

## **Knowledge and Attitude towards Basic Life Support among Health Care Professionals Working in Emergency of BPKIHS**

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### **Abstract**

**Background:** Basic Life Support (BLS) aims to maintain respiration and circulation in the cardiac arrest victim and involves a major focus on cardiopulmonary resuscitation (CPR) with minimal use of ancillary equipment. The raised standards of care demand that knowledge about BLS/ CPR be updated and include the lay persons as well as medical experts who have the potential to become the teachers of the skill. The objective of the study was to describe the knowledge and attitude of medical personnel (nurses and doctors) towards BLS/ CPR.

**Methods:** This cross sectional study was done among the doctors and nurses working in Department of General Practice and Emergency Medicine, BPKIHS, Nepal after ethical approval. A pre-validated questionnaire (Shrestha et al, WJEM, 2012) with pre-structured questions was used for assessing the knowledge and attitude. Attitude was measured using 5 point Likert. Designation, previous training and demographics were used as describing variables. For data recording and statistical analysis; Microsoft Excel, SPSS 11 and EPI Info were used.

**Results:** Total number of sample size was 84 medical personnel working in emergency department (consultant 12, junior resident 16, house officer 18, senior nurse 3 and staff nurse 35). Nine (11%) respondents answered more than 10 questions, 57 (68%) answered 6-10 question and 18 (21%) answered less than 5 question. Average mean score (total 15) was 7.40 (SD 2.32, 95% CI 6.90-7.90). Mean score of the positive attitude (total 15) to CPR was 11.1807 (2.43, 10.65-11.71). The mean score for reluctance (total 5) to perform CPR was 3.25 (consultants and those who were certified in BLS or taken BEC course in the department had maximum score in knowledge (p<0.001). Higher positive attitude score to BLS/ CPR was associated with an increasing age strata (p 0.001), senior designation (p 0.001), BLS course (p 0.048) and BEC department course (p 0.009).

**Conclusion:** Knowledge in BLS/ CPR was average. CPR/ BLS training and frequent assessments are recommended at our hospital.

**Keywords:** Basic life support (BLS), cardiopulmonary resuscitation (CPR), knowledge

### **Background**

Basic life support (BLS), a key component of the chain of survival helps to decrease the cardiac arrest to cardiopulmonary resuscitation

interval and increases the rate of hospital discharge.<sup>1</sup> Adequate awareness of basic life support (BLS) and cardiopulmonary resuscitation (CPR) is an important global issue to ensure that individuals can provide necessary life-saving care in emergency situations.<sup>2</sup> It is an integral part of emergency resuscitative care that aims to retain sufficient ventilation and

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circulation until the cause of the arrest is detected and eliminated.<sup>3</sup>

It is possible to sustain life in patients whose hearts had stopped as long as 30 minutes by means of chest compression combined with mouth-to-mouth respiration (CPR). This period of temporary support is effective in sustaining life until endotracheal intubation and cardiac defibrillation or pacing could be carried out.<sup>4</sup> BLS course is gaining acceptance worldwide as cardiopulmonary resuscitation plus defibrillation within 3-5min of collapse following VF in out hospital cardiac arrest can produce survival rates as high as 49-75%.<sup>5,6</sup>

Effective management of an emergency condition is ultimately the health care personnel's responsibility. The lack of training and inability to cope with medical emergencies can lead to tragic consequences and legal complications. Therefore, health professionals like doctors and nurses who are directly involved in patient care must be well prepared to manage medical emergencies. Hence, BLS and high quality CPR is an important tool until a medical emergency is treated definitely. This forms an integral link in patient care.<sup>7</sup>

Studies done in varied settings including Nepal have reported that knowledge of BLS and resuscitation technique is lacking even in hospital areas where frequent CPR takes place and more emphasis is placed to develop CPR skills; viz. the emergency, anesthesia and critical care.<sup>1,7,8</sup> The attitude to performing CPR was also poor in frequent CPR performer.<sup>9</sup> Both the attitude to CPR and skills have been shown to improve with training and workshop.<sup>8,10</sup>

This study was planned to assess the level of knowledge and attitude towards CPR among the health professionals working in the emergency department as they are the first responders in majority of urgent presentations to hospital. The findings are expected to be helpful in formulating plans like training/ workshop on CPR.

### **Method**

This was a hospital based descriptive cross-sectional study conducted in the Emergency ward of B. P. Koirala Institute of Health Sciences (BPKIHS), a medical university in the eastern part of Nepal from March 30<sup>th</sup> to July 30<sup>th</sup> 2017. The study population included doctors and nurses working in the Emergency ward of BPKIHS. Participation in the study was voluntary and informed consent was taken from all the participants. Ethical approval was taken from Institutional Review Committee, BPKIHS. Coding was done to hide participants' identity.

The minimum calculated sample size was 75 assuming the prevalence of knowledge as 23% (Shrestha R et al, 2012). We enrolled 84 participants based on willingness to participate and to allow for non-response rate.

Pre-validated questionnaire designed and used by Shrestha R et al at another medical college in Nepal was used with the author's permission. Two questions were modified to allow for changes in recent guideline of CPR 2017.<sup>11</sup> Questionnaire was distributed to be filled after consent during duty hours. Name was not required.

Outcome was measured as the total score of knowledge and a positive attitude to CPR. A set of 15 questions was used to assess knowledge

with score of one for each correct answer. Attitude was assessed using a 5 point Likert Scale. Other variables of interest were designation, attendance of basic emergency certificate course (BEC) periodically conducted by the Department of General Practice and Emergency Medicine to all doctors and nurses, previous attendance to Basic Life Support (BLS) Course and certification in BLS, along with demographic profile.

A master chart was prepared and the collected data were entered in Microsoft Excel. The data was analyzed using SPSS version 11.5, through various descriptive and inferential statistics. Tests of association used were chi square and T test. Tests were considered significant at 5%.

**Results**

There were a total of 84 participants: 35 staff nurses, 3 senior nurses, 18 house officers, 16

junior residents and 12 consultants. The mean age was 27.93 years (SD 6.05). Female: Male ratio was 1.70. The emergency and resuscitation course (Basic Emergency Certificate Course) periodically conducted by the department was attended by 44 (57%). Those with Basic Life Support Training were divided into 2 groups, 48% had informal BLS training with no certification and 26% had received certified BLS course.

The mean score to a set of 15 questions was 7.4 (SD, minimum, maximum 2.35, 3, 15). Method of rescue breathing in infant had the least number of correct responses (n 13) and compression to ventilation ratio in adults had the maximum number of correct response (n 67). Score less than 5 was achieved by 21%, score of 6 to 10 was achieved by 68% and score of more than 10 was achieved by 11% (Table 1).

**Table 1: Performance to questions assessing knowledge on BLS**

Questions	Correct Answer (%)	Wrong Answer (%)	Don't know (%)
1. First action in the chain of survival for out-of-hospital in cardiac arrest	53 (63.1)	31 (36.9)	0 (0)
2. Victim suddenly collapsed what next	57 (67.9)	27 (32.1)	0 (0)
3. Method of check for response	46 (54.8)	38 (45.2)	0 (0)
4. Victim not breathing	65 (77.4)	19 (22.6)	0 (0)
5. Un-will to perform mouth to mouth ventilation, what next	51 (60.7)	27 (32.1)	6 (7.1)
6. Location of hand for CPR in adult	51 (60.7)	32 (38.1)	1 (1.2)
7. Rate of chest compression in adult	43 (51.2)	41 (48.8)	0 (0)
8. Depth of chest compression in adult	18 (21.4)	64 (76.2)	2 (2.4)
9. Ratio of chest compression and ventilation in adult	67 (79.8)	15 (17.9)	2 (2.4)
10. To minimize interruption in compression what should be done	14 (16.7)	66 (78.6)	4 (4.8)
11. Rescue breathing in infant	13 (15.5)	61 (72.6)	10 (11.9)
12. Ratio of chest compression and ventilation in children	49 (58.3)	29 (34.5)	6 (7.2)
13. Depth of chest compression in infant	44 (52.4)	28 (33.3)	12 (14.3)
14. Choking adult management	22 (26.2)	61 (72.6)	1 (1.2)
15. Choking infant management	29 (34.5)	44 (52.4)	11 (13.1)

Consultant designation (p 0.001), previous BLS training (p 0.001), certified BLS training (p 0.001) and completion of department held basic emergency course (0.007) were all associated with better scores at knowledge assessment (Table 2).

**Table 2: Mean knowledge score among different groups**

Variables (Frequency in No.)	Mean knowledge score out of 15 (SD, 95% CI)	P value
Age group		
20- 25 (33)	6.72 (1.64, 6.14-7.31)	0.069 (ANOVA)
26- 30 (29)	7.41 (2.00, 6.64-8.170)	
31- 35 (11)	8.54 (3.35, 6.28-10.80)	
>35 (11)	8.27 (3.13, 6.16-10.37)	
Designation		
House Officer (18)	6.83 (2.09, 5.79-7.87)	<0.001 (ANOVA)
Junior Resident (16)	7.81 (2.22, 6.62-8.99)	
Consultant (12)	10.25 (2.41, 8.71-11.78)	
Staff Nurse (35)	6.82 (1.54, 6.29-7.35)	
Senior Nurse (3)	3 (1, 1.51-6.48)	
Received BLS Training (40)	8.32 (2.49, 7.52-9.12)	<0.001 (t test)
Not received BLS Training (44)	6.56 (1.80, 6.01-7.11)	
Attended BEC course (48)	7.97 (2.47, 7.26-8.69)	0.008 (t test)
Not attended BEC course (36)	6.63 (1.88, 6.00-7.27)	
Certified BLS course (22)	8.81 (2.68, 7.62-10.00)	0.001 (t test)
No certification in BLS (62)	6.90 (1.97, 6.40-7.40)	
Total (84)	7.40 (2.32, 6.90-7.90)	

Attitude was measured by four questions and response recorded in Likert scale of 1(strongly disagree) to 5 (strongly agree), 3 being neutral (Table 3).

**Table 3: Attitude to performance of BLS**

Statements	Likert 1 N (%)	Likert 2 N (%)	Likert 3 N (%)	Likert 4 N (%)	Likert 5 N (%)
I can perform CPR	7 (8.3%)	7 (8.3%)	13 (15.5%)	32 (38.1%)	25 (29.8%)
Reluctant to perform	30 (35.7%)	19 (22.6%)	13 (15.5%)	20 (23.8%)	2 (2.4%)
Perform CPR frequently	6 (7.1%)	17 (20.2%)	21 (25.0%)	29 (34.5%)	11 (13.1%)
Want to improve with training	8 (9.5%)	0 (0.0%)	8 (9.5%)	24 (28.6%)	44 (52.4%)

One statement asked about ‘the reluctance to perform BLS’. The mean score (SD) for reluctance to perform CPR was 3.25 (SD 1.25) out of 5 Likert scale (n= 84).

Higher positive attitude score to BLS/ CPR was associated with an increasing age strata (p 0.001), senior designation (p 0.001), BLS course (p 0.048) and BEC departmental course (p 0.009).

**Table 4: Mean Attitude Score out of fifteen among different groups**

<b>Variables (Frequency in Number)</b>	<b>Mean Attitude Score out of 15 (SD, 95% CI)</b>	<b>P Value</b>
Age Group		
20-25 (33)	10.2500 (2.44, 9.36-11.13)	0.001 (ANOVA)
26-30 (29)	10.9310 (2.50, 9.97-11.88)	
31-35 (11)	13.1818 (1.32, 12.28-14.07)	
>35 (11)	12.5455 (1.03, 11.84-13.24)	
Designation		
House Officer (18)	10.66 (2.54, 9.40-11.93)	0.001 (ANOVA)
Junior Resident (16)	12.50 (2.33, 11.25-13.74)	
Consultant (12)	12.50 (1.08, 11.80-13.19)	
Staff Nurse (35)	10.17 (2.30, 9.37-10.97)	
Senior Nurse (3)	13.33 (1.15, 10.46-16.20)	
Received BLS Training (40)	11.72 (2.21, 11.01-12.43)	0.048 (t test)
Not received BLS Training (44)	10.67 (2.53, 9.89-11.45)	
Attended BEC course (48)	11.77 (2.03, 11.18-12.36)	0.009 (t test)
Not attended BEC course (36)	10.37 (2.71, 9.43-11.30)	
Total (84)	11.1807 (2.43, 10.65-11.71)	

## Discussion

Basic life support is a simple life saving maneuver, starting with prompt recognition of suddenly collapsed victim and is one of the urgent integral parts of Emergency resuscitation component.<sup>3,12</sup> Life threatening emergency can occur anywhere, so, health care professionals can face these problems in every step of life and should have adequate knowledge and competency to initiate the care.<sup>7</sup> Although BLS is an integral part of patient care, the knowledge and skill is variable among different levels of health workers, with room for improvement noted in most studies.<sup>1,2,3,7,8</sup> Identification and knowledge was lacking even in departments like ED and Anesthesia where a greater emphasis is placed on this.<sup>8</sup> Frequent CPR performers seem to have better scores at knowledge compared to lesser performers but still not up to the mark.<sup>1</sup> Our study included doctors and nurses working in emergency with various levels of experience and expertise with an average score of knowledge (68%). Previous training and more

senior designation was associated with a higher score (p 0.0010). However, the time frame within which these trainings were received as well as source of training varied. Irrespective of this, the knowledge score was better in this group compared to others. This is similar to Yunus et al who also showed that the better average knowledge score was associated with previous training in BLS.<sup>13</sup> Contrary to Bajracharya et al who reported a low proportion of nurses with sufficient knowledge on BLS/ CPR and no association between academic qualification and experience to knowledge.<sup>14</sup> We found higher scores among senior experienced nurses. The variation may be due to the fact that we are working in an academic institute and our staffs are commonly involved in teaching learning activities. Training is a precursor to knowledge. The lack of training has been emphasized as a contributory factor in many studies from around the region.<sup>1,9,13</sup> However, the retention of knowledge and skills after training is another major issue and different

studies have shown that knowledge declines even after few days after completion of the studies, and regular training and simulation keeps health care professionals competent and knowledgeable.<sup>3,15,16</sup> Our department conducts a basic emergency course regularly with an aim to improve the skill which was attended by 57% of the study subjects at the time of research. This group had better knowledge compared to those not attending it.

Positive attitude is another factor to consider for successful resuscitation. A study from another academic institute in Nepal reported the reluctance to perform CPR in 17% of respondents.<sup>1</sup> In our study, the proportion of reluctance to perform CPR was noted in almost one fourth and a shift to positive attitude and training needs was associated with an increase in experience, seniority and previous training. This may be due to lack of confidence in junior doctors and nurses and important to address when providing training.

### **Limitations**

This study has focused on emergency staff personnel from a single centre and should be interpreted as such. Observation of skills in real life scenario and skill demonstration was not assessed as part of the research due to technical difficulties.

### **Conclusion**

The knowledge and attitude on BLS and resuscitation varied between different designation and experience levels and showed scope for improvement. Pediatrics resuscitation related question was least answered by all. Seniority and previous training improved both the knowledge and attitude to BLS/resuscitation. A periodic training to update and

enhance the skill and knowledge is recommendable based on the turnover of doctors and nurses.

### **Abbreviation**

BLS- Basic Life Support  
CPR- Cardio Pulmonary Resuscitation  
BEC- Basic Emergency Certificate  
BPKIHS- B. P. Koirala Institute of Health Sciences  
SD- Standard Deviation

### **Ethical approval and consent to participate**

Ethical approval was taken from the Institutional Review Committee, BPKIHS. (Reference Number 350/074/075-IRC, 25<sup>th</sup> March 2018)

An informed consent was taken from all the participants. Participation was voluntary.

### **Declaration of conflicting interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article

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