JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

"A Pre-Experimental Study To Assess The Effectiveness Of Structured Teaching Program on Knowledge Regarding Cardiopulmonary Resuscitation Among Students Of Selected Higher Secondary School, Anantnag Kashmir"

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Abstract: Cardiopulmonary resuscitation (CPR) is a series of life-saving actions that improve the chances of survival, following cardiac arrest. Successful resuscitation, following cardiac arrest, requires an integrated set of coordinated actions represented by the links in the Chain of Survival. The links include the following: immediate recognition of cardiac arrest and activation of the emergency response system, early CPR with an emphasis on chest compressions, rapid defibrillation, effective advanced life support, and integrated post-cardiac arrest care. The newest development in the CPR guideline is a change in the basic life support sequence of steps from "A-B-C" (Airway, Breathing, Chest compressions) to "C-A-B" (Chest compressions, Airway, Breathing) for adults. Also, "Hands-Only (compression only) CPR" is emphasized for the untrained lay rescuer. On the basis of the strength of the available evidence, there was unanimous support for continuous emphasis on high-quality CPR with compressions of adequate rate and depth, which allows for complete chest recoil, minimizing interruptions in chest compressions and avoiding excessive ventilation. High-quality CPR is the cornerstone of a system of care that can optimize outcomes beyond return of spontaneous circulation (ROSC). There is an increased emphasis on physiologic monitoring to optimize CPR quality, and to detect ROSC. A comprehensive, structured, integrated, multidisciplinary system of care should be implemented in a consistent manner for the treatment of post-cardiac arrest care patients. The return to a prior quality and functional state of health is the ultimate goal of a resuscitation system of care.

Introduction

Cardiopulmonary arrest is the cessation of respiration, absence of heart sounds and blood pressure, loss of palpable pulses and dilation of pupil. Ventricular fibrillation is one of the most common causes of cardiac arrest. Pronounced retraction of inter-coastal and supraclavicular spaces is the first manifestation of complete respiratory obstruction.

Cardio pulmonary resuscitation is provided for a patient with cardiac arrest to maintain life until the victim either recovers or is transported to a medical facility where advanced life support measures are available. If victim is breathing and doesn't have pulse, then we should give 30 compressions. CPR is contraindicated in don't resuscitate order and in case of fracture of ribs. Cardiopulmonary resuscitation (CPR) refers to a series of emergency lifesaving actions which is performed in an effort to manually resuscitate a person in cardiac arrest. As CPR requires various emergency treatments in short time, the essential treatment procedures had been established as a standardized guideline. In 1962, the American Heart Association (AHA) had established "A Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care" for the first time and since then the efforts to medically improve CPR has been continued up to now, and it has been applied continually to CPR based on the research results known from many clinical studies. Thereafter, the International Liaison Committee on Resuscitation (ILCOR) which was constituted in 1993 had performed its tasks to apply new scientific grounds which were periodically accumulated at each 5 year from 2000 to the Guidelines for Cardiopulmonary Resuscitation and came to present an Integrated Guidelines, providing each country scientific grounds for revising or establishing their own CPR guidelines. Korea also had established and notified "A Common Guidelines for CPR" which was the first national guidelines for CPR in 2006. The AHA and ILCOR had developed a revised guideline for CPR in 20101-11 and based on it, Korea had developed a revised guideline for CPR in 201112. In this paper, key details concerning CPR for adult from the Guidelines for Cardiopulmonary Resuscitation of Korea 2011 were extracted and summarized.

Background of the study

According to Centers for Disease Control and Prevention, about 350,000 cardiac arrests happen outside of hospitals each year and about 7 in 10 of those happen at home. Unfortunately, about half of the people at home don't get the help they need from bystanders before an ambulance arrives.

If CPR is performed in the first few minutes of cardiac arrest; person's chance of survival can double or triple. Among India's population, less than 2% people are aware of CPR. Every minute 112 people are succumbing to cardiac arrest. The main aim of the present study was to evaluate the effectiveness of Structured Teaching Program (STP) on knowledge regarding Cardiopulmonary Resuscitation among students of selected higher secondary school of Anantnag, Kashmir.

Need of study

Cardiopulmonary Resuscitation (CPR) is a technique of basic life support which helps to maintain blood circulation in the victim's brain and heart during cardiac arrest or during the absence of pulse or breath.

Cardiac arrest is an immediate medical emergency which can be effectively managed if effective CPR is commenced promptly. Recent studies show that bystander CPR is the key factor for determining out of hospital cardiac arrest survival. It is therefore, need of hour to educate young people in CPR as a long- term strategy for the community. Training school children to perform CPR is one possible method of increasing bystander CPR rates.

Problem statement:

"A Pre-Experimental Study To Assess The Effectiveness Of Structured Teaching Program On Knowledge Regarding Cardiopulmonary Resuscitation Among Students of Selected Higher Secondary School, Anantnag Kashmir".

Objectives:

1. To assess the pre-test level of knowledge regarding Cardiopulmonary Resuscitation among students of selected Higher Secondary School of Anantnag.
2. To assess post-test level of knowledge regarding Cardiopulmonary Resuscitation among students of selected Higher Secondary School of Anantnag.
3. To evaluate the effectiveness of structured teaching program by comparing the pre-test and post-test knowledge score regarding Cardiopulmonary Resuscitation among students of selected Higher Secondary School of Anantnag.
4. To find out the association between pre-test knowledge scores with their selected demographic variables.

Hypothesis:

H_1: There will be significant difference between pre-test and post-test knowledge score regarding Cardiopulmonary Resuscitation.

H_2: There will be significant association between the knowledge with selected demographic variables.

H_0: There will be no significant difference between pre-test and post-test knowledge score regarding Cardiopulmonary Resuscitation.

Assumptions:

The study assumes that:

- Higher secondary school students may have inadequate knowledge regarding Cardiopulmonary Resuscitation
- The knowledge regarding Cardiopulmonary Resuscitation among higher secondary school students may be influenced by their selected demographic variables.

Operational definitions

I. Assess: In this study assess refers to evaluate the level of knowledge score of students regarding CPR.

II. Effectiveness: In this study it refers to significant gain in knowledge as determined by significant difference between pre and post-test knowledge score.

III. Structured teaching programme: In this study it refers administration of systematically organized, well planned teaching programme (which pair written instructions with oral instructions) to students of Selected Higher Secondary School regarding CPR.

IV. Knowledge: In this study it refers to correct response of of students of selected higher secondary schools regarding Cardiopulmonary Resuscitation.

V. Cardiopulmonary Resuscitation: Cardiopulmonary resuscitation (CPR) is a procedure to support and maintain breathing and circulation for a person who has stopped breathing (respiratory arrest) and/or whose heart has stopped beating (cardiac arrest). It is a manual method to keep the heart pumping in an emergency situation.

VI. Higher secondary school: The school which provides education for 11^{th} and 12^{th} standard students

Delimitations:

The study was limited to

- Only one settings i.e. Govt. Higher Secondary School Kadipora Anantnag Kashmir

- Use of structured knowledge questionnaire restricts the amount of information that could be collected from the subjects

Review of Literature:

Review of literature is one of the most important steps in the research process .It is an account of what is already known about a particular phenomenon. A literature review is an account of the previous efforts and achievements of scholars and researchers on a phenomenon .A review of literature is a description and analysis of the literature relevant to a particular field or topic. It provides an overview of what work already had been carried out, who are the key researchers who did that work, which of the questions are already answered regarding a particular area of research interest, what methods and methodologies were used to answer the particular questions and what are the prevailing theories and hypothesis.

RESEARCH APPROACH:

A Quantitative approach was adopted to determine the effectiveness of planned teaching programme on knowledge regarding adult cardiopulmonary resuscitation among students of selected higher secondary schools of Anantnag.

VARIABLES UNDER STUDY:

1) Independent variable:. In the present study the independent variable was planned teaching programme on knowledge regarding adult cardiopulmonary resuscitation
2) Dependent variable: In the present study; the dependent variable was the knowledge of higher secondary school students regarding adult cardiopulmonary resuscitation.

RESEARCH SETTING:

Setting is the physical location and the condition in which data collection takes place in a study. It refers to the area where the study is conducted. The present study was conducted at a selected higher secondary school, Anantnag. The criteria for selecting the setting were feasible to conduct the study, availability of sample and familiarity of researcher with the settings.

TARGET POPULATION:

In this study the population comprises of students of selected higher secondary school, Anantnag.

SAMPLE:

A sample is a subset of population, selected to participate in the study or which represents the entire population. In this study sample consists of 40 students of selected higher secondary school, Anantnag.

SAMPLING TECHNIQUE:

Sampling is the process of selecting a representative segment of the population under the study. Simple random sampling technique was used to select the sample.

CRITERIA FOR SAMPLE SELECTION:

The following criteria were set for the selection of the subjects.

Inclusive Criteria:

- 9^{th}, $10^{th,}$ ^{11th} and 12^{th} students who were available at the time of study.
- 9^{th}, 10^{th}, 11^{th} and 12^{th} students who were willing to participate in the study.
- 9^{th}, 10^{th},11^{th} and 12^{th} students who were attending regular classes.

Exclusive Criteria:

- 9^{th},10^{th},11^{th} and 12^{th} students who were not available at the time of study
- 9^{th},10^{th},11^{th} and 12^{th} students who were not willing to participate.

DATA COLLECTION INSTRUMENTS:

Data collection instrument is a device used to measure the concept of interest in a research project that a researcher used to collect the data. In the present, study, the data collection instrument used was self structured questionnaire to assess the knowledge regarding adult cardiopulmonary resuscitation.

SELECTION AND DEVELOPMENT OF TOOL:

Selection of Tool:

Structured knowledge questionnaire was selected to assess the knowledge regarding adult cardiopulmonary resuscitation among students in the selected higher secondary of Anantnag. It was considered to be the most appropriate instrument to elicit the response from the subjects.

Development of Tool:

A Tool is a device or technique that a researcher uses to collect data. Structured knowledge questionnaire was selected to assess the knowledge regarding adult cardiopulmonary resuscitation among students in the selected higher secondary school of Anantnag .We used closed-format questionnaire to assess the knowledge. The tool was developed on the basis of:

1. Objectives of the study.
2. Extensive review of literature—Related literature from, journals, articles, periodicals, published and unpublished research studies were reviewed and used for the development of the tool.
3. Preparation of the blue print of the tool.

DESCRIPTION OF TOOL:

The structured questionnaire consists of two parts.

PART 1:- Demographic Performa

A Performa for selected personal information was used to collect the sample characteristics .The characteristics include Age, Gender, Residence, Class

The respondents were asked to give relevant information by choosing the correct option.

PART 2:-Structured knowledge questionnaire:

It consists of 30 questions related to adult cardiopulmonary resuscitation.

All the questions were multiple-choice questions, which has four alternative responses. A score of value 1 was allotted to each correct response. The total knowledge score was 34.

SCORE INTERPRETATIONS:

PART 1:- Information regarding demographic data was collected from students on 5 variables. The responses they felt appropriate was chosen and the right choice is written in the box provided against each item.

PART 2:- There were 34 multiple choice questions. Each correct answer score is awarded with 1 mark and a wrong answer has given as 0. So the maximum score was 34 for all the questions. The respondents were instructed to place the right choice in the box provided against the response.

The score was counted manually.

The level of knowledge have been classified as

- Inadequate (1-11)
- Moderately adequate (12-22)
- Adequate (23-34)

Demographic variable:

Residence	Frequency
Rural	24
Urban	16

Table 1: Frequency of distribution of demographic variable (type of residence)

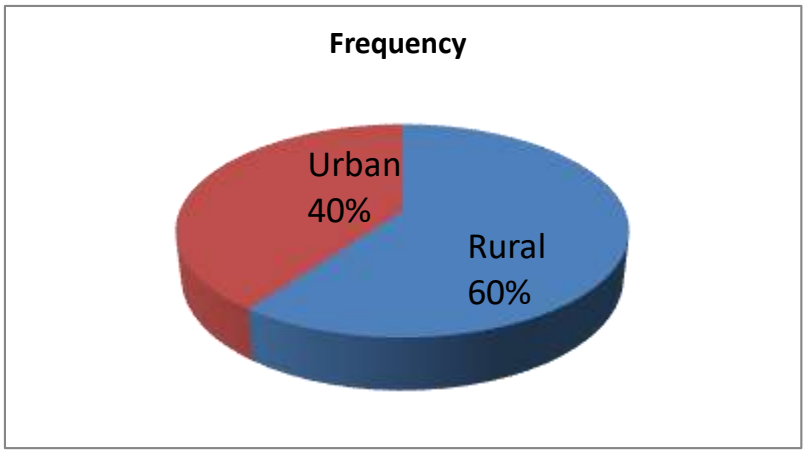


Figure 1: Pie Chart showing Frequency of distribution of demographic variable (type of residence)

Gender	Frequency
Male	11
Female	29

Table 2: Frequency of distribution of demographic variable (gender)

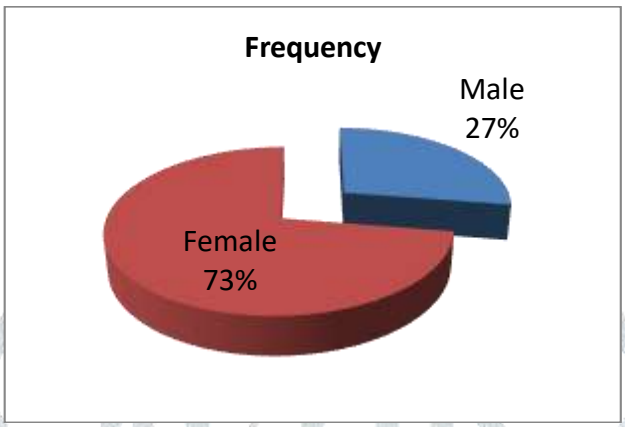


Figure 2 : Pie Chart showing Frequency of distribution of demographic variable (gender)

Age group	Frequency
12-14	0
15-17	29
18-20	11
21-23	0

Table 3: Frequency of distribution of demographic variable (age)

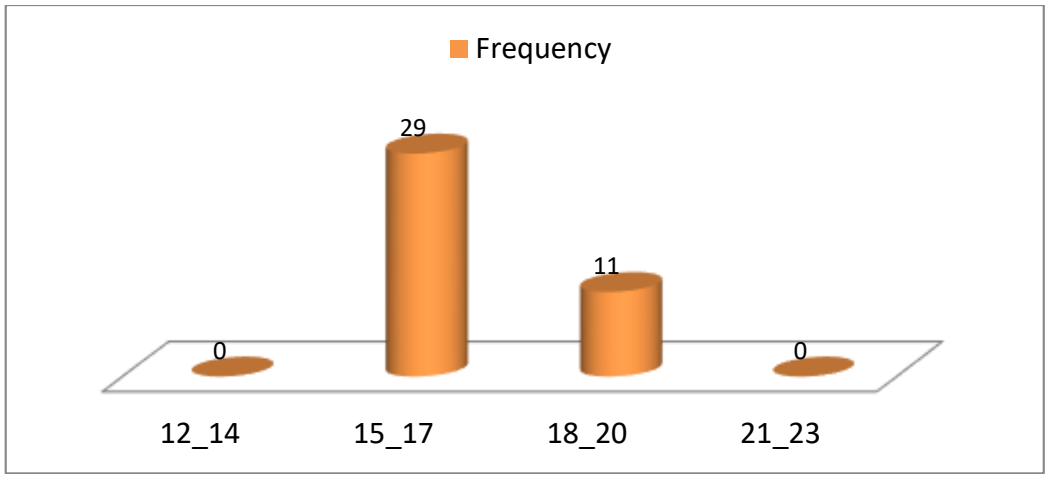


Figure 3 : Cylinder Chart showing Frequency of distribution of demographic variable(age)

Class	Frequency
9th	14
10th	8
11th	11
12th	7

Table 4: Frequency of distribution of demographic variable (class)

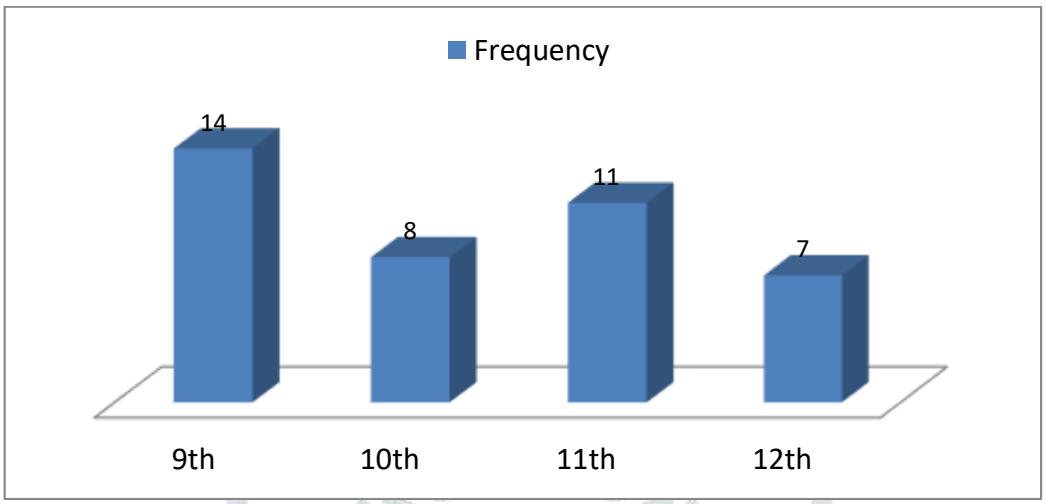


Figure 4 : Bar graph showing Frequency of distribution of demographic variable(class)

Analysis and Interpretation

Table 5: Frequency and percentage distribution as per their level of knowledge of regarding Cardiopulmonary Resuscitation among students

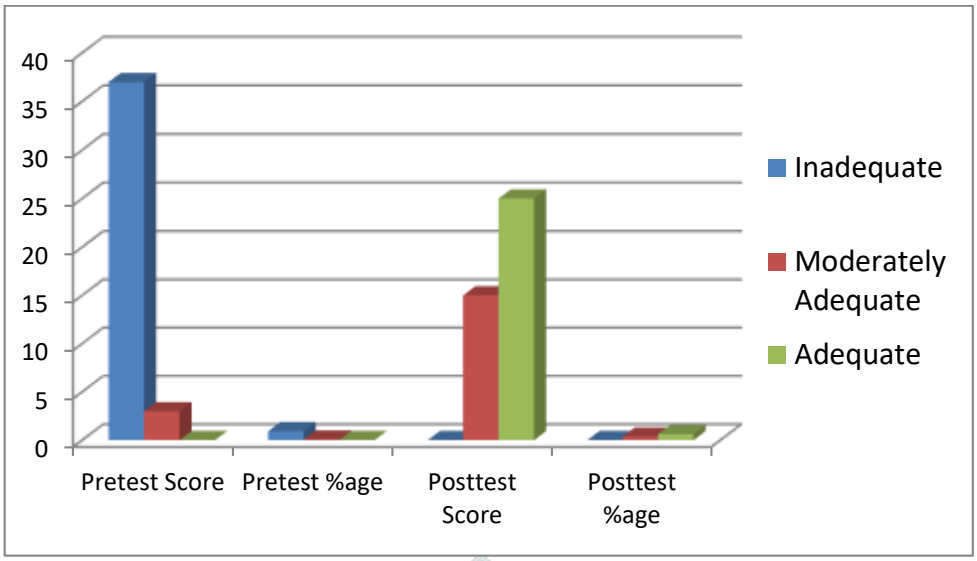
S. No.	Grade	Score	Percentage
1	In adequate	<15	<50%
2	Moderately Adequate	15-22	50-73%
3	Adequate	>22	>73%

This table categorizes the score obtained into three grades with score less than 50% labeled as inadequate and a score above 73% as adequate. Anything between these is labeled as moderately adequate.

Score grading comparison between pre and post-test:

Grade	Pre-test		Post-test	
	Number	%age	Number	%age
Inadequate	37	92.5%	0	0%
Moderately adequate	3	7.5%	15	37.5%
Adequate	0	0%	25	62.5%

Figure 5: Bargraph showing comparision between pre-test and post test score

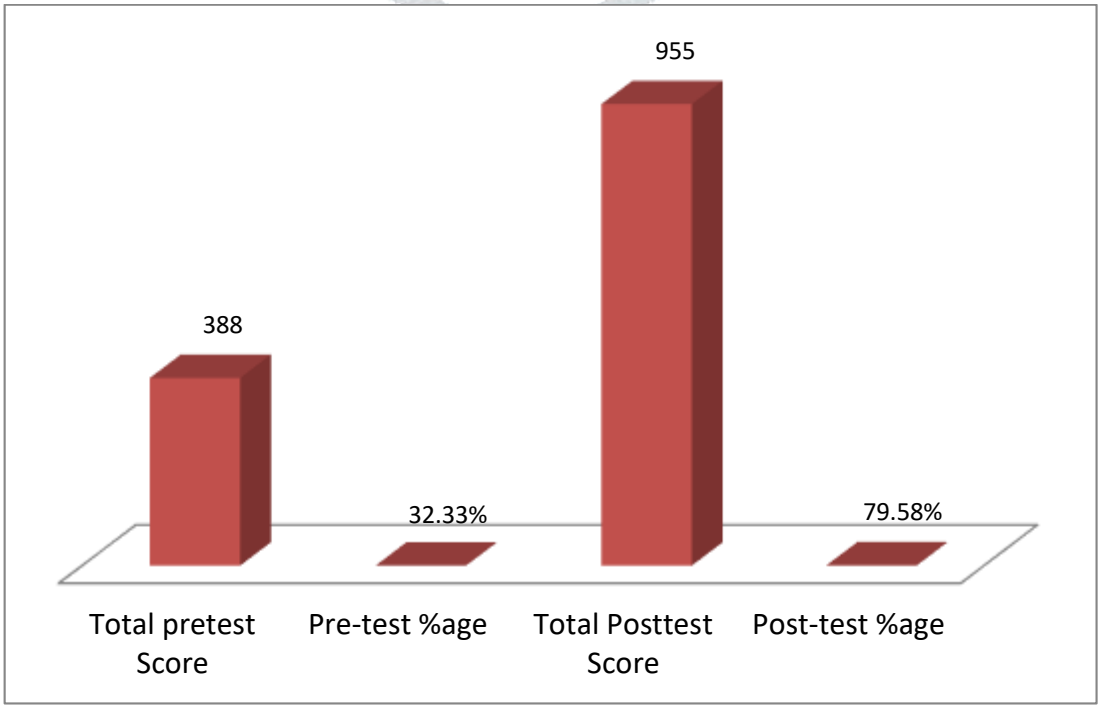


In the pre-test series 37(92.5%) students had inadequate knowledge and 3(7.5%) had moderately adequate knowledge were none had adequate knowledge regarding Cardiopulmonary Resuscitation among students and after the implementation of structured teaching programme at Higher Secondary School Anantnag ,majority of students i.e.25(62.5%) showed adequate knowledge, and 15(37.5%) showed moderately adequate kn0wledge , were none showed inadequate knowledge in post-test analysis. This means that there was a high significant improvement in the knowledge among Students with a p-value <0.000

Table 6: Table showing Total Pre-test & Post Test scores with percentage

Pre-test		**Post-Test**	
score	**%age**	**Score**	**%age**
388	**32.33%**	**955**	**79.58%**

Figure 6: Bar graph showing total pre-test and post test scores with percentage



In the pre-test the total score achieved by the study group was 388 out of 1200 which is 32.33% and the score improved to 955 which is 79.58% in the post-test analysis. This shows significant improvement of knowledge by 47.25% .This means that there was a high significant improvement in the knowledge after the introduction of structured teaching programme.

In order to compare the pretest and posttest level of knowledge regarding subject Cardiopulmonary Resuscitation among students, we will check the normality of the data so that appropriate test can be used. If the data is normally distributed we will use t test otherwise its alternative test i.e. wilkoson signed Rank test will be used.

Table 7 : Checking the normality of pre-test and post-test score

	KOLMOGOROV-SMIRNOV TEST				SHAPIRO-WILK TEST			
	Statistics	**d.f**	**P value**	**Interpretation**	**Statistics**	**d.f**	**P value**	**Interpretation**
Pretest	**0.163**	**40**	**0.09**	**Not Normally distributed**	**0.945**	**40**	**0.52**	**Normally distributed**
Posttest	**0.151**	**40**	**0.022**	**Not Normally distributed**	**0.940**	**40**	**0.34**	**Not Normally distributed**

From the above table it is evident that the data is not normally distributed, so we will be alternative of paired t test i.e. Wilkoson Signed Rank test to compare pretest and posttest level of knowledge

	Mean	**N**	**Minimum**	**Maximum**	**Standard deviation**
Pre-test	9.7000	40	4	17	3.19615
Post-test	23.8750	40	15	30	3.78382

Z value	-5.517
P value	0.000
Interpretation	Highly Significant

Reporting the result: From the above table it is evident that there was a significant improvement in knowledge regarding subject Cardiopulmonary Resuscitation among Higher secondary school students at Anantnag after the implementation of structured teaching programme with $z=-5.517, p<0.000$.

S. No	Variables	Association of Students with selected demographic variables.		$\chi 2$ Value	Table value	Df	P value	Interpretation
		Yes	No					
1	Age (years)							
	12-14	0	0	7.91	3.841	1	0.02	Significant
	15-17	12	17					
	18-20	8	3					
	21-23	0	0					
2.	Place of residence							
	Rural	16	8	8.82	3.841	3	0.03	Significant
	Urban	7	9					
3.	Gender							
	Male	14	12	2.20	3.841	3	0.7	Not Significant
	Female	7	7					

DISCUSSION

The present study aimed to assess the effectiveness of planned teaching programme on knowledge regarding Cardiopulmonary Resuscitation among students of selected higher secondary school of Anantnag.

Section 1

Socio-Demographic data of study subjects

1. GENDER

- In the present research study 11(27%) of study subjects were males and 29(73%)were females

2.CLASS

- 14(35%) of study subjects were studying in class 9th, 8(20%) were studying in class 10^{th}, 11(27.5%) were studying in class 11^{th}, 7(17.5%) were studying in class 12^{th}

3. AREA OF RESIDENCE

- 24(60%) of the study subjects belong to the rural area and 16(40%) of the study subjects belong to the urban area

4. AGE GROUP

- 0(0%) of the study subjects fall in age group of 12-14
- 29(72.5%) of the study subjects fall in age group of 15-17
- 11(7.5%) of the study subjects fall in age group of 18-20

Section 2:

Section 2.1 Assessment of pre- interventional knowledge score of study subjects regarding Cardiopulmonary Resuscitation.

The overall pre-interventional knowledge score shows that 37(92.55%) of the study subjects had inadequate knowledge, 3(7.5%) of the study subjects had moderate knowledge, and 0(0%) of the study subjects had adequate knowledge regarding Cardiopulmonary Resuscitation.

Section 2.2: Assessment of post interventional knowledge score of study subjects regarding Cardiopulmonary Resuscitation.

The overall post interventional knowledge score shows that majority of subjects i.e., 25(62.5%) of the study subjects had adequate knowledge and 15(37.5%) of the study subjects had moderate knowledge and 0(0%) of the study subjects had inadequate knowledge regarding Cardiopulmonary Resuscitation.

Section 2.3: Comparison of pre and post interventional level of knowledge scores regarding Cardiopulmonary Resuscitation.

The overall pre and post-interventional knowledge score of study subject reveals that the percentage obtained by the study subjects in pre-test was 9.7000 at standard deviation 3.19615. Whereas in post-test was 23.8750 at standard deviation 3.7838

In the pre-test the total score achieved by the study group was 388 out of 1200 which is 32.33% and the score improved to 955 which is 79.58% in the post-test analysis. This shows significant improvement of knowledge by 47.25% .This means that there was a high significant improvement in the knowledge after the introduction of structured teaching programme.

From the above comparison it is evident that there was a significant improvement in knowledge regarding subject Cardiopulmonary Resuscitation among Higher secondary school students at Anantnag after the implementation of structured teaching programme with $z=-5.517, p<0.000$

Section 3: Association of pre interventional knowledge scores of study subjects with socio-demographic variables

The present study indicated that there was significant association between pre-interventional knowledge score with selected socio-demographic variables i.e., (Age, Area of residence) and there was no significant association between pre interventional knowledge score with selected socio-demographic variables i.e., (Gender) Hence research hypothesis i.e., H2 which states that, "there will be a significant association between mean pre-test knowledge score with selected demographic variables is true in Residence and class and is rejected in variables i.e. Gender and Age.

SUMMARY AND CONCLUSION

The study that was conducted among students of selected higher secondary school of Anantnag Kashmir, sample size was 40 (n=40) and purposive random sampling technique was used, self-structured questionnaire was used as tool and intervention was structured teaching program (STP).

Some findings from the study are:-

- Pre interventional score /findings showed that the students had inadequate or moderate knowledge regarding cardiopulmonary resuscitation, so there was need to provide them knowledge and make them aware.
- The Structured teaching programme (STP) was found effective in improving the level of knowledge of students regarding Cardiopulmonary resuscitation as evident from their post interventional knowledge score.
- There was significant association between pre interventional knowledge score of the study subjects with their selected socio-demographic variables i.e., (Area of residence and age) and there was no significant association between pretest score of the study subjects with their remaining selected socio-demographic variables (gender).
- These findings reveal that an effective structured teaching program must be conducted in schools with a view to make the students knowledgeable about various aspects of cardiopulmonary resuscitation.

Summary of the major findings:

Majority of findings related to demographic variables:-

- The study subjects had inadequate knowledge regarding CPR in post-test.
- 23.8750 and 3.78382 is the mean and SD of the post interventional knowledge score respectively.

Majority Findings related to comparison:-

- In the present research study 11(27%) of study subjects were males and 29(73%) were females
- 14(35%) of the subjects were studying in class 9^{th}, 8(20%) were studying in class 10^{th}, 11(27.5%) were studying in class 11^{th}, 7(17.5%) were studying in class 12^{th}
- 0(0%) of the subjects were belonging to age group 12-14, 29(72.5%) were belonging to age group 15-17, 11(27.5%) were belonging to age group 18-20
- 16(40%) of the subjects were dwelling in urban areas and 24(60%) were dwelling in rural areas.

Majority findings related to pre and post interventional level of knowledge score regarding Cardiopulmonary Resuscitation:-

- 37(92.5%) of the study subjects had inadequate knowledge, 3(7.5%) of the study subjects had moderate knowledge, and 0(0%) of the study subjects had adequate knowledge regarding CPR in pre-test
- 9.7000 And 3.19615 is the mean and SD of the pre interventional knowledge score respectively.
- 25(62.5%) of the study subjects had adequate knowledge and 15(37.5%) of the study subjects had moderate knowledge and 0(0%) of study had inadequate knowledge regarding CPR in post test
- 47.5% is the difference between pre interventional knowledge score (32.33%) And post-interventional knowledge score (79.58%) .

- Mean and SD score of the post interventional knowledge score of the study subjects (23.8750, 3.78382) is greater than mean and SD score of the pre interventional knowledge (9.7,3.19615) .This shows that the structured teaching program was effective.

Majority findings related to association between pre interventional knowledge scores with socio-demographic variables (Age, area of residence and gender)

Significant association was found between pre interventional knowledge scores of the study subjects with their selected socio-demographic variables i.e., (Age and area of residence) and there was no significant association between pre interventional score of the study subjects with their remaining selected demographic variables (gender).

Limitations of the study:

The study was limited to

- Small sample size.
- Only one settings i.e. govt. higher secondary school Kadipora Anantnag Kashmir
- Use of structured knowledge questionnaire restricts the amount of information that could be collected from the subjects.

Recommendations:

- The sample study can be replicated on large sample to generalize the findings.
- The sample study can be conducted in different schools.
- A survey can be done to determine interest among nurses in educating students regarding CPR.
- Teaching program should be updated to include comprehensive information about CPR, its uses and importance.

Implications:

The study provides a scope for further research in the field of nursing .it will enable the use of understanding knowledge regarding CPR among Students. The study primarily depicts how a Structure teaching programme (STP) can enhance the knowledge of subjects.

Nursing practice:

- The nurses can learn accurate assessment of level of knowledge by using structured questionnaire.
- The STP can be incorporated in nursing as specific health education measure to teach about CPR among students.
- Nurses as health care professionals have responsibility to promote health information practice among students and teachers.
- The nursing personal can be able to develop specific knowledge and skill in providing health education regarding CPR.

Nursing education:

- The study increases the knowledge of nursing students which help them to impart adequate knowledge to others.

- Nurses can provide health education regarding CPR.
- Nurses can organize workshops regarding knowledge on CPR.
- Nurses at the post graduate level need to develop skill in preparing health teaching materials at the level of Student understanding.

Nursing research:

- Nurses can increase the nursing knowledge which also helps to generate new knowledge about the subject.
- The study findings can be used as the baseline data and further studies can be conducted and the study can be expanded in various fields.

Research should focus on causes and preventive measures of cardiac arrest and respiratory arrest.

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