Evaluation of Knowledge Regarding Cardiopulmonary Resuscitation among Health Care Workers in a Tertiary Care Center of Western Nepal

Sonika KC[1], Puja Sharma Dhital[1], Rupak K.C[2], Aayush Bist[2], Geeta Belbase[1], Binita Khatri[1], Ambika Dhakal Poudel[1]

[1]Department of Nursing; Rapti Academy of Health Sciences; Dang

2Department of Medicine; Rapti Academy of Health Sciences; Dang

CORRESPONDENCE

Puja Sharma Dhital
Lecturer
Department of Nursing
Rapti Academy of Health Science
Email: pujash789@gmail.com

ARTICLE INFO

Article History
Submitted: 28 November 20234
Accepted: 2 January 2025
Published: 8 February 2025

Source of support: None
Conflict of Interest: None

ABSTRACT

Introduction: Cardiopulmonary resuscitation is an essential life-saving procedure for a patient treated in emergencies. Nurses and paramedics are the first responders at the bedside of patients, hence adequate knowledge and skills are highly expected in this profession. This study was carried out to determine the level of knowledge regarding Cardiopulmonary Resuscitation among the health care workers working at Rapti Academy of Health Science, Dang, Nepal.

Method: This is a descriptive cross-sectional study design conducted among 148 health workers at Rapti Academy of Health Science, Dang, Nepal. Semi-structured self-administered questionnaire was used to assess the knowledge regarding cardiopulmonary resuscitation. The socio-demographic information and knowledge regarding cardiopulmonary resuscitation among healthcare workers was obtained. Descriptive statistics were presented in tables. The chi-square test was used to explore any possible association between various demographic variables and the level of knowledge in the respondents.

Results: Total 64.9% (n=79) of the respondents had an excellent level of knowledge about cardiopulmonary resuscitation. The mean knowledge score of the participants was 31.24 ± 3.08. There is significant association between their level of knowledge with work experience (p=0.02) and previous training (p=0.04) of the participants.

Conclusion: The study concluded that, still 35.1% of respondents had moderate level of knowledge about cardiopulmonary resuscitation. Therefore, need of further training and periodic workshop on cardiopulmonary resuscitation is required to help health workers improve upon quality of care while providing cardiopulmonary resuscitation.

Keywords: Cardiopulmonary Resuscitation; Healthcare workers; Knowledge

INTRODUCTION

Cardiopulmonary Resuscitation (CPR) is an essential life-saving procedure for a patient used in emergencies like cardiac arrest, near drowning, electrocution, and suffocation to revive individuals experiencing cardiac arrest or respiratory distress until professional medical assistance arrives. Studies has shown that immediate CPR after a cardiac arrest can double or triple the chances of survival and enhance the patient's prognosis by combining two essential techniques, chest compressions and rescue breathing.[1–3] Nurses and paramedics are the first respondents at the bedside of patients in the emergency ward, intensive care units (ICU), and other departments before the arrival of the doctor on duty, especially during night shifts. Therefore, adequate knowledge and skill in CPR are highly expected in this profession. Few studies conducted on Nepali nurses showed below 50 % score in their knowledge of CPR. Some studies showed that understanding and performance of CPR significantly increased in nurses post-training. [4,5] Lack of frequent assessment of knowledge and training in such life-saving skills has a huge impact on determining survival rates and outcomes of post-cardiac arrest.[6] . Hence this study is planned to assess the knowledge level of CPR among the health care workers working at Rapti Academy of Health Science (RAHS).

METHODS

This descriptive cross-sectional study was conducted among health care workers of Rapti Academy of Health Sciences (RAHS) during March to May 2023. Total enumerative sampling technique was used to collect the data where total sample size were 148 health care workers. The population of the study was all healthcare workers (HCWs) who was present at the time of study. The respondents were Nurses having a diploma or bachelor's degree in nursing i.e., proficient in the certificate level in nursing (PCL), bachelor of nursing science (BNS), and bachelor of science in nursing (BSC). Similarly, respondents from paramedics were Auxiliary Nurses and Midwives (ANM), Certified Medical Assistants (CMA), and Health Assistants (HA) working in various departments of RAHS. Nursing students, Lecturers and Professors from the nursing school, Doctors, and other staff were excluded from our study. Those participants with incomplete answers, those who didn't give consent to participate, and those who were not present on duty were also excluded from our study. Ethical approval was taken from the institutional review committee of the Nepal Health Research Council (NHRC, protocol registration number 566/2022 P). A semi-structured self-administered questionnaire was used to assess the knowledge regarding CPR among healthcare workers after doing pre-test in 10% of sample pouplation. The socio-demographic details like age, gender, academic background, previous training of the respondents was also taken into consideration during the study as the study's independent variable. The dependent variable was knowledge regarding CPR among HCWs. The questionnaire was divided demographic questions, questions related to the anatomy and physiology of the heart,cardiac arrest, and 23 questions related to CPR in part II . Total scores are converted into percentages and divided into pre-fixed grades as follows: >80% as excellent, 60–80% good and <60% poor7. The consent of the participants was taken both in verbal and in written form while distributing the questionnaire form. The confidentiality of all the participants was taken into account by not mentioned their name in questionnaire. The data were entered into Statistical Package for Social Sciences (SPSS) version 20 and then analyzed for descriptive and inferential statistics. With a confidence interval of 95%, the evaluated data were presented in the form of tables and charts. Chi-square test was used to explore possible association between various demographic variables and the level of knowledge in the respondents. The association is considered to be significant if the p-value is less than 0.05.

RESULTS

Table 1 shows that among 148 sample, 138 were females and 10 were male. Half (50%) of the study group were between the ages of 21 and 25. Concerning qualification, the majority of the respondents were Proficiency Certificate Level in nursing (PCL Nursing, n=104, 70.3%). All the health workers had heard about CPR, where most participants heard it for the first time from their course book (42.6%, n=63). More than half 53.4% (n=79) got the training during their learning and working phase. However, 94 respondents (63.5.) % were involved in the CPR procedure during their clinical services.

Table 1: Distribution of the respondents by Socio-Demographic Characteristics (n=148)

Respondents (n)		Responded (%)
Gender		
Male	10	93.2
Female	138	6.8
Professional Qualification		
PCL	104	70.3
BNS/BSc	33	22.3
HA	7	4.7
ANM & CMA	4	2.7
Working Experience in years		
Less than 1 year	21	14.2
1-2 year	41	27.7
2-3 year	18	12.2
More than 3 years	68	45.9
Heard About CPR		
Yes	148	100
The hospital has a CPR protocol		
Yes	95	64.2
No	53	35.8
Attended CPR training		
Yes	79	53.4
No	69	46.6

Table 2 shows that among all, 64.9% (n=96) of the participants had an excellent level of knowledge about CPR, and 52(35.1%) had moderate level of knowledge. The mean score with a standard deviation of the participants was 31.23±3.106, where the minimum and maximum scores were 22 and 37 respectively.

Table 2: Knowledge About CPR

Level of Knowledge	Score	Frequency (n)	Percentage (%)
Excellent	>80%	96	64.9
Moderate	60-80%	52	35.1
Poor	<60%	-	-

Pearson Chi square test was applied to study association between level of knowledge regarding CPR among nurses and sociodemographic variables. There was no statistical significance between level of knowledge regarding age and qualification. However, there was statistically significant association between level of knowledge with clinical working experience (p=0.02) and previous training (p=0.04).

Table 3: Association between level of knowledge with clinical working experience

Level of knowedge	less than 1 year	1-2yrs	2-3yrs	more than 3 yrs	Total	P value
Excellent	9	23	12	52	96	
Moderate	12	18	6	16	52	**0.020**
Total	21	41	18	68	148	

Table 4: Association between level of knowledge with previous training

Level of knowedge	Yes	No	Total	P value
Excellent	Excellent	57	39	**0.047**
Moderate	Moderate	22	30	
Total	Total	79	69	

Table 5: Association between level of knowledge with age of participants

Level of knowledge	below 20	21-25 years	26-30 years	30 and above	Total	P value
Excellent	0	45	43	8	96	**0.30**
Moderate	1	29	17	5	52	
Total	1	74	60	13	148	

Table 6: Association between level of knowledge with qualification of participants

Level of knowledge	below 20	21-25 years	26-30 years	30 and above	Total	P-Value
Level of knowledge	ANM/ CMA	HA	PCL	BNS/ BSc	Total	
Excellent	2	6	66	22	96	**0.60**
Moderate	2	1	38	11	52	

Table 7: Questions asked regarding Knowledge of CPR

S.N	Questions	F	%
1	The human heart consists of	143	96.6
2	The shape of the heart is	109	73.6
3	The heart remains within a cavity	146	98.6
4	The heart is covered by	140	94.6
5	The normal blood pressure is	146	98.6
6	The sounds of a normal heartbeat are	148	100
7	The arteries carry	120	81.1
8	The pacemaker of the heart is	148	100
9	The electrical activity of the heart will be monitored by	144	97.3
10	The normal heart rate is (beats/min)	141	95.3
11	Cardiac arrest means	147	99.3
12	Cardiac arrest is mainly caused by	142	95.9
13	Cardiac arrest is diagnosed by	121	81.8
14	Where will you check for pulse while cardiac arrest occurs	142	95.9
15	The immediate management of cardiac arrest is	142	95.9
16	CPR is used for	119	80.4
17	BLS stands for	132	89.2
18	ACLS stands for	141	95.3
19	What is the new sequence of CPR?	100	67.6
20	CPR is a technique that involves	82	55.4
21	While performing CPR, the place should be	111	75
22	Position while performing	139	93.9
23	While performing CPR, your chest compressions should be	90	60.8
24	How many compressions must be delivered within 1 minute when giving adult CPR?	86	58.1
25	Depth of compression in adults	57	38.5
26	If two rescuers, the ratio of compression is	112	75.7
27	What compression method should be used for an adult?	128	86.5
28	What compression method should you use for a child?	143	96.6
29	CPR is highly effective when it is performed	136	91.9
30	To prevent brain death, CPR should be started within	129	87.2
31	What is another option for oxygen intervention during CPR that is NOT mouth-to-mouth	101	68.2
32	Complications of CPR	126	85.1
33	The device used in CPR is	52	35.1
34	If you are performing CPR on a child and their chest does not rise with the first breath, what should you do?	119	80.4
35	After compressions, open the airway by	128	86.4
36	Drugs used during CPR	71	48
37	What mistake is common and sometimes deadly during the treatment of cardiac arrest?	80	54.1
38	The main goal of hemodynamic management after CPR is	107	72.3

DISCUSSION

In order to perform CPR effectively, it is crucial to have a thorough understanding and knowledge of the proper techniques needed8. This study examined the knowledge level of health care workers of RAHS regarding CPR. Among all the participants in this study, 93.2 % of the respondents were females. In this study, PCL nurses made up 70.3% of all included healthcare workers, followed by BNS/BSC nursing at 22.3%, Health Assistants (HA) at 4.7%, and CMA/ANM at 2.7%. Similar result was found in another study, where 52% were certificate level, 36% had a BN qualification, and 12% had a BSc. in Nursing. [9]

Finding of this study shows that among 148 respondents, 64.9% (n=96) had an excellent level of knowledge about CPR, and 52(35.1%) had moderate level of knowledge about CPR. This finding aligns with a similar study where 63% of the nurses had good knowledge about CPR[8.]

Similarly, one same result was found in study where 71.8% respondents had excellent level of knowledge7. Whereas, one contrast result shows that majority (77.8%) of the respondents had inadequate knowledge about cardiopulmonary resuscitation[10].

In this study, the majority of healthcare workers had worked for more than 3 years., and we found statistically significant association between professional working experience and the level of knowledge of CPR (p = 0.02). This finding is similar to study findings where association between knowledge and experience is highly significant (p=0.001)[11]. Whereas, contradictory result was found in another study where majority of participants having more than 5 years of work experience but no statistical significance to knowledge level (p > 0.001)[9].

Likewise, another research study showed that most nurses with 2-10 years of work experience had no statistically significant association[12]. In this study, all respondents were aware of CPR, where more than half (53.4%) of the respondents had received training about CPR. There is significant association between level of knowledge and previous training of respondents (p=0.04). This finding is similar to other findings where training and level of knowledge of participants were highly significant (p=0.001) and (p=0.02)[11,13.]

CONCLUSION

Cardiopulmonary resuscitation (CPR) plays a pivotal role in reducing the associated risk and mortality of the patients. Nurses and paramedical staff are the frontliners in healthcare institutions who are highly expected to deliver CPR in a protocol. Therefore, the study concluded that it's necessary to update their knowledge regarding the CPR through in-service education program and training on cardiopulmonary resuscitation to improve the knowledge of the health care workers in general care settings.

REFERENCES

1. Sasson C, Rogers MAM, Dahl J, Kellermann AL. Predictors of survival from out-of-hospital cardiac arrest a systematic review and meta-analysis. Circ Cardiovasc Qual Outcomes. 2010 Jan;3(1):63–81.

2. Adib Hajbagheri M, Afazel MR, Mousavi S gholam A, Noorizad S. Evaluation of knowledge and skills of medical personnels of Kashan hospitals regarding cardiopulmonary resuscitation. Feyz Medical Sciences Journal [Internet]. 2001 Oct 10 [cited 2023 Nov 29];5(3):96–103. Available from: https://feyz.kaums.ac.ir/article-1-375-en.html

3. Rajeswaran L, Cox M, Moeng S, Tsima BM, Tsima B. African Journal of Primary Health Care & Family Medicine. Prm Health Care Fam Med. 2018;10(1):1633.

4. Parajulee S, Selvaraj V. Knowledge of Nurses Towards Cardio-pulmonary Resuscitation in a Tertiary Care Teaching Hospital in Nepal. Journal of Clinical and Diagnostic Research [Internet]. 2011;5(8):1585–8. Available from: www.jcdr.net

5. Kuchaki Z, Taheri M, Esfahani H, Erfanifam T. The effect of CPR educational package on knowledge and performance of nurses working in intensive care units: A review study. J Family Med Prim Care. 2022;11(5):1677.

6. Singh B, Shankar PR. "Knowledge regarding cardiopulmonary resuscitation among health assistants in Nepal: A cross-sectional study." PLoS One. 2023 Nov 1;18(11 NOVEMBER).

7. Vural M, Koşar MF, Kerimoğlu O, Kızkapan F, Kahyaoğlu S, Tuğrul S, İşleyen HB. Cardiopulmonary resuscitation knowledge among nursing students: a questionnaire study. Anatolian journal of cardiology. 2017 Feb;17(2):140.

8. Tomas N, Kachekele ZA. Nurses' knowledge, attitudes, and practice of cardiopulmonary resuscitation at a selected training hospital in Namibia: a cross-sectional survey. SAGE Open Nursing. 2023 Nov;9:23779608231216809.

9. Shanti Bajracharya, Liza Nagarkoti. Knowledge Regarding Basic Life Support Among Nurses of a Tertiary Level Hospital of Nepal. Medical Journal of Shree Birendra Hospital. 2016;5(1):66–9.

10. Abebe TA, Zeleke LB, Assega MA, Sefefe WM, Gebremedhn EG. Health-care providers' knowledge, attitudes, and practices regarding adult cardiopulmonary resuscitation at Debre Markos Referral Hospital, Gojjam, Northwest Ethiopia. Advances in Medical Education and Practice. 2021 Jun 14:647-54.

11. Varughese S, D'Silva B. Knowledge and perspective on CPR among staff nurses. IOSR Journal of Nursing and Health Science. 2018;7(1):12-4.

12. Rajeswaran L, Ehlers VJ. Cardiopulmonary resuscitation knowledge and skills of registered nurses in Botswana. Curationis. 2014;37(1):1259.

13. Chaudhary GP, Sah K, Malla J, Das N, Chaudhary S, Chaudhary I, Pandey J. Knowledge regarding Basic Life Support among Health Care Workers of the Hospital of Nepal. Journal of Healthcare Engineering. 2023;2023(1):9936114.