❖ Scoring system:

The total scores of the 69 questions with 69 degree which equal 100%, each question was assigned a score according to nurses' knowledge responses were correct answer scored with 1 and incorrect answer scored with 0. The nurses' knowledge was checked with a model key answer and accordingly the nurses' knowledge was categorized into satisfactory and unsatisfactory. These scores were summed and were converted into a percent score. It was classified into 2 categories:

- **Satisfactory** knowledge if total score $\geq 90\%$. More than 62.1 degree according to statistical report.
- **Unsatisfactory** knowledge if total score $< 90\%$. Less than 62.1 degree according to statistical report.

2. Nurses' practice observational checklist:

Practice checklist regarding management of patient with life threatening arrhythmias as interpretation (ECG) which developed by (El-Hamamsy, 2019). Such as electrocardiogram (ECG) 35 steps, Cardiopulmonary resuscitation 34 steps, connecting patient to monitor 21 steps, connecting patient to cardiac defibrillator 23 steps and medication given during life threatening dysrhythmia 17 steps.

❖ Scoring system:

Each skill was assigned a score according to sub-items. The total score of nurses' practices were 130 degree which equal 100%, each item was evaluated as "done correctly" was taken one degree and "done incorrectly" or not done was taken zero degree. These scores were summed up and were converted into a percentage score. It was classified into 2 categories:

- **Satisfactory** if total score $\geq 90\%$. more than 117 according to statistical report.
- **Unsatisfactory** if total score $< 90\%$. less than 117 according to statistical report.

3. Nurses' attitude observational checklist: It was adapted from (El-Hamamsy, 2019). Likert like type rating scale was used to assess the attitude of the nurses' toward management of patient with life threatening arrhythmias. This scale was consisted of 13 items which categorized as the following agree, unsure and disagree.

❖ Scoring system:

The total score of attitudes rating scale was 39 degree. Each statement was assigned a score according to nurses' attitude, responses were "agree", "unsure", "disagree" and were scored 3, 2 and 1 respectively. The scoring was reversed for negative statements; the scores of the items were summed up and were converted into a percentage score.

It was classified into 2 categories:

- **Positive** attitude if total score $\geq 80\%$. More than 31 degree according to statistical report.
- **Negative** attitude if total score $< 80\%$. less than 31 degree according to statistical report.

2nd tool: Environmental related factors assessment questionnaire:

This tool was developed by investigator to assess factors affecting nurses' performance. It was adapted from (Cummings et al., 2018). This scale was consisted of 12 items which categorized as the following yes and no.

❖ Scoring system:

The total score of items was 12 degree which equal 100%. Each statement was assigned a score according to nurses' response, each item was evaluated as "yes" was taken one degree and "no" was taken zero degree. The scoring was reversed for negative statements; these scores were summed up and were converted into a percentage score. It was classified into 2 categories:

- **Positive effect** if total score $\geq 90\%$. More than 10.8 degree according to statistical report.

- **Negative effect** if total score < 90%. less than 10.8 degree according to statistical report.

3rd tool: Patient related factors questionnaire:

It was developed by the investigator after reviewing related literature (**Linton, A. D. (2019)**) to collect the required data. It was written in simple Arabic language and it consisted of two parts:

Part I: Socio-demographic characteristics of patients such age, gender, marital status, level of education, living place, working status, smoking habits and drug abuse habits Total question (8).

Part II: Medical history of patients such as family history total question (2), past history total question (4), present medical history total question (6), medication history total question (5) and systemic alterations history total question (5).

II. Operational Designed:

It included operational design for this study consisted of four phases, namely preparatory phase, ethical considerations, pilot study and fieldwork.

Preparatory Phase:

This phase included reviewing of current and past, local and international related literature and theoretical knowledge of various aspect of the study using books, articles, periodical magazines and internet to modify tool for data collection. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study settings. Development of the tools was under supervisors' guidance and experts' opinions were considered.

Tool validity and reliability:

Testing validity of the proposed tools by inspecting the items to determine whether the tools measure what supposed to measure. The tools revised by a jury of seven experts from different academic categories (one professor, two assistant professors and two lecturers) from

medical surgical nursing department, faculty of nursing, Ain Shams University. The experts reviewed the tools and its content for clarity, relevance, comprehensiveness, accurateness, logical consequence, applicability and simplicity. Modifications were done according to their recommendations

Testing reliability of the proposed tools was done statistically by Cronbach Alpha test. It was used to examine whether the questionnaire had an internal consistency. The knowledge and practice tools had an internal consistency. Alpha tests reached 0.787 for Nurses related factor assessment tool. Alpha tests for Environmental related factors questionnaire was 0.802, also Patient related factors questionnaire with alpha test reached 0.811

Pilot Study:

The pilot study was carried out on 10% those represent (5) of nurses and 10% (10) of patients in order to test the applicability of the constructed tools and the clarity of the questions. The pilot has also served to estimate the time needed for each subject to fill in the questionnaire. According to the results of the pilot, no corrections and omissions of items were performed, so the nurses were included in the study sample.

Fieldwork:

The aim of this stage is to assess the knowledge, and practice and factors affecting performance of nurses through collecting the data using the study tools after confirming its validity and reliability and explaining the aim or purpose of the study simply by the investigator to the studied subjects and obtaining their written permission for data collection prior data collection. All available subjects (50 nurses and 100 patient) were included in the study

Data were collected through six months, from the beginning of March 2021 to the end of August 2021. The data were collected by the investigator through three days per week (Sunday, Wednesday) in the morning shift (9AM -1PM) and evening shifts(2PM – 7PM) at ICU and CCU department medicine hospital, in Damerdash. The questionnaire in simple Arabic

language was filled by nurses which take 20-35 minutes, the attitude scale and environmental factor was filled by nurses within 30-40 minutes and the observational checklist were filled by the investigator within 35-50 minutes. Additionally to collect Patient questionnaire was filled by investigator within 10-15 minutes.

III. Administrative Design:

An official permission was obtained by submission of a formal letter issued from the Dean of faculty of nursing, Ain Shams University to the director of each of the previously mentioned setting. An official agreement was obtained from Hospital Manager and to get their approval to conduct the study. Collect the necessary data for current study after a brief explanation of the purpose of the study and its expected outcomes. Using proper channels of communication from authorized personnel

Ethical Considerations:

The research approval was obtained from the Ethics of Scientific Research Committee - Faculty of Nursing - Ain Shams University. The researcher was clarified the objectives and aim of the study to nurses' included in the study before starting. Oral consent was obtained from the nurses before engaging in the study; a clear and simple explanation was given according to their level of understanding. They secured that all the gathered data was confidential and used for research purpose only. The researcher was assuring maintaining anonymity and confidentiality of subjects' data included in the study. The nurses were informed that allowed to choose to participate or not in the study and have the right to withdrawal from the study at any time.

IV. Statistical Analysis

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test (X^2) was used for

comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between three ranked variables.

Significance of the results:

- Highly significant at p-value < 0.01.
- Statistically significant was considered at p-value < 0.05
- Non-significant at p-value \geq 0.05.

Results:

Table (1): demonstrated that the mean age of the studied nurses` is 33.2 with SD 3.76 , (82.0%) of the studied nurses were females, (62.0%) of them were married, (4.0%) of them widow. Concerning the experience of the studied nurses, the mean experience years was 6.23 ± 1.76 . (58.0%) of them work at ICU. Moreover, only 18.0% of the studied group attended only one training course related to cardiac arrhythmias and heart disease and caring for patient with arrhythmia.

Figure (1): demonstrated that 40% of studied patient had age group (30>40), 36% of them had age 20> 30years, 24% of them had age group \geq 40 years

Figure (2): Percentage distribution of the studied nurses' according to their educational level (n=50).

Figure (3): demonstrated that (56%) of the studied nurses had total unsatisfactory knowledge and (44%) had total satisfactory knowledge.

Figure (4): portrayed that (76%) of them had total competent practice while, (24%) of them had total incompetent practice

Figure (5): portrayed that (58%) of the studied group had positive attitude towards the care of patients with life-threatening arrhythmias while, (42%) of them had negative attitude towards the care of patients with life-threatening arrhythmias.

Figure (6): shows that 36% of studied nurses demonstrate positive effect regarding total factors related to work environment, and 64% of them studied nurses demonstrated negative effect regarding total factors related to work environment.

Table (2): showed positive correlation between studied variables among studied

nurses. There is a positive correlation between total knowledge, total practice ,total attitude , total environmental factors (p=0.000). Moreover, There is a positive correlation between total practice and total attitude & total environmental factors (p=0.001& p=0.000). Also, there is a positive correlation between total attitude and total environmental factors (p=0.000).

Table (1): Frequency and percentage distribution of the studied nurses' according to their demographic characteristics (n=50).

Demographic characteristics	N	%
Age \bar{x} S.D 33.2±3.76		
Gender		
Female	41	82.0
Male	9	18.0
Marital status		
Single	17	34.0
Married	31	62.0
Widow	2	4.0
Years of experience		
1-<5	21	42.0
5-<10	15	30.0
≥10	14	28.0
$\pm \bar{x}$ S.D	6.23±1.76	
Setting		
ICU nurse	29	58.0
CCU nurse	21	42.0
Attended training courses related to cardiac arrhythmias and heart disease and caring for patient with arrhythmia		
Yes	9	18.0
No	41	82.0
If yes no. of courses N=9		
One courses	9	100.0
Two courses	0	0
Three courses	0	0

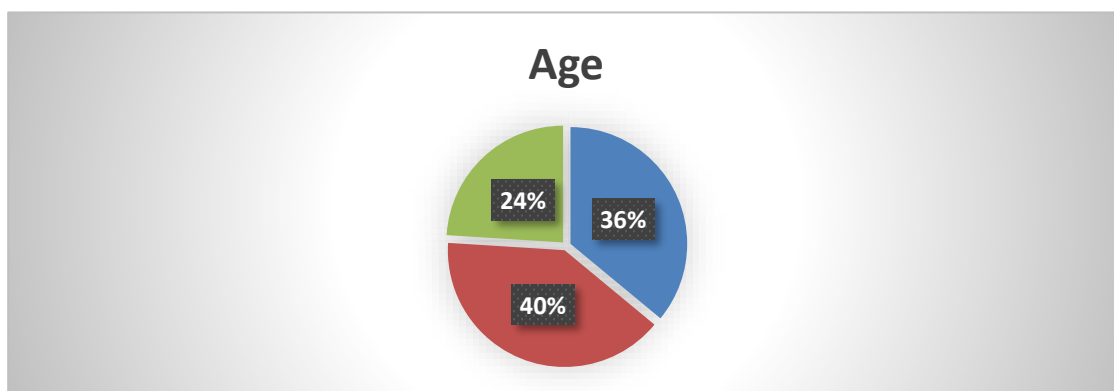


Figure (1): Frequency and percentage distribution of the studied nurses according to their age (n=100).

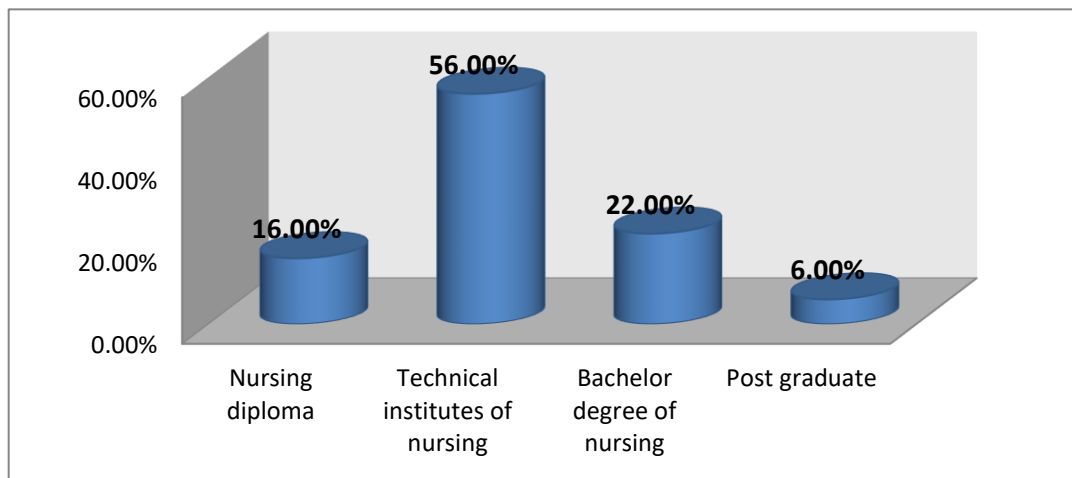


Figure (2): Percentage distribution of the studied nurses' according to their educational level (n=50).

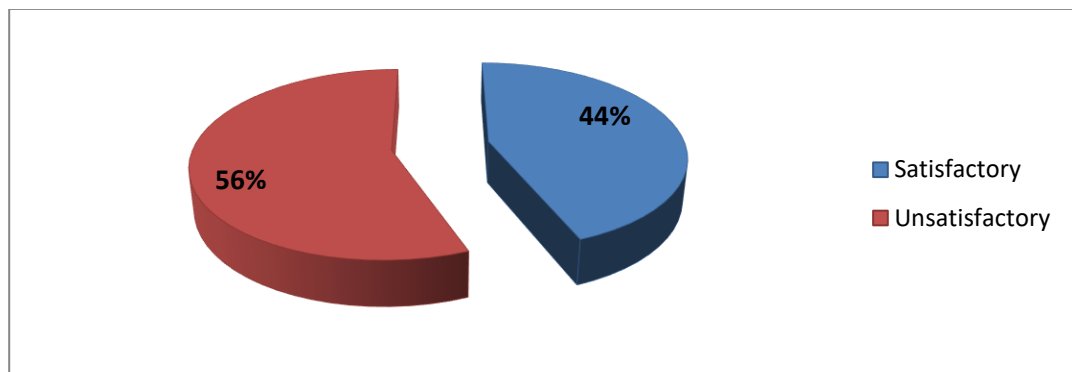


Figure (3): Percentage distribution of the studied nurses' according to their total knowledge about life-threatening arrhythmias (n=50).

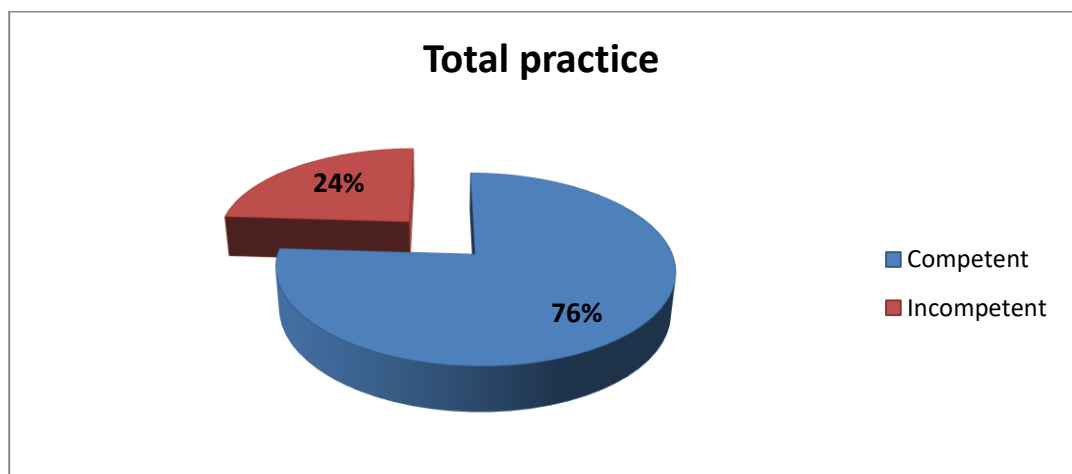


Figure (4): Percentage distribution of the studied nurses' according to their total practice toward patient with t life-threatening arrhythmias (n=50).

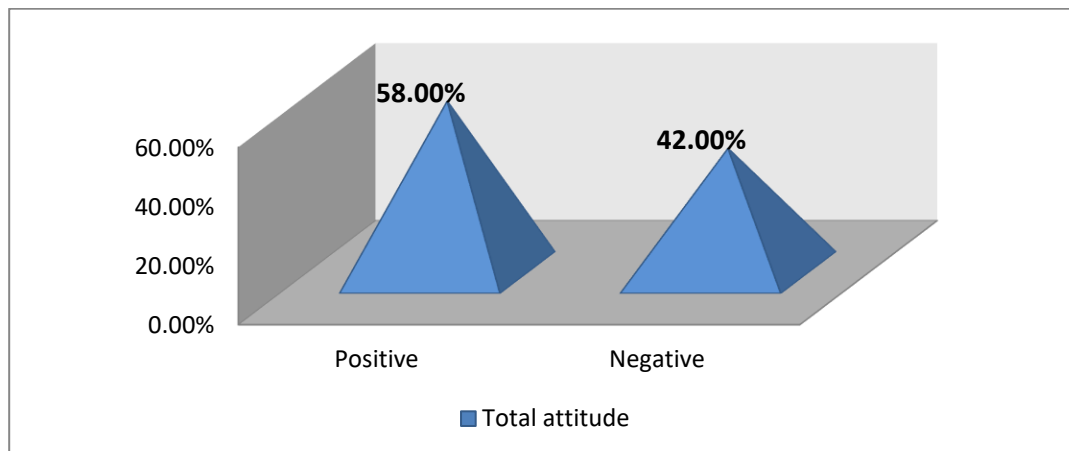


Figure (5): Percentage distribution of the studied nurses' according to their total attitude towards the care of patients with life-threatening arrhythmias (n=50).

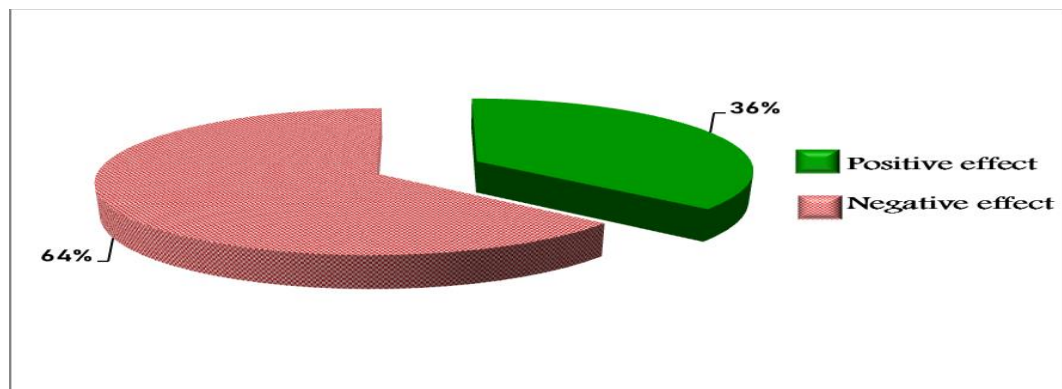


Figure (6): Frequency and percentage distribution of the studied nurses according to their total factors related to work environment (n=50).

Table (2): Correlation between the Studied Variable (n=50).

		1	2	3	4
1. Total knowledge	r				
	p				
2. Total practice	r	.745			
	p	.000**			
3. Total attitude	r	.685	.457		
	p	.000**	.001**		
4. Total environmental factors	r	0.712	0.559	0.691	
	p	.000**	.000**	.000**	

(**) Statistically significant at p<0.01. r Pearson correlation

Discussion:

Disorders that are potentially life threatening require expert clinical judgment and vigilance on the part of the nurse, patients with Arrhythmias that disrupt their activities of daily living or are potentially lethal are often anxious and need nurse, who understand how the dysrhythmia affects their quality of life. Caring practices are considered the soul of nursing care, identifying patients at high risk for developing lethal dysrhythmias is the first step in providing excellent care. In hospital, the care the patient receives, armed with nurses knowledge of medical and nursing language, biochemistry, human anatomy and physiology (Peate & Wild, 2018). So the current study aimed to assess factors affecting nurses' performance toward life-threatening arrhythmias for critically ill patient.

Regarding demographic characteristics of the studied nurses the current study result demonstrated that, the majority of the studied nurses were female. Concerning experience of the studied nurses, the mean experience years was 6.23 years with SD 1.76, more than half of them working in ICU. Moreover, only less than one fifth of them attended only one training course related to cardiac arrhythmias and heart disease and caring for patient with arrhythmia

The current study result in the same line with Ullah et al., (2021) who applied study entitled " Knowledge of Nurses Regarding Assessment of Life Threatening Arrhythmias" and found that, highly percentage of the studied nurses were female, more than half of them working in ICU, while disagree in relation to attended training course, less than one third of them didn't attended training course related to cardiac arrhythmias.

Regarding age of the studied nurses the current study result demonstrated that two fifths of studied patient had age group (30-<40), more than one third of them had age $20 \geq 30$ years, less than one quarter of them had age group ≥ 40 years. The current study result disagree with El-Sayed, Fekry & Metwaly, (2020) who applied study entitled "Nurses' performance regarding life threatening ventricular dysrhythmias among critically ill patients" and found that, most of

the studied nurses' age ranged between 20-<30years old with median 26.5 years

Regarding educational level of the studied nurses the current study result demonstrated that, more than half of the studied nurses at technical institute of nursing, more than one fifth of them had bachelor degree of nursing and less than one fifth of them had nursing diploma while minority of them had post graduate education. The current study result contrast with Ullah et al., (2021) who mentioned that, less than two thirds of the studied nurses had diploma in nursing, while more than one third of them had graduate.

As regard marital status of the studied nurses the present study result showed that, less than two thirds of the studied nurses were married. The current study result agree with El-Sayed, Fekry & Metwaly, (2020) who applied study entitled "Nurses' performance regarding life threatening ventricular dysrhythmias among critically ill patients" and found that, highly percentage of the studied nurses were married.

Regarding total knowledge of the studied nurses about life-threatening arrhythmias the current study result demonstrated that, more than half of the studied nurses had total unsatisfactory knowledge and around more than two fifths of them had total satisfactory knowledge about life-threatening arrhythmias. The current study result agree with Nabil et al.,(2018) who conducted study entitled " Effect of an Education Program on Nurses Performance Regarding Electrocardiography" and mentioned that, highly percentage of the studied nurses had unsatisfactory knowledge. While disagree with Jacob et al.,(2018) who applied study entitled " A study to Assess the Effect of Planned Teaching Program on Knowledge Regarding Interpretation of Cardiac Arrhythmias and its Management among Staff Nurses in Selected Hospitals of Pune City" and reported that, more than two thirds of the studied nurses had average level of knowledge while, less than one quarter of them had poor level of knowledge.

Additionally, contrast with Ahmed, Abdulkareem, Aliaa (2020) who illustrated that, majority of nurses had poor knowledge

about CPR. Also **Ullah, et al., (2021)** who applied study entitled "Knowledge of Nurses Regarding Assessment of Life Threatening Arrhythmias" and found that, the majority of nursing staff were unable to identify life-threatening rhythm of patients.

From the researcher point of view this limitation of nurses' knowledge at this critical area might be as a result of lack of refreshment of the nurses' knowledge. Moreover, the nurses in Egypt are not used the independent self-learning. Another cause for lack of knowledge is nurses' exhaustion due to increased work load which may hinder their ability to read and update their knowledge.

Regarding total practice of the studied nurses toward patient with life-threatening arrhythmias the current study result portrayed that more than three quarters of them had total competent practice while, less than one fifth of them had total incompetent practice. This may be due to years of experiences and attended that courses related to this topic. The present study result in contrast with **Ahmed & Kandeel, (2017)** who applied study entitled "Evaluating Emergency Nurses' Performance of Cardiopulmonary Resuscitation: An Investigation from Egypt" and demonstrated that, the majority of nurses were incompetent in performing most of CPR steps. And disagree with **Nabil et al.,(2018)** who reported that, most of them had unsatisfactory practice regarding ECG pre intervention.

Additionally disagree with **Ruhwanya, Tarimo & Ndile, (2018)** who reported that the studied nurses had poor skills regarding life threatening arrhythmias. Also contrast with **Kaihula et al.,(2018)** who conducted study entitled "assessment of CPR knowledge and skills among healthcare providers at an urban tertiary referral hospital in Tanzania" and found that, overall of the studied subjects' skills were poor.

From the investigator point of view, lack of training, lack of continuous in service training programs, lack of motivation to learn or take training courses and, and these poor level prevent patients to receive standardized level of

care during CPR and prevent them from maximizing chance of survival.

Regarding total attitude of the students nurses towards the care of patients with life-threatening arrhythmias the current study result illustrated that, more than half of the studied nurses had positive attitude towards the care of patients with life-threatening arrhythmias while, more than two fifths of them had negative attitude towards the care of patients with life-threatening arrhythmias. This may be due to lack of level of knowledge that affects of practice and level of attitude.

The current study result disagree with **Ihunanya et al., (2020)** who applied study entitled "Knowledge, Attitude and Practice of Cardiopulmonary Resuscitation Among Nurses in Babcock University Teaching Hospital in Nigeria" and found that, only few of the nurses expressed positive attitude towards the practice of CPR.

The current study result in the same line with **Santhosh, (2017)** who applied study entitled "Knowledge and Attitude Regarding Basic Life Support Among nurses" and found that nurses showed positive attitude towards conducting cardiopulmonary resuscitation. While disagree with **Ihunanya et al., (2020)** who mentioned that, nurses have negative attitude. Also **Gebremedhn et al., (2017)** who applied study entitled "Attitude of nurses cardiopulmonary resuscitation" and found that, overall attitude of nurses was poor.

From the researcher point of view Nurses' knowledge about life-threatening arrhythmias is important where knowledge is a basic foundation on creating nurses practice and attitude on performing life-threatening arrhythmias fast and right.

Regarding total factors related to work environment the current study result illustrated that nearly two third of the studied nurses demonstrated negative effect of their total factors related to work environment while, more than one third of them demonstrated positive effect. This may be due to more than half of the studied nurses had years of experiences from five to more than ten years The current study result disagree with **El-Hamamsy, (2019)** who

reported that less than two thirds of the studied nurses demonstrate average level toward factors affecting performance of CPR, nearly one third demonstrate poor level while one percentage of them demonstrate good level toward factors affecting performance of CPR.

Regarding Correlation between the Studied Variable the current study result showed positive correlation between studied variables among studied nurses. There is a positive correlation between total knowledge and total practice & total attitude & total environmental factors ($p=0.000$). Moreover, There is a positive correlation between total practice and total attitude & total environmental factors ($p=0.001$ & $p=0.000$). Also, there is a positive correlation between total attitude and total environmental factors ($p=0.000$).

The current study result in the same line with **El-Sayed, Fekry, & Metwaly, (2020)** who mention that there was a statistical significant relation between nurses' practice and their total knowledge in emergency management of life threatening ventricular dysrhythmias with p-value at 0.03. Also matching with **El-Hamamsy, (2019)** who reported that there was a statistical significant relationship between total practice and total knowledge of the studied nurses. Additionally agree with **Kelkay et al., (2018)** who applied study entitled " A cross sectional study on knowledge, practice and associated factors towards basic life support among nurses working in amhara region referral hospitals, northwest Ethiopia" found that, there was a statistically significant relation between the nurses' level of practice and knowledge of the studied subjects.

While disagree with **Abdel Aziz & El Shafaey, (2018)** who conducted study entitled "Effect of Implementing Teaching Program on Knowledge and Practice of Nurses and Clinical Outcomes of Patients Post Cataract Surgery" and discovered that there was no statistical significance difference between total nurse's level of knowledge and their practice.

This has explained as knowledge and its implementation in clinical practice are most valuable for retention. So, knowledge alone without practice and attitude has no effect. Moreover, new techniques based on, intended to

improve nurses' knowledge through nursing care standard could enhance their knowledge and consequently improve their practice and attitude.

Conclusion:

In the light of the current study findings, it can be concluded that: More than half of the studied nurses had total unsatisfactory knowledge of life-threatening arrhythmias. Also more than three quarters of them had total satisfactory practice. Additionally more than half of them had positive attitude towards the care of patients with life-threatening arrhythmias and less than two thirds of them demonstrated negative effect regarding total factors related to work environment. Additionally there was positive correlation between studied variables among studied nurses. There is a positive correlation between total knowledge and total practice & total attitude & total environmental factors. Moreover, there is a positive correlation between total practice and total attitude & total environmental factors Also, there is a positive correlation between total attitude and total environmental factors.

Recommendations:

Based on the current study finding the following recommendations were proposed:

- An orientation program should be prepared to help the newly appointment nurses to revise, acquire and develop their knowledge and practice regarding CPR, ECG.
- Specific courses about the recognition and management of Life-Threatening arrhythmias must be establish for critical care nurses to enhance them to be more knowledgeable, practice and attitude.
- The importance of establishing guideline for critical care nurses regarding ECG and CPR and cardiac defibrillator.

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