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Original Research Article

An experimental study to evaluate the effectiveness of lecture cum demonstration on knowledge and practice on basic life support among lay person

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ABSTRACT

Introduction: Basic Life Support (BLS) refers to a set of emergency procedures that assist individuals experiencing cardiac arrest, respiratory distress, or airway obstruction. Cardiopulmonary resuscitation (CPR) and other BLS techniques serve as crucial interventions that can save lives in critical situations. Effective training in BLS can empower laypersons to act decisively and appropriately during emergencies.
Aim and Objectives: To shed light on the effectiveness of a comprehensive BLS training program, incorporating lectures and practical demonstration, in empowering layperson to respond effectively to cardiac arrest situation.
Secondary Objectives: To assess the knowledge of lay person regarding basic life support, To assess the practice of lay person regarding basic life support, to evaluate the effectiveness of demonstration on basic life support, to find out the association between the knowledge and practice of lay person regarding basic life support with their selected demographic variables.
Materials and Methods: A quantitative research approach was employed in this study, utilizing a true experimental (one group pre-test and post-test) research design. A convenient sampling technique was used to select 60 participants for the study. Data were collected using structured questionnaires to assess knowledge and practice checklists to evaluate practical skills. Descriptive and inferential statistical methods were applied for data analysis.
Results: The pre-test and post-test assessments revealed a significant improvement in the participants' knowledge and practice of BLS after the training. The mean knowledge score in the pre-test was 5.75 ± 1.85 (27.38 ± 8.83%), while the mean score in the post-test increased to 12.48 ± 2.03 (59.44 ± 9.70%). The mean practice score was 11.46 ± 3.03 (40.95 ± 10.85%) in the post-test.The evaluation of the training method, which incorporated both lectures and demonstrations, showed statistically significant improvement in both knowledge and practice scores. The paired 't' test for overall knowledge scores yielded a calculated value of 16.87, which exceeded the tabulated value of 2.00 (with 59 degrees of freedom), confirming the effectiveness of the intervention.
Conclusion: The study demonstrated that the lecture and demonstration-based training significantly improved the knowledge and practical application of Basic Life Support techniques among laypersons. As a result, the null hypothesis (H0) was rejected, and the research hypothesis (H1) was accepted.

1. Introduction

Life is a journey of living, marked by the choices we make and the actions we take.[1,2] In this journey, health plays

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a pivotal role, as it encompasses not only the absence of disease but also the complete state of physical, mental, social, and spiritual well-being.[3,4] Maintaining good health is a collective responsibility, and individuals have the power to make a difference.[5]

The purpose of this study is to shed light on the effectiveness of a comprehensive BLS training program, incorporating lectures and practical demonstrations, in empowering laypersons to respond effectively to cardiac arrest situations.[6] By equipping individuals with the knowledge and skills needed to initiate CPR, use automated external defibrillators (AEDs), and provide early intervention, we aim to increase the odds of survival for those in dire need. Cardiac emergencies often strike unexpectedly, and the outcome can be profoundly influenced by the immediate actions taken by those present at the scene.[7] Bystanders, family members, or coworkers who possess the knowledge and confidence to provide effective basic life support can serve as the crucial link between the moment of crisis and the arrival of professional medical assistance. In many cases, the minutes following a cardiac arrest can be a matter of life or death, making rapid and informed intervention a necessity.[8]

This research seeks to address the critical need for effective BLS training among laypersons, acknowledging their potential to be first responders in cardiac emergencies.[9] By evaluating the impact of a structured training program that combines lectures and practical demonstrations, this study aims to contribute valuable insights into enhancing the preparedness of individuals to act decisively when faced with life-threatening situations.[10] Through a thorough examination of the training's effectiveness, we aspire to empower communities with the knowledge and skills necessary to save lives and champion the cause of health and well-being for all.[11]

1.1. Primary objectives

1. To assess the effectiveness of lecture cum demonstration on knowledge and practice of basic life support among lay persons.

1.2. Secondary objectives

1. To assess the knowledge of lay person regarding basic life support.
2. To assess the practice of lay person regarding basic life support.
3. To evaluate the effectiveness of demonstration on basic life support.
4. To find out the association between the knowledge and practice of lay person regarding basic life support with their selected demographic variables.

2. Materials and Methods

This chapter consists of research approach design, setting of the study, population of this study, sample, size, sampling technique, sample selection criteria, description of the tool, content validity of the tool, procedure for data collection and the plan for data analysis.[12]

2.1. Experiment

2.1.1. According to Oxford dictionary

Based on new ideas, forms or methods that are used to find out what effect they have.[13]

2.1.2. According to our study

Experimental study means to provide intervention on basic life support to assess the knowledge and practice on basic life support on lay person.

2.2. Study

2.2.1. According to oxford dictionary

The activity of learning and gaining knowledge, either from books or by examining things in the world.[13]

2.2.2. According to our study

Study means the project we are carrying out.

2.3. Evaluate

2.3.1. According to oxford dictionary

To form an opinion of the amount value or quality of something after thinking about it carefully.[13]

2.3.2. According to our study

Evaluate means to evaluate the outcome of layperson after administrating lecture cum demonstration.

2.4. Effectiveness

2.4.1. According to oxford dictionary

The fact of producing the result that is wanted or intended; the fact of producing a successful result.[13]

2.4.2. According to our study

It is extent to which the basic life support on lay person and is effect in improving knowledge of lay person as evident from gain in knowledge score.

2.5. Hypothesis

2.5.1. Null hypothesis (H0)

There is no significant difference between the pre-test and post-test knowledge and practice scores related to basic life support among lay person, as measured by the knowledge questionnaire and practice checklist.

2.5.2. Research hypothesis (H1)

There is significant difference between the pre-test and post-test knowledge and practice scores related to basic life support among lay person, as measured by the knowledge questionnaire and practice checklist.

2.6. Assumption

1. The knowledge of lay person regarding basic life support is assumed to be increased.
2. The practice of lay person regarding basic life support is assumed to be increased.

2.7. Variable under study

Variables are the condition or characteristics that the experimental manipulates, controls, or observes. Three types of variables were identified in this study.

1. Independent variables
2. Dependent variables
3. Demographic variables

2.8. Independent variable

The independent variable is manipulated by the researcher. It is the intervention of treatment that the researcher performs to see the resulting change in the dependent variable.

The Independent variable in present study is Lecture Cum Demonstration.

2.9. Dependent variable

The dependent variable usually is the variables that the researcher is interested in understanding, explaining, or predicting. It is the outcome variable which is observed following the intervention of the dependent variables.

The dependent variable in present study is knowledge and practice.

2.10. Demographic variable

1. Gender
2. Age
3. Residency
4. Educational level
5. Placement of employment
6. Employment status

2.11. Setting of the study

The study was conducted at construction site of Nagpur city.

2.12. Population, sample and sampling techniques

2.12.1. Population

The study population was comprised of the entire lay person including non-medicos.

2.12.2. Sample

Lay persons who satisfy the inclusive criteria of all the study was selected as sample for the study.

2.13. Inclusive criteria

1. Lay persons who were willing to participate in the study.
2. Lay person who was present at the time of data collection.
3. Lay person who was able to read and write.

2.14. Exclusive criteria

1. Lay person who was not confident enough.
2. Lay person who had any disabilities.

2.15. Sample size

A sample study of 60 lay persons were selected for the study.

2.16. Sampling technique

The non-probability convenience sampling technique.

2.17. Data collection and tools (Graph 1,2

2.17.1. Data collection

Data collection involves systematically gathering information to answer research questions and evaluate outcomes. In this study, data was collected using a questionnaire schedule.

2.17.2. Development and description of the tool

2.17.2.1. Demographic questionnaire. A 6-item questionnaire to gather information on gender, age, residence, education, employment status, and workplace.

2.17.2.2. Effectiveness of BLS training questionnaire. A 21-item questionnaire developed by the researcher to assess the effectiveness of the lecture and demonstration-based BLS training.

2.17.2.3. BLS practice checklist. A checklist to evaluate participants' practical application of BLS techniques.

2.18. Content validity

The content validity of the Hindi-translated tool was reviewed by a Hindi professor, and suggestions were incorporated to ensure accuracy and relevance.

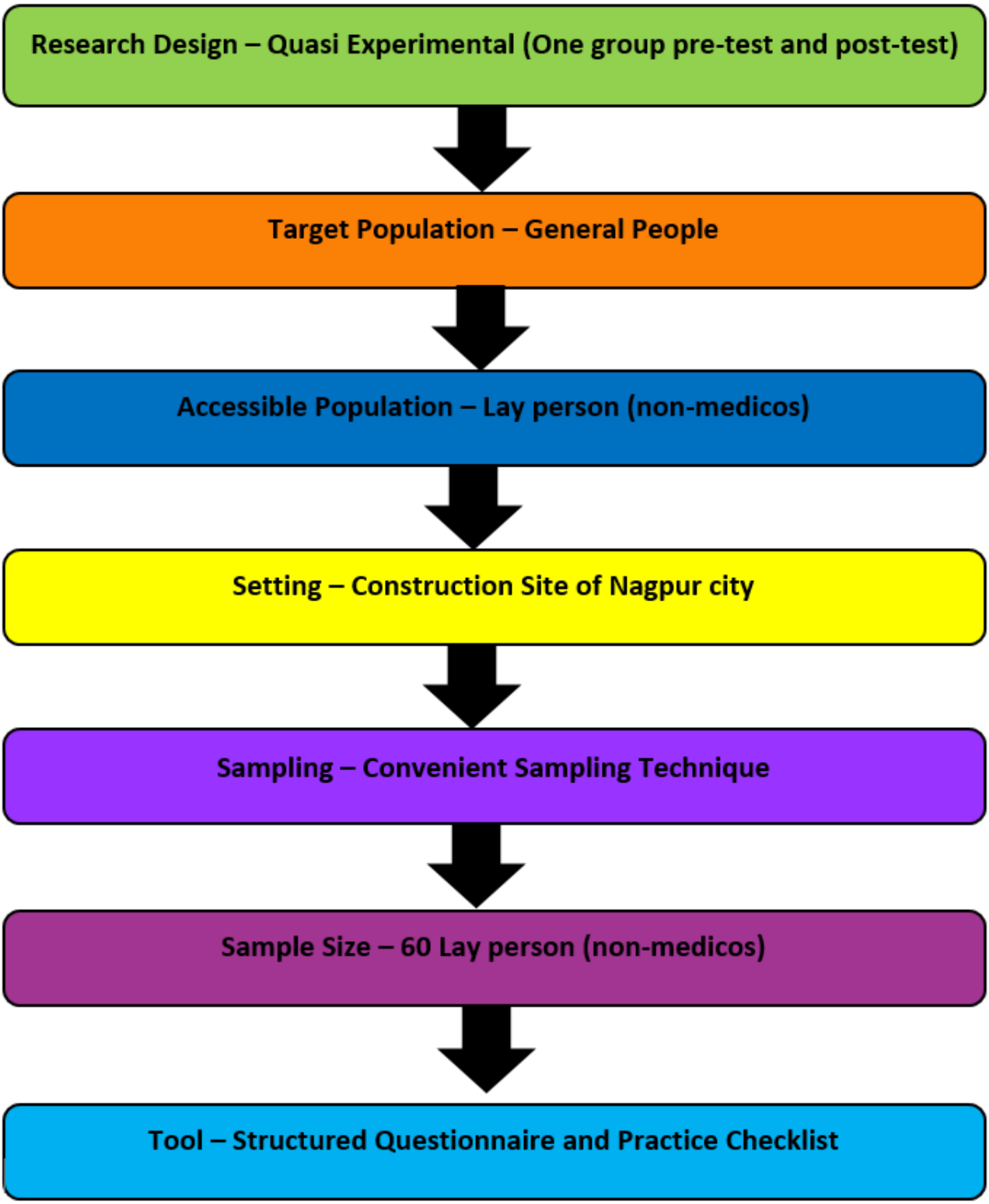

Diagram 1: Research methodology

2.19. Reliability

Reliability was established through expert validation and the test-retest method. The tool's reliability, determined using Karl Pearson's coefficient, was r = 0.8694, confirming its consistency. (Table 1)

Table 1: Percentage wise distribution of Lay Person according to their demographic characteristics

Demographic Variables	No. of Lay Person	Percentage (%)
Gender		
Male	29	48.3
Female	31	51.7
Age Group in years		
≤30 yrs.	28	46.7
31-40 yrs.	17	28.3
41-50 yrs.	14	23.3
>50 yrs.	1	1.7
Place of residence		
Urban	11	18.3
Rural	49	81.7
Education		
Primary/Secondary	15	25.0
Higher/Higher Secondary	9	15.0
Graduation/PG	4	6.7
Place of employment		
Industrial	0	0
Construction Sector	45	75.0
Office	15	25.0
House	0	0
Employment Status		
Government	0	0
Private	26	43.3
Self Employed	0	0
Farmer	0	0
Labour	34	56.7

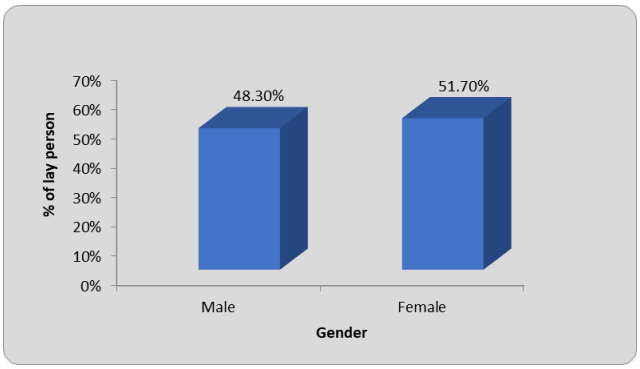

Figure 1: Percentage wise distribution of Lay Person according to their gender

30% of lay person were males and 51 70% of them were females.

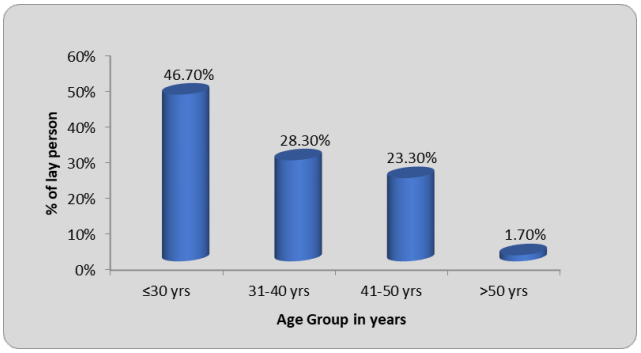

Figure 2: Percentage wise distribution of Lay Person according to their age in years

46.70% of lay person were less than 30 years of age, 28.30% of them were in the age group of 31-40 years, 23.30% were in the age group of 41-50 years and 1.70% of them were more than 50 years.

3. Result

As shown in graph 3 the comparison of pretest and post-test knowledge scores of lay persons regarding basic life support. Mean, standard deviation and mean difference values are compared, and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=60-1 i.e., 59 degrees of freedom was 2.00. The calculated 't' value i.e., 16.87 are much higher than the tabulated value at 5% level of significance for overall knowledge score of lay persons which is statistically acceptable level of significance. Hence it is statistically interpreted that the Lecture Cum Demonstration on knowledge regarding basic life support among lay person was effective. Thus, the H_1 is accepted.

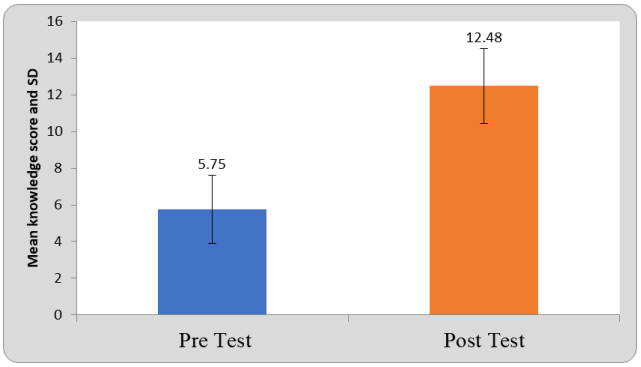

Figure 3: Significance of difference between knowledge scores in pre and post-test of lay person

The hypothesis is tested statistically with distribution of pretest and post-test mean and standard deviation and mean percentage knowledge score. The levels of knowledge during the pretest and post-test are compared to prove the

effectiveness of Lecture Cum Demonstration. Significance of difference at 5% level of significance is tested with student's paired 't' test and tabulated 't' value is compared with calculated 't' value. Also, the calculated 'p' values are compared with acceptable 'p' value i.e., 0.05. (Table 2)

Table 2: Significance of difference between knowledge score in pre and post-test of Lay Person (n=60)

Test	Mean	SD	Mean Difference	t-value	p-value
Pre-Test	5.75	1.85	6.73±3.09	16.87	0.0001 S, p<0.05
Post Test	12.48	2.03			

As shown in Table 2 assessment of level of knowledge and practice regarding basic life support among lay person from selected area, it was observed that mean knowledge score in pretest was 5.75±1.85 and mean percentage of knowledge score in pretest was 27.38 ± 8.83, whereas mean knowledge score in post-test was 12.48±2.03 and mean percentage of knowledge score in post-test was 59.44 ± 9.70 and mean practice score was 11.46±3.03 and mean percentage of practice score was 40.95 ± 10.85. Thus, improvement in post knowledge score and practice score indicates the study to be effective. Also, evaluation of effectiveness of lecture cum demonstration showed, mean standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n = 60-1 i.e., 59 degrees of freedom was 2.00. The calculated 't' value i.e., 16.87 are much higher than the tabulated value at 5% level of significance for overall knowledge score of lay persons which is statistically acceptable level of significance. Hence it is statistically interpreted that the Lecture Cum Demonstration on knowledge regarding basic life support among lay person was effective.

4. Discussion

This study aimed to assess the effectiveness of lecture and demonstration-based Basic Life Support (BLS) training among laypersons. The pre-test showed a low mean knowledge score of 5.75 ± 1.85, with 81.67% having average knowledge. After the training, the post-test score improved significantly to 12.48 ± 2.03, with 81.67% showing average knowledge and 16.67% showing good knowledge. Statistical analysis confirmed the effectiveness of the training, with a calculated 't' value of 16.87, higher than the tabulated value, supporting the research hypothesis. [14]

The study also found that demographic factors such as age, educational status, and place of employment were associated with post-test knowledge, while educational status was linked to practice scores. However, variables like gender, age, area of residence, and employment status did not significantly affect practice scores. [15]

In conclusion, the lecture and demonstration-based BLS training was effective in improving laypersons' knowledge and practice, highlighting the importance of such training for emergency response.

5. Conclusion

The effectiveness of Lecture Cum Demonstration on knowledge regarding basic life support among lay person was effective. There is no significant association between gender, age, area of residence, employment status of lay person with the pretest knowledge score.

6. Source of Funding

None.

7. Conflict of Interest

None.

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