

## Knowledge and Practice Regarding Basic Life Support Among Nurses at Selected Private Hospitals, Kathmandu, Nepal

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**ABSTRACT:** Basic life support (BLS) is a life-saving method for the patient with the use of cardiopulmonary resuscitation (CPR), use of automated external defibrillator (AED) and airway management. The nurses need to have knowledge and proper skills regarding BLS to save the lives of patients at the hospital as well as in the community setup. Hence, the study aimed to assess the knowledge and practice regarding BLS among nurses at selected private hospitals in Kathmandu, Nepal. A descriptive, cross-sectional study design was carried out to collect data among the nurses working in Green City Hospital, Chirayu National Hospital and Medical Institute Pvt. Ltd and B.P Smriti Hospital using a self-administered semi-structured questionnaire. A sample of 136 nurses was taken using probability stratified random sampling technique. The study found that only 7.4% nurses had adequate level of knowledge, 51.5% had moderate level of knowledge and 41.1% had inadequate level of knowledge regarding BLS. The study also revealed that 65.4% nurses had good practice and 34.6% had poor practice regarding BLS. There was a statistically significant association between the level of knowledge and working ward ( $p=0.002$ ), working experience ( $p=0.011$ ) and training related to CPR ( $p=0.000$ ). There was no significant association between level of practice regarding BLS and other sociodemographic and professional related variables. It is concluded that although the knowledge level regarding BLS is adequate among few nurses whereas there is good practice regarding BLS among more nurses.

**KEYWORDS:** Knowledge, Practice, Basic life support, Cardiopulmonary resuscitation .

### I. INTRODUCTION

Basic Life Support (BLS) is the term for manual techniques used to protect the airway without the use of equipment<sup>1</sup>. It is a life-saving method that includes instant recognition of cardiac arrest, initiation of emergency response systems, adoption of adequate cardiopulmonary resuscitation (CPR), implementation of rapid defibrillation and airway management<sup>2</sup>.

BLS includes recognition of signs of sudden cardiac arrest (SCA), heart attack, stroke and foreign-body airway obstruction (FBAO); cardiopulmonary resuscitation (CPR); and defibrillation with an automated external defibrillator (AED)<sup>3</sup>. In a premedical setting, BLS is a life-saving procedure. For any healthcare professional working in a hospital, having sufficient knowledge and awareness of BLS and CPR is a fundamental requirement<sup>4</sup>. Defibrillation within 3 to 5 minutes of collapsed patients can produce survival rates as high as 50 to 70%. Each minute of delay to defibrillation reduces the probability of survival to hospital discharge by 10 percent<sup>5</sup>. A patient has a better chance of surviving if CPR is started as soon as possible. According to the American Heart Association, early CPR could save the lives of 100,000 to 200,000 adults and children each year. Studies have shown that even among highly trained professionals, such as doctors, nurses and others, the recall of CPR knowledge and abilities tends to decrease as early as three months after training if not in application<sup>6</sup>.

It is ultimately the responsibility of the health care professionals especially doctors and nurses to effectively manage an emergency condition where CPR may require. Inadequate training and the inability to manage medical emergencies might lead to legal problems in some situations. Thus, BLS with excellent CPR are among the crucial management until a medical emergency is treated definitely<sup>7</sup>. Most institutions have an essential requirement that all nurses have fundamental basic cardiac life support (BCLS) training<sup>8</sup>. The early response of nurses can have a major impact on the rates of morbidity and mortality associated with cardiac arrest with the application of BLS<sup>9,10</sup>.

### II. METHODOLOGY

#### A. Methods

A descriptive cross-sectional research design was adopted for the study of the knowledge and practice regarding basic life support among nurses.

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## B. Sampling and Setting

Probability stratified sampling technique was used among 136 nurses. The study was conducted in three private hospitals in Kathmandu, Nepal. Those were Green City Hospital, Chirayu National Hospital and Medical Institute Pvt. Ltd and B.P Smriti Hospital.

## Instrumentation

Semi-structured self-administered questionnaire was administered which consisted of three parts:-

Part I: Socio-demographic and professional related information.

Part II: Questionnaire related to knowledge regarding BLS.

Part III: Checklist related to practice of BLS.

## C. Data Collection

The researcher obtained permission to collect data from three different private hospitals' authorities. After then questionnaires were distributed to the nurses and collected soon after the nurses filled up the questionnaire.

## Data Analysis

The collected data was checked, reviewed, and organized daily for its accuracy, completeness, and consistency. The data was coded and entered in Statistical Package for Social Science (SPSS) version 26.0 for data process and analysis. Data was analyzed by using simple descriptive statistics such as frequency, percentage, mean and standard deviation. Inferential statistics like chi square test was used to identify the association between levels of knowledge and practice with selected variables.

## III. RESULTS

**Table 1. Socio Demographic Information of the Respondents n=136**

| Variables  | Frequency | Percentage |
|--|-----------|------------|
| <b>Age (years)</b>                                     |           |            |
| ≤20  | 13        | 9.5        |
| 21-29  | 107       | 78.7       |
| ≥30  | 16        | 11.8       |
| <i>Mean±SD 25.2±5.89; Min: 19 years; Max : 49years</i> |           |            |
| <b>Religion</b>  |           |            |
| Brahman  | 37        | 27.2       |
| Kshetri  | 25        | 18.4       |
| Newar  | 19        | 14.0       |
| Tamang   | 15        | 11.0       |
| Magar  | 10        | 7.3        |
| Gurung   | 13        | 9.6        |
| Others*  | 17        | 12.5       |
| <b>Ethnicity</b>                                       |           |            |
| Hinduism   | 107       | 78.7       |
| Non-Hinduism**   | 29        | 21.3       |
| <b>Marital status</b>                                  |           |            |
| Married  | 51        | 37.5       |
| Unmarried  | 83        | 61.0       |
| Other***   | 2         | 1.5        |

\*Rai, Bishworkarma, Thakuri, Tharu \*\*Buddhism, Christianity \*\*\*Divorced, Widow

Table 1 shows that 78.7% of the respondents belonged to 21-29 years of age group, 27.2% were Brahmin, 78.7% were Hindus and 61% were unmarried.

**Table 2. Profession related Information of Respondents n=136**

| Variables                                      | Frequency | Percentage |
|--|-----------|------------|
| <b>Educational level</b>                       |           |            |
| Proficiency Certificate Level in Nursing (PCL) | 87        | 64.0       |
| Bachelor Nursing                               | 49        | 36.0       |
| <b>Designation</b>                             |           |            |
| Staff nurse                                    | 123       | 90.4       |
| In-charge and Senior staff nurse               | 13        | 9.6        |
| <b>Working ward</b>                            |           |            |
| Post-operative Ward                            | 27        | 19.8       |

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|                                    |    |      |
|------------------------------------|----|------|
| Intensive Care Unit                | 25 | 18.3 |
| General Ward                       | 22 | 16.2 |
| Emergency                          | 20 | 14.7 |
| Medical Ward                       | 11 | 8.1  |
| High Care Unit                     | 11 | 8.1  |
| Surgical Ward                      | 10 | 7.4  |
| Cabin                              | 10 | 7.4  |
| <b>Working experience</b>          |    |      |
| ≤2 years                           | 70 | 51.5 |
| 3-4 years                          | 29 | 21.3 |
| >4 years                           | 37 | 27.2 |
| <b>Training related to CPR</b>     |    |      |
| Yes                                | 47 | 34.6 |
| No                                 | 89 | 65.4 |
| <b>Previous involvement in CPR</b> |    |      |
| Yes                                | 58 | 42.6 |
| No                                 | 78 | 57.4 |

Table 2 reveals that 64% respondents had completed PCL nursing, 90.4% were staff nurses, 19.8% were from post-operative ward, 51.5% of the respondents had working experience of less than 2 years, 65.4% of the respondents had not received training of CPR and 57.4% had not involved in CPR.

**Table 3. Knowledge regarding BLS among Respondents n=136**

| Statements  | Frequency | Percentage |
|---|-----------|------------|
| <b>Meaning of BLS</b><br>Care that is provided to anyone who is experiencing cardiac arrest, respiratory distress or an obstructed airway | 68        | 50.0       |
| <b>Principles of CPR</b><br>Circulation, airway, breathing  | 48        | 35.3       |
| <b>Steps to check normal breath of victim</b><br>Look, listen and feel  | 117       | 86.0       |
| <b>Location for chest compression in adult</b><br>At xiphisternum   | 46        | 33.8       |
| <b>Location for chest compression in infants</b><br>One finger breadth below the nipple line  | 81        | 59.6       |
| <b>The ratio of chest compressions on an adult</b><br>A rate of 100 to 120 compressions per minute and a depth of at least 2 inches       | 76        | 55.9       |
| <b>The ratio of chest compressions on pediatrics</b><br>30:2 for 1 provider, then switch to 15:2 for 2 providers                          | 52        | 38.2       |
| <b>Most consider while giving mouth to mouth ventilation in adult</b><br>Pinch nose   | 52        | 38.2       |
| <b>Rescue breathing in infants</b><br>Only mouth to nose breathing  | 21        | 15.4       |
| <b>The preferred method for opening airway in head or neck trauma</b><br>Jaw thrust   | 85        | 62.5       |
| <b>AED stands for</b><br>Automated External Defibrillator   | 75        | 55.1       |
| <b>AED pad placement on infants</b><br>Place 1 pad on the chest and another 1 pad on the back   | 87        | 64.0       |
| <b>EMS stands for</b><br>Emergency Medical Services   | 80        | 58.8       |
| <b>The first response for choking</b><br>Give abdominal thrusts   | 81        | 59.6       |
| <b>The most common complication of CPR</b><br>Ribs fracture   | 126       | 92.6       |

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Table 3 reveals that 86% of the respondents gave right answer regarding the steps to check normal breath of the victim, 64% gave correct answer regarding the AED pad placement on infants and 92.6% gave correct answer regarding the most common complication of CPR,

**Table 4. Level of Knowledge regarding BLS among Respondents n=136**

| Levels of Knowledge            | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Adequate (>11 of total score)  | 10        | 7.4        |
| Moderate (8-11 of total score) | 70        | 51.5       |
| Inadequate (<8 of total score) | 56        | 41.1       |

Table 4 shows that 7.4% of the respondents had adequate level of knowledge, 51.5% of the respondents had moderate level of knowledge, and 41.1% had inadequate level of knowledge regarding BLS.

**Table 5. Practice regarding BLS among Respondents n=136**

| Statement   | Frequency | Percentage |
|---|-----------|------------|
| The initial BLS steps is to assess the victim, activate EMS and get AED, check pulse, start CPR.                            | 113       | 83.1       |
| The carotid pulse is felt before delivering CPR in adult.   | 87        | 64.0       |
| Femoral pulse is felt before delivering CPR in infant.*   | 73        | 53.7       |
| The airway is opened by tilting the head forward and lifting the chin.*   | 59        | 43.4       |
| The depth of chest compression of adult is 2 inches.  | 86        | 63.2       |
| The depth of chest compression of infant is about 1 inch.*  | 73        | 53.7       |
| When 2 rescuers are present, switch the compression every minutes taking less than 2 seconds.*                              | 54        | 39.7       |
| The proper steps for operating an AED are power on the AED, attach electrode pads, analyze the rhythm and shock the person. | 88        | 64.7       |
| The recovery position is to lie the patient on their left side with the lower arm extended and upper leg flexed after CPR.  | 85        | 62.5       |
| While performing Heimlich maneuver, the hand is placed slightly above the navel and below the lower part of the breastbone. | 77        | 56.6       |

\* Negative statement

Table 5 represents that 83.1% had provided the correct answer regarding the initial BLS steps for adults to assess the victim, activate EMS and get AED, check pulse, start CPR., 64.7% knew about the proper steps for operating an AED are power on the AED, attach electrode pads, analyze the rhythm and shock the person and 64% felt carotid pulse before delivering CPR in adult.

**Table 6. Level of Practice regarding BLS among Respondents n=136**

| Variables                | Frequency | Percent |
|--------------------------|-----------|---------|
| Good Practice (>5 score) | 89        | 65.4    |
| Poor Practice (≤5 score) | 47        | 34.6    |

Table 6 shows that 65.4% of the respondents had good practice and 34.6% had poor practice regarding BLS.

**Table 7. Association between Respondents' Level of Knowledge and Selected Variables n=136**

| Variables              | Level of Knowledge |          |            | $\chi^2$           | P value |
|------------------------|--------------------|----------|------------|--------------------|---------|
|                        | Adequate           | Moderate | Inadequate |                    |         |
| <b>Age</b>             |                    |          |            |                    |         |
| ≤20                    | 9                  | 4        | 0          | 5.585a             | 0.232   |
| 21-29                  | 42                 | 56       | 9          |                    |         |
| ≥30                    | 5                  | 10       | 1          |                    |         |
| <b>Education level</b> |                    |          |            | 1.329 <sup>a</sup> | 0.515   |
| PCL Nursing            | 33                 | 48       | 6          |                    |         |
| Bachelor in Nursing    | 23                 | 22       | 4          |                    |         |
| <b>Designation</b>     |                    |          |            | 2.316 <sup>a</sup> | 0.314   |

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|                                    |    |    |    |                     |       |
|------------------------------------|----|----|----|---------------------|-------|
| Staff nurse                        | 52 | 61 | 10 | 33.677 <sup>a</sup> | 0.002 |
| In-charge/Senior staff nurse       | 4  | 9  | 0  |                     |       |
| <b>Working ward</b>                |    |    |    |                     |       |
| Post-operative ward                | 16 | 11 | 0  |                     |       |
| Intensive Care Unit                | 5  | 18 | 2  |                     |       |
| General ward                       | 16 | 4  | 2  |                     |       |
| Emergency                          | 4  | 14 | 2  |                     |       |
| Medical ward                       | 6  | 4  | 1  |                     |       |
| High care unit                     | 2  | 9  | 0  |                     |       |
| Surgical ward                      | 2  | 7  | 1  |                     |       |
| Cabin                              | 5  | 3  | 2  |                     |       |
| <b>Working Experience</b>          |    |    |    | 13.029 <sup>a</sup> | 0.011 |
| ≤2 years                           | 37 | 30 | 3  |                     |       |
| 3-4 years                          | 8  | 20 | 1  |                     |       |
| >4 years                           | 11 | 20 | 6  |                     |       |
| <b>Training related to CPR</b>     |    |    |    | 23.418 <sup>a</sup> | 0.000 |
| Yes                                | 7  | 34 | 7  |                     |       |
| No                                 | 49 | 36 | 3  |                     |       |
| <b>Previous involvement in CPR</b> |    |    |    | 1.915 <sup>a</sup>  | 0.384 |
| Yes                                | 21 | 31 | 6  |                     |       |
| No                                 | 35 | 39 | 4  |                     |       |

**Level of significant <0.05**

Table 7 illustrates that there was statistically significant association between the level of knowledge regarding BLS and working ward (p=0.002), working experience (p=0.011) and training related to CPR (p=0.000).

**Table 8. Association between Respondents' Level of Practice and Selected Variables n=136**

| Variables                    | Level of Practice |               | $\chi^2$           | P value |
|------------------------------|-------------------|---------------|--------------------|---------|
|                              | Poor practice     | Good practice |                    |         |
| <b>Age</b>                   |                   |               | 1.782 <sup>a</sup> | 0.410   |
| ≤20                          | 3                 | 10            |                    |         |
| 21-29                        | 40                | 67            |                    |         |
| ≥30                          | 4                 | 12            |                    |         |
| <b>Education level</b>       |                   |               | 0.602 <sup>a</sup> | 0.438   |
| PCL Nursing                  | 28                | 59            |                    |         |
| Bachelor in Nursing          | 19                | 30            |                    |         |
| <b>Designation</b>           |                   |               | 2.337 <sup>a</sup> | 0.126   |
| Staff nurse                  | 45                | 78            |                    |         |
| In-charge/Senior staff nurse | 2                 | 11            |                    |         |
| <b>Working ward</b>          |                   |               | 8.863 <sup>a</sup> | 0.263   |
| Post-operative ward          | 12                | 15            |                    |         |
| Intensive Care Unit          | 10                | 15            |                    |         |
| General ward                 | 9                 | 13            |                    |         |
| Emergency                    | 7                 | 13            |                    |         |
| Medical ward                 | 3                 | 8             |                    |         |
| High care unit               | 2                 | 9             |                    |         |
| Surgical ward                | 0                 | 10            |                    |         |
| Cabin                        | 4                 | 6             |                    |         |
| <b>Working Experience</b>    |                   |               | 0.206 <sup>a</sup> | 0.902   |

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|                                    |    |    |                    |       |
|------------------------------------|----|----|--------------------|-------|
| ≤2 years                           | 25 | 45 |                    |       |
| 3-4 years                          | 9  | 20 |                    |       |
| >4 years                           | 13 | 24 |                    |       |
| <b>Training related to CPR</b>     |    |    | 0.954 <sup>a</sup> | 0.329 |
| Yes                                | 14 | 34 |                    |       |
| No                                 | 33 | 55 |                    |       |
| <b>Previous involvement in CPR</b> |    |    | 0.000 <sup>a</sup> | 0.987 |
| Yes                                | 20 | 38 |                    |       |
| No                                 | 27 | 51 |                    |       |

Level of significant <0.05

Table 8 reveals that there was no significant association between respondents' level of practice regarding BLS and selected variables.

### IV. DISCUSSION

The findings of the present study showed that only 7.4% nurses had adequate level of knowledge, 51.5% had moderate level of knowledge and 41.1% had inadequate level of knowledge regarding BLS. The findings is somehow similar to the findings of a descriptive study conducted in Bharatpur, India among nursing staffs working in Government Medical College to assess the level of knowledge on which 10% nurses had good knowledge about BLS, while 50 % had moderate and 40 % nurses had poor knowledge<sup>2</sup>.

The present study revealed that 65.4% respondents had good practice and 34.6% had poor practice regarding BLS which is similar to the findings of the study conducted in Ogun State, Nigeria which showed that 65.2% of the respondents had good practice and 34.8% had poor practice regarding BLS<sup>11</sup>.

In this study, there was statistically significant association between the level of knowledge regarding BLS and working ward ( $p=0.002$ ), working experience ( $p=0.011$ ) and training related to CPR ( $p=0.000$ ). Somehow similar findings was found in the study conducted in New Delhi, India which revealed that there was significant association of knowledge with experience, clinical area and in service education with  $p$  value<0.05<sup>12</sup>.

### V. CONCLUSION

Based on the findings, it can be concluded that very few had adequate level of knowledge, more than half of the nurses had moderate level of knowledge and about four in ten nurses had inadequate level of knowledge regarding BLS whereas the majority of the respondents had good level of practice and a few had poor practice regarding BLS. There was statistically significant association between the level of knowledge regarding BLS and working ward, working experience and training related to CPR. There was no significant association between respondents' level of practice regarding BLS and selected variables.

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