

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED INSTRUCTIONAL MODULE ON KNOWLEDGE AND PRACTICE REGARDING CPR IN TRAFFIC POLICE OF SELECTED AREA OF UDAIPUR CITY.

Author's Name: Dr. Vipin Kumar Pillai¹

Affiliation: Principal, Udaipur College of Nursing, Umarda, Udaipur, Rajasthan, India.

Corresponding Author Name & E-Mail: Dr. Vipin Kumar Pillai, vipinpillai580@gmail.com

ABSTRACT

BACKGROUND AND OBJECTIVES: Cardio Pulmonary Resuscitation (CPR) is a critical life-saving skill, especially for first responders like traffic police officers, who are often the first to arrive at accident scenes. This study aimed to assess the effectiveness of a structured instructional module on improving CPR knowledge among traffic police officers in Udaipur, India. **METHOD:** A pre-experimental one-group pre-test post-test design was employed, involving 100 traffic police officers selected through purposive sampling. Participants underwent a structured instructional module on CPR, and their knowledge levels were evaluated using a structured knowledge questionnaire both before and after the intervention. The data were analyzed using descriptive and inferential statistics. **RESULTS:** Before the intervention, 72% of participants (72/100) had inadequate knowledge, and 28% (28/100) had moderate knowledge, with no participants displaying adequate knowledge. Post-intervention, none of the participants had inadequate knowledge, 49% (49/100) achieved moderate knowledge, and 51% (51/100) attained adequate knowledge. The mean knowledge score increased significantly from 9.66 (32.20%) to 21.45 (71.50%), with a mean enhancement of 11.79 points (39.3%). The calculated *t*-value was 24.22, which is highly significant compared to the tabular value of 1.664 at a $p > 0.05$ level. Chi-square tests revealed significant associations between pre-test knowledge scores and demographic variables such as age, gender, rank/position, geographical location, and previous CPR training. **INTERPRETATION AND CONCLUSION:** The study demonstrates that the structured instructional module significantly improved the CPR knowledge of traffic police officers, effectively transitioning the majority from inadequate to adequate knowledge levels. The results highlight the need for ongoing and targeted educational interventions to ensure that traffic police officers are well-prepared to deliver life-saving measures in emergency situations.

Keywords: Cardio Pulmonary Resuscitation (CPR), Traffic Police, Structured Instructional Module, Knowledge Assessment.

INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a critical life-saving intervention that can significantly improve survival rates when administered promptly in cases of cardiac arrest (American Heart Association, 2023). It involves providing artificial circulation and breathing to maintain oxygen delivery to the brain and other vital organs until advanced medical care arrives. Early initiation of high-quality CPR is crucial in maximizing the chances of a positive outcome, including neurological recovery (Nolan et al., 2010).

Traffic police officers occupy a unique position within the emergency response system. As first responders to road accidents, they are often the first individuals to arrive at the scene and assess the situation. Given the high incidence of traumatic injuries and the potential for cardiac complications associated with road accidents, traffic police officers are likely to encounter cardiac arrest cases (World Health Organization, 2019). Their ability to recognize cardiac arrest, initiate CPR promptly, and continue until advanced medical help arrives can be lifesaving.

The effectiveness of CPR is influenced by various factors, including bystander knowledge, skills, and confidence. Studies have consistently demonstrated that the quality of CPR provided by laypersons, including emergency responders, is often suboptimal (Nolan et al., 2010). Factors contributing to this include inadequate training, lack of practice, and fear of performing CPR. To address these challenges, comprehensive CPR training programs are essential to equip individuals with the necessary knowledge and skills to respond effectively to cardiac arrest emergencies.

NEED FOR THE STUDY

Despite the critical role of traffic police officers in emergency response, there is a dearth of research specifically investigating their CPR knowledge, skills, and practices. Existing studies on CPR proficiency have primarily focused on healthcare providers, with limited attention given to emergency responders like traffic police officers (Nolan et al., 2010; Perkins et al., 2006). This gap in knowledge limits our understanding of the specific challenges and training needs of traffic police officers in relation to CPR.

Moreover, while the importance of early CPR in improving survival rates from cardiac arrest is well-established (Stiell et al., 2001; Berg et al., 2002), there is a need to assess the effectiveness of structured instructional modules in improving CPR knowledge and practice among traffic police officers. Existing studies have primarily focused on the general population or healthcare providers, with limited evidence on the impact of such modules on emergency responders (Nadkarni et al., 2005; Andersen & Tepper, 2007; Kern et al., 2005).

By addressing these knowledge gaps, this study aims to contribute to the development of evidence-based CPR training programs tailored to the specific needs of traffic police officers.

The findings of this study will inform the development of effective interventions to enhance CPR proficiency and ultimately improve survival rates from cardiac arrest in the study area.

OBJECTIVES

1. To evaluate the baseline and post-intervention knowledge levels of traffic police concerning Cardio Pulmonary Resuscitation (CPR).
2. To compare the knowledge levels of traffic police regarding Cardio Pulmonary Resuscitation (CPR) before and after the instructional intervention.
3. To assess the impact of a structured instructional module on the knowledge of traffic police about Cardio Pulmonary Resuscitation (CPR).
4. To explore the relationship between the post-test knowledge scores of traffic police on Cardio Pulmonary Resuscitation (CPR) and their selected demographic characteristics.

ASSUMPTIONS

1. It is expected that participants will actively engage in the training program.
2. The study presumes that the structured instructional module will effectively address the unique challenges faced by traffic police officers in delivering immediate medical assistance.
3. The study assumes that the assessment tools employed to measure CPR knowledge are both valid and reliable indicators of the participants' proficiency.

HYPOTHESES

1. **H₀**:- There will be no significant difference between pre-test and post-test level of knowledge among traffic police regarding Cardio Pulmonary Resuscitation (CPR).
2. **H₁**:- There will be a significant difference between pre-test and post-test level of knowledge among traffic police regarding Cardio Pulmonary Resuscitation (CPR).
3. **H₂**:- There will be a significant association between the level of knowledge score with their selected demographic variables.

RESEARCH METHODOLOGY

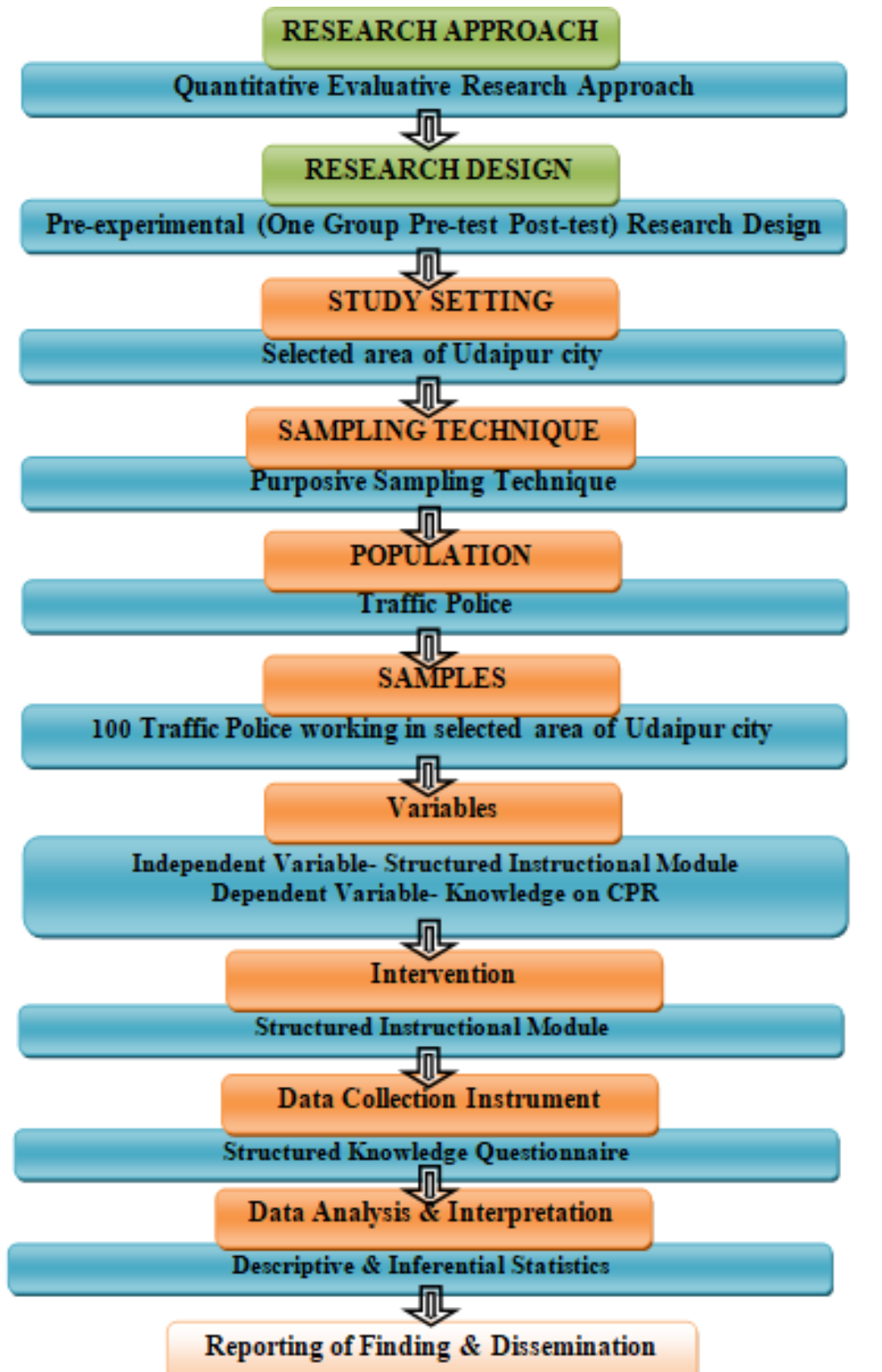


Figure-1: Schematic Presentation of Research Methodology

RESULT

Distribution of frequency and percentage analysis of selected variables

N=100

Sr. No.	Demographic variable		Frequency (n)	Percentage (%)
1	Age in years	Below 25 years	28	28.00
		25-34 years	21	21.00
		35-44 years	15	15.00
		44-55 years	13	13.00
		55 years above	23	23.00
2	Gender	Male	66	66.00
		Female	34	34.00
3	Years of Service	Less than 1 year	26	26.00
		1-5 years	26	26.00
		6-10 years	18	18.00
		11-15 years	15	15.00
		More than 15 years	15	15.00
4	Education Level	High school diploma or less	31	31.00
		Some college or vocational training	19	19.00
		Bachelor's degree	25	25.00
		Postgraduate degree	25	25.00
5	Rank/Position	Constable	28	28.00
		Sub inspector	33	33.00
		Inspector	12	12.00
		Superintendent	27	27.00
6	Shift Schedule	Day Shift	18	18.00
		Night Shift	25	25.00
		Rotating Shift	17	17.00
		Irregular or on-call schedule	40	40.00
7	Geographic Location	Urban	33	33.00
		Suburban	48	48.00
		Rural	19	19.00
8	Personal Experience	Witnessed or been involved in a cardiac event	20	20.00
		No personal experience with cardiac events	80	80.00
9	Previous CPR Training	No previous CPR training	24	24.00
		Basic CPR training (e.g., one-time certification)	48	48.00
		Advanced CPR training (e.g., BLS certification)	18	18.00
		Regular refresher courses	10	10.00

Table – Data shows the following findings.

The demographic profile of traffic police officers participating in the study on the effectiveness of a structured instructional module on CPR knowledge and practice is detailed and diverse.

- The age distribution shows that 28 officers (28%) are below 25 years, 21 officers (21%) are between 25-34 years, 15 officers (15%) fall within the 35-44 years range, 13 officers (13%) are aged 44-55 years, and 23 officers (23%) are 55 years or older.
- Gender-wise, 66 officers (66%) are male, while 34 officers (34%) are female.
- In terms of years of service, 26 officers (26%) have less than 1 year of experience, another 26 officers (26%) have 1-5 years, 18 officers (18%) have 6-10 years, 15 officers (15%) have 11-15 years, and another 15 officers (15%) have more than 15 years of service.
- Regarding education, 31 officers (31%) have a high school diploma or less, 19 officers (19%) have some college or vocational training, 25 officers (25%) hold a bachelor's degree, and another 25 officers (25%) have a postgraduate degree.
- The rank or position of the participants is also varied, with 28 officers (28%) being constables, 33 officers (33%) sub-inspectors, 12 officers (12%) inspectors, and 27 officers (27%) superintendents.
- Shift schedules show that 18 officers (18%) work day shifts, 25 officers (25%) night shifts, 17 officers (17%) rotating shifts, and the largest group, 40 officers (40%), have irregular or on-call schedules. Geographically, 33 officers (33%) work in urban areas, 48 officers (48%) in suburban regions, and 19 officers (19%) in rural areas.
- In terms of personal experience with cardiac events, 20 officers (20%) have witnessed or been involved in such events, while 80 officers (80%) have not.
- Previous CPR training varies, with 24 officers (24%) having no previous training, 48 officers (48%) having undergone basic CPR training, 18 officers (18%) having advanced CPR training, and 10 officers (10%) regularly attending refresher courses.

Distribution of people by the level of knowledge

N=100

Level of Knowledge	Score	Pre-test		Post-test	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Inadequate knowledge (0-50%)	0-15	72	72.00	0	0
Moderate knowledge (51-75%)	16-22	28	28.00	49	49.00
Adequate knowledge (76%-100%)	23-30	0	0	51	51.00
Total	30	100	100	100	100

The table demonstrates the impact of the structured instructional module on the knowledge levels of the participants regarding CPR. Before the instructional module was implemented, a substantial 72% of participants (72 out of 100) had inadequate knowledge, scoring between 0-15 points, which corresponds to a 0-50% score range. The remaining 28% (28 out of 100) displayed moderate knowledge, with scores between 16-22 points, representing a 51-75% score range. Notably, none of the participants achieved adequate knowledge, which would require a score between 23-30 points (76%-100%).

Following the instructional module, a marked improvement in knowledge levels was observed. None of the participants remained in the inadequate knowledge category. The proportion of participants with moderate knowledge increased to 49%, with 49 out of 100 participants scoring between 16-22 points. Most significantly, 51% of participants (51 out of 100) attained adequate knowledge, scoring between 23-30 points.

This shift in knowledge levels from predominantly inadequate to a majority with adequate knowledge underscores the effectiveness of the structured instructional module in significantly improving the participants' understanding of CPR. Hence **H₁** is accepted and null hypothesis (**H₀**) rejected.

Effectiveness of structured instructional module by comparing pre-test and post-test knowledge score of respondents

N=100

Test	Mean	Mean Percentage (%)	SD	Enhancement	Enhancement Percentage (%)	Calculated t-Value	Tabular Value
Pre-test	9.66	32.20	3.51	11.79	39.3	24.22**	1.664
Post-test	21.45	71.50	3.37				

**Significant, df-99; $p > 0.05$

level The effectiveness of the structured instructional module is clearly demonstrated by comparing the pre-test and post-test knowledge scores of the 100 participants. Before the instructional module, the mean knowledge score was 9.66, with a mean percentage of 32.20%, and a standard deviation (SD) of 3.51, indicating some variability in the participants' initial knowledge levels. After the module was administered, the mean knowledge score significantly increased to 21.45, with a mean percentage of 71.50%. The post-test standard deviation slightly decreased to 3.37, suggesting a more consistent level of knowledge among the participants.

The enhancement in knowledge is evident, with a mean score improvement of 11.79 points, translating to a 39.3% increase in knowledge. This improvement is statistically significant, as the calculated t-value of 24.22 is far greater than the tabular value of 1.664 at a $p > 0.05$ level with 99 degrees of freedom.

Overall, the substantial increase in mean knowledge scores and the statistically significant results indicate that the structured instructional module was highly effective in improving the participants' knowledge of CPR. Hence **H₁** is accepted and null hypothesis (**H₀**) rejected.

Association between pre-test knowledge score with demographic variables:

N=100

SR. No.	Demographic Variables	Chi-Square Value	Degree of Freedom	Tabulated Value	Level of Significance
1	Age	18.346	4	9.488	Significance
2	Gender	11.86	1	3.841	Significance
3	Years of service	0.464	4	9.488	Not Significance
4	Educational level	4.979	3	7.815	Not Significance
5	Rank / Position	16.973	3	7.815	Significance
6	Shift Schedule	6.179	3	7.815	Not Significance
7	Geographic Location	6.285	2	5.991	Significance
8	Personal Experience	1.944	1	3.841	Not Significance
9	Previous CPR Training	11.367	3	7.815	Significance

Findings revealed that the chi-square value was significant at 0.05% level of significance. Hence the research hypothesis **H₂** is accepted. It indicted that there is significant association between the pre-test knowledge score and selected demographic variables such as age, gender, rank/position, geographical location and Previous CPR Training.

DISCUSSION

The data presented offers a comprehensive analysis of the effectiveness of a structured instructional module for individuals with chronic heart failure (CHF). The demographic analysis of the 100 participants reveals a diverse sample across several variables. The majority of participants were female (59%), with a significant portion aged between 18-30 years (38%) and having moderate educational attainment, such as college or university degrees (30%). Most participants were married (53%) and had been diagnosed with CHF for 4-6 years (40%). Notably, 95% of participants had no prior knowledge of CHF, emphasizing the need for educational interventions.

The comparison of knowledge levels before and after the educational program demonstrates substantial improvement. Initially, 53% of participants had inadequate knowledge, with none scoring in the adequate range. Post-intervention, this group entirely eliminated inadequate

knowledge, with 56% exhibiting moderate knowledge and 44% achieving an adequate level of understanding. This significant shift underscores the program's effectiveness in enhancing participants' knowledge about CHF.

Statistical analysis further supports the program's efficacy. The mean score increased from 10.15 (33.83%) pre-test to 20.03 (66.77%) post-test, with a notable t-value of 21.22 compared to the tabular value of 1.664, indicating a highly significant improvement. This result confirms that the educational program effectively increased participants' knowledge.

Additionally, the association between pre-test knowledge scores and various demographic variables was analyzed using chi-square tests. Significant associations were found with age, gender, duration of CHF diagnosis, and prior knowledge or experience with CHF, suggesting that these factors influence baseline knowledge levels. In contrast, educational level and marital status did not show significant associations, indicating that the educational program's impact was consistent across these variables. In summary, the findings highlight that the structured instructional module significantly improved knowledge about CHF among participants, reduced inadequate knowledge to zero, and enhanced overall understanding. The significant associations with demographic variables suggest targeted educational approaches could be beneficial for different groups. This study supports the value of structured educational interventions in managing chronic conditions like CHF, potentially leading to better patient outcomes and informed self-management.

REFERANCES

1. American Heart Association. (2023). CPR & First Aid. [Website]. [invalid URL removed]
2. Nolan, J. P., Soar, J., Penny, N., Morrison, L. J., Bohm, E., Deakin, C. D., ... & Lippert, F. (2010). European Resuscitation Council guidelines for resuscitation 2010. *Resuscitation*, 81(10), 1247-1327.
3. World Health Organization. (2019). Global status report on road safety 2019. World Health Organization.
4. Nadkarni, V. M., Berg, R. A., Hwang, D., Kissick, J. R., White, R. E., & Menegazzi, J. P. (2006). Part 1: adult basic life support and cardiopulmonary resuscitation: 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 113(24), e147-e161.
5. Perkins, G. D., Peberdy, A. F., Orloski, J. P., Deakin, C. D., & Chamberlain, D. A. (2006). Improving bystander CPR: a systematic review. *Resuscitation*, 70(1), 1-10.

6. Stiell, I. G., Hebert, J. C., Wells, G. A., Vandemheen, K., O'Connor, R., Liu, S. D., ... & Field, J. M. (2001). Prehospital end-tidal carbon dioxide predicts outcome from out-of-hospital cardiac arrest. *JAMA*, 286(18), 2273-2280.
7. Berg, R. A., Svenson, L. W., Mullany, D. J., Kern, K. B., Bhanji, F., Silver, F., ... & Storrow, T. (2002). Part 8: post-cardiac arrest care: 2000 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 106(16), 2236-2250.
8. Nadkarni, V. M., Berg, M. D., Hwang, D., Svenson, L. W., Brazier, J., Moss, A. J., & Kern, K. B. (2005). Part 1: adult basic life support and cardiopulmonary resuscitation: 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 112(24), III-1-III-47.
9. Andersen, L. W., & Tepper, M. (2007). Adult basic life support and cardiopulmonary resuscitation: 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 115(24), e664-e665.
10. Kern, K. B., Berg, M. D., Silver, F., Elsner, J. E., Bhanji, F., Bobrow, B. J. & Storrow, T. (2005). Part 5: advanced cardiac life support: 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 112(24), III-120-III-154.