Original Research Article

Paramedical staff knowledge regarding Revised Cardio Pulmonary Resuscitation guidelines working at rural tertiary care medical teaching hospital Kolar, Karnataka

Reshma B BacheGowda[1], Zeanath Cariena Joseph[1]*, Geetha S Srinivasa[1]

[1]Dept. of Medical Surgical Nursing, Sri Devaraj Urs College of Nursing, Karnataka, India

Abstract

Background: Cardiopulmonary Resuscitation (CPR) is a life-saving technique during cardiac arrest. Studies show that well-trained healthcare professionals can reduce cardiac fatalities in hospital setting. This study aimed to assess the Cardiopulmonary Resuscitation knowledge among Paramedical staff working at rural Tertiary care Medical Teaching Hospital.

Materials and Methods: A Descriptive survey design with purposive sampling technique involved 55 Paramedical staff from various support service departments. Data was collected by using validated Structured Knowledge Questionnaire. The study aimed to assess the knowledge levels of Paramedical staff on Cardiopulmonary Resuscitation (CPR).

Result: The study revealed that 56.3% of participants had adequate knowledge, 40% of participants had moderate knowledge. A very few 3.6% of participants had inadequate knowledge. These results suggest that, need for empowering and strengthening the knowledge of Paramedical staff in identification of cardiac arrest and initiation of Cardiopulmonary Resuscitation (CPR) by activation of code blue.

Conclusion: The study concludes that Paramedical staff have to be trained regularly on Basic Life Support (BLS) or Cardiopulmonary Resuscitation, which is crucial for responding during cardiac emergencies.

Keywords: Cardiopulmonary Resuscitation, Paramedical staff, Knowledge.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Cardiopulmonary Resuscitation (CPR) is an important life-saving medical interventionemployed in response to cardiac arrest.[1] It is designed to restore vital functions and maintain adequate blood flow to the essential organs when the heart suddenly stops beating effectively by chest compressions, ventilation and defibrillation. In general, research has demonstrated that when appropriately trained healthcare professionals (HCPs) administer CPR, it can lead to a decrease inin-hospital cardiac fatalities and related deaths.[2]

In-hospital cardiac arrest (IHCA) is the most urgent medical emergency and may lead to deathwhen not recognized and treated with prompt initiation and appropriate interventions by competentprovider. Generally, hospitals in the United States have been estimated to treat approximately 200,000 cardiac arrests annually (Bradley et al., 2019).[3] This is an unpredictable event that often occurs without any prior warning, mandating quick and competent intervention.[4]

The American Heart Association (AHA) plays a pivotal role in advancing the knowledge and practices related to cardiac resuscitation. As a preeminent organization in the realm of heart health,AHA has a rich history of conducting research, developing guidelines, disseminating critical information pertaining to cardiac resuscitation science, and preparing HCPs to have the knowledge, skills, and self-efficacy necessary to activate immediately in CPR.[5] However, although the 2020 AHA guidelines recommend renewing certification every two years, HCPs have expressed anxiety

*Corresponding author: Zeanath Cariena Joseph
Email: reshmab261999@gmail.com

about their required knowledge and CPR skills if they are exposed only in frequently to real CPR situations.[6]

Individuals in the community at least the health care professionals should know how to perform Cardiopulmonary Resuscitation as they encounter such situation very often. Health care professionals are expected to be competent to resuscitate from their first posting.[7] In the United States, BLS training has been recommended for all health care professionals since 1966, especially for those who are involved in resuscitation.[8]

A successful resuscitation requires an integrated set of coordinated actions, including the immediate recognition of cardiac arrest, the activation of an emergency response system, early chest compressions, rapid defibrillation, effective advanced life support, and integrated post- cardiac arrest care.[9] In resource-limited settings, responding promptly to a cardiac arrest poses considerable challenges due to lack of capacity to roll out trainings of healthcare providers; however even developed countries experience challenges with knowledge of, attitudes toward, andpractice relating to CPR Possessing the fundamental knowledge and skills, as well as the right mindset, is crucial for healthcare professionals if they are to deliver effective medical care.[10]

Cardiopulmonary Resuscitation (CPR) cases depend on whether they work in critical care units or general care units. Limited research has been conducted on the deterioration of CPR skills and knowledge among Paramedical staff in critical care and general care units. Hence it is necessary to train the professional and Non –professional staff.[11]

As reported Internationally Pakistan in 2019 to compare hospital wide code rates and mortality before and after the implementation of a Rapid Response Team (RRT).[12] The study was conducted at Shifa International Hospital, Islamabad, from January 21, 2016, to January 20, 2018.The triggers for the rapid response team were displayed on each floor. Staffs was trained on when and how to activate the Rapid Response Team.[13] The study concluded that the total number of mortality events before the implementation of the RRT was 1470(3.725%) and after the implementation of the RRT was 1529(3.805%) which was not significantly different (P =0.929).[14]

Based on the available literature with gaps identified and the personal experience. Thus, the investigator strongly felt the need to conduct interventional study to assess the knowledge regarding Cardiopulmonary resuscitation among Paramedical staff along with creating awareness and motivation on initiating CPR as a one of the means of reducing mortality as per the revised AHA Guidelines at various clinical settings.[15]

2. Objectives of the Study

1. To assess the level of knowledge regarding Cardiopulmonary Resuscitation (CPR) among Paramedical staff by using Structured Knowledge Questionnaire.
2. To determine the association between knowledge scores with selected sociodemographic Variables.

3. Methods and Methods

2.1. Design and samples

This study used a Descriptive research design and a non – experimental survey approach. The investigations occurred at R L Jalappa Hospital and Research Centre. The sample comprised 55 Paramedical staff from various supportive departments like Laboratory department, Pharmacy department, Radiology department, Radiotherapy department, CSSD and Laundry department. The samples consist of Diploma, Undergraduate and Postgraduate Paramedical staff. The samples were chosen based on inclusion and exclusion criteria. Those who are willing to participate included in the sample by the researcher. The study's researcher excluded people who were absent on the particular day. The participants were informed about the purpose and scope of the study. Participants were added to the survey after receiving informed consent. Consequently, the sample was chosen using the purposive sampling technique.

The study consist of different sections, as mentioned below:

1. Section I: Socio demographic Performa -It consists of socio- demographic variable as Age, gender, previous Training on Cardiopulmonary Resuscitation, Qualification, Year of experience, specific department allotted and designation.
2. Section II: It consists of Structure Knowledge Questionnaire on Cardiopulmonary Resuscitation(CPR) to measure the Paramedical staff overall level of knowledge and area wise knowledge. It comprised of 40 questions and divided as four divisions based on revised Cardio Pulmonary Resuscitation guidelines such as General Information, Primary Assessment, Circulation management and Use of Defibrillation and promotion of safety. Each correct response received one mark, while the incorrect response received zero. Eight experts and one statistician established the tool's content validity.
3. Section III: To evaluate the association between the knowledge scores with selected demographic variables of Paramedical staff by analyzing Chi-square test.

2.2. Data collection method

1. Step 1: A written permission was obtained from the Ethics Committee of Sri Devaraj Urs College of Nursing.
2. Step 2: A written permission was obtained from the Medical Superintendent and Paramedical in- charges on the particular respective department.
3. Step 3: Formal written consent was obtained from the study participants.

4. Step 4: Based on the inclusion criteria the study participants were selected.
5. Step 5: The data from the study participants was collected by using Structure Knowledge Questionnaire.

2.3. Statistical analysis

The collected data were entered and analyzed using a statistical tool for Statistical Package for Social Science (SPSS), version 20. In order to assess the association between the demographic factors and knowledge, the chi-square test was used.

4. Results

Section I: Socio demographic characteristics of paramedical staff.

Table 1: Distribution of baseline characteristics in terms of frequency and percentage. n = 55

Base line data	Frequency	Percentage
Age in years		
< 30 years	30	**54%**
31- 40 years	18	33%
41 -50 years	07	13%
Gender		
Male	40	**73%**
Female	15	27%
Qualification		
MSc	14	25%
BSc	24	**44%**
Diploma	10	18%
Others	7	13%
Year of experience		
<1 year	12	22%
1 -2 years	13	24%
2-3 years	6	11%
>3 years	24	**43%**
Specific department allotted		
Laboratory department	17	**31%**
Pharmacy department	17	**31%**
Radiology department	05	9 %
CSSD department	11	20 %
Radiotherapy department	03	5%
Laundry department	02	4%
Designation		
Lab technician	17	**31%**
Pharmacist	17	**31%**
Radiologist	03	5%
Radiographers	05	9%
Laundry staff	02	4%
CSSD staff	11	20%
Previous training programme related to Cardiopulmonary Resuscitation within 6 months of duration		
Yes	21	39%
No	34	61%

Section: 2

Table 2: Distribution of samples according to overall level of knowledge on Cardiopulmonary Resuscitation among Paramedical staff. n=55

Aspect	Knowledge scores	Range	Frequency	Percentage
Knowledge Level	Inadequate knowledge	≤50% (≤15)	02	4%
	Moderately adequate Knowledge	51-75% (16-25)	22	40%
	Adequate knowledge	>76% (26-40)	31	**56%**

Table 3: Area distribution of knowledge scores of Cardiopulmonary Resuscitation among Paramedical staff.

S.No.	Variables items	No. of Score	Max.	Range	Mean	SD	Mean%
1	General Information	1	12	3-12	8.6	2.4	30%
2	Primary Assessment	08	08	0 -8	6.0	1.5	20%
3	Circulation management	04	04	3 -11	7.2	2.3	27%
4	Use of Defibrillation and promotion of safety	04	04	1 -11	6.1	2.3	23 %

Section: 3

Table 4: Association of knowledge scores of Paramedical staffs of with selected demographic variables.

S.No	Variables	Below Median <23.5	Median and above >23.5	Chi square	Df	P Value -0.05	Inference
1	**Age (in Years)**						
	a) 20-30	13	18	0.95	1	0.32	**NS**
	b) 31-50	7	17				
2	**Gender**						
	a) Male	15	25	0.08	1	0.47	**NS**
	b) Female	5	10				
3	**Qualification**						
	a) Diploma, Under graduate	14	24	0.51	1	0.47	**NS**
	b) Postgraduate, Others	8	9				
4	**Year of experience**						
	a) < 1- 2 Year	14	11	6.16	1	0.01	***SS**
	b) 2 - >3 years	7	23				
5	**Specific department allotted**						
	Laboratory. Pharrmacy, Radiology department	10	26	0.14	1	0.14	**NS**
	b)CSSD, Radiotherapy, Laundry department	9	10				
6.	**Designation**						
	a)Lab technician, Pharmacist, Radiologist	10	26	0.14	1	0.14	**NS**
	b) Laundry staffs, Radiographers, CSSD staffs	9	10				
7.	**Undergone previous training programme related to CPR**						
	a) Yes	6	15	0.89	1	0.34	**NS**
	b) No	14	20				

Note: P<0.05, NS-Not, significant, SS statistically significant, df-degree of freedom,1(3.841).

5. Discussion

As per the objectives of the study knowledge regarding revised Cardiopulmonary Resuscitation among Paramedical staff results revealed that, as mentioned in **Table 2.** Majority 56% of the study participants had adequate knowledge, 40% have moderately adequate knowledge and inadequate knowledge have 4% of participants **Table 4.** Depicts the Association between Knowledge and Socio demographic variable like year of experience is statistically significant.

5.1. Limitations

The study was limited to Paramedical staff in a Rural Tertiary care Medical Teaching Hospital in Kolar and did not include a control group. The findings cannot be generalized due to

the small sample size, lack of intervention, and absence of an assessment of its effectiveness.

5.2. Recommendations

A similar study can be replicated with a larger sample across different types of settings and include a control group. It can be conducted using a true experimental study design, involving participants such as clerical staff, security personnel, and other support staff working in healthcare facilities.

6. Conclusion

The study concluded that while paramedical staff generally have a basic understanding of CPR, there are notable gaps in knowledge, especially regarding advanced techniques and updates to CPR guidelines. Regular training, simulations, and continuous education are essential to enhance their confidence and proficiency in performing CPR effectively. Further emphasis on practical skills and regular assessments can improve outcomes in emergency situations.

7. Source of Funding

None.

8. Conflict of Interest

None.

9. Acknowledgements

References

1. Neumar RW, Shuster M, Callaway CW, Gent LM, Atkins DL, Bhanji F, et al. Part 1: Executive Summary: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2020;142(16_suppl_2):S1-S572.
2. Pareek M, Parmar V, Badheka J, Nirmalyo L. Study of the impact of training of registered nurses in cardiopulmonary resuscitation in a tertiary care centre on patient mortality [Internet]. *Indian J Anaesth*. 2018;62(5):381.
3. Peberdy MA, Kaye W, Ornato JP, Larkin GL, Nadkarni V, Elizabeth Mancini M, et al. Cardiopulmonary resuscitation of adults in the hospital: a report of 14720 cardiac arrests from the National Registry of Cardiopulmonary Resuscitation. *Resuscitation*. 2003;58(3):297-308.
4. Panchal AR, Bartos JA, Cabañas JG, Donnino MW, Drennan IR, Hirsch KG, et al. American Heart Association. 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*. 2020;142(16_suppl_2):S366–S468.
5. Merchant RM, Topjian AA, Panchal AR, Cheng A, Aziz K, Berg KM, et al.Lavonas EJ, et al. Part 1: Executive summary. 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2020 Oct 20;142(Suppl 2):S337–57
6. Manono BK, Mustisya A, Chakaya J. Assessment of knowledge and skills of cardiopulmonary resuscitation among health workers at Nakuru County Referral Hospital. *Int J Community Med Public Health*. 2021;8(7):3224–30.
7. American Heart Association. (2025). Resuscitation guidelines. Retrieved March 2025, from https://www.heart.org/en/cpr
8. Hazinski MF, Nolan JP, Billi JE, Böttiger BW, Bossaert L, de Caen AR, et al. Part 1: Executive summary: 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation*. 2010;122(16 Suppl 2):S250–75.
9. Roshana S, Batajoo KH, Piryani RM, Sharma MW. Basic life support: knowledge and attitude of medical/paramedical professionals. *World J Emerg Med*. 2012;3(2):141.
10. Cummins RO, Ornato JP, Thies WH, Pepe PE. Improving survival from sudden cardiac arrest: the" chain of survival" concept. A statement for health professionals from the Advanced Cardiac Life Support Subcommittee and the Emergency Cardiac Care Committee, American Heart Association. *Circulation*. 1991;83(5):1832–47.
11. Chan PS, Khalid A, Longmore LS, Berg RA, Kosiborod M, Spertus JA. Hospital-wide code rates and mortality before and after implementation of a rapid response team. *JAMA*. 2008;300(21):2506–13.
12. Friesen J, Patterson D, Munjal K. Cardiopulmonary resuscitation in resource-limited health systems: considerations for training and delivery. *Prehosp Disaster Med*. 2015;30(1):97–101.
13. Kochhar S, Samagh N, Sharma J, Kaur A, Verma M. Knowledge and Skill Retention in First-Year MBBS Students After Basic Life Support Training: A One-Year Longitudinal Study. *BMC Med Educ*. 2024;24(1):971.
14. Saleem AF, Zaidi S, Haider SR. Experience of pediatric rapid response team in a tertiary care hospital in Pakistan. *Indian J Pediatr*. 2010;77:273–6.
15. American Heart Association. (2025). AHA Guidelines 2020 Update: CPR training and certification for healthcare professionals. Retrieved March 2025, from https://www.heart.org