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Cardiopulmonary resuscitation: knowledge amongst Nepalese health personnel

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ABSTRACT

Background and Objectives: The role of effective basic life support (BLS) and cardiopulmonary resuscitation (CPR) is established. Reports on CPR knowledge assessment in Nepal are few and underline the gross lack of CPR knowledge.

Material and Methods: A cross-sectional descriptive study was conducted among residents, students, and teachers in a few Nepalese health institutions. A questionnaire based on BLS guidelines 2010 was used, incorporating total 30 questions.

Results: Total 145 complete responses (63 females, 82 males) were obtained and analyzed. Mean and median of correct answers was 18 out of 30 (60%, range 3-26); 9% could identify the correct sequence of action from a given set of 7 CPR steps. By ANOVA, score correlated significantly with the background of person (scores highest 19 in 'clinical' group and 18 in 'dentistry' to 16.38 in 'nursing' and 15.09 in 'non-clinical'; p=0.000) but not with other variables (sex, age, designation, academic degree, institution, and previous CPR training).

Conclusion: Lack in CPR knowledge and awareness are reported worldwide. Findings of this study are similar. Although those with clinical background had better knowledge, poor correlations with other variables indicate lack of importance being given to CPR knowledge and skill by most people, even those working in big health institutions of the country.

Key Words: Basic life support (BLS); cardiopulmonary resuscitation (CPR); health personnel; knowledge; Nepal.

INTRODUCTION

In a person who is experiencing sudden cardiac arrest, cardiopulmonary resuscitation (CPR) is an emergency procedure by which intact brain function can be preserved manually until definite measures can be taken to re-establish spontaneous blood circulation and respiration. The components of CPR are chest compressions and artificial breathing [1]. It is estimated that about 75-80% of all out-of-hospital cardiac arrests occur at home, so being trained to perform CPR can mean being able to save the life of a family member [2]. Therefore, it is desirable that even individuals in the community are trained to

perform CPR as they are usually the people who encounter such situations at the earliest. In case of health professionals, they should be knowledgeable and competent in basic life support (BLS) including CPR. They are expected to be competent in resuscitation from their earliest days of posting. It is an understandably mandatory skill for all the health professionals, not to exclude medical students and teachers.

There are several studies reporting the levels of knowledge and skill of CPR in different countries and professions, especially health professionals. The knowledge of CPR is found to be poor and unsatisfactory in the general public, even in the previously trained people [3]. Many studies observed that the knowledge about CPR and skill of performing CPR is inadequate in most of the participants such as medical students, nursing students, dental students, medical officers, and registered nurses [4 - 11]. Even the clinicians and full-time medical practitioners are found to be lacking adequate level of CPR knowledge and skill [12].

Few studies have been reported regarding the knowledge and skill of CPR among the Nepalese general population, health care providers, and other professionals. One study conducted in the nurses reported less than 50% score in knowledge of CPR [13]. The average health personnel was found to lack adequate knowledge in CPR/BLS in another study conducted in medical/paramedical professionals such as house officers, health assistants, nurses, basic and dental science faculty members, and faculty members [13].

This study aimed at assessing the knowledge of CPR in the personnel in medical institutes but related to different subjects and backgrounds.

MATERIALS AND METHODS

Study subjects: Teaching faculties of clinical (MBBS, Nursing) or non-clinical (MSc, BDS) background and residents of post-graduate programs in Basic Medical Sciences were considered for participation in the study. Most of the participants were involved in training the first and second year undergraduate medical students in the subjects of Anatomy, Biochemistry, Community Medicine, Microbiology, Pathology, Pharmacology, and Physiology.

Study area and duration: The study was conducted in two medical colleges in Kathmandu, Nepal – Nepal Medical College, Attarkhel, Jorpati and Maharajgunj Medical Campus, Maharajgunj in the period of May-August, 2014.

Study tools: A questionnaire was prepared by the authors to gather information of participants about demographic information, professional qualification and experience, and knowledge and experience of CPR. To assess knowledge of CPR, multiple choice questions were devised - three questions with multiple correct responses, nine questions with single correct response, and one question requiring correct ordering of the listed steps of CPR. The questions were based on 2010 European Resuscitation Council Guidelines for BLS of the adult (table 1). The questionnaire was validated by a pre-test.

Data collection and ethical considerations: The authors went to respective departments and distributed the questionnaires to participants and re-collected later according to participants' convenience. Participants had the freedom of providing or withholding any information. Return of the questionnaire was considered as consent to participate apart

from prior verbal consent. Participant's identity was not revealed in any state of data collection, analysis, and presentation.

Data analysis: Collected data was recorded, tabulated, and analyzed by Microsoft Excel 2007 and SPSS version 16.0. Groups were compared by ANOVA, setting level of significance at 95%.

RESULTS

One hundred and forty five responses that were completed for assessment of knowledge of CPR were received and analyzed. Mean age of participants was 28.65 years (±5.5) and males comprised 56.6% (n=82). Four were senior faculties (associate professors, 2.8%), 25 were junior faculties (lecturers and assistant professors, 17.2%), 16 were medical officers and interns (11%), 59 were residents (40.7%), and 41 were others (not specified, 28.3%).

The respondents constituted heterogeneous groups with respect to designation, highest academic degrees, and field of study or specialty (table 1).

Out of 145 complete responders, we obtained minimum 3 and maximum 26 correct responses while none could give all 30 correct responses (table 2). The mean and median correct number of responses was 18 (60.0%). When presented with a set of 7 random steps of CPR, only 13 (9%) could identify the proper sequence.

Group comparison showed that the clinical and dentistry groups were the most knowledgeable while non-clinical groups (basic sciences and nursing) were most ignorant (table 3). Also, in the non-clinical, nursing, and non-specified groups, least numbers had previous CPR training. It was observed that previous training of CPR had significant correlation to the scores in knowledge (F=6.62, p=0.011). Comparison by other characteristics such as age, highest academic degree, designation ranks, gender, and institute of working showed non-

Table 1: Characteristics of respondents				
Characteristics	Groups	Number	Percentage	Cumulative frequency
Designation	Senior faculty	4	2.8	2.8
	Junior faculty	25	17.2	20.0
	Medical officer & intern	16	11.0	31.0
	PG resident	59	40.7	71.7
	Others	41	28.3	100.0
Highest academic degree obtained	Undergraduate student	17	15.6	15.6
	MBBS	50	45.9	61.5
	BDS	8	7.3	68.8
	Master	30	27.5	96.3
	Other	4	3.7	100.0
Background	Non-clinical	23	15.9	15.9
	Clinical	92	63.4	79.3
	Dentistry	8	5.5	84.8
	Nursing	8	5.5	90.3
	Not specified	14	9.7	100.0

Table 2: Summary of questionnaire and correct response for each item

SN	Question	Number of correct responses	% of total 145 responses
1	Sudden cardiac arrest is recognized by which of the following presentations?		
a	Unresponsive	86	59
b	Having convulsions	140	97
c	Irrelevant talking	140	97
d	Complaining of great, excruciating pain	110	76
e	No breathing	48	33
f	Sweating profusely	100	69
g	Making moaning sounds	128	88
h	Abnormal breathing, i.e., only gasping	47	32
i	No pulse palpated within 10 seconds	90	62
2	Which is the correct sequence of CPR?	74	51
3	Which are the components of CPR?		
a	Chest compression	137	94
b	Leg-up, head-down positioning	134	92
c	Airway opening	104	72
d	Mouth-to-mouth breathing	101	70
e	Establishing an IV line to give intravenous fluids and drugs	116	80
4	What is the correct site for chest compression?	62	43
5	The recommended depth of chest compression for adults.	71	49
6	If trauma to neck is not suspected, airway should be maintained by the process of -	99	68
7	The recommended action of resuscitation for untrained rescuer or not proficiently trained rescuer is	44	30
8	The site for checking pulse in an apparent cardiac arrest is -	124	86
9	First, airway should be cleaned by -	99	68
10	With single rescuer, compression to ventilation ratio is -	100	69
11	The correct mouth-to-mouth breathing includes -		
a	Visible chest rise	111	77
b	About 1 second per breath	27	19
c	One breath every 6-8 seconds	103	71
d	Allow complete chest recoil between compressions	45	31
e	Look, listen, and feel for patient's breathing	63	43
f	Not necessary to synchronize with chest compression (asynchronous)	10	7
12	The rate of chest compression should be -	84	28
13	Arrange the following steps of CPR in correct sequence -	13	9
a	Give 30 chest compressions		
b	Call for help		
c	Open the airway and give 2 breaths		
d	Check for no breathing or no normal breathing		
e	Check the patient for responsiveness		
f	Check the pulse for no longer than 10 seconds		
g	Resume compressions		

significant differences.

Table 3: Comparison of previous CPR training and mean knowledge scores in different background groups			
Background	Number	Received CPR training No (% of total)	Correct responses (mean±SD)
Non-clinical (basic sciences)	23	9 (39.13)	15.09 ± 4.77
Clinical (MBBS)	92	64 (69.57)	19 ± 3.63
Dentistry	8	4 (50.0)	18 ± 2.62
Nursing	8	2 (25.0)	16.38 ± 2.39
Others and non-specified	14	4 (28.58)	17.14 ± 4.49
Total	**145**	**83 (57.24)**	**18 ± 4.05**
ANOVA			**F=5.451, p=0.000**

DISCUSSION

The community looks up to a person who is associated to a medical institution in health-related issues – emergency or otherwise. While clinicians should be knowledgeable and skilled in the basic life support technique, medical students should also learn the skills. The same is also expected from those associated with medical institutions, especially so in case of teachers of the medical college.

This study assessed the knowledge regarding CPR in different personnel associated with a medical college. The mean score of correct answers in this study (60%) is better than that reported in most other studies [9, 10, 12, 13] but yet cannot be considered adequate. A higher correct response rate (mean score 4.55 out of 6) had been observed in undergraduate medical students in Tamil Nadu, India [14]. That the knowledge of CPR varies in people of different academic backgrounds or fields has been reported in some studies [5,15]. Our study also found that the knowledge level is different in people with different backgrounds, even though working in the same institution. That the basic sciences faculties have lower knowledge than clinical faculties has also been reported by Shrestha et al (2012). Our study had similar finding and observed that in the Nepalese medical college teachers, clinical faculties had better CPR knowledge than basic science faculties.

The study by Garcia et al (2015) observed that the higher number of CPR training courses received, the higher is the level of knowledge regarding CPR [16] and also that the rate of people receiving CPR training is highly variable among different backgrounds. This study also found significantly higher scores in the knowledge of CPR in those who had taken CPR training before. We also noticed that in the non-clinical and nursing groups, less percentage of participants had had CPR training before.

Ragavan et al (2000) have reported that the knowledge of CPR is not related to age, gender, country of qualification, post graduate qualification, and past experiences of partaking resuscitation [8]. We tried to correlate the knowledge of CPR with different characteristics also and found similar findings that the CPR knowledge did not correlate with age, sex, degree of academic qualification, institute of study and work, and duration of association with the medical institution.

CONCLUSION

Knowledge regarding CPR – a basic resuscitation measure – is not adequate in the personnel associated with medical colleges in

Nepal. Knowledge is particularly less in basic science and nursing faculties. Knowledge correlated with having received CPR training. However, the fact that few of the basic science and nursing faculties have had CPR training indicates their low priority to such an important skill.

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