Effect of an Educational Program Regarding Cardiac Arrythmais on Nurses Knowledge 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 Sceince,Prince Sattam Ben AbdElaziz University , Alkharj, KSA[3]

ABSTRACT

Background: Cardiac arrhythmias are the most prominent causes of mortality in patients with heart diseases. The critical care nurse role in cardiac arrhythmia mainly focuses on, prevention, early detection and taking emergency actions**. Aim:** to evaluate the effect of an educational program regarding cardiac arrhythmias on nurses' knowledge in critical care units**. Subjects and method:Design:** A quasi-experimental design was applied. **Setting:** The study was conducted at Critical Care Units in Governmental Port-Said general hospitals (Port Said general hospital, Pour -Fouad general hospital and Alzhoor central hospital) recently universal health insurance hospitals in Port Said. **Subjects:** Convenient sample of all available nurses 139 nurses in critical care units divided into 116 female and 23 male, who attended the research setting and were included in this study. **Tools:** Tool: Self- administered questionnaire to assess nurses knowledge regarding cardiac arrhthmais, which includes part I: Demographic characteristics, part-II: Self- administered questionnaire of nurses regarding cardiac arrhthmais. **Results:** showed that more than three quadrants of the studied nurses were female aged less than thirty years old and slightly more than half of them holding diplome degree in nursing. The studied sample demonstrated a significantly higher level of knowledge (P 0.001), with a high reported satisfactory knowledge level 77%) in post-intervention than the pre-intervention (13.7%). **Conclusion:** Improvement of a nurses knowledge about cardiac arrythmais after the implementation of the education program. **Recommendations:** Continuous education programs for nurses in different critical care settings are highly recommended.

Keywords: Cardiac Arrythmais, Critical care nurses, Knowledge.

INTRODUCTION

A cardiac arrhythmia is defined as a variation from the normal in the heart rhythm or rate. Electrical impulse creation, conduction, or both irregularities are the cause of it. The perfusion and oxygenation of important organs and peripheral tissues are impacted by the heart's inability to operate and pump blood adequately. This results in a reduction in cardiac output to these tissues, which can lead to organ dysfunction or failure. Atrial flutter, atrial fibrillation, ventricular tachycardia (VT), ventricular fibrillation (VF), pulseless ventricular tachycardia, pulseless electrical activity, complete heart block, asystole, and torsade de point rhythm are examples of arrhythmia that originate in the ventricles and/or atrial and range from asymptomatic rhythm to symptomatic lethal rhythm (Salem, 2020).

Dysrhythmias, particularly ventricular tachycardia and ventricular fibrillation, are the most frequent problems that result in death globally, according to the World Health Organization. They cause between 70,000 and 90,000 sudden cardiac deaths annually (Youssef, 2017). Life-threatening arrhythmias must be promptly assessed and managed if the patient is to have a chance at survival. Critical care nurses must understand that constant monitoring is a nursing duty and that they must be competent in this discipline (Khalil, Abd Rahman & Hamouda, 2018).

Patients with dysrhythmias that interfere with their daily activities or are potentially fatal are frequently anxious and require nurses who are aware of how the dysrhythmia affects their quality of life. Cardiac arrhythmia disorders that are potentially life threatening require expert clinical judgement and observation on the part of the nurse. Nursing care is characterised by caring practises, and the first step in delivering good care is identifying patients who are at a high risk of developing deadly dysrhythmias. In a

hospital, the patient's care is provided by nurses who are knowledgeable in medical and nursing terminology, biochemistry, human anatomy, and physiology (Peate & Wild, 2018).

For prevention of cardiac arrhythmia, cardiac arrhythmia triggers should be avoided if identified and definable (e.g., increase caffeine intake), maintenance of appropriate and weight moderate balanced caloric diet intake, prevent stress, encourage regular aerobic exercise as long as it does not trigger arrhythmias, urge risk factor reduction to prevent of structural cardiac disease (managment of hypertension, hypercholesterolemia, smoking, or increase ethanol intake), , incorporate meditation, bioenergy techniques and yoga, maintain a regular sleep-wake cycle with at least seven to eight hours at nightly, encourage two to three servings of fish a week and, if unable, consider supplementing with 1–2 g of fish oil and avoid the use of drugs or supplements that stimulate or mimic the effect of catecholamines (e.g., over-the-counter decongestants, ephedra (ma huang), and caffeine) (Lakkireddy et al., 2020).

In critical care settings, bedside nurses play a critical role in arrhythmia identification and management. Currently, nurses are responsible for gathering data and informing the physician, who then decides how to proceed with therapy based on the nurse's interpretation of the patient's rhythm or implements pharmacological and anti-shock treatments in accordance with unit-specific protocols or algorithms. Although there isn't a single strategy for instructing critical care nurses about arrhythmias, a number of strategies have been employed to help nurses gain more information and expertise. Hospital administrators should encourage nurses to take part in a clinical practise development program to advance their knowledge and abilities in arrhythmia monitoring through a combination of interactive web-based collaborative learning activity and assessment of staff competency using a skills checklist. By encouraging nurses to

appreciate learning, it will be easier for them to become competent (Ruhwanya, Tarimo & Ndile, 2018).

Significance of the study:

Cardiac arrhythmias is a critical disorder that can increase the force on the heart. This need immediate and precise intervention. The knowledge regarding management of dysrhythmia is most important among nurses in critical care unit. By gaining the knowledge of management in dysrhythmia may help the nurses in critical care unit to prevent the mortality and morbidity. Several studies related the knowledge of management in cardiac dysrhythmia was done and the result was varies. Arrhythmia knowledge among nurses is generally lacking. Therefore, the goal of this study is to aid in the improvement and upgrading of nurses' understanding of arrhythmia.

Between 2011 and 2012, 2315 patients were hospitalised to the coronary care unit (CCU) at Banha University Hospital; roughly 50–60% of these patients suffered arrhythmias, which affect about four million people in Egypt (Statistics by country for arrhythmias, 2012). In order to help nurses refresh and improve their knowledge, this study provides an educational program. The impact of a cardiac arrhythmia education program on nurses' knowledge in critical care units must therefore be assessed.

AIM OF THE STUDY

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

Study Hypotheses:

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

SUBJECTS AND METHOD

I. Technical Design

Study design:

A quasi-experimental design with one group (pre/post/follow up - intervention) was used to achieve the research aim.

Study settings:

The study was carried out at Critical Care Units in Governmental Port-Said general hospitals (Port Said general hospital, Pour -Fouad general hospital and Alzhoor central hospital) in Port Said city. In Port Said general hospital (Elsalam 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(Alhayah hospital) contains 32 beds divided into 2 main unit: adult ICU and median intensive care unit. Alzhoor central hospital contain 16 beds divided into 2 main unit: adult ICU and median intensive care unit.

Study sample:

Convenient sample of all available nurses

Study subjects:

One handered thirty nine nurses from critical care units were studied in total, with 116 women and 23 men participating in the study and attending the research setting.

Tools for Data Collection:

Data was collected for this study by using the following tool during the pre-, post-, and follow-up phases.

Self administerated questionnaire regarding knowledge about cardiac arrhythmias:

A self administerated questionnaire was was developed by the researcher after reviewing literature (Hinkle, & Cheever, 2017) & (Mclaughlin, 2018). It was designed in Arabic language to avoid misunderstanding, and divided into two parts:

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

Part (2): Nurses' knowledge assessment questionnaire “pre and post-intervention”: This part subdivides to assess nurses' knowledge regarding cardiac arrhythmias in critical care units (knowledge about heart & cardiac dysrhythmias, connecting patient to ECG monitor, ECG interpretation, Emergency antiarrhythmic medications, Cardiopulmonary resuscitation and defibration).

- General knowledge about heart & cardiac dysrhythmias: It contains eighteen items such as; structure of the heart, causes of heart arrhythmais and deviced used to treat arrhythmais.
- knowledge related to connecting patient to ECG monitor: It contains seven items such as; what the nurse will do if the monitor shows ventricular fibliration and what the nurse will do if the monitor shows sinus tachycardia.
- ECG interpretation: It contains twenty two items such as; what QRs wave indicate for, what the P wave indicate for and what is the ST distance indicate.
- Emergency antiarrhythmic medications: It contains eight items such as; indication of atropine, indication of anderal and the nursing intervention of administer adrenaline.
- Cardiopulmonary resuscitation: It contains ten items such as; the basic ways to open the airway, the rate of chest comperrsion & rate of breath.
- Knowledge related to defibration: It contains five items such as; the nursing intervention after completion of the electrical charge and the right places of the electrodes.

Scoring system: True or false questions were mixed in with multiple-choice questions. The "correct answer" took a one, while the "incorrect answer" received a zero. The scores for each domain's items and the total domain were totaled, divided by the number of items, and converted into percent scores. Knowledge was 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' knowledge regarding the care of patients with cardiac arrhythmias.

II. Operational design:

The operational design phase have included preparatory phase, pilot study, tool validity and reliability, and field work.

Preparatory phase:

Based on pertinent literature reviews and theoretical understanding of many aspects of the research, the researcher used books, articles, internet journals, and magazines to develop data collection tools. The researcher then created a handout for Cardiac

arthymias that contains all of the above covering points. The program had been completed.

Validity:

The tool were examined by a jury of seven medical surgical nursing specialists, and face and content validity were established. In response to the expert's comments and suggestions, the sheet was modified.

Reliability:

The Cronbach's alpha test was used to determine the validity of the study's tools. The Nurse Knowledge Tool's Cronbach's alpha value (internal consistency) was 0.894. The tool's reliability reveals high reliability.

Pilot Study:

After the tool creation, a pilot study was conducted, which was carried out on 16 nurses. It was administered to 10% of the nurses, then it was excluded from the study sample.The purpose of the pilot study was to evaluate the tool applicability, clarify its viability, and test the sequence of the items to ensure continuity. It also helped in predicting the amount of time needed to finish the tool, identifying any issues that would prevent data collection, and choosing the right information to collect and the best time to do it. As a result of the pilot study, necessary adjustments being implemented. In response to the results and approval of the final forms, the study instruments were changed, revamped, and rewritten. The nurses who participated in the pilot research were excluded from the the study.

Field Work

Data was collected 2 days a week (Saturday and Tuesday). The current study field work lasted eighteen months, from the beginning of March 2020 to the ending of August 2021. The work was divided into four stages (assessment, planning, implementation and evaluation).

Phase I: Assessment (Pre-intervention phase):

The researcher interviewed the nurses and introduced herself then invited them to participate in the study. After their agreements to participate, written consent was obtained. To gain their cooperation, the researcher explained the purpose of the study.

After that, the researcher explined to the participants the tools which include structured interview questionnaire regarding knowledge of cardiac arrhytmais, and asks them to answer the tools as consider a pre-intervention assessment.

Phase II: Planning

The researcher created an Arabic version of the cardiac arrhthmais handbook and required to submit it to the study group. It contains the following details: Anatomy and physiology of the heart. Cardiac arrhythmias (definition, signs &symptoms, types of arrhythmias, diagnosis, treatment and nursing intervention), Devices used for monitoring cardiac rhythm as ECG and cardiac monitor (nursing role before, during and after), Cardiac arrhythmias medication (uses, route, contraindications of uses, nursing role and complications), Cardiopulmonary resuscitation (knowledge & procedure), Emergency Crash cart and Health education regarding cardiac arrythmias. The booklet was divided into theoretical and practical parts. Also, it was supplemented by photos and colors for more illustration and to help the nurses tounderstand the content. Each participant was given a booklet which is summarizing the content of cardiac arrthymais sessions to guide them at their home. Animation videos, social media, and slide presentations were used in the sessions.

Phase (III): Health education sessions implementation

At the beginning, the studied nurses were divided into 10 groups each group consisted of 13 -15 nurses, then each group was gathered at a conference room separately. Because of Covid 19 the four sessions take two weeks for each group.

They were given the structured program education course that lasted about eight hours and was divided into four sessions of about 120 minutes each.

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

Section 2 was held after three day from first session. The content for the second session included: Reviewing, devices used for monitoring cardiac rythem as electrocardigram and cardiac monitor.

Section 3 was held after three day from second session. The content for the third session included: Reviewing, cardiac arrhthmais medication and cardiopulmonary resuscetation.

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

Phase IV: Evaluation

At the end of the fourth session, the researcher distributed structured interview regarding cardiac arrthmais again and asks them to answer the tool as consider immediately post intervention evaluation and after 3 months followup was done.

III. Administrative design

The relevant authorities have given their formal approval for the conduct of this study. Before beginning the study, the Dean of the Faculty of Nursing at the University of Port Said have sent formal letter explaining the goal, and purpose of the study to the Directors of the before mentioned settings, requesting permission to proceed.

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)). Before obtaining written consent to participate in the study, the purpose of the study was explained to the participants. A brief overview of the study was given to participants in order to reassure them that all information obtained would be kept strictly confidential and used only for the purpose of the study. Participants were informed that they could participate in or opt out of the study at any time. For identification purposes, code numbers rather than participant names were used. This safeguard ensured that the participants' identities would not be revealed in public reports.

IV. Statistical design

Data was sorted, organised, coded, and transferred into specially designed formats for computer entry. SPSS version 22 was used for the statistical analysis. Frequencies and percentages were used to describe qualitative data. The Chi-square test was used to examine the relationship between categorical variables (x2). Quantitative data were expressed as mean± SD, and for comparison between two means, the t-paired test (t) test

was calculated.Significance was adopted at $p<0.05$ for statistically significant interpretation of results of tests of significance, while $p\leq0.01$ was adopted for highly statistically significant interpretation of results.

RESULTS:

Table (1): shows that 88.5% of the studied nurses were at age group less than 30 years old with a mean ± SD (25.6 ±5.1), and the majority (83.5%) of nurses were females, (55.4%) of them had diplome level of education, (100 %) of studied nurses had not any training courses and (15.8%)of the studied nurses had more than six years' experiences.

Table (2): illustrates that (95%) of the studied nurses had unsatisfactory level regarding knowledge related to emergency medications for cardiac arrhythmia pre-educational program implementation comparing to (31%) and (36%) of them immediately after and follow up the educational program. In according to knowledge related to connecting the patient to the monitor (89.9%) of studied nurses had unsatisfactory level pre-educational program implementation and (33%) of them immediately post educational program implementation and less than half of them (36.7%) follow up the educational program. Moreover, (20.1%) of studied nurses had satisfactory level concerning knowledge related to cardiopulmonary resuscitation pre-educational program implementation comparing to all of them (76.3%) immediately post educational program implementation and (65.5%) of them follow up the educational program implementation.

Table (3): shows that there was no statistically significant relation between demographic characteristics of the studied nurses and their knowledge pre, immediately post and follow up after educational program except level of education & experience years at pre, immediately post and follow up after educational program whereas $p< 0.05$.

Table (4): shows that there was high statistically significant difference between pre and immediately post program implementation whereas high statistically significant difference was found between pre & follow up program implementation (P-value <0.001).

Figure (1): clarifies that (77%) of nurses had satisfactory total knowledge immediately post educational program implementation compared to (13.7%) pre and

(64.7%) of them follow up after educational program implementation. (P- value <0.001).

Figure (2): clarifies that 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. . (P- value <0.001).

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		
Diploma 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): Frequency distribution of nurses' knowledge pre, immediately post and follow up after educational program (n=139):

Knowledge	Pre-intervention				Post-intervention				Follow-Up			
	Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		Satisfactory	
	N	%	N	%	N	%	n	%	N	%	N	%
Heart & rhythm disorders	118	84.9	21	15.1	37	26.6	102	73.4	49	35.3	90	64.7
Connecting the patient to the monitor	125	89.9	14	10.1	33	23.7	106	76.3	51	36.7	88	63.3
Electrocardiogram knowledge & interpretation	114	82.0	25	18.0	32	23.0	107	77.0	49	35.3	90	64.7
Emergency medications for cardiac arrhythmia	132	95.0	7	5.0	31	22.3	108	77.7	50	36.0	89	64.0
Cardiopulmonary resuscitation	111	79.9	28	20.1	33	23.7	106	76.3	48	34.5	91	65.5
Defibration	118	84.9	21	15.1	34	24.5	105	75.5	45	32.4	94	67.6

Table (3): Relation between demographic characteristics of the studied nurses and their knowledge 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	107	89.2	16	84.2			31	96.9	92	86.0			46	93.9	77	85.6		
30 or More	13	10.8	3	15.8	0.396	0.529	1	3.1	15	14.0	2.870	0.090	3	6.1	13	14.4	2.157	0.142
Gender																		
Male	19	15.8	4	21.1			4	12.5	19	17.8			9	18.4	14	15.6		
Female	101	84.2	15	78.9	0.324	0.569	28	87.5	88	82.2	0.493	0.483	40	81.6	76	84.4	0.182	0.670
Marital Status																		
Single	58	48.3	8	42.1			16	50.0	50	46.7			19	38.8	47	52.2		
Married	62	51.7	11	57.9	0.255	0.613	16	50.0	57	53.3	0.106	0.745	30	61.2	43	47.8	2.300	0.129
Educational Level																		
Diplome (institute)	77	64.2	0	0.0			30	93.8	47	43.9			47	95.9	30	33.3		
Bachelor	43	35.8	11	57.9			2	6.2	52	48.6			2	4.1	52	57.8		
Master of Nursing	0	0.0	8	42.1	64.773	<0.001**	0	0.0	8	7.5	24.803	<0.001**	0	0.0	8	8.9	50.335	<0.001**
Experience Years																		
< 6	113	94.2	4	21.1			32	100.0	85	79.4			49	100.0	68	75.6		
6 or More	7	5.8	15	78.9	65.818	<0.001**	0	0.0	22	20.6	7.817	0.005*	0	0.0	22	24.4	14.23	<0.001**

χ2: value for Chi square test
Statistically significant at p ≤ 0.05
Statistically high significant at p ≤ 0.001

Table (4): Difference in nurses' knowledge throughout the program implementation (n=139):

Knowledge	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
Heart rhythm disorders	8.6 ±3.0	15.2 ±5.3	12.776	<0.001**	8.6 ±3.0	14.6 ±5.1	11.955	<0.001**
Connecting the patient to the monitor	2.9 ±1.0	6.1 ±2.1	16.220	<0.001**	2.9 ±1.0	5.6 ±2.0	14.236	<0.001**
Electrocardiogram knowledge	11.3 ±4.0	19.4 ±6.8	12.104	<0.001**	11.3 ±4.0	17.9 ±6.3	10.427	<0.001**
Medications for cardiac arrhythmia	2.7 ±0.9	7.1 ±2.5	19.523	<0.001**	2.7 ±0.9	6.4 ±2.2	18.351	<0.001**
CPR knowledge	5.6 ±2.0	8.7 ±3.0	10.136	<0.001**	5.6 ±2.0	8.2 ±2.9	8.701	<0.001**
Emergency defibrillator	2.5 ±0.9	4.5 ±1.5	13.479	<0.001**	2.5 ±0.9	4.4 ±1.5	12.805	<0.001**
Total Knowledge Level	**33.6 ±11.3**	**60.9 ±12.5**	**19.101**	**<0.001****	**33.6 ±11.3**	**56.2 ±14.9**	**14.248**	**<0.001****

τ : t- paired test
Statistically significant at p ≤ 0.05
Statistically high significant at p ≤ 0.001

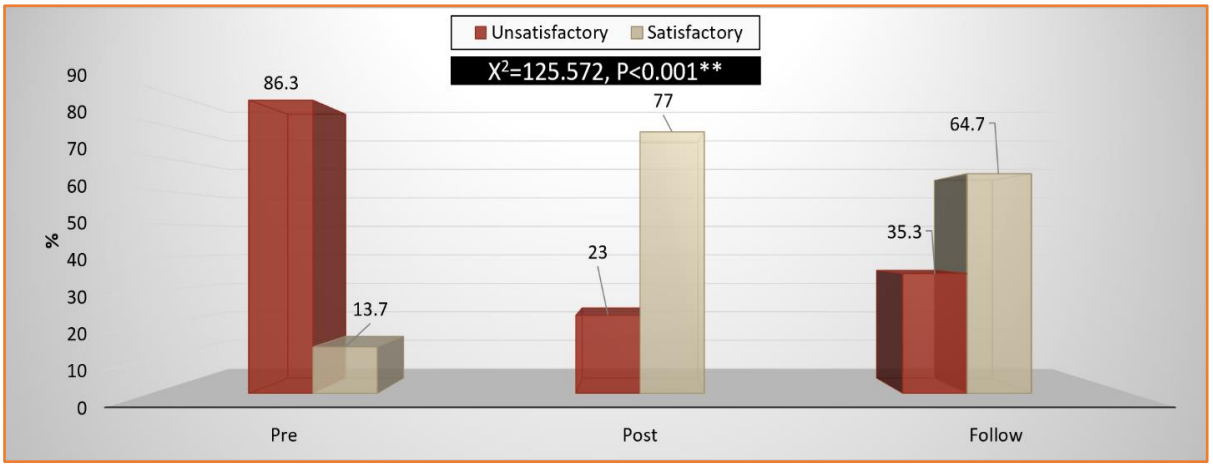

Figure (1): Total nurses' knowledge pre, immediately post and follow up after educational program (n=139)

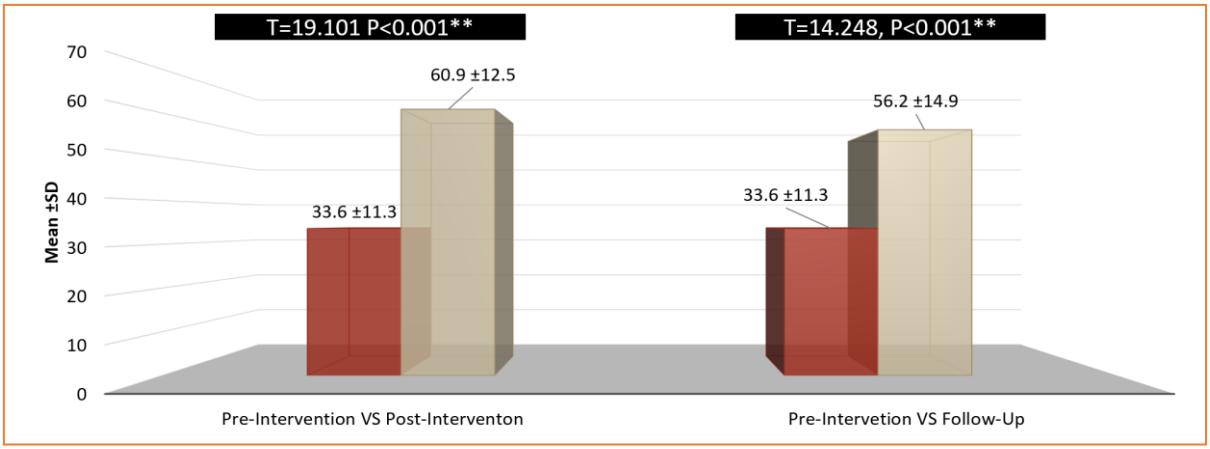

Figure (2): Difference of total knowledge score between pre-intervention, post intervention and follow-up

DISCUSSION

Arrhythmias are irregular heartbeats driven on by abnormalities with the automaticity of the heart and/or improper heart conduction, which reduce cardiac output and vary heart rate and thus impact tissue perfusion. Any impulse coming from outside the Sino-atrial node has the potential to disrupt the normal heartbeat. A variety of symptoms, from complete asymptomaticism to unconsciousness or rapid cardiac death, can be caused on by cardiac arrhythmias. In general, more severe symptoms are more likely to manifest when systemic cardiac disease is present. For instance, in a heart that is healthy, persistent monomorphic ventricular tachycardia can be tolerated hemodynamically without resulting in syncope (Mitchell, 2022).

Arrhythmias are a major cause of morbidity, increased hospital length and higher economic costs. Nurses should have enough knowledge to carry out these responsibilities so that they can maximize the quality of care and patient outcomes. Nurses should be able to quickly and correctly detect and interpret ECG abnormalities and intervene in a timely manner (Habibzadeh et al., 2019). The current study hypotheized that, the nurse's level of knowledge will improve after attending the educational program. The study's findings showed that the tested knowledge domains significantly improved post-intervention and over the follow-up period compared to pre-intervention. This leads to acceptance of this hypothesis.

In a recent study Ameen, Maarouf and Khalifa (2021) who studied cardiac dysrhythmias Interpretation: Knowledge Enhancement Nursing Protocol and stated that the majority of the study's nurses were female, around two thirds of them were under

thirty, and none of them had ever participated in training programs. This is in line with the study's findings, which showed that more than three quarters of the nurses were female and under the age of thirty. In relation to nurses' 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, according to years of experience. 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.

The study's findings regarding nurses' knowledge pre, immediately post, and follow up phases illustrated that the majority of the studied nurses had unsatisfactory level regarding knowledge related to emergency medications for cardiac arrhythmia at pre-educational phase compared to slightly more than one third of them at immediately post and follow up phases. In according to knowledge related to connecting the patient to the monitor the majority of studied nurses had unsatisfactory level pre-educational program implementation and slightly more than one third of them immediately post and follow up the educational program. Additionally, lesser than one-fourth of the nurses in the study had satisfactory level knowledge of cardiopulmonary resuscitation prior to the implementation of the educational program, compared to slightly more than three-fourths of them immediately following the program's implementation and slightly more than two-thirds of them at its follow-up. This might be because the survival of patients experiencing cardiac arrhythmias depends on the use of emergency drugs and properly connecting them to monitors.

This result was compatible with Ameen, Maarouf and Khalifa (2021) who studied cardiac dysrhythmias Interpretation: Knowledge Enhancement Nursing Protocol and reported that at the pre, immediately post, and follow up program phases, there were statistically significant variations in understanding of emergency drugs and knowledge related to connecting the patient to the monitor. Also, in line with this study Fadalla (2018) who studied Impact of an educational program on recognition and management of ventricular arrhythmias guideline among critical care nurses in Khartoum City, Sudan and stated that at the pre, immediately after, and follow up program phases, there were statistically significant variations in understanding of emergency drugs and knowledge related to connecting the patient to the monitor.

According to the study's findings regarding total nurses' knowledge pre, immediately post and follow up after educational program the study result clarified that more than three quadrants of nurses had satisfactory total knowledge immediately post educational program implementation compared to thirteen-point seven percent pre and more than two thirds of them follow up after educational program implementation. This may be due to the importance of managing cardiac arrhythmias because it is one of the major life-threatening conditions and also indicates the effectiveness of educational program.

This result was in the same line with Nagy, Taha, Mohamed and Mohamed (2022) they studied effect of training program on nurses' performance regarding life threatening cardiac arrhythmias and found that there were statistically significant improvements in total level of nurse's knowledge, practice and attitude post and follow up program phases. Also, this result was compatible with Metwaly, Bayomi and Taha (2021) they studed effect of Training Program on Nurses' Knowledge and Practice Regarding Patients with Cardiac Arrhythmias and found that statistically significant improvements were shown in nurses' knowledge regarding the care of patients with cardiac arrhythmias compared to preprogram and these persisted in follow-up phase with slight decline. Inadtion to, Tavan, Norouzi and Shohani (2020) they studied teaching cardiac arrhythmias using educational videos and simulator software in nurses: An educational interventional study and reported that after the education intervention program, there is significant enhancement in knowledge and skill for managing cardiac arrhythmias.

Regarding the relationship between the demographic characteristics of the studied nurses and their knowledge prior to, immediately after, and following an educational program, the study's findings revealed that there was no statistically significant relation between these variables, with the exception of level of education and years of experience prior to, immediately following, and following an educational program. This could be because different work conditions require higher levels of knowledge and performance as a result of experience and education.

In line with this result Shehab and Shaaban (2021) they studied nurses' performance regarding caring of patients with angina attack at Emergency and Critical Care Units and revealed that there was no statistically significant relations between nurses' sociodemographic characteristics and their level of knowledge and it was also reported

that there was no statistically significant relation between nurses' characteristics, including age, marital status, qualifications, job, and years of experience, and their level of practice. Also, this result was the same as Jacob, Tryambake, Jamdade and Sakhardande (2018) they studied 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 Citythey concluded that there was no statistically significant relation between demographic characteristics of nurses and their knowledge pre, immediately post and follow up phases after educational program.

CONCLUSION

Based on the findings of the current study, there was high statistically significant difference of total knowledge score between pre and immediately post program implementation. Also, there was statistically significant difference of total knowledge score was notices among pre & follow up program application. There was an obvious improvement in the studied nurses knowledge, it can be concluded that the educational program has a positive impact on the nurses' knowledge regarding cardiac arrhthmais.

RECOMMENDATIONS

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

1- Pre-service training and educational program for the purpose of refreshing and updating the knowledge, and practice of the nurses assigned to start working with cardiac arrhythmias patients.

2 - Periodic evaluation of nurses' knowledge and practice concerning management of patients in any emergency situation in the critical care units.

3 - Make orientation program for newly graduated nurses in critical care units to improve their knowledge and practice.

Further study:

Further study is needed with larger sample sizes to evaluate the application of nursing training program and evaluate its effect on nurses' performance regarding care of patients with cardiac arrhythmias.

Referances

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تأثير برنامج تعليمى عن اللانتظامية القلبية على معرفة 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]

الخلاصه

اللانتظامية القلبية هي أبرز أسباب الوفيات في المرضى الذين يعانون من أمراض القلب. يركز دور ممرضة الرعاية الحرجة في اللانتظامية القلبية بشكل أساسي على الوقاية والكشف المبكر واتخاذ إجراءات في حالات الطوارئ. هذا وكان الهدف من الدراسه هو تقييم تأثير برنامج تعليمى عن اللانتظامية القلبية علي معرفة الممرضيين في وحدات الرعاية الحرجة. وقد تم استخدام تصميم شبه تجريبي. هذا وقد أجريت هذه الدراسة في مستشفيات بورسعيد العامة الحكومية (مستشفى بورسعيد العام، ومستشفى بور فؤاد العام، ومستشفى الزهور المركزي) التابعة حديثا للتأمين الصحي الشامل بمدينة بورسعيد. وقد اشتملت عينه الدراسه علي جميع الممرضين المتاحين أثناء الدراسة (١٣٩) في وحدات وحدة الرعاية الحرجة مقسمة إلى ١١٦ أنثى و ٢٣ ذكرا. هذا وقد تم جمع البيانات باستخدام: استبيان المعلومات لتقييم معرفة الممرضين والذي ينقسم الي جزئين. الجزء الأول يتعلق بالمعلومات الديموغرافية والجزء الثاني يتعلق بالمعلومات عن اللانتظامية القلبية. وقد أسفرت نتائج الدراسه علي أن أكثر من ثلاثة أرباع الممرضيين كن من الإناث وكان أعمارهن تقل عن ثلاثين عاما وأكثر من نصف العينة بقليل يحمل درجة الدبلوم في التمريض(خريجي المعاهد الفنيه الصحية). أظهرت العينة المدروسة مستوى عالي من المعرفة حول اللانتظامية القلبية،كانت هناك فروق ذات دلالة أحصائية عالية بين مستوى المعرفة المرضي (٧٧٪) حول اللانتظامية القلبية بعد التدخل مقارنة بما قبل التدخل (١٣.٧٪). وقد أوصت الدراسه بأن هناك حاجة لتحسين معرفة الممرضيين حول اللانتظامية القلبية ببرامج التعليم المستمر في مختلف أماكن الرعاية الحرجة.

الكلمات المرشدة : اللانتظامية القلبية ، وحدات الرعاية الحرجة ، المعلومات.