

Evaluate the Effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service Personnel in a selected fire station

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Abstract:- When sophisticated medical care is not available, individuals might receive a specific degree of pre-hospital care known as "Basic Life Support." understanding basic life support in an emergency can save lives. The statement of the problem is a study to evaluate the effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service Personnel in a selected fire station.

- The objectives of the study were;
 - To assess the existing knowledge regarding Basic Life Support among the Fire and Rescue Service Personnel.
 - To determine the Effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service Personnel.
 - To determine the association between knowledge regarding Basic Life Support with their selected demographic variables (Age, Educational Status, Designation, Working Experience, Previous Knowledge and Source of Previous Knowledge)

➤ *The conceptual framework adopted for the present study was based on Daniel Stuffle Beam's CIPP Model (1971).*

A Quasi-Experimental study was conducted in the Fire Station at Coimbatore among 60 Fire and Rescue Service Personnel. The samples were selected randomly by adopting the lottery method. The instrument consisted of structured self administered questionnaire to assess the knowledge regarding Basic Life Support. The content validity of the tool was 0.9 and reliability was 0.9 which was highly reliable. Structured Teaching Programme was carried out by Lecture cum discussion with demonstration by using a CPR manikin. After 7 days the same tool was used for post test. The results show that the 't' value of knowledge was 24.75. It was significant at ($p < 0.001$). Hence the provided Structured Teaching Programme was very effective and has made way for the Fire and Rescue Service Personnel to achieve their motto of "We Serve to Save".

Keywords:- Evaluate, Effectiveness, Structured Teaching Programme, Basic Life Support, Fire and Rescue Service Personnel.

I. INTRODUCTION

"We Serve To Save"

There has been an accident! What shall we do? He has fallen and bleeding severely from the head. His face is blue and I'm sure he has stopped breathing. He is cold and clammy, and I couldn't feel his pulse, he may die! What next?

Every day, somewhere, somebody repeats hundreds of similar words, such as "emergency," "disaster," "gloom," and "despondency." that needs to be carried out? person who understands the fundamentals of first aid should typically be able to follow a clear-cut path. There is no need to fear; there are methods that can prevent someone from passing away, such as cardiopulmonary resuscitation.

In order to deliver oxygen to the tissues, breathing and heart activity are necessary. One of the primary organs affected by oxygen starvation is the brain, which can begin to show signs of damage after four minutes and become irreversibly damaged after approximately seven minutes. The heart very swiftly loses its capacity to beat normally. Following a cardiac arrest, successful CPR allows enough oxygen to reach the brain, delaying brain death and keeps the heart receptive to defibrillation attempts.

If CPR is performed fifteen minutes after collapse, it is nearly never successful since irreversible brain damage has possibly already happened. The general population is frequently instructed in CPR since they can be the only ones there in the vital few minutes until medical assistance arrives.

The Basic support systems of the body are circulation and respiration, for without these functions life cannot be sustained. To effectively support these systems, Basic Life Support (BLS) procedures have been designed to intervene when the systems are assessed to need intervention. Basic life support is a specific level of pre-hospital medical care provided by persons, in the absence of advanced medical care. Basic life support consists of a number of life saving

techniques focused on the "ABC's Airway, Breathing, Circulation of pre hospital emergency care.

When a patient is declared to be in cardiac arrest, time matters: if nothing decisive is done within four to six minutes, the patient will sustain permanent brain damage. If the patient is to have a chance of survival, immediate intervention is required. Deadly consequences are frequently avoided with prompt and efficient CPR. ACLS stands for Advanced Cardiac Life Support, while BLS is the basic life support.

The rapidity and competence are more important in Basic Life Support, as the components of CPR are given without the need for extra equipment. The major goal of this therapy is to get the blood flowing again, with oxygen, to the brain.

Adults on Basic Life Support receive 30% of their normal cardiac output, which is sufficient blood flow for physiological needs. It is suggested that non-professionals require more extensive and improved training because fewer than one-third of patients who experience an out-of-hospital cardiac arrest receive CPR. An estimated 75% of cases of sudden cardiac arrest occur at home, according to the Heart Association.

In films and television shows, CPR is frequently shown as a very successful method of resuscitation for someone who is unconscious and lacks circulation. According to Hallstrom (1996), 75% of CPR attempts in television programmes were successful. Therefore, laypeople can learn BLS after taking a quick course, and it also mentions that certification is required for police and fire personnel.

The motto of the Tamil Nadu Fire and Rescue Service Department is "We Serve To Save" and strive to save life and property, to rescue people affected by floods, earthquakes or other natural calamities and to rush the sick and injured to hospital. Besides fighting fire and helping to prevent fires, it also includes emergency relief and rescue measures to victims not only of fire, but also all types of natural and other calamities like floods, cyclones, landslides, building collapses, explosive accidents, railway accident, major disasters etc.

The cardiac and respiratory arrest usually occurs due smoke inhalation, toxic gas inhalation, drowning, obstruction from foreign bodies and penetrating trauma, in all these conditions the Fire and Rescue Service Personnel has a greater exposure in the golden hours of the victims survival and also in some situations the knowledge on basic life support can help them to save the life of even their colleagues as quoted above.

With the primary motto of the Fire and Rescue Service is to "Save Life" the researcher feels that if they have adequate knowledge regarding Basic Life Support, they will be able to

save thousands of lives during rescue operations as well as transporting the victims to the hospitals.

Therefore Basic Life Support is viewed as a measure to support a patient until health care providers trained in advanced life support techniques can provide more advanced strategies to facilitate the victim's survival.

Therefore the researcher has considered the fire and rescue service personnel as a bridge between the victim and the health care provider and has selected them as the sample.

So all the above stated literatures and statistics of the lives lost in rescue calls motivated the researcher to conduct a study to evaluate the effectiveness of Structured Teaching Programme regarding Basic Life Support among the Fire and Rescue Service personnel.

➤ *Problem Statement*

A Study to evaluate the effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service Personnel in a selected fire station.

➤ *Objectives of the Study*

- To see the existing knowledge regarding Basic Life Support among the Fire and Rescue Service Personnel
- To determine the Effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service Personnel
- To determine the association between knowledge regarding Basic Life Support with their selected demographic variables (Age, Educational Status, Designation, Working Experience, Previous Knowledge and Source of Previous Knowledge),

➤ *Hypotheses*

- H1: The mean post score of knowledge will be significantly higher than the mean pre score of knowledge regarding Basis Life Support among Fire and Rescue Service Personnel
- H2 :There will be a significant association between the knowledge regarding Basic Life Support among Fire and Rescue Service Personnel with their selected demographic variables (Age, Educational Status, Designation, Working Experience, Previous Knowledge and Source of Previous Knowledge),

II. REVIEW OF LITERATURE

At the time of the study an extensive review of related literature was done, several articles were discussed about the various teaching techniques and there was no study particular to the selected population of the study, but few of the

following are relevant and they are organized into the following areas.

- Studies related to Fire and Rescue Service.
- Studies related to Effectiveness of Bystander CPR Training.
- Studies related to Knowledge, Attitude and Skill of CPR.
- Studies related to Effectiveness of Bystander CPR.
- Studies related to Effect of CPR on Cardiac Arrest.
- Studies related to CPR in Specific Conditions.

III. METHODOLOGY

➤ *Research Approach*

The Research approach used for this study is a quantitative approach without control group, by manipulating the variables to assess the effectiveness of the structured Teaching programme regarding Basic Life Support.

➤ *Research Design*

A quasi experimental design has been chosen for this study. One group pre-test and post-test design without control group and observations has been made before and after the teaching programme.

Hence the researcher has chosen the quasi experimental design to evaluate the effectiveness of teaching programme among Fire and Rescue Service Personnel regarding Basic Life Support.

➤ *Variables*

- Independent Variable -Structured Teaching Programme regarding Basic Life Support.
- Dependent Variable-Knowledge regarding Basic Life Support

➤ *Setting of the Study*

The study was conducted in the Tamilnadu Fire and Rescue Service Department Head Office which is situated opposite to the Coimbatore Railway Station.

➤ *Criteria for Sample Selection*

• *Inclusion Criteria*

- ✓ The firemen who are able to understand Tamil or English
- ✓ The firemen those who are present at the time of the study

• *Exclusion Criteria*

- ✓ The firemen who are not willing to participate in the study.
- ✓ The firemen who underwent training previously regarding Basic Life Support

➤ *Sampling Technique*

The samples were selected for this study by adopting simple random sampling technique Lottery method was used to select 60 samples from the total population. There were totally 80 firemen in Coimbatore Fire Station, all 80 fall in the inclusion criteria. A name list of all 80 fire men was made after getting the willingness from the firemen. From the name list lots were prepared and 60 lots were taken without replacement. The names in the lots were selected as the sample for the study.

➤ *Development of Instrument*

After in depth review of literature and consulting with experts, the research instrument was developed in English. A linguist with expertise in Tamil translated it. The Structured self-administered questionnaire was utilized as an instrument to assess firefighters' knowledge about Basic Life Support.

➤ *Description of the Tool*

The instrument consists 2 parts;

• *Part-I:*

Consisted of demographic data of the Fire and Rescue Service Personnel, (Age, Educational Status, Designation, Working Experience, Previous Knowledge and Source of Previous Knowledge regarding Basic Life Support).

• *Part-II:*

The Self Administered Questionnaire consists of 50 Multiple Choice Questions to assess the Knowledge regarding Basic Life Support among the Firemen in the following areas:

- ✓ Basic concepts of CPR -2 questions
- ✓ Airway -8 questions
- ✓ Breathing -10 questions
- ✓ Foreign Body Obstruction- 5 questions
- ✓ Circulation -18 questions
- ✓ Recovery position -4 questions
- ✓ Complications -2 questions
- ✓ Legislation -1 question

➤ *Structured Teaching Programme*

It was developed by reviewing the literature and obtaining experts opinion. The teaching was held for 1 hour duration comprised the overall objectives, specific objectives, Content, Teachers Learners activity, summary and conclusion.

The content area of the Structured Teaching Programme included definition, levels of CPR, The ABC's of Resuscitation, Assessing Unresponsiveness, Maintenance of patent airway, Breathing assessment, Mouth to mouth respiration, Management of foreign body obstruction, Assessment of circulation, Chest compressions, Recovery Position, Reassessment, Complication and Legal Consideration. The method of teaching program was given by lecture cum discussion and demonstration. The CPR manikin was used as the Audio Visual Aid.

➤ *Scoring Procedure*

Part II: Regarding the multiple choice questions on knowledge regarding Basic Life Support the maximum possible score was 50 and a score of one mark was given for every correct answer and a score of Zero was given for every wrong answer.

For the purpose of the study, the total score was classified as follows:

- Adequate Knowledge $\geq 75\%$
- Moderately Adequate Knowledge 51%-74%
- Inadequate Knowledge $< 50\%$

➤ *Validity and Reliability*

• *Content Validity of the Tool*

The content validity of the self administered questionnaire has been checked and evaluated by experts including 5 nursing experts and 2 medical experts, who validated the tool regarding the adequacy of the content and the sequence in framing of questions and based on their valid suggestions reframing of the instrument was done. The items were rated by the experts on four-point scale. The Content Validity Index for the total instrument was 0.9 which indicates good content validity.

• *Reliability of the Tool*

The tool was administered to 10 samples representing the characteristics of the population, the split half technique was used to calculate the correlation coefficient, for this approach items on the questionnaire were split into two groups and scored independently, the split was done by using odd items versus even items, the correlation coefficient was calculated. The reliability estimate for the questionnaire was estimated by using Spearman-Brown Prophecy Formula. The reliability estimate of the tool was 0.9.

➤ *Pilot Study*

The researcher conducted pilot study among 10 firemen working at Kavundamplayan fire station after obtaining permission from the District Fire Officer. The pilot study revealed that the study was feasible. Data were analyzed to find the suitability of the statistical methods.

➤ *Data Collection Procedure*

The data collection procedures were done for a period of 9 days for pre-test, Structured Teaching Programme and post-test. The permission was obtained from the Divisional Fire Officer, Coimbatore. The samples were informed by the investigator about the purpose and nature of the study and their oral consent was obtained. The structured self administered questionnaire was given to the study samples to assess the pre-test. It took 40-45 minutes to collect data from the samples. On the next day structured teaching program was given to the firemen. For 20 minutes lecture was given to all the firemen, then they were divided into 3 groups of 20

firemen in each group and demonstration of the procedure was done. Booklets on Basic Life Support were issued to the study samples. After giving Structured Teaching Programme and seven days interval, again same self administered questionnaire was given to the samples for assessing post-test. The same duration was given to study samples.

➤ *Plan for Data Analysis*

The demographic variables were organized by using descriptive measures (Frequency and Percentage). The knowledge was assessed by using descriptive measures like (Mean, Standard deviation and mean difference).

The effectiveness of the structured Teaching programme was assessed by using paired 't' test.

The association between the knowledge with their selected demographic variables were analyzed by using the inferential statistics (chi-square).

➤ *Protection of Human Rights*

The Study was conducted after the approval of the Dissertation Committee. The nature and purpose of study was explained to the Divisional Fire Officer and permission was obtained. Oral consent was obtained from the samples before starting the data collection in order to get their full cooperation. Assurance was given to the samples that anonymity of each individual will be strictly maintained.

IV. MAJOR STUDY FINDINGS

- Among Fire and Rescue service Personnel, majority fall in the age group of 25-35 years, and had an educational level of higher secondary, and equally were in the grades of junior and senior firemen and a work experience of more than 5 years and had no previous knowledge regarding Basic Life Support and the source of previous knowledge gain was from mass media and none of them gained in their training period.
- Regarding the knowledge on Basic Life Support among Fire and Rescue Service Personnel, greater strength of them had inadequate knowledge in Pre-Test and more than half of them acquired adequate knowledge in Post-Test.
- With regard to effectiveness of Structured Teaching Programme regarding Basic Life Support among Fire and Rescue Service, the result showed that the Structured Teaching Programme was effective among Fire and Rescue Service Personnel between Pre-Test and Post-Test of knowledge. The obtained 't' value of knowledge was 25.75 which was significant at ($p < 0.001$) level.
- With regard to association between knowledge on Basic Life Support among Fire and Rescue Service Personnel with their selected Demographic variables. The results revealed that there was a significant association between knowledge regarding Basic Life Support and previous knowledge among Fire and Rescue Service Personnel and

there was no significant association between the knowledge on Basic Life Support and the age in years, educational status, designation and working experience and source of previous knowledge among Fire and Rescue Service Personnel at ($p < 0.05$) level.

V. CONCLUSION

The main conclusion drawn from this present study is that most of the Fire and Rescue Service Personnel had inadequate knowledge in Pre-Test. After giving Structured Teaching Programme, majority of Fire and Rescue Service Personnel had adequate knowledge regarding Basic Life Support. It reveals that proper Structured Teaching Programme will change the knowledge of the Fire and Rescue Service Personnel regarding Basic Life Support.

Basic Life Support performed correctly will be a central aspect of chain of survival for those who have an out of hospital cardiac arrest, but fewer than one-third of patient who have out of hospital cardiac arrest receive CPR, which suggest a need for better and more widespread training for non professionals. By this study the need for training a part of non professional is achieved by educating the Firemen regarding Basic Life Support

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