

Research article

# Knowledge and Attitude towards Cardiopulmonary Resuscitation among Students of a Dental College

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## ABSTRACT

**Background and Objectives:** Survival after cardiopulmonary arrest depends on early and effective cardiopulmonary resuscitation (CPR). Demand for courses of basic life support (BLS)/CPR is increasing worldwide. Till date, there have been little reports regarding CPR knowledge and attitude among the Nepalese dental health personnel. This study aimed to assess the knowledge and attitude towards CPR among undergraduate dental students, interns and postgraduate residents studying at Kantipur Dental College and Teaching Hospital (KDCH), Kathmandu, Nepal.

**Material and Methods:** A descriptive cross-sectional study was conducted among 243 dental students studying at KDCH. Data was collected through a self-administered semi-structured questionnaire. Collected data was organized, recorded, coded and then analyzed using Statistical Package of Social Science (SPSS) version 16. Descriptive statistics was used to compute mean, percentile, standard deviation and one way ANOVA test was done to compare the mean knowledge score between different academic levels of the students at 95% level of significance.

**Results:** The mean knowledge and attitude score towards CPR among the dental students was  $8.05 \pm 2.85$  and  $4.63 \pm 0.51$  respectively. Out of total students, only few (5.8%) had adequate knowledge whereas all (100%) had a positive attitude towards CPR. The mean score for the pre-clinical students ( $7.26 \pm 2.38$ ) was significantly ( $p=0.001$ ) lower than clinical students ( $8.44 \pm 3.23$ ), interns and residents ( $8.85 \pm 2.54$ ).

**Conclusion:** The present study showed inadequate knowledge regarding CPR among dental students of different academic levels but they have a positive attitude towards it. The integration of CPR in the early year of the curriculum along with regular training of CPR in succeeding years will enhance their knowledge.

**Keywords:** Attitude, Cardiopulmonary resuscitation, Dental students, Knowledge.

## INTRODUCTION

Cardiopulmonary arrest is a medical emergency; if not treated immediately, can lead to sudden death. However, prompt and

effective medical intervention makes the survival possible [1]. Cardiopulmonary resuscitation (CPR) is a simple but effective lifesaving procedure for a person who is suffering from sudden cardiopulmonary

arrest. It comprises two basic components: artificial breathing and chest compression to normalize blood circulation to the brain and vital organs [2].

It is documented that more than two third of all out of hospital cardiac arrests occur at home resulting in survival rate less than 8% [3, 4]. Therefore, it is very important that all adults in the community, at least health workers should be skilled in performing CPR and should be regularly updated to CPR procedures in order to save lives at critical situations [1]. Health care personnel are expected to be aware about basic life support procedures and competent to resuscitate. Both knowledge and attitude towards CPR is a major determinant in success of resuscitation, and plays a vital role in the final outcome in an emergency situation. As other health care professionals, dental professionals also face medical emergencies due to frequent administration of local anaesthesia, dental treatments of medically compromised patients, dental care of elderly patients and fear of unknown surgical operations [5, 6]. A study conducted in Australia among dental practitioners reported that, 1 in 7 practitioners had to perform resuscitation [7]. Another study from New Zealand, also showed that 65% dental practitioners had experienced at least one medical emergency in their practice in the last one decade [8]. The incompetence to deal with these medical emergencies can lead to feelings of insecurity, tragic consequences and legal complications [6]. Thus, dental professionals should have sound knowledge about basic life support to competently manage medical emergencies arising during their practice.

But, different surveys have reported that dental students, interns and dental practitioners have inadequate knowledge of CPR and lack confidence in handling medical emergencies [9-13]. Although there is inadequate knowledge regarding basic life support, they had positive attitude towards acquiring it [14]. To the best of our knowledge, there is no existing literature

available regarding the knowledge and attitude towards CPR among Nepalese dental students. Thus, this study was conducted to assess the present knowledge and attitude towards CPR among undergraduate dental students, interns, postgraduate residents studying at Kantipur Dental College and Teaching Hospital (KDCH), Kathmandu, Nepal.

## **MATERIAL AND METHODS**

This is a descriptive cross sectional study conducted in Kantipur Dental College and Teaching Hospital (KDCH), Kathmandu, Nepal from March 2020 to June 2020. Dental students (first to final year), interns and postgraduate residents studying in KDCH were included in the study. The ethical clearance was obtained from the Institutional Review Committee (IRC) of KDCH before conducting the study. Participation in this study was voluntary and informed consent was taken from the participants prior to data collection. Participants were ensured about the maintenance of their confidentiality. A non-probability purposive sampling technique was used to collect data. A semi-structured questionnaire was developed through rigorous literatures [15, 16] and consultation with the experts related to the field. It was prepared in simple and understandable English language. Questionnaire was divided into 3 parts; socio-demographic information of students, multiple choice questions related to the knowledge about CPR and questions related to the attitude of students towards CPR. Pretesting was done for validity of the questionnaire.

An online survey was done for the data collection due to the corona virus disease of 2019 (COVID-19) pandemic situation. The knowledge score for each participant was calculated with a maximum possible score of 17 and minimum score of 0 and categorized into three levels of knowledge on the basis of the score as : inadequate (<50%), satisfactory (50%-75%) and adequate (>75%). Attitude regarding CPR was measured on five point

Likert scale i.e. strongly agree, agree, uncertain, disagree and strongly disagree. The attitude was categorized into 2 levels on the basis of attitude score as: positive and negative attitude.

Collected data was organized, recorded, coded and then analyzed using Microsoft Excel and Statistical Package of Social Science (SPSS) version 16. Descriptive statistics was used to compute mean, percentile, standard deviation and one way ANOVA test was done to compare the mean of knowledge score between different academic level of the students (Pre-clinical, clinical, interns and residents) at 95% level of significance.

## RESULTS

Of the total participants (n=243), 72.8% were females and 27.2% were males with the mean age of  $21.81 \pm 2.9$  years. There were almost equal numbers of participants in the pre-clinical (first and second year) and clinical level (third, fourth and fifth year) and few were interns and residents comparatively (Table 1).

The mean knowledge score was  $8.05 \pm 2.85$  (Table 2) and the mean attitude score was  $4.63 \pm 0.51$ . Among the total 243 participants,

more than half (59.3%) of the participants had inadequate knowledge, about one third (35%) had satisfactory and only a few (5.8%) had adequate knowledge regarding CPR (Table 2). All of the students had positive attitudes regarding CPR training.

There were very few participants who had ever taken CPR training (Table 3) and it was significantly associated with the knowledge level of the participants (Table 4). However, there was no significant association between knowledge level with gender and age.

A one way ANOVA between subjects was conducted to compare the effect of different academic level conditions. There was a significant effect of academic level on knowledge score [F (2, 240) = 6.98, p = 0.001] (Table 5). Post hoc comparisons using the Tukey HSD test indicated that the mean score for the preclinical students was significantly lower than clinical students (p = 0.009), interns and residents (p = 0.004). However, the knowledge score of clinical students was not significantly different from interns and residents (p=0.680). The result suggests that the knowledge score increases with the increase in academic level.

As shown in Table 6, almost all of the participants (99.6%) thought that dentists, faculties and dental students should know

**Table 1: Distribution of gender in different academic level (n, %)**

Gender	Pre-clinical	Clinical	Interns and residents	Total
Male	15 (15.3)	27 (27.8)	24 (50)	66 (27.2)
Female	83 (84.7)	70 (72.2)	24 (50)	177 (72.8)
Total	98 (100)	97 (100)	48 (100)	243 (100)

**Table 2: Distribution of Knowledge level of the participants**

Knowledge level	Inadequate (n, %)	Moderate (n, %)	Adequate (n, %)	Mean score (mean $\pm$ SD)
	144 (59.3)	85 (35)	14 (5.8)	8.05 $\pm$ 2.85

**Table 3: Distribution based on previous CPR training received in different academic level (n, %)**

Previous CPR Training received	Pre-clinical	Clinical	Interns and residents	Total
Yes	1 (1.0)	4 (4.1)	7 (14.6)	12 (4.9)
No	97 (98.9)	93 (95.9)	41 (85.4)	231 (95.1)
Total	98 (100)	97 (100)	48 (100)	243 (100)

about CPR. Similarly, most of the respondents (97.9%) believed that CPR should be kept in the undergraduate BDS curriculum. A large number of participants (92.2%) were reluctant to perform CPR to a stranger.

## DISCUSSION

The benefit of early and effective CPR/BLS is well established. However, in developing countries like Nepal, resuscitation training is not routine. In this study, only few (5.8%) of

**Table 4: Association of CPR training received and knowledge level**

Knowledge level	CPR training received		$\chi^2$ (likelihood ratio)	p value
	Yes	No		
Inadequate	2	142	9.99	0.007*
Moderate	8	77		
Adequate	2	12		

\* Significance at  $p < 0.05$

**Table 5: One way ANOVA to compare the mean knowledge score of all academic level**

Academic level	Number	Mean score	F value	p value
Pre-clinical	98	7.26 $\pm$ 2.38	6.978	0.001*
Clinical	97	8.44 $\pm$ 3.23		
Intern and residents	48	8.85 $\pm$ 2.54		

\* Significance at  $p < 0.05$

**Table 6: Distribution of attitude of participants (n, %)**

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Dentists, faculties and dental students should have knowledge about CPR	206 (84.8)	36 (14.8)	1 (0.4)	0 (0)	0 (0)
Dentist, faculties and dental students should be skilled in performing CPR	175 (72)	65 (26.7)	3 (1.3)	0 (0)	0 (0)
CPR should be kept in the BDS curriculum of Dental science	166 (68.3)	72 (29.6)	4 (1.6)	1 (0.4)	0 (0)
I will perform CPR to a stranger if needed.	135 (55.6)	89 (36.6)	18 (7.4)	1 (0.4)	0 (0)
I am interested to acquire training of CPR	185 (76.1)	52 (21.2)	4 (1.6)	1 (0.4)	1 (0.4)
Performing CPR is more harmful to the patients rather than being beneficial	2 (0.8)	13 (5.3)	79 (32.5)	94 (38.7)	55 (22.6)
CPR does not save a patient's life.	2 (0.8)	7 (2.9)	54 (22.2)	110(45.3)	70 (28.8)
Performing CPR is simply a waste of manpower and time	3 (1.2)	3 (1.2)	38 (15.6)	81 (33.3)	118 (48.6)
CPR training is not useful for students	2 (0.8)	6 (2.5)	35 (14.4)	54(22.2)	146 (60.1)

the participants had adequate knowledge revealing severe lack of knowledge regarding CPR, which is supported by similar previous findings [9, 12]. These findings suggest that education on CPR in the dental curriculum in Nepal seems inadequate, therefore need to be improved and updated. In contrast to this study, a previous study found an average knowledge about CPR among dental interns and postgraduate students [6].

The knowledge score is significantly associated with the academic level of the students as well as previous involvement in CPR training. Poor knowledge in this study group might be due to lack of prior involvement in CPR training, which was only (4.9%). A study by Sharma et al, among medical and dental interns reported that lack of training of BLS/CPR was regarded as the most common hindering factor responsible for poor BLS knowledge by interns [17]. This advice a mandatory pre service CPR training for dental students, interns and residents will enhance the knowledge as well as practice of CPR, which will be very beneficial for the patients in an emergency situation.

Our study found that the knowledge level was significantly different in students of different academic level. The mean score for the preclinical students was significantly lower than clinical students, interns and residents. The result suggests that the knowledge score increases with the increase in academic level which is similar to the finding of a previous study [9]. This could be attributed to the fact that clinical students have some theoretical classes in some subjects to teach medical emergency management which could be the reasons for higher scores among clinical students. However, the knowledge score between clinical students was not significantly different from interns and residents ( $p = 0.680$ ). CPR might not be part of some postgraduate practice which could have decreased the overall knowledge as well as practice of postgraduate residents regarding CPR. This stresses the need for compulsory continuing education/ training programs to

be conducted on a regular basis. In contrast to our findings, a study conducted in India, concluded that postgraduate students and faculties had significantly poorer knowledge when compared to undergraduate students and dental interns [2].

In the present study, very few (4.9%) participants had undergone CPR training and it was significantly associated with the knowledge level of the participants ( $p = 0.007$ ). Other studies also reported that knowledge of the trained personnel was better than those of untrained ones [18, 19]. The low percentage observed in this study is probably due to the fact that formal CPR training and re-training is not incorporated into the dental curriculum in the Universities and dental in-service education or dental practices in Nepal. In a study among health care professionals in Nepal only 22% had received training within a period of 5 years, [18] which is in contrast to the most developed countries such as New Zealand, where up to 74% of a lay adult population had received prior training in CPR [20].

We attempted to correlate knowledge of CPR with some characteristics of the participants and found no association of CPR knowledge with age and gender. However, it is associated with the academic level, previous involvement in CPR training. A previous study also reported that the knowledge of CPR is not related to age, gender, academic qualification and working institution [3].

The total mean score regarding attitude among students was  $4.63 \pm 0.51$ . All of the participants had a positive attitude towards CPR, importance of CPR training in terms of integration in the curriculum and in-service education. Other studies also reported a positive attitude regarding CPR among dental students [6, 14]. Almost all of the participants believed that dentists, faculties and dental students should know about CPR and it should be kept in the undergraduate BDS curriculum. Alotaibi et al in their study reported that 93.6% of dental students and staff thought that CPR should be included in

the undergraduate dental curriculum. Another previous study among dental and medical interns showed that all of the students (100%) favoured inclusion of CPR courses in their academic curriculum [17].

## CONCLUSION

There is inadequate knowledge regarding CPR among dental students of different academic levels but they have a positive attitude regarding the CPR training. The knowledge score increases with the increase in the academic level. There is a significant association between knowledge score and previous CPR Training received but there is no association with the gender and age. CPR should be integrated from the early year of the dental curriculum. Workshops/training regarding CPR on a regular basis should be focused for dental students, interns and residents.

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## REFERENCES

1. Vural M, Koşar MF, Kerimoğlu O et al. Cardiopulmonary resuscitation knowledge among nursing students: a questionnaire study. *Anatol J Cardiol*. 2017;17(2):140-5.
2. Reddy S, Doshi D, Reddy P, Kulkarni S, Reddy S. Awareness of Basic Life Support Among Staff and Students in a Dental School. *J Contemp Dent Pract*. 2013;14(3):511-7.
3. Amatya M, Gorkhali B. Cardiopulmonary resuscitation: knowledge amongst Nepalese health personnel. *JMCJMS*. 2015;3(1):25-30.
4. Sasson C, Rogers MA, Dahl J, Kellermann AL. Predictors of survival from out-of-hospital cardiac arrest: a systematic review and meta-analysis. *Circ Cardiovasc Qual Outcomes*. 2010;3(1):63-81.
5. Grzanka A, Misiółek H, Filipowska A, Miśkiewicz-Orczyk K, Jarząb J. Adverse effects of local anaesthetics-

- allergy, toxic reactions or hypersensitivity. *Anestezjol Intens Ter*. 2010;42(4):175-8.
6. Narayan DP, Biradar SV, Reddy MT, Bk S. Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city India. *World J Emerg Med*. 2015;6(2):118-22.
7. Chapman PJ. Medical emergencies in dental practice and choice of emergency drugs and equipment: A survey of Australian dentists. *Aust Dent J* 1997;42:103-8.
8. Broadbent JM, Thomson WM. The readiness of New Zealand general dental practitioners for medical emergencies. *N Z Dent J*. 2001;97(429):82-6.
9. Goel S, Chaudhary G, Marria G. Knowledge and attitude toward "basic life support" in dental college. *Indian J Dent Sci*. 2017;9:73-8.
10. Sangamesh NC, Vidya KC, Pathi J, Singh A. Awareness, attitude, and knowledge of basic life support among medical, dental, and nursing faculties and students in the university hospital. *J Int Soc Prev Community Dent*. 2017;7(4):161-67.
11. Albelaihi HF, Alweneen AI, Ettish A, Alshahrani FA. Knowledge, attitude, and perceived confidence in the management of medical emergencies in the dental office: A survey among the dental students and interns. *J Int Soc Prev community Dent*. 2017;7(6):364-69.
12. Chandrasekaran S, Kumar S, Bhat SA. Awareness of basic life support among medical, dental, nursing students and doctors. *Indian J Anaesth*. 2010;54(2):121-26.
13. Al-Shamiri HM, Al-Maweri SA, Shugaa-Addin B, Alaizari NA, Hunaish A. Awareness of basic life support among Saudi dental students and interns. *Eur J Dent*. 2017;11(4):521-5.
14. Alotaibi OA, Alamri F, Almufleh L, Alsougi W. Basic life support: Knowledge and attitude among dental students and staff in the College of Dentistry, King Saud University. *Saudi J Dent Res*. 2016;7:51-6.
15. Almesned A, Almeman A, Alakhtar AM et al. Basic life support knowledge of healthcare students and professionals in the Qassim University. *Int J Health Sci*. 2014;8(2):141-50.
16. Mohan M, Sharma SM, Shetty T, Gupta P. Awareness of basic life support (BLS) among Dental interns and Dental practitioners. *NUJHS*. 2015;5(3):14-8.
17. Sharma R, Attar NR. Adult basic life support (BLS) awareness and knowledge among medical and dental interns completing internship from deemed university. *NUJHS*. 2012;2(03):06-13.
18. Shrestha R, Batajoo KH, Piryani RM, Sharma MW. Basic life support: knowledge and attitude of medical/paramedical professionals. *World J Emerg Med*. 2012;3(2):141-45.

19. Abbas A, Bukhari SI, Ahmed F. Knowledge of first aid and basic life support amongst medical students: a comparison between trained and un-trained students. JPMA. 2011;61:613-16.
20. Larsen P, Pearson J, Galletly D. Knowledge and attitudes towards cardiopulmonary resuscitation in the community. N Z Med J. 2004;117(1193):U870.

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