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Evaluation of the Impact CPR Training on Emergency Response Competency in Basic Life Support

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Abstract

Cardiac arrest is a major medical emergency that requires immediate intervention to prevent mortality and complications. Cardiopulmonary resuscitation (CPR) is a vital life-saving procedure that helps maintain blood circulation and oxygen supply to the brain and other vital organs until advanced medical care is available. Adequate knowledge and competency in Basic Life Support (BLS) are essential for institutional staff to respond effectively during such emergencies.

The present study aimed to evaluate the impact of structured CPR training on emergency response competency in Basic Life Support among institutional staff. A quasi-experimental one group pre-test and post-test research design was adopted for the study. The study was conducted among 40 staff members selected using a convenience sampling technique. A structured questionnaire was used to assess the participants' competency related to CPR and Basic Life Support.

The findings of the study revealed that the mean post-test competency score was significantly higher than the pre-test score after the structured CPR training program. The chi-square analysis also showed a significant association between previous CPR exposure and competency level ($\chi^2 = 5.84$, df = 2, $p < 0.05$).

The study concluded that structured CPR training significantly improves emergency response competency in Basic Life Support among institutional staff. Regular training programs and refresher courses are recommended to enhance the preparedness of staff members in handling cardiac emergencies effectively.

Introduction

Cardiac arrest is a sudden medical emergency in which the heart stops pumping blood effectively to the body. When this occurs, the brain and other vital organs are deprived of oxygen, which can lead to permanent damage or death within a few minutes if immediate action is not taken. Cardiopulmonary resuscitation (CPR) is a lifesaving procedure that involves chest compressions and artificial ventilation to maintain blood circulation and oxygen supply until advanced medical care becomes available.

Basic Life Support (BLS) is a fundamental component of emergency care and includes early recognition of cardiac arrest, immediate initiation of CPR, and activation of emergency medical services. According to guidelines provided by the American Heart Association, prompt and effective CPR can significantly improve the survival rate of individuals experiencing cardiac arrest. Early intervention through CPR has been shown to double or even triple the chances of survival.

Institutional staff may encounter emergency situations in workplaces such as educational institutions, offices, and healthcare settings. Therefore, it is important that staff members possess adequate knowledge and competency in performing CPR and providing Basic Life Support. However, many studies have indicated that a large number of staff members lack sufficient knowledge and practical skills related to CPR due to the absence of regular training programs.

Structured CPR training programs play an important role in improving knowledge, practical skills, and confidence in performing resuscitation procedures during emergencies. These training sessions usually include theoretical instruction, demonstration, and hands-on practice, which help participants understand the correct techniques of chest compression, airway management, and rescue breathing.

Considering the importance of early and effective CPR in saving lives, it is essential to provide structured training to institutional staff. Therefore, the present study aims to evaluate the impact of structured CPR training on emergency response competency in Basic Life Support among institutional staff. The findings of the study will help determine the effectiveness of such training programs and highlight the need for regular CPR education to enhance emergency preparedness.

Problem statement- Evaluation of the Impact of CPR Training on Emergency Response Competency in Basic Life Support

Objectives-

To assess the pre-training level of emergency response competency in Basic Life Support (BLS) among institutional staff.

To evaluate the impact of structured Cardiopulmonary Resuscitation (CPR) training on emergency response competency in Basic Life Support among institutional staff.

To compare the pre-training and post-training competency levels of institutional staff regarding CPR and BLS.

To determine the association between the level of emergency response competency and selected demographic variables such as age, gender, qualification, and previous CPR training among institutional staff

Review of Literature

Cardiopulmonary resuscitation (CPR) and Basic Life Support (BLS) are essential emergency procedures used to maintain blood circulation and oxygen supply during cardiac arrest. Training in CPR has been widely recognized as an effective way to improve knowledge, practical skills, and confidence in performing life-saving interventions among healthcare professionals and institutional staff.

A study conducted by Gavin D. Perkins evaluated the effectiveness of CPR training programs among healthcare workers. The findings revealed that structured CPR training significantly improved both knowledge and practical performance of participants. The study emphasized that regular training and refresher courses are necessary to maintain competency in emergency response.

Another study by Michael Sayre reported that early initiation of CPR and proper training in Basic Life Support can greatly increase survival rates among cardiac arrest victims. The research highlighted that individuals who received formal CPR training were more confident and competent in responding to emergency situations.

Research conducted by Mary Fran Hazinski examined the impact of structured BLS training on healthcare professionals. The results showed a significant improvement in knowledge and skills after training sessions that included lectures, demonstrations, and hands-on practice using simulation models.

A similar study by Douglas P. Zipes investigated the effectiveness of CPR education among hospital staff. The findings indicated that most participants had inadequate knowledge of CPR before the training program, but their knowledge and competency improved significantly after participating in a structured educational intervention.

Another study conducted by Bentley J. Bobrow focused on the importance of CPR training in improving emergency response performance. The study concluded that participants who received systematic CPR instruction demonstrated better accuracy in performing chest compressions and faster response during simulated cardiac arrest situations.

Hypothesis

Research Hypothesis (H_1)

There will be a significant improvement in emergency response competency in Basic Life Support (BLS) among institutional staff after structured CPR training.

Null Hypothesis (H_0)

There will be no significant improvement in emergency response competency in Basic Life Support (BLS) among institutional staff after structured CPR training.

Hypothesis for Association

H_1: There will be a significant association between emergency response competency and selected demographic variables (such as age, gender, qualification, and previous CPR training) among institutional staff.

H_0: There will be no significant association between emergency response competency and selected demographic variables among institutional staff.

Research Methodology

Research Approach

A quantitative research approach was used to evaluate the impact of structured CPR training on emergency response competency in Basic Life Support among institutional staff.

Research Design

The study adopted a quasi-experimental one group pre-test and post-test design to assess the effectiveness of the structured CPR training program.

Setting of the Study

The study was conducted in a selected University of Meghalaya**.**

Population

The population of the study consisted of all staff working in the selected University.

Sample Size

The sample size of the study was 50 institutional staff.

Sampling Technique

Participants were selected using a convenience sampling technique.

Variables of the Study

Independent Variable: Structured CPR Training Program

Dependent Variable: Emergency response competency in Basic Life Support (BLS)

Inclusion Criteria

Staff who:

Were willing to participate in the study

Were present during the data collection period

Exclusion Criteria

Staff who:

Had already received advanced CPR certification or specialized training

Tool for Data Collection

A structured questionnaire was used for data collection.

Section A: Demographic variables such as age, gender, educational qualification, years of experience, and previous CPR training.

Section B: Structured questions to assess emergency response competency related to CPR and Basic Life Support.

Data Collection Procedure

Permission was obtained from the concerned authority.

Participants were informed about the purpose of the study.

A pre-test was conducted to assess baseline competency.

A structured CPR training session was provided, including lecture, demonstration, and practical practice.

A post-test was conducted after the training to evaluate improvement in competency.

Plan for Data Analysis

Data collected were analyzed using descriptive and inferential statistics.

Frequency and percentage were used to describe demographic variables.

Mean and standard deviation were used to compare pre-test and post-test scores.

Chi-square test was used to determine the association between competency level and selected demographic variables

Results of the Study (n = 50 Staff)

1. Demographic Characteristics of Participants

Out of the 50 staff members, the majority were female and belonged to the age group of 31–40 years.

Gender: 30 (60%) were female and 20 (40%) were male.

Age: 18 (36%) were aged 20–30 years, 20 (40%) were 31–40 years, and 12 (24%) were 41–50 years.

Previous CPR Training: 15 (30%) participants had previous CPR training, while 35 (70%) had no previous training.

2. Pre-Training Competency Level in Basic Life Support

Before the structured CPR training:

Poor competency: 28 staff (56%)

Average competency: 17 staff (34%)

Good competency: 5 staff (10%)

This indicates that most staff had inadequate knowledge and skills in Basic Life Support before the training program.

3. Post-Training Competency Level in Basic Life Support

After the structured CPR training:

Poor competency: 4 staff (8%)

Average competency: 14 staff (28%)

Good competency: 32 staff (64%)

The results show a considerable improvement in competency after the training session.

4. Comparison of Pre-Test and Post-Test Scores

The mean competency score increased significantly after the training.

Pre-test Mean Score: 10.4

Post-test Mean Score: 19.2

This indicates that the structured CPR training significantly improved emergency response competency among the staff members.

5. Chi-Square Test Result

The association between previous CPR training and competency level was analyzed.

Chi-square value (χ^2) = 6.

Conclusion

The present study was conducted to evaluate the impact of structured Cardiopulmonary Resuscitation (CPR) training on emergency response competency in Basic Life Support (BLS) among institutional staff. A total of 50 staff members participated in the study.

The findings of the study revealed that the level of emergency response competency among staff was relatively low before the training program. However, after the implementation of the structured CPR training, there was a significant improvement in knowledge and competency related to Basic Life Support. The comparison between pre-test and post-test scores indicated that the training program was effective in enhancing the participants' understanding and skills related to CPR procedures.

The statistical analysis also showed a significant association between competency level and selected demographic variables, indicating that factors such as previous CPR training and experience may influence the level of emergency response competency.

Therefore, the study concludes that structured CPR training is an effective method for improving emergency response competency in Basic Life Support among institutional staff. Regular training programs and refresher courses are recommended to ensure that staff members remain prepared to respond effectively to cardiac emergencies.

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