

Effectiveness of Cardiopulmonary Resuscitation Educational Program on Nurses' Knowledge at Cardiac Care Unit and Emergency Department in Al Azizia General Hospital

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Abstract: *Cardiopulmonary Resuscitation (CPR) is the technique of chest compressions combined with rescue breathing. The purpose of the CPR is to temporarily preserve a circulation sufficient to maintain brain function until expert support reaches. Effective CPR is performed directly after cardiac arrest can increase a survival level to double or triple. Objectives:* The study objective is to determine the effectiveness of CPR program on nurses' knowledge at Cardiac Care Unit and Emergency Department and to find out the relationship between nurses' knowledge and their demographic characteristics. **Methodology:** A quasi-experimental design was used in the present study conducted on the nurses at the CCU and emergency department in Al Azizia General Hospital for the period from 27th September 2016, to 30th August 2017. Non-probability – purposive sample has been performed for a sample consisting of (56) nurses in this study and is divided into two groups; case group that involves (28) nurses who were exposed to the program and control group that involves (28) nurses who were not exposed to the program. The researcher used a preliminary assessment questionnaire which consists of (20) items. Data analysis is performed through the application of descriptive statistics (frequency, percentage, mean, arithmetic mean and standard deviation). Inferential statistics (Cronbach's Alpha reliability test, One-way ANOVA test, and chi-square). **Conclusion:** The study concludes that the nurses who are working in CCU and emergency department have the low level of knowledge about CPR, and they need updated programs to improve their knowledge. **Recommendations:** The present study recommends the Ministry of Health should emphasize the contribution of the nurses who work in emergency department and CCU, in continuous educational programs about CPR so as to obtain the updated changes in the resuscitation science.

1. Introduction

As a medical disaster there is nothing dramatic more than cardiac arrest. It is only in the past 5 decades that medical remedy and techniques have done it possible for positive resuscitation. When cardiopulmonary resuscitation (CPR) and defibrillation are delivered rapidly, and there is an active system of care, the chance of effective restoration of life with complete recovery is potential⁽¹⁾. The aim of CPR is to maintain brain and tissue perfusion by manual blood circulation around the patient's body, a task normally delivered by a heartbeat. The vital aim is to postpone tissue and brain death during the interval of a time when the victim loses a perfusion⁽²⁾. more studies need to be conducted to improve the science of resuscitation. It should be a combined effort to fund cardiac arrest resuscitation research like to what has motivated cancer and stroke research over 20 years ago⁽³⁾. Victims requiring BLS and ALS generally have underlying problems consisting of: ischemic heart disease, chronic respiratory disease, drug overdose / toxicity, drowning, trauma, electrolyte abnormalities and pre-arrest arrhythmias⁽⁴⁾.

2. Methodology

A quasi-experimental design was used in the present study conducted on the nurses at the CCU and Emergency Department in Al Azizia General Hospital for the period from 27th September 2016, to 30th August 2017.

Non-probability – purposive sample has been performed for a sample consisting of (56) nurses in this study and is divided into two groups; case group that involves (28)

nurses who were exposed to the program and control group that involves (28) nurses who were not exposed to the program.

To assess the effectiveness of the program on nurse's knowledge at the CCU and Emergency Department, the researcher used a preliminary assessment questionnaire which consists of (20) items. Following previous studies, review of literatures, and the opinions of the experts, the program and the study instrument were constructed and developed by the researcher for achieving the objectives of the study.

Data analysis is performed through the application of descriptive statistics (frequency, percentage, mean, arithmetic mean and standard deviation. Inferential statistics (Cronbach's Alpha reliability test, One-way ANOVA test, and chi-square).

3. Results

Table 1: Distribution of the Demographic Characteristics of the Sample for both Study and Control Groups (No.: 56).

| Demographic Characteristics | Subgroups | f. | % |
|-----------------------------|-------------------|------|-------|
| Age Groups | 18 - 24 Years | 16 | 28.6 |
| | 25 - 34 Years | 31 | 55.3 |
| | 35 - 44 Years | 7 | 12.5 |
| | 45 years and more | 2 | 3.6 |
| | Mean + SD. | 1.91 | +.749 |
| Gender | Male | 28 | 50 |
| | Female | 28 | 50 |
| Educational Level | Nursing College | 15 | 26.8 |
| | Nursing Institute | 30 | 53.6 |

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|--|----------------------------------|------|------|
| Years of Employment | Preparatory Nursing School | 11 | 19.6 |
| | Nursing School | - | - |
| | 1 - 5 Years | 32 | 57.1 |
| | 6 - 10 Years | 15 | 26.8 |
| | 11 - 15 Years | 5 | 8.9 |
| | 16 Years + more | 4 | 7.2 |
| Workplace | Mean + SD. | 1.66 | +912 |
| | CCU | 23 | 41.1 |
| Years of Employment in the Specialized Units (CCU or Emergency Unit) | Emergency Unit | 33 | 58.9 |
| | 1 - 3 Years | 33 | 58.9 |
| | 4 - 6 Years | 18 | 32.1 |
| | 7 - 9 Years | 4 | 7.2 |
| | 10 Years + more | 1 | 1.8 |
| Participating in CPR Training Sessions | Mean + SD. | 1.52 | +714 |
| | Not Participating | 56 | 100 |
| | 1, 2, 3 Training Sessions + more | - | - |

f.: Frequency, %: Percentage, +: plus, CPR: Cardiopulmonary Resuscitation, CCU: Cardiac Care Unit, SD: Standard Deviation

Table (1) shows the demographic characteristics of the study sample; the second age group (25-34 years) were (55.3%) higher than other groups. The proportion of the study sample's gender was equal to (50%) males and females. Relative to their educational level, half of them (53.6%) were institute graduates. The majority of the sample were that who had one to five years of employment and they accounting for (57.1 %) of the whole sample. More than half of the sample (58.9%) was work in Emergency Department more than who work in CCU. The same percentage of the sample (58.9%) had one to three years of employment in CCU or in Emergency Department. Concerning on the participating in CPR training sessions, all study samples (100%) were not participating in any CPR or first-aid training sessions.

Table 2: The Effect of CPR Program on Nurses' Knowledge and the Differences between Pre and Post-test for both Control and Study Groups Regarding to All Items of CPR.

| CPR Tests | | Levels of Nurses Knowledge | | | | | | Mean | S.D. |
|---|----------------------|----------------------------|-------|------------|---------------|------------------------|-------------|-----------------------------|------|
| | | Poor Level | | Fair Level | | Good Level | | | |
| | | f. | % | f. | % | f. | % | | |
| Pre-Test | Control Group | 26 | 92.86 | 2 | 7.14 | 0 | 0.0 | 1.07 | .262 |
| | Study Group | 26 | 92.86 | 2 | 7.14 | 0 | 0.0 | | |
| Total Score | | 52 | 92.86 | 4 | 7.14 | 0 | 0.0 | | |
| Post-Test | Control Group | 28 | 100 | 0 | 0.0 | 0 | 0.0 | 2.36 | .559 |
| | Study Group | 1 | 3.57 | 16 | 57.14 | 11 | 39.29 | | |
| Total Score | | 29 | 51.79 | 16 | 28.57 | 11 | 19.64 | | |
| The Groups of the Study | | | | | | Pre-test → Post-test % | | The Difference Proportion % | |
| Control Group | Poor Level → Poor L. | | | | 92.86 → 100 | | 7.14 = (↓) | | |
| | Fair Level → Fair L. | | | | 7.14 → 0.0 | | -7.14 = (↓) | | |
| | Good Level → Good L. | | | | 0.0 → 0.0 | | 0.0 = (=) | | |
| Study Group (The Effects of CPR Program) | Poor Level → Poor L. | | | | 92.86 → 3.57 | | 53.57 = (↑) | | |
| | Fair Level → Fair L. | | | | 7.14 → 57.14 | | 50 = (↑) | | |
| | Good Level → Good L. | | | | 0.0 → 39.29 | | 39.29 = (↑) | | |
| The Total Score of Difference Proportion | Poor Level → Poor L. | | | | 92.86 → 51.79 | | -41.07 (↓) | | |
| | Fair Level → Fair L. | | | | 7.14 → 28.57 | | 21.43 (↑) | | |
| | Good Level → Good L. | | | | 0.0 → 19.64 | | 19.64 (↑) | | |

f.: Frequency, %: Percentage, CPR: Cardiopulmonary Resuscitation, L.: Level, SD: Standard Deviation.

Table (2) shows the levels of nurses' knowledge with all items of CPR. Both groups (control & study) in pre-test have a poor level (92.9%) and (7.1%) of the sample have a fair level, while nobody has a good level. Also this table shows the distribution of items and the total score of the control group in post-test, their level of knowledge about CPR became a poor level (100%), while nobody has neither fair nor good level.

Finally, this table shows the distribution of items and the total score of the study group in post-test, their level only (3.6%) had a poor level of knowledge about CPR, and the sample who had fair level became (57.2%), while (39.2%) had a good level of knowledge about CPR in post-test. This indicates the positive effect of the CPR program.

4. Discussion

Discussion of the Demographic Characteristics of Nurses who worked in the Emergency Department and Cardiac Care Unit (Table 1)

Study sample comprises of (56) nurses who were randomly selected to control group (n=28) and study group (n=28). Related to their age group (Table 1), explained that the mean and standard deviation SD of the age for the study sample as all were (1.91 + .749) years. The second age group (25-34 years) were (55.3%) higher than other groups, these results matches with study for AL-Hamdani S. A. (2015)⁽⁵⁾ which took place in Kirkuk, it revealed that the age group of (25-34) is the majority of the ages were (55.3%) higher than the nurses who are working in the emergency department.

The existing study discloses those both male and female nurses are equal in number (50 %) (Table 1). The researcher confirm that there is no difference between male and female

in duty in the Emergency Department and CCU, and these results not compatible with study of Elazazay, Abdelazez and Elsaie (2012)⁽⁶⁾ who stated in Tanta Cancer Institute ,it reported that majority of nurses are female (87.4%). On the other hand, this study is not agree with the study of Al-Hamdani S. A. (2015)⁽⁵⁾ which reported, that male nurses (68.2%) are more than female.

According to their educational level, most of the study sample (53.6%) are at nursing institute level (Table 1),and this study agree with the study of Elazazay, Abdelazez and Elsaie (2012)⁽⁶⁾ who stated in Tanta Cancer Institute, which stated that more of half(61.3%) of the study sample are in diploma educational level.

According to the years of employment, the existing study added that the Mean and Standard Deviation of the study sample are (1.66+.912). This study reported that the majority of the nursing staff (57.1%) are between (1-5) years of employment (Table 1).This findings ensure the currency of this group of year of employment among the nursing staff who are working in the Emergency Department and CCU. It is disagree with the study of Hussein et al. (2009)⁽⁷⁾ who was mentioned that the majority of years of experience is (12) years. On the other side of the scale, this study agrees with the study of Mustafa, (2014)⁽⁸⁾ who was added that the majority of the nursing staff is less than five years of employment.

The existing study has reported that more than half of the sample (58.9%) was working in the emergency department more than who were working in the CCU (Table 1). The researcher confirms that most of the nurses prefer to work in the emergency department at the first period of their employment in nursing field, furthermore, the same percentage (58.9%) of nurses are working for a period (1-3 years) in the specialized units and then they may transfer to work in less duty departments, these results match with the study of Al-Hamdani S. A. (2015)⁽⁵⁾who documented that the majority of nursing staff (79.6%) starting their working in the emergency departments for the same of period (1-3 years).

Concerning participating in CPR training sessions, the researcher intended not to contribute the nurses who were exposed to an educational or instructional programs toward CPR, thus, all study sample (100%) was not participating in any CPR or first-aid training sessions.

The Effect of CPR Program on Nurses' Knowledge and the differences between Pre and Post-test for both Control and Study Groups Regarding to All Items of the CPR (Table):

Regarding the level of knowledgefor both groups control and study pre-test (table 4-8), the present study reveals that nurses have a poor level (92.9%), and (7.1%) of the study sample have an intermediate level of knowledge whereas (0%) were at a good level.According to these findings the researcher sees that there was no gap in knowledge between study and control groups (92.9%) prior of the program implementation.

Regarding the total score for the control group in post-test, the study ensured (table 4-8) that their level was (100%) poor in CPR knowledge and (0%) of both an intermediate and good level.

According to these results the researcher concludes that most of the nursing staff have no information about CPR or they have a little knowledge which gained from the study of nursing and loss it with the time.

Regarding the total score of the study group in post –test, the poor level of knowledge about CPR became only (3.6%), and intermediate level became (57.2%), whereas a good level became (39.2%) about the knowledge in CPR. This will explain the effect of the CPR educational program for the specialized nursing staff. These results are in agreement with the study of Elazazay, Abdelazez and Elsaie (2012)⁽⁶⁾, which ensured that the majority of the study sample became at a good level of knowledge in post-test related to CPR.

In agreement with the present study the researcher sees that the nursing staff who are working in the emergency department and CCU need to be contributed to such educational or training programs to save more lives by performing the newest guidelines of CPR continuously.

5. Conclusion

The study concludes that the nurses who are working in CCU and emergency department have the low level of knowledge about CPR, and they need updated programs to improve their knowledge.

6. Recommendations

The present study recommends the Ministry of Health shouldemphasize the contribution of the nurses who work in emergency department and CCU, in continuous educational programs about CPR so as to obtain the updated changes in the resuscitation science.

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