Effect of an Educational Program Regarding Cardiac Arrhythmias on Nurses' Practices in Critical Care Units

Mai El Sayed Mohsen Ahmed Batal [1], Prof. Sahar Yassien Mohammad [2], Assist.Prof. Dena Eltabey Sobh Sobeh [3]

Master Medical Surgical Nursing -Faculty of Nursing - Port said University[1]

Professor of Medical Surgical Nursing - Faculty of Nursing - Ain-Shams University [2]

Assistant prof of Medical Surgical Nursing - Faculty of Nursing - Port Said University – Nursing Department. Faculty of Applied Medical Science, Prince Sattam Ben AbdElaziz University, Alkharj, KSA[3]

ABSTRACT

Background: Cardiac arrhythmia can cause more fatal forms of rhythm disturbance. Nurse in critical care units plays a necessary role in arrhythmias management specializes in symptomatic relief, promotion of comfort and taking crisis intervention in fatal forms of dysrhythmias. **Aim:** This study aimed to evaluate the effect of an educational program regarding cardiac arrhythmias on nurses' practice in critical care units. **Subject and Methods: Design:** A quasi-experimental design was utilized in this study. **Setting**: The study was conducted at Critical Care Units in Port-Said Governmental hospitals (Port Said general hospital, Port -Fouad general hospital and Al zhoor central hospital) recently comprehensive health insurance hospitals in Port Said (El Salam hospital, Al hayah hospital and Al zhoor hospital)**. Subjects:** A convenient sample of available nurses (139 nurses in critical care units divided into 116 female and 23 male) was included in this study. **Tools:** Tool was used for data collection: Nurses' Practice observational Checklist, which includes part I: Demographic variables, part-II seven Nurses' Practice observational Checklist. **Results:** The results revealed that, (92.8%) of nurses had satisfactory total practice level immediately post educational program implementation and (69.8%) follow up educational program compared to (37.4 %) of studied nurses pre-educational program implementation. **Conclusion:** Educational program for nurses had a significant positive effect on improving nurses' practice regarding the care of patients with cardiac arrhythmias. **Recommendations:** Continuous training and educational program for the purpose of upgrading, improving and updating the practice of the nurses assigned to provide care with cardiac arrhythmias patients.

Keywords: Cardiac arrhythmias, Educational program, Nurses' practice.

INTRODUCTION

Heartbeat irregularity is known as arrhythmia. It happens when the electrical signals that regulate the heartbeat aren't functioning properly. The heart beats could be too quickly (tachycardia), or too slowly (bradycardia), or erratically due to the malfunctioning signals. Heart palpitations or racing beats are common symptoms of cardiac arrhythmias, which may also be unharmful. However, some arrhythmias can result in uncomfortable, even life-threatening, symptoms and signs. In order to manage or treat of fast, slow, or irregular heartbeats, cardiac arrhythmias may be treated using drugs, catheter procedures, implantation, or surgery. A heart-healthy lifestyle can aid in avoiding cardiac damage that may result in certain arrhythmias (National Heart, Lung, & Blood Institute, 2021).

It was reported that, more than 70% of heart rhythm problems are common in patients in critical care units, and these patients typically have higher fatality rates, particularly when they have ventricular arrhythmias (Uvelin, Pejakovic & MiJatovic, 2017). Up to 450,000 deaths per year globally are due to sudden cardiac death (SCD). SCD is frequently characterized by an unstable, ventricular fibrillation, fast ventricular rhythm, primarily ventricular tachycardia (El-Sayed, Mohammed & Metwaly, 2020).

Effective management of arrhythmias depends on rapid diagnosis and activated management, regularly requiring a multimodality procedure, which may include of sequential correction of electrolytes and pH, pharmacological actions for rate control, pressors, exact antiarrhythmic therapeutic drugs, electrical pacing, or cardioversion. Carefully designed treatment must be taken into consideration the patient's unique arrhythmia, its underlying cause, and any concurrent therapeutic or surgical conditions (Salim, Brown, Inaba & Martin, 2018).

For nurses, the ability to interpret cardiac dysrhythmias or rhythm abnormalities is crucial. Rapid rhythm disturbance analysis and appropriate therapy initiation enhance patient safety and maximize positive outcomes. The critical care nurse frequently serves as the healthcare provider in charge of continuously monitoring the patient's heart rate and has the ability to make an early intervention that can help avoid a potentially dangerous clinical condition. The goal of continuing nursing education is to increase professional nurses' knowledge, abilities, and self-assurance so they can deliver high-quality, competent patient care. (Ho, Yau, Wong & Tsui, 2021).

Nurses working in critical care units should be highly skilled and able to offer excellent care around-the-clock. The goal of this statement is to guarantee excellent performance in order to detect and treat arrhythmias and preserve the patient's life. Nurses should receive training to assist them identify potentially lethal arrhythmias, enabling quick and effective patient care. The American Heart Association (AHA) advises healthcare practitioners to become proficient in ECG interpretation as a patient safety strategy. (Rahimpour Shahbazi, Ghafourifard, Gilani & Breen, 2021).

Nurses in critical care units play a crucial role in the management of arrhythmias. They are experts in symptomatic relief, comfort promotion, and crisis intervention in fatal forms of dysrhythmias. For example, they can assess abnormal rhythms, obtain 12-lead ECGs to determine the type of arrhythmia, and connect the right amounts of oxygen to lessen the workload on the heart. The nurse should perform expert nursing interventions while also monitoring any potential adverse drug responses and side effects when providing medication as directed. To sustain the oxygen supply to essential organs in situations like VF and cardiac arrest, the nurse should administer quick and safe defibrillation as well as additional cardiac life support techniques. (Urden, Stacy & Lough, 2020).

Successful treatment of arrhythmias depends on fast diagnosis and activates management, regularly requiring a multimodality procedure. Nursing education and

training program on cardiac arrhythmias is essential to be able to meet the demands and effects of patients' outcomes or reduce complications, it is crucial to fulfil the nursing role's needs. In order to improve nursing care and procedures for critically ill patients, critical care unit nurses must undergo ongoing and periodic training. (Ruhwanya, Tarimo & Ndile, 2018).

Significance of the study:

Approximately 4 million people have cardiac arrhythmias in Egypt between 2011 and 2012, the number of patients admitted to the coronary care unit (CCU) at Banha University Hospital was 2315; around 50–60% of them experienced cardiac arrhythmias (Statistics by country for arrhythmias, 2012). Based on clinical experience and observations made in the cardiac care unit over five years. The researcher came to the conclusion that heart arrhythmias are a widespread issue in the CCU and represent a substantial source of morbidity, some of which causes sudden death and cardiac failure. Consequently, a study was conducted to increase and enhance the practise of nurses caring for patients with cardiac arrhythmias by implementing national care standards (NCSs). This study was done to aid them in promoting the quality of nursing care and reducing morbidity and mortality in such patients (Ibrahim, et al., 2017). Therefore, it is crucial to create a program of education on cardiac arrhythmias in critical care units for nurses.

AIM OF THE STUDY

The aim of this study was to evaluate the effect of an educational program regarding cardiac arrhythmias on nurses' practice in critical care units.

Study Hypotheses:

The nurses will improve their practice regarding cardiac arrhythmias, after the educational program implementation.

SUBJECTS AND METHOD

I. Technical Design

Study Design:

A quasi-experimental with one group (pre / post / follow up -intervention) design was used to achieve the objective of the present study.

Study Settings:

The study was conducted at Critical Care Units in Port-Said Governmental hospitals (Port Said general hospital, Pour -Fouad general hospital and Al zhoor central hospital) recently universal health insurance hospitals in Port Said. The study was carried out at Critical Care Units in Governmental Port-Said general hospitals (Port Said general hospital, Pour -Fouad general hospital and Al zhoor central hospital) in Port Said city. In Port Said general hospital (El Salam Hospital) The intensive care unit (ICU) contains 20 beds divided into 2 main units: Frist ICU and third care unit. The Pour -Fouad general hospital (Al hayah hospital) contains 32 beds divided into 2 main unit: adult ICU and median intensive care unit. Al zhoor central hospital contain 16 beds divided into 2 main unit: adult ICU and median intensive care unit.

Study sample:

A convenient sample of available nurses

Study subjects:

The total number of the studied participants were one hundred thirty-nine nurses in critical care units divided into 116 female and 23 men participating in the study and attending the research setting

Tools for Data Collection:

During the pre-, post-, and follow-up stages of this study, data were collected using the following tools.

Tool: Nurses' Practice observational Checklist

After reviewing the literature as (Lynn, 2018; Mclaughlin, 2018; Nettina, 2018), the researcher developed a practice observational checklist. It was divided into two parts:

Part (1): Demographic characteristics such as: Age, level of education, and experience.

Part (2): Nurses' Practice observational Checklists, which the researcher developed to assess and evaluate nurses' practice regarding cardiac arrhythmias. The following checklists were included:

- Carry out intervention regarding management of arrythmias: It contains ten items such as; assess signs & symptoms of cardiac arrythmias, implement measures to maintain cardiac output and prepare patient for emergency procedures.
- Connected patients to monitor: It contains twenty-two items such as; prepare equipment, hand washing and apply electrodes.
- Obtain 12- lead ECG & interpretation: It contains twenty-three items such as; check physician order for ECG, explain procedure and place chest leads.
- Emergency defibration: It contains twenty-eight items such as; ensure patient unresponsive, began CPR /check the crash cart has arrived and command all persons to move away from bed areas.
- Perform cardiopulmonary resuscitation: It contains fourteen items such as; assess the patients, activate emergency response system and allow complete recoil of the chest between compression.
- Emergency medication of arrhythmias: It contains nineteen items such as; check the physician order, give medication using appropriate specific procedure and documentation.
- Emergency crash cart: It contains eleven items such as; prepare equipment commonly used in emergency situation, lock drawers when cart is not in use and check cart daily.

Scoring system:

As regard nurses' practice, each step checked answer was scored one for (done) and zero for (not done). The total nurses' practice was summed up then converted to percent. Total nurses' practices were considered satisfactory if the percent score was equal or above 75% and unsatisfactory if less than 75% based on statistical analysis and importance of nurses' practices regarding the care of patients with cardiac arrhythmias.

II. Operational design:

The operational design included preparatory phase, content validity, Reliability, pilot study and fieldwork work.

Preparatory phase:

The researcher review books, articles, internet journals, and magazines to establish data gathering tools based on relevant literature reviews and theoretical comprehension of various areas of the research. The researcher then included all of the previously mentioned topics into a handout for cardiac arrhythmias. The program had been completed.

Validity:

The tools were revised for clarity, relevance, comprehensiveness, understanding, and simplicity of implementation by a jury of seven experts from the Faculty of Nursing Port Said university and Ain Shams University. In accordance with their comments, modifications were made as defibrillation checklist.

Reliability:

The tool's internal consistency was evaluated using the alpha Cronbach's coefficient, and for practice, its result was (0.90). High reliability is revealed by the tool.

Pilot Study:

A pilot study was performed after the tool's development. Prior to the beginning of the data collection, a pilot study was conducted on 10% of the total sample (16 study nurses), to test the tool then it was excluded from the study sample. The pilot study's goals were to evaluate the tools' applicability and clarity and to determine how long they would take to complete. Additionally, it was helpful to identify any challenges or issues that would prevent the gathering of data. Based on the results of the pilot research, changes were made to the tools.

Field Work:

From the beginning of March (2020) to the end of August (2021), fieldwork was done two days a week (Saturday and Tuesday). Four stages (assessment, planning, implementation, and evaluation) were used to organize the work:

Phase I: Assessment (Pre-intervention phase):

At this stage following the completion of the tools, the researcher used Tool to evaluate the practice needs of nurses. In about 20 and 30 minutes, the tool was full. A checklist of

observations was used to evaluate the nurse. As each nurse was observed by the researcher during the actual clinical practice. The protocol of care was developed in light of the most recent research as well as the researcher's observations of the needs and demands of nurses.

Phase II: The educational program development phase

Based on the needs and requirements of nurses that were discovered during the assessment phase and a review of pertinent literature, the educational program me was created. To improve in learning and assist understanding, the researcher created a simple handout booklet in Arabic with many illustrated colored graphics. It includes the following information: heart anatomy and physiology. Definition, symptoms, Definition, symptoms, kinds, diagnosis, therapy, and nursing intervention for cardiac arrhythmias, Devices used for monitoring cardiac rhythm as ECG and cardiac monitor (nursing role before, during and after), heart arrhythmias medication (uses, route, contraindications of uses, nursing role, and complications), cardiopulmonary resuscitation, emergency crash cart, and health education regarding cardiac arrhythmias. There were both theoretical and practical sections in the manual. Additionally, it was enhanced with images and color to add to the picture and help the nurses in understanding the content. For self-practice, each participant received a guidebook that summarized the information from the cardiac arrhythmias' sessions. The sessions included the use of slide presentations, social media, and animation videos. The entire content of caring for patients with cardiac arrhythmias was covered in a booklet.

Phase (III): Educational program implementation phase

The study's nurses were initially separated into 10 groups, each of which had 13–15 nurses. Each group was then brought together in a conference room, and the session was held there at a convenient time, which was during the morning and afternoon working shifts. For 36 weeks, the instructional program was in operation. They received the organized program education course, which was broken into four sessions of roughly 120 minutes each and lasted about eight hours.

Sections 1 firstly, the researcher illustrated aim, purpose of these sessions, and then distributed the cardiac arrhythmias preparation booklet to participates. The content for the first session included: introduction, anatomy and physiology of the heart and cardiac arrhythmias.

Section 2 was held after three days from first session. The content for the second session

included: Reviewing, devices used for monitoring cardiac rhythm as electrocardiogram, cardiac monitor, obtain ECG lead and interpretation and cardiac monitor connection.

Section 3 was held after three days from second session. The content for the third session included: Reviewing, administer medication regarding cardiac arrhythmias and demonstrate and redemonstrate cardiopulmonary resuscitation.

Section 4 was held after three days from third session. The content for the fourth session included: Reviewing, emergency crash cart and health education regarding cardiac arrhythmias.

Phase IV: Evaluation

The program outcome was evaluated by using tool, first evaluation immediately after program implementation, and second evaluation after three months. Immediately after program implementation, nurses' practice was evaluated immediately after program implementation by using tool. The second evaluation after three months, the researcher evaluates effectiveness of the program through observed and evaluated nurses' practice by using tool to determine the program's success.

III. Administrative design

By submitting an official letter from the vice dean of the nursing faculty at Port Said university, approval was officially granted for data collecting in the three hospitals in Port Said. Meetings and discussions were made between the researcher and the nursing administrative staff in order to inform them of the research's goals and objectives and to improve cooperation during the implementation phase.

Ethical consideration

An approval was taken from the Research Ethics Committee of the Faculty of Nursing, Port Said University code no. (NUR 26/11/2018 (1)). The study's goal was conveyed to participants before they gave their written agreement to participate. In order to reassure them that all information acquired would be kept totally confidential and used only for the purpose of the study, a brief summary of the study was given to participants. The ability to enroll in or out of the study at any time was made clear to participants. Instead of participant names, code numbers were utilized to identify participants. The participants' identities were kept secret in public reporting due to this protection.

IV. Statistical design

Data was organized, coded, and moved into formats that were specifically created for computer entry. The statistical evaluation made use of SPSS version 22. Qualitative data were described using frequencies and percentages. To investigate the association between categorical variables, the Chi-square test was performed (x2). Quantitative data were reported as mean SD, and the student (t) test was computed to compare two means. For statistically significant interpretation of test results, significance was accepted at p0.05, and for highly statistically significant interpretation of data, p0.01.

RESULTS:

Table (1): shows that 88.5% of the studied nurses were at age group less than 30 years old. Regarding gender, 83.5% of nurses of them were females. In relation to nurses' qualification 55.4% of them had diplome level of education, while 100 % of studied nurses had not any training courses. As regard to years of experience 15.8% of the studied nurses had more than six years experiences.

Table (2): Illustrates that 95.7% of the studied nurses had satisfactory levels regarding practices related to cardiopulmonary resuscitation and emergency medication administration and 95% of them had satisfactory levels regarding management of arrhythmias and connecting the patient to monitor immediately post educational program implementation. Moreover, 76.3% of nurses had unsatisfactory practice levels related to obtaining 12- lead ECG & interpretation procedure pre-educational program implementation comparing to 20.1 % of studied nurses post educational program implementation and 43.9% of studied nurses follow up educational program implementation.

Table (3): Clarifies the differences in nurses' practice throughout the program implementation. A general improvement in the mean practice scores of nurses in all items after implementation was noted as compared with the scores before implementation. There was high statistically significant difference between pre and immediately post program implementation. Also, there was statistically significant difference was notices among pre & follow up program application.

Table (4): Illustrates that, there was statistically significant relation between demographic characteristics of the studied nurses and their practices related to gender pre, level of

education immediately post and level of education and experience follow up educational program implementation whereas p< 0.05.

Figure (1): Clarifies that 92.8% of nurses had satisfactory total practice level immediately post educational program implementation compared to 37.4 % of studied nurses pre-educational program implementation and 69.8% follow up educational program

Figure (2): Shows the differences in the total nurses' practice throughout the program implementation. There was high statistically significant difference between pre and immediately post program implementation. Also, there was statistically significant difference was notices among pre & follow up program application.

Table (1): Demographic characteristics of the studied nurses (n=139):

Items	number	Percent %
Age (years)		
< 30	123	88.5
30 or More	16	11.5
Mean ±SD	25.6 ±5.1	
Gender		
Male	23	16.5
Female	116	83.5
Marital Status		
Single	66	47.5
Married	73	52.5
Educational Level		
Diplome of Health Technical Institute	77	55.4
Bachelor of Nursing	54	38.8
Master of Nursing	8	5.8
Experience Years		
< 6	117	84.2
6 or More	22	15.8
Have you ever attended training courses on Cardiac arrhythmia?		
Yes	0	0.0
No	139	100.0

Table (2): Nurses' practices pre, immediately post and follow up after educational program (n=139):

Practices	Pre-intervention				Post-intervention				Follow-Up			
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory	
	N	%	N	%	n	%	N	%	n	%	n	%
Management of arrhythmias	74	53.2	65	46.8	7	5.0	132	95.0	32	23.0	107	77.0
Connecting the patient to monitor	104	74.8	35	25.2	7	5.0	132	95.0	38	27.3	101	72.7
Obtaining 12- LEAD ECG & interpretation	97	69.7	42	30.3	26	18.7	113	81.3	55	39.6	84	60.4
Emergency defibrillation	101	72.7	38	27.3	28	20.1	111	79.9	69	49.6	70	50.4
Cardiopulmonary resuscitation	63	45.3	76	54.7	6	4.3	133	95.7	26	18.7	113	81.3
Emergency medications administration	91	65.5	48	34.5	6	4.3	133	95.7	30	21.6	109	78.4
Emergency crash cart	71	51.1	68	48.9	9	6.5	130	93.5	34	24.5	105	75.5

Table (3): Difference in nurses' practices throughout the program implementation (n=139):

Practices	Pre-Intervention / Post Intervention				Pre-Intervention / Follow-Up			
	Pre-Intervention	Post Intervention			Pre-Intervention	Follow-Up		
	Mean ±SD	Mean ±SD	T	P	Mean ±SD	Mean ±SD	T	P
Management of arrhythmias	4.8 ±1.4	10.9 ±2.6	6.532	<0.001**	4.8 ±1.4	7.6 ±2.1	3.508	0.002*
Connecting the patient to monitor	10.1 ±3.8	17.4 ±5.7	4.998	<0.001**	10.1 ±3.8	13.7 ±4.1	3.020	0.004*
Obtaining 12- LEAD ECG	9.1 ±3.8	18.4 ±5.6	16.201	<0.001**	9.1 ±3.8	14.7 ±4.5	11.209	<0.001**
Emergency defibrillation	7.9 ±2.8	13.5 ±4.3	5.774	<0.001**	7.9 ±2.8	10.6 ±3.3	3.301	0.002*
Performing Cardiopulmonary resuscitation	6.2 ±2.1	12.1 ±3.7	5.188	<0.001**	6.2 ±2.1	9.7 ±2.9	3.657	<0.001**
Emergency medications	8.2 ±3.1	15.1 ±4.7	5.341	<0.001**	8.2 ±3.1	12.6 ±3.7	3.973	<0.001**
Emergency crash cart	5.1 ±1.6	9.8 ±2.7	4.966	<0.001**	5.1 ±1.6	7.9 ±2.0	3.625	<0.001**
Total Practices Score	**51.4 ±12.6**	**97.2 ±27.2**	**18.013**	**<0.001****	**51.4 ±12.6**	**76.8 ±18.6**	**13.329**	**<0.001****

Table (4): Relation between demographic characteristics of the studied nurses and their practices pre, immediately post and follow up after educational program (n=139):

	Pre						**Post**						**Follow up**					
	Unsatisfactory (n=120)		satisfactory (n=19)		Chi-Square		Unsatisfactory (n=32)		satisfactory (n=107)		Chi-Square		Unsatisfactory (n=49)		satisfactory (n=90)		Chi-Square	
	N	%	N	%	X^2	P	N	%	n	%	X^2	P	n	%	N	%	X^2	P
Age (years)																		
< 30	79	90.8	44	84.6			10	76.9	113	89.7			36	85.7	87	89.7		
30 or More	8	9.2	8	15.4	1.224	0.269	3	23.1	13	10.3	1.884	0.170	6	14.3	10	10.3	0.455	0.500
Gender																		
Male	19	21.8	4	7.7			3	23.1	20	15.9			8	19.0	15	15.5		
Female	68	78.2	48	92.3	4.717	0.030*	10	76.9	106	84.1	0.443	0.506	34	81.0	82	84.5	0.273	0.602
Marital Status																		
Single	43	49.4	23	44.2			8	61.5	58	46.0			25	59.5	41	42.3		
Married	44	50.6	29	55.8	0.352	0.553	5	38.5	68	54.0	1.136	0.286	17	40.5	56	57.7	3.500	0.061
Educational Level																		
Diplome (institute)	48	55.2	29	55.8			13	100.0	64	50.8			38	90.5	39	40.2		
Bachelor	33	37.9	21	40.4			0	0.0	54	42.9			4	9.5	50	51.5		
Master of Nursing	6	6.9	2	3.8	0.579	0.749	0	0.0	8	6.3	11.548	0.003*	0	0.0	8	8.3	30.157	<0.001**
Experience Years																		
< 6	74	85.1	43	82.7			13	100.0	104	82.5			40	95.2	77	79.4		
6 or More	13	14.9	9	17.3	0.137	0.712	0	0.0	22	17.5	2.697	0.101	2	4.8	20	20.6	5.532	0.018*

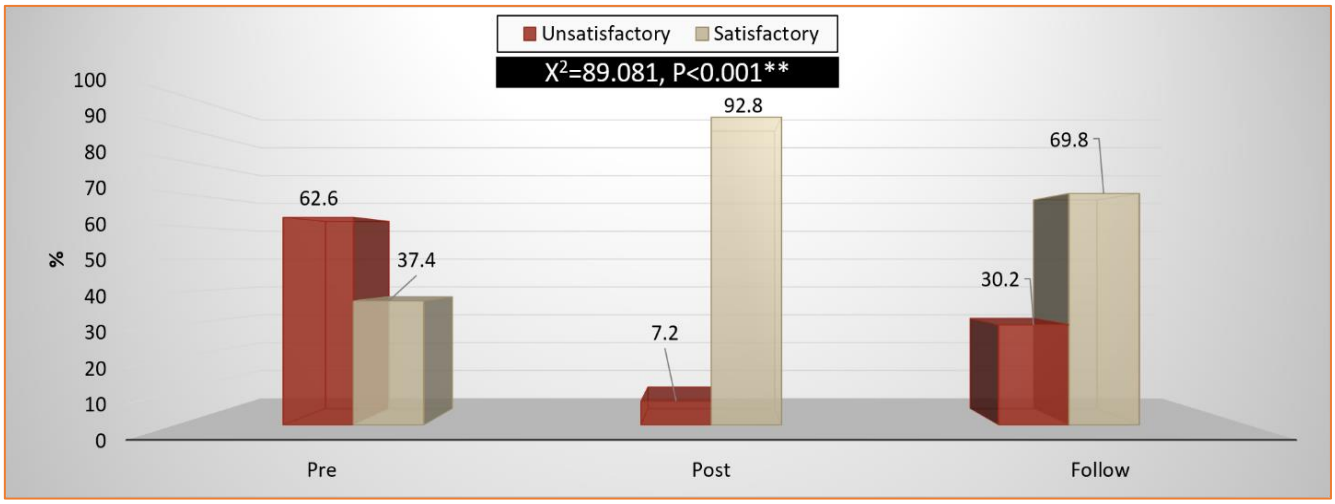

Figure (1): Total nurses' practices pre, immediately post and follow up after educational program (n=139):

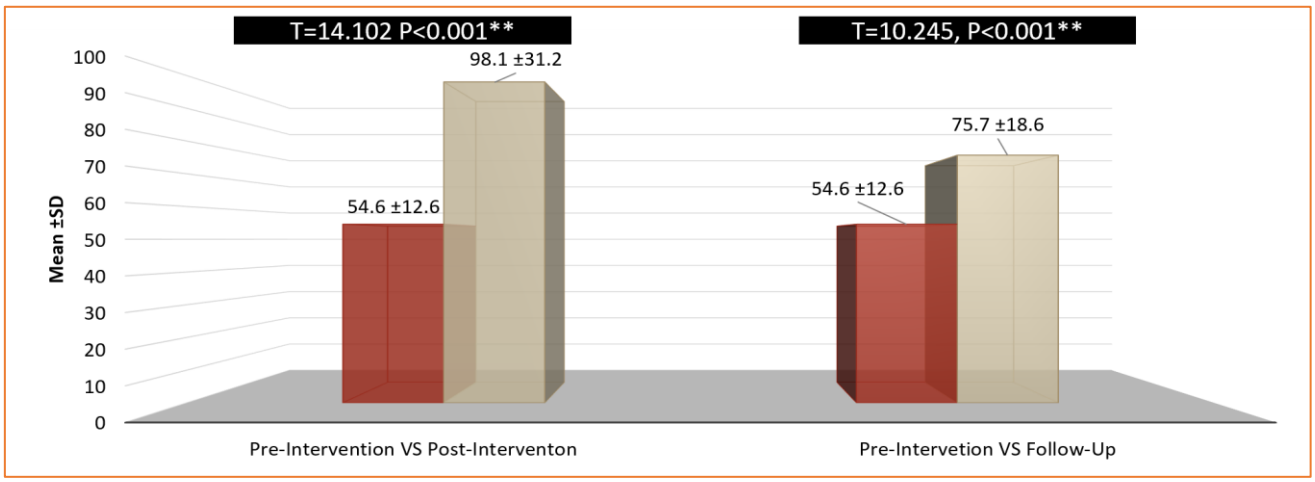

Figure (2): Difference of total practice score between pre-intervention& post intervention and difference of total practice between pre-intervention & follow-up.

DISCUSSION

Heart arrhythmias are aberrant heart rhythms brought on by problems with the heart's automaticity and/or defective heart conduction. These problems reduce cardiac output and change heart rate, which in turn affects the perfusion of the tissue. An irregular heart rate and rhythm can result from any beat coming from a location other than the Sino-atrial node. A multitude of symptoms, including complete asymptomatic, loss of consciousness, and rapid cardiac death, can be brought on by arrhythmias. In general, more severe symptoms are more likely to appear when systemic heart disease is present. (Mitchell, 2022).

Nurses in critical care units play a crucial role in the management of arrhythmias. They are experts in symptomatic relief, comfort promotion, and crisis intervention in fatal forms of dysrhythmias. For example, they can assess abnormal rhythms, obtain 12-lead ECGs to determine the type of arrhythmia, and connect the right amounts of oxygen to lessen the workload on the heart. The nurse should perform skilled nursing interventions while also monitoring any potential adverse drug reactions and side effects when providing medication as prescribed. To sustain the oxygen supply to essential organs in situations like ventricular fibrillation and cardiac arrest, the nurse should administer quick and safe defibrillation as well as additional cardiac life support techniques. (Ameen, Maarouf & Khalifa, 2021).

Regarding the study's nurses' demographic characteristics. The study's findings regarding the gender and age of the nurses under investigation revealed that more than three-quarters of the nurses were female and under the age of thirty. In concerns of nursing education, slightly more than half of nurses receive diplome from the Technical Health Institute. One hundred percent of the nurses who participated in the study had no training courses. Most of them had less than six years of nursing experience in nursing profession. From the point view of the researcher, it might be due to the historical roots of profession were to female nurses and some professions have broken these perceptions but nursing has been slow to change.

This result was incompatible with Metwaly, Bayomi, and Taha (2021) they studied effect of training program on nurses' knowledge and practice regarding patients with cardiac arrhythmias and revealed that almost two thirds of the nurses in the study were over thirty and that half of them had nursing bachelor's degrees. Additionally, nearly two thirds of them attended training courses on cardiac arrhythmias, and more than half of them had more than five years of experience in cardiac intensive care units. Conversely this result was compatible with Ameen, Maarouf and Khalifa (2021) who studied cardiac dysrhythmias Interpretation: Knowledge Enhancement Nursing Protocol It noted that the majority of the study's nurses were female, that around two-thirds of them were under thirty, and that none of them had previously attended training courses.

The study's findings regarding nurses' practices before, immediately post, and follow up an educational program were implemented showed that most of the nurses had satisfactory levels for practices relating cardiopulmonary resuscitation and the

administration of emergency medications, and most of them had satisfactory levels for management of arrhythmias and connecting the patient to monitoring. Furthermore, less than one quadrant of the studied nurses had unsatisfactory practice levels related to obtaining 12-lead ECGs and interpretation procedures post the educational program's implementation, and more than one third of the studied nurses had unsatisfactory practice levels related to follow-up educational program implementation. This might be a result of the educational program's success and effectiveness.

This finding was consistent with Tahboub and Dal Yilmaz (2019) they studied nurses' knowledge and practices of electrocardiogram interpretation and stated that ECG training courses were effective in improving the nurses' ECG knowledge and interpretation. Also, in line with this study Elbaih, Taha, Elsakaya, Elshemally and Alshorbagy. (2019) they studied Assessment of cardiopulmonary resuscitation knowledge and experiences between emergency department nurses' hospital pre and post basic life support training course, Egypt and found that the majority of the nurses under investigation had satisfactory levels regarding practices related to cardiopulmonary resuscitation and emergency medication administration post program implementation.

According to the study's findings, Total nurses' practices pre, immediately post and follow up after educational program the study result clarified that the majority of nurses had satisfactory level of total practice immediately post educational program implementation compared to more than one third of studied nurses pre-educational program implementation and more than two thirds follow up educational program. This might be a result of the educational program's success.

In line with this study Al-Temimi and Atiya (2019) they studied effectiveness of an educational program on emergency nurse's knowledge and practice about advance cardiac life support at emergency Medicine Department in Baghdad City and concluded that the nurses' knowledge and skills had improved after educational program. Also, this study was compatible with AL-Jumaily and Khudur (2019) they studied effectiveness of an education program on nurses' knowledge concerning in nursing management for patients with Heart Block in Kirkuk Teaching Hospitals and Their finding showed that there were highly significant differences in the study group's pre- and post-test results in the majority of the main domains related to nurses' practice.

As regard to relation between demographic characteristics of the studied nurses and their practices pre, immediately post and follow up after completing educational program the study result illustrated that, there was statistically significant relation between the studied nurses' demographic characteristics and their practices related to level of education and year of experience pre, immediately post and follow up educational program implementation.

This result was in the same line with Malk, Rezk, Mohammed, and Abd-Allah (2018) they studied Effect of an Education Program on Nurses Performance Regarding Electrocardiography and concluded that there was statistically significant relation between nurses' level of education and years of experience and their levels of practices after educational program implementation. This result was in the same line with Ameen, Maarouf and Khalifa (2021) they studied cardiac dysrhythmias interpretation: knowledge enhancement nursing protocol and found that there were statistically significant differences between nurses' level of education and years of experience and their levels of practices after program implementation.

Regarding difference in nurses' practices throughout the program implementation the study result clarified that there were differences in nurses' practice throughout the program implementation. When compared to the scores before to implementation, there was an overall improvement in the mean practice scores of nurses across all items. There was high statistically significant difference between pre and immediately post program implementation. Also, there was statistically significant difference was notices among pre & follow up program application. This could be due to lack of educational programs and knowledge updating regarding management of arrhythmias for critical care nurses.

The result was concurred with Haza'a, Al-Qubati, Mohammed, Abdel-Aziz, & Mehany (2020) They reported that the nursing practice in the pre/post and follow-up implementation of the educational program showed statistically significant differences. Additionally, this result was consistent with Sakr Metwaly and Taha (2019) they studied effect of intervention guidelines on nursing performance regarding patients with angina and found that nurses' knowledge and skill levels were higher in the post-intervention and follow-up stages of the nursing intervention guidelines.

Concerning to difference of total practice score between pre, post and follow-up program implementation the study result showed that there was high statistically significant difference between pre and immediately post program implementation. Also, there was statistically significant difference was found among pre & follow up program application. This could be attributed to lack of nurses' knowledge, which reflects on their skills, inadequate continuous training program and sometimes insufficient equipment.

Similar to this study, Ruhwanya., Tarimo, , and Taha (2018) they studied life threatening arrhythmias: knowledge and skills among nurses working in critical care settings at Muhimbili Nation al Hospital, Dar es Salaam, Tanzania and found that following the implementation of a training program, nurses' practice improved statistically significantly compared to before the program and continued throughout the follow-up phase. Also, in accordance with that study Al-Temimi & Atiya (2019) they found that nurses' level of practice significantly improved immediately post program and at follow up phase in all items.

CONCLUSION

Based on the findings of the current study, it was concluded that majority of the studied nurses were had unsatisfactory practice regarding cardiac arrhythmias pre the program implementation. Meanwhile, the majority of the studied nurses had got statistically significant improvement in their practice post the program implementation, while this improvement decreased slightly at follow up.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

1- Continuous training and educational program for the purpose of refreshing, improving and updating the practice of the nurses assigned to provide care with cardiac arrhythmias patients.
2- Review and evaluation of nurses' practices regarding management of patients with cardiac arrhythmia especially in any emergency situation in the critical care units.
3- Educational materials such as booklets and pamphlets should be developed for critical care nurses according to their needs, skills, and all updating practice and guidelines regarding arrhythmia management.

Further studies:

It is strongly advised to replicate similar specific studies using large probability samples and different settings to enhance and update the nurses' performance regarding care of patients with cardiac arrhythmias.

References

AL-Jumaily, K. A. S., & Khudur, K. M. (2019). Effectiveness of an education program on nurses knowledge concerning in nursing management for patients with heart block in Kirkuk teaching hospitals. *Indian Journal of Public Health Research & Development, 10(4).*

Al-Temimi, H. T. K., & Atiya, H. H. (2019). Effectiveness of an educational program on emergency nurse's knowledge and practice about advance cardiac life support at emergency medicine department in Baghdad City. *Indian Journal of Public Health Research & Development, 10(9).*

Ameen, A. D., Maarouf, M. D., & Khalifa, M. A. (2021). Cardiac dysrhythmias interpretation: Knowledge enhancement nursing protocol. *Egyptian Journal of Nursing and Health Sciences, 2*(2), 159-175.

National Heart, Lung, and Blood Institute (2022). What is an Arrhythmia?

Retrieved from https://www.nhlbi.nih.gov/health-topics/arrhythmia. Accessed Aug. 4, 2022.

Elbaih, A. H., Taha, M., Elsakaya, M. S., Elshemally, A. A., & Alshorbagy, M. E. M. (2019). Assessment of cardiopulmonary resuscitation knowledge and experiences between emergency department nurses' hospital pre and post basic life support training course, Egypt. *Annals of Medical Research, 26*(10), 2320-2327.

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.

Haza'a, A., Al-Qubati, F. A., Mohammed, M. A., Abdel-Aziz, M. A., & Mehany, M. M. (2020). Effect of an educational program on critical care nurses performance regarding emergency care for patients with pulmonary embolism. *Assiut Scientific Nursing Journal, 8*(20), 31-44.

Hemida Salem, A. (2020). Critical care nurses' competency regarding early prediction and interpretation of life-threatening dysrhythmias: Life–Saving opportunity. *Egyptian Journal of Health Care, 11*(4), 428-443.

Ho, J. K. M., Yau, C. H. Y., Wong, C. Y., & Tsui, J. S. S. (2021). Capability of emergency nurses for electrocardiogram interpretation. *International Emergency Nursing, 54*, 100953.

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), 251-258.

Ali Ameen, D., Mohamed Maarouf, D., & Mohamed Khalifa, A. (2021). Cardiac dysrhythmias Interpretation: Knowledge Enhancement Nursing Protocol. *Egyptian Journal of Nursing and Health Sciences, 2*(2), 159-175.

Lynn, P. (2018). *Skill checklists for Taylor's clinical nursing skills*. Lippincott Williams & Wilkins. p.289-330.

Malk, N. R., Rezk, M. M., Mohammed, S. S., & Abd-Allah, F. K. (2018). Effect of an education program on nurses performance regarding electrocardiography. *Egyptian Journal of Health Care, 9*(1), 38-49.

Mclaughlin, M. (2018). *Cardiovascular care made incredibly visual*. 3rd ed. Wolters Kluwer publishers. p. 264.

Metwaly, E. A., Bayomi, R. R., & Taha, N. M. (2021). Effect of training program on nurses' knowledge and practice regarding patients with cardiac arrhythmias. *Assiut Scientific Nursing Journal, 9*(26), 52-61.

Mitchell, B. L. (2022). Overview of Arrhythmias.

Retrieved from: https://www.msdmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/overview-of-arrhythmias.

Nettina, S. M. (2018*). Lippincott manual of nursing practice*. 11th ed. Wolters Kluwer Publishers. p. 594-620.

Rahimpour, M., Shahbazi, S., Ghafourifard, M., Gilani, N., & Breen, C. (2021). Electrocardiogram interpretation competency among emergency nurses and emergency medical service (EMS) personnel: A cross-sectional and comparative descriptive study. *Nursing Open.*

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).

Sakr, M. D., Metwaly, E. A., & Taha, N. M. (2019). Effect of intervention guidelines on nursing performance regarding patients with angina. *Egyptian Nursing Journal, 16*(2), 70.

Salim,A., Brown,C., Inaba,K., and Martin,M.J. (2018). *Surgical Critical Care Therapy A Clinically Oriented Practical Approach, Arrhythmia Evaluation And Management In The Surgical* ICU, 1sted., united states of America, Springer, P:85.

Statistics by Country for Arrhythmias, (2012). *Extrapolation of prevalence rate of arrhythmias to countries and regions.*

Retrived from: http://www.rightdiagnosis.com/a/arrhythmias/stats-country.htm.

Tahboub, O. Y., & Dal Yilmaz, U. (2019). Nurses' knowledge and practices of electrocardiogram interpretation. *International Cardiovascular Research Journal, 13*(3), pp. 80-84.

Urden, L.D., Stacy, K.M., and Lough, M.E. (2020). *Priorities in critical care nursing-e-book, caring for the critically ill patient & cardiovascular therapeutic management*, 8th ed., Canada, Elsevier, p: 1/194.

Uvelin, A., Pejakovic, J., and MiJatovic,V. (2017). Acquired prolongation of QT Interval as a Risk Factor for Torsade de pointes Ventricular Tachycardia: A narrative review for the anesthesiologist and intensivist. *Journal of anesthesia, vol.31*(3), P:413-423.

Yadav, U., & Mehta, R. S. (2018). Effectiveness of education intervention programme on life support measures for the nurses working in emergency unit of BPKIHS: A pre-experimental study. *Journal of BP Koirala Institute of Health Sciences, 1*(1), 14-19.

تأثير برنامج تعليمي عن اللانتظامية القلبية على ممارسة الممرضين في وحدات الرعاية الحرجة

مي السيد محسن [١] ،أ.د. سحر ياسين محمد [٢] ، أ.م. د. دينا التابعي صبح [٣]

ماجستير التمريض الباطني والجراحي - كلية التمريض - جامعة بورسعيد[١]

استاذ التمريض الباطني والجراحي - كلية التمريض - جامعة عين شمس [٢]

أستاذ مساعد في التمريض الباطني والجراحي - كلية التمريض - جامعة بورسعيد[٣]

أستاذ مساعد في التمريض الباطني والجراحي - قسم التمريض - جامعة الأمير سطام بن عبد العزيز[٣]

الخلاصة

يمكن أن تؤدي اللانتظامية القلبية إلى أشكال أكثر فتكًا من اضطراب نظم القلب. يلعب ممرض الرعاية الحرجة دورًا حيويًا في إدارة عدم انتظام ضربات القلب وتتخصص في تخفيف الأعراض وتعزيز الراحة والقيام بالمهارات الازمة في حالات الطوارئ مثل حالات خلل ضربات القلب القاتلة. هذا وكان الهدف من الدراسة هو تقييم تأثير برنامج تعليمي عن اللانتظامية القلبية على ممارسة الممرضين في وحدات الرعاية الحرجة. وقد تم استخدام تصميم شبه تجريبي. هذا وقد أجريت الدراسة بوحدات الرعاية الحرجة بمستشفيات بورسعيد العامة الحكومية (مستشفى بورسعيد العام، ومستشفى بور فؤاد العام، ومستشفى الزهور المركزي) التابعة حديثا للتأمين الصحي الشامل(مستشفى السلام ، مستشفى الحياة، مستشفى الزهور) بمحافظة بورسعيد. وقد اشتملت عينه الدراسة جميع الممرضين المتاحين أثناء الدراسة (١٣٩) في وحدة العناية المركزة مقسمة إلى ١١٦ أنثى و٢٣ ذكرًا. هذا وقد تم جمع البيانات باستخدام أداة: تقييم ممارسات التمريض تنقسم إلى جزئين الجزء الأول يتضمن البيانات الديموغرافية والجزء الثاني يتضمن ممارسات التمريض عن اللانتظامية القلبية. وقد أسفرت نتائج الدراسة على أن ٨٨.٥٪ من المرضيين الخاضعين للدراسة نساء من حيث الجنس وكانت الفئة العمرية أقل من ٣٠ سنة. ووضحت النتائج ان هناك أثر إيجابي كبير للبرنامج التعليمي للتمريض في تحسين ممارسة التمريض فيما يتعلق برعاية المرضى الذين يعانون من اللانتظامية القلبية. وقد أوصت الدراسة بأن هناك حاجة إلى مزيد من الدراسة بأحجام عينات أكبر لتقييم تطبيق برنامج تدريب التمريض وتقييم تأثيره على أداء التمريض فيما يتعلق برعاية المرضى الذين يعانون من عدم انتظام ضربات القلب.

الكلمات المرشدة: اللانتظامية القلبية، برنامج تعليمي، ممارسات التمريض.