THE EFFECTIVENESS OF PRE-OPERATIVE EDUCATIONAL PROGRAM ON NURSES PERFORMANCE IN CARDIAC SURGERY WARD AT THE MIDDLE EUPHRATES REGION

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ABSTRACT

Background: Cardiac surgery patients are generally admitted to cardiac surgery department or in critically case in intensive care units (ICU). Most of those patients usually having critical diseases such as myocardial infarction or heart failure or coronary artery disease and the cardiac surgery operation is done emergency or selective. The patients admitted to hospital to cardiac surgery department and the nurses do all doctors order such as lab investigations, X-Ry, MRI, CTs, ECG, ECHO, etc.. and prepare the patients for surgery. Preparation of patients for cardiac surgery by nurses is one of the most important procedure to reduce cardiac surgery complications after surgery, and preparation of patients before cardiac surgery if it is performed incorrectly may lead to threatening complications and safety of patients after surgery.

Aims: To determine the effectiveness of educational program on nurses performance preoperative cardiac surgery at the Middle Euphrates Region.

Method: A quasi-experimental of pre-test and post-test one group design is used to conduct this study. A non-probability convenience sampling technique was adopted and recruited 48 nurses from three public governmental hospitals.

Results: There is about 54.2% of nurses were male on study group, while 41.7% on control group were male, and more than third of nurses 37.5% were between 25 to 29 years old on study group and 41.7% of control group were at the same age. Half of study group 50% were had Graduate of college nursing, while, 45.8% of control group had Nursing institute Graduate. More than half of study group 58.6% have 1-5 years of experience, and 41.7% of control group have 1-5 years of experience.

Related to performance pretest, 70.9% of participate of nurses were not done the checklist during preparation of patients preoperative of cardiac surgery, and posttest, 87.5% of participate of nurses done checklist related to preparation of patients for cardiac surgery. While there is high significant differences in pathogen performance at p-value less than 0.01. Based on the statistical average, the results indicate that there was an improvement in the performance level of the nurses after applying the educational program.

Conclusion: According to the results of the current study, the statistical results indicated an improvement in participants' performance and this is evidence that our structured educational program regarding preoperative patient preparation was effective. Regarding the study participants and their demographic variables, we conclude the following:

The majority of cardiac surgery parlor nurses are male and almost all of the participants in this study had no opportunity to attend a prior training or educational program related to preoperative cardiac preparation and most of the hospitals did not have special instructions regarding the preparation of the patient before the operation.
Recommendations:

Based on the results and conclusion of the present study, the researcher recommends the following:

Encourage nursing faculty to focus on cardiac surgery and preoperative patient preparation in their academic lectures and specifically during nursing care courses. Implementation of educational program procedure based on clinical indications of patients and should be done by qualified and trained nurses. Encourage health care providers to apply recommended evidence-based findings in their work. Encouraging attending national and international conferences and workshop for nurses. Nurses working in cardiac surgery wards should update their skills through attending in education program, workshop, lectures scientific congresses and internet conferences.

**keyword:** cardiac surgery, preoperative, performance, nurses.

1. INTRODUCTION

Cardiac surgery is a medical specialty of treating diseases related to the heart by surgery. Modern cardiac surgery began at the end of the nineteenth century, when heart surgery was developed by many surgeons specializing in this field who presented and still provide more surgical treatments for a variety of heart diseases, and this development continues today (Aris A. Francisco Romero, 2015).

Pulmonary bypass or revascularization is one of the most important options for treating ischemic cardiac disease and atherosclerosis. In the sixties of the last century, surgeons in different countries began to perform Coronary Artery Bypass Grafting (CABG) operations, where the doctor Veinberg implanted left internal mammary artery (LIMA) in the front wall of the heart muscle without performing any anastomosis directly into the coronary vessels and he noticed that, they are development of vessels collateral when sufficient blood supply was present, and Doctor Forssmann invented cardiac catheterization in 1929, and Doctor Sherry invented media injection in contrast into coronary with angiography to determine location of stenosis in coronary arteries (CA) and from here began the era of reversal of coronary heart disease (Konstantinov IE. Robert H. Goetz, 2000).

Constitute bypass grafting operations and revascularization two main possibilities for the treatment of ischemic cardiac disease in addition to medications treatment. Surgical treatment of valvulopathy was first started in 1923 by Cutler. The treatment was by opening the coronary commissures by inserting a finger or a device inside the coronary artery into the stenosis area to expand it or cut the stenosis area. After that, a new technique introduced which called Hufnagel Valve Cage and Ball, this technique was artificial valve which placed inside the descending aorta to treat aortic regurgitation and that was in 1952, 15 years later (Starr A, Edwards ML, 1961), an artificial valve similar to the firstly which called Edwards Ball Cage, this artificial valve implanted to treatment patients with mitral valve In 1967. After that, valve replacement techniques improved from replacing one valve to replacing the four valves, where special techniques have been introduced, such as the Ross procedure, where the aortic valve was replaced by pulmonary valve auto-graft, and that was in 1992. Bental implanted a prosthetic aortic valve accompanied by an ascending aortic limb to treat the nearest aortic anatomy or aneurysm (Lillehei CW, Varco RL, 1986).

Cardiac system is divided into heart, blood, and blood vessels, in addition to the lymphatic system, which helps maintain an adequate blood volume within the vascular system by capturing excess fluid from the tissues and returning it to the blood vessels (bloodstream) (O’Keefe, et al, 2014). The heart is divided into four hollow chambers, two upper and two lower chambers or right and left chambers which called atrium and ventricles respectively, separated from each other by a longitudinal septum which called the interventricular septum (Rossano JW, et al, 2019). The interrelationships between the heart valves are unified by virtue of the similarities in terms of shape and function. Valves of the heart are divided into two groups: atrio-ventricular valves (mitral and tricuspid valves), and semilunar valves (aortic and pulmonary valves) (Bradlow, WA, et al, 2014).

The heart is described as a double pump because it receives and exits blood at the same time. The blood circulatory system consists of two parts: pulmonary circulation, systemic circulation, and coronary circulation (Pratt, Rebecca. 2017).

Cardiac conduct system is contain of a special electrical circuit inside the heart, which consists of Nodal cells and Purkinje fibers, called electrical cells. These Nodal cells generate and transmit impulses through Purkinje fibers.
to contractile cells inside the heart, which leads to the occurrence of impulses (systole and diastole)(OpenStax CNX.2015).

The classification or types of cardiac surgery are divide into many categories: Acquired valvular heart disease, Coronary artery disease, Surgery for heart failure, Thoracic Aortic Disease, Transplantation, Arrhythmias, Acquired Valvular Heart Disease

Preoperative nursing is a term that describes a variety of nursing functions associated with surgical work, and includes three phases before, during and after surgery. Each of these stages begins and ends at a certain point to start the other stage, and each stage includes a group of nursing activities that the nurse performs using the nursing process (NP) (Celik F, Edipoglu IS.2018). All stages of patient care before, during and after surgery are important, but the preoperative stage is considered one of the most important of these stages because patients at this stage are unable to meet their physical or psychological needs, which leads to an imbalance in patients, whether emotional or psychological(Fudickar A, etal.2012).

The nurses play an essential role in assessing patients before cardiac surgery by determining the patient’s needs, not only for cardiac surgery but also for complete per-operative nursing care (before, during and after surgery). Preoperative evaluation is an interactive process to provide information, psychosocial and emotional support, and health education to patients which help to promote a patient's postoperative recovery. The nurse also plays the role of coordinator among the team members by collecting and safeguard information of patients to provide best healthcare and to meet the patient needs before and after surgery. The nursing consultation before surgery is useful from the patients' point of view. It provides them with essential information about procedure and explains the pre and postoperative care process (Bouamrane M, Mair FS 2014).

II. METHODOLOGY

2-1-Ethical considerations

Permission has been obtained from three health directorate (holy Karbala, AL Najaf, and AL Hila province).

2-2-Design ,setting, sampling of study and data collection

A quasi-experimental study design was applied using a pre-test post-test approach to study samples from December 5, 2019 to October 10, 2020. Though, this study is intended to evaluate nurses’ performance regarding cardiac surgery before and after implementing educational program. The study carried out in the Karbala, AL Najaf, and AL Hila province, held on 48 of nurses and divide to study group and control group of Imam Zain Al-Abidin Hospital in holy Karbala, Shahid Al-Mihrab Center in Al-Hilla province, and then in the Najaf Center for Cardiac Surgery and Catheter Interference at AlNajf.

2-3-Instrument of study

The researchers were developing a checklist which consisted of 32 procedures related to the preparation of the patient before the operation, where the checklist was explained to the nurses and a (yes) sign was placed when the nurse performed the correct performance. And a sign (no) when the nurse is not performing properly.

2-4-Statistical Analysis

The data analysis of this study is analyzed through using the Statistical Package of Social Sciences (SPSS) version (24). The following statistical data analysis approaches were used in order to analyze data and assess the results of the study. The researcher used descriptive and inferential data analysis to obtain results.

III. RESULT AND DISCUSSION

Table-1: Distribution of study sample according to socio-demographic data (study and control group) No=48 Nurses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Study</th>
<th>Control</th>
<th>C.S P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
<td>%</td>
</tr>
<tr>
<td>Age</td>
<td>20-24</td>
<td>6</td>
<td>2</td>
<td>8.3</td>
</tr>
<tr>
<td></td>
<td>25-29</td>
<td>9</td>
<td>10</td>
<td>41.7</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>4</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>Items</td>
<td>Pretest Mean SD</td>
<td>Posttest Mean SD</td>
<td>Paired t-test</td>
<td>d.f</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-----</td>
</tr>
<tr>
<td>Operative consent signed (surgeon + patient)</td>
<td>1.24(0.283)</td>
<td>2.21(0.375)</td>
<td>6.261</td>
<td>23</td>
</tr>
<tr>
<td>Surgery type confirmed for patient</td>
<td>1.42(0.208)</td>
<td>2.14(0.254)</td>
<td>9.943</td>
<td>23</td>
</tr>
<tr>
<td>did you have allergy</td>
<td>0.33(0.225)</td>
<td>2.03(0.259)</td>
<td>6.731</td>
<td>23</td>
</tr>
<tr>
<td>Did you have Contagious Disease</td>
<td>1.63(0.241)</td>
<td>2.32(0.150)</td>
<td>7.356</td>
<td>23</td>
</tr>
<tr>
<td>The financial costs are clear to the patient</td>
<td>1.73(0.342)</td>
<td>1.97(0.208)</td>
<td>8.934</td>
<td>23</td>
</tr>
<tr>
<td>Blood units prepared</td>
<td>0.64(0.136)</td>
<td>2.24(0.213)</td>
<td>5.837</td>
<td>23</td>
</tr>
</tbody>
</table>

This table shows that, more than third (37.5%) of nurses in the study group were age (25-29) while, (41.7%) of nurses in the control group were the same age group, and (54.2%, and 79.2% respectively) of nurses in study group and control group were male.

According to the educational level, half of nurses in study group (50%) were graduate from of college nursing, and (45.8%) of nurses in the control group were nursing institute graduate.

In relation to years of experience of nurses, most of nurses have 1 to 5 years of experience in study and control group (58.6%, and 41.7% respectively) in the medical wards of cardiaq surgery. The same table revealed that the majority of the training session (50%) of nurses in the study group and (70.7%) did not have session.

Statistically, there were no statistical significant difference between study groups and control groups in relation to (gender, work time, age, education level, training sessions, and years of experience).

Table 2: Comparison of pre-test performance results between study group and control group (n=48).
Table 2- Paired t-test analysis was performed to determine the difference in the mean performance of the nurses participating in the pretest and posttest. The results of the study show that, there was a significantly higher difference in the practices of the participating nurses with a p-value of less than 0.01. Based on the statistical average, the results indicate that there is a significant increase in the statistical average in the post-test compared to the pre-test, meaning that there is an improvement in the practices of the nurses participating in the study after applying the educational program.

Table 3: Subdomain and Overall Evaluation of Nurses' performance at the Pre-Test and Post-Test.

<table>
<thead>
<tr>
<th>Main studied domain</th>
<th>Response</th>
<th>Pretest (N%)</th>
<th>Posttest (N%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall nurses practice</td>
<td>Done</td>
<td>7 (29.1)</td>
<td>21 (87.5)</td>
</tr>
<tr>
<td></td>
<td>Not done</td>
<td>17 (70.9)</td>
<td>3 (12.5)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24 (100)</td>
<td>24 (100)</td>
</tr>
</tbody>
</table>

Table 3- This table showed that, the overall evaluation of the practices of the nurses participating in the study in the pre-test is (70.9%) from incorrect practices and (29.1%) correct practices, while the general evaluation of the practices of the nurses participating in the post-test is (87.5%) from correct practices and (12.5 %) of incorrect practices. Thus, means that the practices of the participating nurses were improved after the implementation of the educational program.

IV. CONCLUSION

According to the results of the current study, the statistical results indicated an improvement in participants' performance and this is evidence that our structured educational program regarding preoperative patient...
preparation was effective. Regarding the study participants and their demographic variables, we conclude the following:

1-The majority of cardiac surgery parlor nurses are male and almost all of the participants in this study had no opportunity to attend a prior training or educational program related to preoperative cardiac preparation.

2-Most of the hospitals did not have special instructions regarding the preparation of the patient before the operation. Participants with 3 or more years of work experience in cardiac surgery units achieved a higher level of scores compared to less experienced nurses.

3-After providing information about preparing the patient before surgery, the vast majority of participants raised their scores in performance.

4-This indicates the usefulness of the educational program in terms of enhancing participants' knowledge.

Recommendations:

Based on the results and conclusion of the present study, the researcher recommends the following:

Encourage health care providers to apply recommended evidence-based findings in their work. The Continuing Nursing Education Department in every hospital should encourage nurses to attend regular educational sessions and make them mandatory for career promotion. The Governmental hospitals need to provide checklist preoperative paper appropriate in the cardiac surgery wards and educate nurses who to filled this paper. Education program for cardiac disease and management preoperative cardiac surgery which similar to that presented to study group, and need to be offered it as part of nursing education in all nursing programs. Hospitals should provide developed and continues practical training for their nurses toward the management of patients with cardiac disease as well as removing of all barriers that could prevent nurses to develop themselves.

REFERENCES