

# Knowledge of Nurses Towards Cardio-pulmonary Resuscitation in a Tertiary Care Teaching Hospital in Nepal

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## ABSTRACT

**Background:** Nurses are knowledgeable in handling patients with life threatening conditions and hence are expected to be knowledgeable in performing cardio-pulmonary resuscitation (CPR) techniques.

**Aims:** To assess the knowledge of nurses towards CPR and to study the association between the nurses knowledge scores and selected demographic variables.

**Settings and Design:** A questionnaire-based, cross sectional study was performed at the College of Medical Sciences-Teaching Hospital, Bharatpur, Nepal, among the nurses who were working in the hospital during October, 2010.

**Methods and Materials:** A self-developed questionnaire containing 21 questions was distributed to the nurses and the filled questionnaires were analyzed as per the study objectives. A correct response was given a score of '1' and the wrong responses were given a score of '0'.

**Statistical Analysis Used:** Descriptive statistics was used to calculate the mean and the standard deviation and the Kurskal-Wallis test was used to compare the mean scores of the respondents with their demographic variables.

**Results:** Among the total 175 nurses, 70 of them responded with a response rate of 40%. The mean  $\pm$  SD age of the respondents was  $22.07 \pm 2.30$  years and their mean  $\pm$  SD duration of experience was  $11.45 \pm 2.67$  months. The worksites of the respondents varied and there were more than 15 different sites. A relatively high number ( $n = 8$ ; 11.43%) of the respondents were from the Department of Medicine. The mean  $\pm$  SD of the overall total knowledge scores was  $11.45 \pm 2.67$  (the maximum possible score was 21). There was no significant association between the total scores and age ( $p = 0.823$ ) and the duration of experience ( $p = 0.239$ ). However, there was an association between the worksites and the total scores ( $p = 0.013$ ).

**Conclusions:** In general, the knowledge of the nurses was found to be low, thus suggesting a need for educational interventions.

**Key Words:** Cardio-pulmonary resuscitation, Knowledge, Nurses, Nepal

## INTRODUCTION

Nurses are an integral part of the healthcare system and are perceived to be knowledgeable in providing institutional care to the patients. Cardio-pulmonary Resuscitation (CPR) is an important medical procedure which is needed for individuals who face sudden cardiac arrest. It is a combination of rescue breathing and chest compressions which is delivered to the victims who are thought to be in cardiac arrest [1]. Being important members of the healthcare team, nurses are deemed to possess the basic skills and expertise which are needed to perform CPR. It is documented that a timely performed CPR can largely prevent sudden death [2], and it is hence considered to be an important medical procedure. Many times, the doctor may not be present near the patient and hence the nurses are expected to provide this emergency care. To perform the procedure in a meticulous manner, the nurses should be knowledgeable and they should have expertise in the procedure. Contrary to their roles, studies from different countries have reported a poor knowledge among the nurses regarding CPR [3,4,5,6]. A study also reported that interventions can improve the nurses knowledge on CPR [7].

In Nepal, the basic nursing programs, the Diploma and Bachelor programs in Nursing lay adequate emphasis on the CPR techniques [8,9]. However, the retention of this knowledge among the nurses at the practitioner stage can be doubtful. The understanding of this knowledge by the nurses can help in planning for proper training and continuous nursing programs (CNE) for the practicing nurses.

The data regarding the nurses knowledge on CPR are lacking in Nepal. During literature review, we could not locate any studies which were related to this topic, carried out in Nepal. Hence, the present study was carried out.

## OBJECTIVES

The present study had the following objectives:

1. To assess the knowledge of nurses towards cardiopulmonary resuscitation
2. To study the association between the knowledge scores of the nurses and their selected demographic variables

## METHODOLOGY

**Study design:** A cross sectional study which evaluated the knowledge of the nurses regarding CPR.

**Study site:** College of Medical Sciences-Teaching Hospital (CMS-TH), a 900 bedded tertiary care teaching hospital with various specialty and super specialty departments.

**Study subjects:** The subjects were the nurses who were working in various departments. They either had a Diploma or a Bachelor's degree in Nursing.

**Inclusion and exclusion criteria:** All the nurses who were on duty during the study period were enrolled. The ones on leave were excluded from the study.

**Study tools:** A self designed questionnaire was used in the study. The questionnaire had 21 questions. This questionnaire was developed by the researchers in consultation with an expert in pharmacoepidemiology. The face and content validity was carried out through discussion among the researchers and the experts.

**Method of data collection:** The researchers personally went to the workstation of the study subjects and got the questionnaire filled by the nurses. Adequate time (nearly 30 minutes) was given to each respondent for filling the questionnaire.

**Data analysis:** The filled questionnaires were collected, the data were entered in a Microsoft Excel spreadsheet and they were analyzed as per the study objectives. The correct answers were given a score of '1' and wrong answers were given a score of '0', thus making the total possible score as '21'.

**Statistical analysis:** The SPSS version 16 was used to carry out the statistical analysis. The mean and standard deviation were calculated for the demographic variables and the Kruskal Wallis test was used to compare the mean scores with the respondents demographic variables.

## RESULTS

Demographic details of the respondents: Among the total 175 nurses, 70 of them filled the questionnaire (response rate of 40%) and all of them were females. A high percentage (84.29%; n=59) of them belonged to the age group of 20-25 years and the mean  $\pm$  SD age of the respondents was  $22.07 \pm 2.30$  years. The duration of experience of the respondents varied and the mean  $\pm$  SD duration of experience was  $11.45 \pm 2.67$  months. Further details regarding the demography of the respondents are mentioned in [Table/Fig 1].

Comparison of the respondents total scores with demography: The mean  $\pm$  SD of the overall total scores was  $11.45 \pm 2.67$ . There was no association between the knowledge scores of the respondents and 'age' ( $p=0.823$ ) and 'duration of experience' ( $p=0.239$ ). However, there was a statistically significant association between the knowledge scores and the 'worksites' of the respondents ( $p=0.013$ ). The details regarding the comparison of the respondents' total scores with demography are listed in [Table/Fig 2].

Responses of the nurses to individual statements: A high percentage (94.29%; n=66) of the respondents knew the components of 'ABC' as 'airway, circulation and breathing'. However, only 31.34% (n=22) of the respondents knew the CPR ratio of the infants. The detailed responses of the nurses to the individual questions are listed in [Table/Fig 3].

## DISCUSSION

Nurses are important members of the healthcare team. They play a vital role in the institutional care of the patients, including the ones who undergo emergency and intensive care. The patients at the emergency and intensive care units are likely to develop a cardiac arrest that can occur even in a normal individual who does not even have a cardiac problem. The present study evaluated the knowledge of nurses towards CPR (a technique that needs to be mastered by any nurse) in a Nepalese tertiary care teaching hospital. In general, the knowledge was found to be low, as was suggested by a mean  $\pm$ SD total score of  $11.45 \pm 2.67$ ; the maximum possible total score being 21. The findings showed a low percentage of knowledge among the respondents.

Parameters	Interval	Number	Percentage
Age (in years) (mean $\pm$ sd = 22.07 $\pm$ 2.30)	Less than 20	3	4.29
	20-25	59	84.29
	26-30	8	11.43
	More than 30	0	0.00
Duration of experience (in months) (mean $\pm$ sd = 11.45 $\pm$ 2.67)	Up to 12 months	41	58.57
	12-24 months	20	28.57
	25-36 months	3	4.29
	More than 36 months	6	8.57
Worksite of the respondents	Medicine	8	11.43
	Neurology	7	10.00
	Pediatrics	7	10.00
	Obstetrics and gynecology	6	8.57
	Surgery	6	8.57
	Cardiology	5	7.14
	Dialysis unit	5	7.14
	Orthopedics	5	7.14
	Urology/ Otorhinolaryngology	5	7.14
	Nephrology	3	4.29
	Neonatal intensive care unit	3	4.29
	Emergency	2	2.86
	Antenatal ward	2	2.86
	Dental department	1	1.43
	Dermatology	1	1.43
	Endoscopy	1	1.43
	Intensive care unit	1	1.43
Miscellaneous	2	2.86	

[Table/Fig-1]: Demographic distribution of the respondents (n=70)

Parameters	Interval	Mean $\pm$ SD scores	P Value
Age	Less than 20	11.66 $\pm$ 0.57	0.823
	20-25	11.33 $\pm$ 2.66	
	26-30	12.25 $\pm$ 3.28	
Duration of experience	Up to 12 months	11.31 $\pm$ 2.91	0.239
	13-24 months	11.35 $\pm$ 2.18	
	25-36 months	10.33 $\pm$ 2.08	
	More than 36 months	13.33 $\pm$ 2.42	
Worksite	Medicine	11.37 $\pm$ 2.61	0.013
	Neurology	12 $\pm$ 1.73	
	Pediatrics	11.42 $\pm$ 1.81	
	Obstetrics and gynecology	12.83 $\pm$ 2.22	
	Surgery	11.83 $\pm$ 1.16	
	Cardiology	9.8 $\pm$ 2.77	
	Dialysis unit	15 $\pm$ 1.41	
	Orthopedics	10.60 $\pm$ 2.07	
	Urology/ Otorhinolaryngology	8 $\pm$ 3.53	
	Nephrology	9.33 $\pm$ 3.21	
	Neonatal intensive care unit	11.66 $\pm$ 3.21	
	Emergency	10 $\pm$ 1.41	
	Antenatal ward	13 $\pm$ 1.41	
	Dental department	–	
	Dermatology	–	
Endoscopy	–		
Intensive care unit	–		
Miscellaneous	11.5 $\pm$ 0.70		

[Table/Fig-2]: Total scores of the respondents with demographic variables

Question	Number of respondents answered correctly	Percentage of respondents answered correctly
1. When do brain death occur after stoppage of heart beat	51	72.86
2. Cardiac arrest is confirmed by	35	50.00
3. Rescue breaths contain how much percentage of oxygen	34	48.57
4. ACLS include	45	64.29
5. ACLS include all of the following except	29	41.43
6. CPR means	64	91.43
7. CPR ratio for an adult is	28	40.00
8. CPR ratio for an infant is	22	31.43
9. Depth of chest compression is	28	40.00
10. Compression applied during CPR is	46	65.71
11. Fluid choice during CPR is	38	54.29
12. The most common complication of CPR is	25	35.71
13. Infant cardiac massage is given by using	48	68.57
14. Reasons for giving vasopressors during cardiac arrest is	45	64.29
15. How to open the airway during CPR	51	72.86
16. If an adult victim with spontaneous circulation requires support of ventilation, one should give rescue breath at the rate of	23	32.86
17. ABC includes	66	94.29
18. What is meant by AED?	35	50.00
19. Which of the following is not true about bag mask ventilation during CPR?	37	52.86
20. All of the following are signs of circulation except	26	37.14
21. Which of the following is not a technique to provide rescue breathing	26	37.14

**[Table/Fig-3]:** Responses of the nurses to individual statements

Note: Total number of respondents is 70

Many times, nurses take care of the patients when the doctor is not present in the ward and also in the community settings, the nurses have to play a major role in the emergency handling of the patients. Thus, CPR becomes a fundamental requirement of any nurse.

In general, the knowledge scores of the nurses were found to be low. Only very few nurses could answer the questions like the 'CPR ratio of an adult', the 'CPR ratio of an infant', etc. Our findings were similar to the findings from few other countries as well. A study from Bahrain had documented a poor knowledge among the nurses regarding CPR. It was also found that the ones with less qualification and experience had poor knowledge [3]. However, in our study, we could not compare the knowledge scores with the

educational qualifications of the respondents. Another study from Kuwait evaluated the nurses knowledge, attitude and experience regarding CPR [4]. This study also documented a poor knowledge among nurses regarding CPR. In addition, this study also pointed out an association between the years of experience and knowledge [4]. In our study, there was no association between the duration of experience and the knowledge scores. These suggest the absence of in-service education that might have helped in improving the knowledge of the Bahraini and Kuwait nurses unlike the Nepalese ones. In general, an in-service education for the nurses may be helpful in improving their knowledge towards the basic requirements and skills that are needed for handling specialized techniques. Another study from the Hainan province of China evaluated the community nurses knowledge on CPR and found them lacking in the essential knowledge. The authors also found the nurses from the rural areas to possess a still lower knowledge [5]. However, our study was conducted only in a single hospital and hence cannot be compared with the findings of this study.

## LIMITATIONS

The present study had a few limitations. Only 40% of the nurses who were working in the hospital were included, thus giving it a low response rate.

## CONCLUSION

The present study identified the nurses to have poor knowledge regarding the CPR techniques and it suggests the need for regular CNE programs. There was an association between the knowledge scores and the 'worksites' of the nurses. Although this study had few limitations, it is the first study to evaluate such an initiative in Nepal. The results of this study need to be discussed with the nursing educators and appropriate training in the vital areas has to be instituted for the practicing nurses.

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