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# Assess the Knowledge and Skill regarding Basic Life Support among B. Sc Nursing 4th Year Students in the selected Nursing Colleges, Guwahati, Assam

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**Abstract:** ***Background: Cardiac Arrest is the sudden, unexpected loss of Heart Function, Breathing and Consciousness. Sudden cardiac arrest usually results from an electrical disturbance in the heart that disrupts its pumping action, stopping blood flow to the rest of the body. Almost 90%of people, who suffer out of hospital cardiac arrest die. CPR, especially if performed in the first few minutes of cardiac arrest, can double or triple a person's chance of survival. According to American Heart Association Published the Heart Disease and stroke statistics2016 out of Hospital Cardiac Arrest Incidence: More than 350, 000, Bystander CPR (overall): 46.1%, Survivor rate (overall): 12%, In Hospital Cardiac Arrest Incidence: 209, 000, Survival rate Adult: 24.8%. So here from the incidence the rate is more and survival rate is less, through BLS we can save a patient life. Basic life support (BLS) is a level of medical care which is used for victims of life - threatening illnesses or injuries until they can be given full medical care at a hospital. it can be provided by trained medical personal, including emergency medical technicians, paramedics, and by qualified bystanders. Methods and Materials: The research approach adopted for the study was quantitative research approach. on experimental descriptive research design was used in this study to accomplish the objectives. Study was undertaken on 62 nursing students in the selected nursing college, Guwahati, Assam using convenience sampling technique. Knowledge and skill of the students were assessed using structured questionnaires and observational check list respectively. Results: Descriptive and inferential statistics were used to analyze the data. A total of 62 students responded. Majority 33 (54%) of the respondents were in the age group of 22 - 23 years.56 (90%) of the respondents were female. Most of the respondent they didn't attend any BLS training 60 (97%) Out of 62 students 3 (5%) had adequate, 39 (62%) had moderately adequate and 20 (33%) had inadequate knowledge regarding basic life support. skill of the respondents had 2 (4%) excellent, 6 (9%) good and 54 (87%) had poor skill regarding basic life support. The mean of knowledge and skill were 10.45 and 8.79 respectively and the standard deviation of knowledge and skill were 2.28 and 3.58 respectively. There was a positive correlation between knowledge and skill regarding basic life support where the 'r' value was found to be (r = 0.9). There was a significant association between knowledge with all demographic variable respondents at 0.05 level of non - significance. Also there was a non - significant association between skills with selected demographic variable of the respondents at 0.05 level of significance. Discussion and Conclusion: After analyzing the collected data, this study shows that students have some knowledge regarding basic life support and skill. There was a positive correlation between knowledge and skill which shows that if the knowledge increases, the skill of the students will also be improved.***

**Keywords:** Cardiac arrest, Basic Life Support, Knowledge and skill

## 1. Introduction

Basic life support (BLS) is a level of medical care which is used for victims of life - threatening illnesses or injuries until they can be given full medical care at a hospital. it can be provided by trained medical personal, including emergency medical technicians, paramedics, and by qualified bystanders. Many countries have guidelines on how to provide Basic life support (BLS) which are formulated by professional medical bodies in those countries. The guidelines outline algorithms for the management of a number of conditions, such as cardiac arrest, choking and drowning. Basic life Support promotes adequate blood circulation in addition to breathing through a clear airway: **Circulation**: providing an adequate blood supply to tissue, especially critical organs, so as to deliver oxygen to all cells and remove metabolic waste, via the perfusion of blood throughout the body.

**Airway**: The protection and maintenance of a clear passage way for gases (principally oxygen and carbon dioxide) to pass between the lungs and the atmosphere.

**Breathing**: Inflation and deflation of the lungs (Respiration) via the airway.

The American Heart Association (AHA) endorses CAB in order to emphasize the primary importance of chest compression in cardiopulmonary resuscitation.[1]

Healthy people maintain CAB by themselves, in emergency situation due to illness (medical emergency) or trauma, BLS helps the patient ensure his or her own CAB, or assists in maintaining for the patient who is unable to do so. for airways, this will include manually opening the patient airway (head tilt/chin lift or jaw thrust) or possible insertion of oral (Oropharyngeal Airway) or nasal (nasopharyngeal airway) adjuncts, to keep the airway unblocked (patent) for breathing, this may include artificial respiration, often assisted by emergency oxygen, for circulation, this may include bleeding control or cardiopulmonary resuscitation (CPR) techniques to manually stimulate the heart and assist its pumping action.2

American Heart Association BLS protocol is designed to used laypeople, as well as students and others certified first responder, and to some extent, higher medical function personnel includes, cardiac arrest, respiratory arrest, drowning, foreign body airway obstruction. Nurses of health services who received professional education and training should be able to practice CPR accurately and offer advanced

cardiac life support to the patient who suffered an attack of cardiac arrest. successful resuscitation following cardiac arrest requires an integrated set of coordinated action the link includes the following According to American Heart Association New Guidelines - [3]

1) Immediate recognition of cardiac arrest
2) Activation of the emergency response team
3) Early CPR with an emphasis on chest compression.
4) Rapid defibrillation
5) Effective advanced life support.
6) Integrated post cardiac arrest care.

A review from Nagashima et. al 2003 conducted a survey on knowledge of and experience in cardiopulmonary resuscitation (CPR) and on knowledge of the Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (ECC) established in 2000 Three hundred and four nurses at Asahikawa Medical College Hospital were asked to fill in questionnaires is the method of study The results show that more than 80% of the nurses are much interested in CPR. Most of the nurses had received education and training in CPR as students or after graduation. However, cases of cardiopulmonary arrest and CPR were experienced by only about 40% of the nurses. Most of the nurses had never heart of the Guidelines for CPR and ECC in 2000. The researchers concluded that there is a need to provide more education (on CPR) to nursing staff.4

## 2. Methods

The aim of this study was to assess the knowledge and skill regarding basic life support among B. sc nursing 4th year student in selected nursing colleges of Guwahati, Assam. In order to accomplish the objective of the study quantitative approach was adopted by the researcher. According to Polit & Beck (2011) research design is the overall plan for addressing a research question, including specification for enhancing the study's integrity. In this study, considering the objective non experimental descriptive research design was used to assess the knowledge and skill regarding basic life support among B. sc nursing 4th year student in selected nursing colleges, Guwahati, Assam.

Variables included in the present study were

**Research variables:** The research variables in this study are knowledge and skill regarding basic life support among B. sc nursing 4th year Students.

**Demographic variables:** The demographic variables in this study are age, gender, religion, attended any special training.

The present study was conducted in C. P. M. S College of nursing, Panikhaiti, Guwahati, Assam and Arya College of nursing, Guwahati. The setting was selected because of the availability of the sample, feasibility of conducting the study and geographical location.

Target population refers to the population that the researcher wishes to study, the population about which the researcher wishes to make generalization. In this study, the target population was the B. sc nursing 4th year students, Guwahati, Assam. Accessible population refers to the aggregate of the cases which confirm to the designated criteria and which was accessible to the researcher as pool of subjects for the aggregates and meet the criteria for inclusion in the study and that was available to the researcher. In this study, the accessible population was the students in the selected nursing colleges Guwahati, Assam. Sample size consisted of 62 nursing students was taken and Non - probability convenience sampling technique was found to be appropriate for the present study and was used in selecting the sample.

***Inclusion criteria***

- Student who is studying B. Sc nursing 4th year.
- Students who are willing to participate.

***Exclusion criteria***

- Students who are not present at the time of the study.

**Data collection tools**

Tools are the various instruments of data gathering which involves accurate recording forms. Tools were prepared based on objectives of the study and extensive literature review. Structured questionnaire to assess the level of knowledge regarding basic life support and skill find out by observational checklist where steps of the BLS procedure included. The technique adopted by the investigator was self - reporting technique and observation.

**Description of the Tool**

The tool was comprised of three parts: -

**Section I:** The demographic information of the students.

**Section II:** Consisted of the structured knowledge questionnaire regarding basic life support.

**Section III:** Consisted of observational check list to observe skill of the students.

**Section - I: Demographic Performa**

The items assessed the demographic data of samples like age, gender, religion, and attended any special training consisting 4 question.

**Section - II: Structured questionnaire on knowledge**

The items assessed the knowledge of samples regarding basic life support consisting of 20 questions.

**Scoring key:** 20 questions were prepared which include general information according to 20 BLS guidelines, meaning of basic life support. For each correct response a score 1 (one) is given and for each incorrect response a score of 0 (zero) is given. Hence, the maximum score on knowledge was '20' and minimum score was '0'. To interpret the level of knowledge, the score was converted into percentage and were categorized as follows:

- Inadequate knowledge < 50% (< 10 marks)
- Moderate knowledge 51 - 74% (10 - 14 marks)
- Adequate knowledge > 75 - % (> 15 marks)

**Section - III:** Observational Check list

This tool was prepared based on the BLS Procedure steps. A total of 15 procedure steps included and each steps yes or no included.

**Scoring key:** It consists of 15 items related to skill on regarding basic life support each steps carry 1 marks wrong steps carry 0 marks.

## 3. Results

**Table I:** Frequency and Percentage Distribution of the Respondents according to their Age Group, n = 62

| Age (in years) | Frequency | Percentage |
|---|---|---|
| < 21 | 0 | 0% |
| 21 - 22 | 33 | 54% |
| 23 - 25 | 29 | 46% |
| Above 25 | 0 | 0% |
| Total | 62 | 100% |

The data presented in Table - I depicts that, out of 62 samples, 33 (54%) of the respondents were in the age group of 21 - 22years, another 29 (46%) of the respondents were in the age group of 23 - 25 years, and above 25 (0%) of the respondent.

**Table II:** Frequency and Percentage Distribution of the Respondents according to Gender, n=62

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 6 | 10% |
| Female | 56 | 90% |
| Total | 62 | 100% |

The data presented in Table - II depicts that, out of 62 samples, 6 (10%) of the respondents were male and 56 (90%) were female

**Table III**: Frequency and Percentage Distribution of the Respondents according to Religion, n=62

| Religion | Frequency | Percentage |
|---|---|---|
| Hindu | 42 | 68% |
| Muslim | 0 | 0% |
| Christian | 20 | 32% |
| Any other | 0 | 0% |
| Total | 62 | 100% |

The data presented in Table - III depicts that, out of 62 samples 42 (68%) of the respondents are hindu religion, and the remaining 20 (32%) of the respondents are Christian religion

**Table IV:** Frequency and Percentage Distribution of the Respondents according to Basic Life Support Training, n=62

| Training about BLS | Frequency | Percentage |
|---|---|---|
| Yes | 2 | 3% |
| No | 60 | 97% |
| Total | 62 | 100% |

The data presented in Table - IV depicts that, out of 62samples 2 (3%) of the respondents with yes, and the remaining 60 (97%) of the respondents are with no.

**Table V:** Frequency and Percentage Distribution according to their Level of Knowledge

| Knowledge | Frequency & percentage | Mean | SD | Range of scores | Total score |
|---|---|---|---|---|---|
| Inadequate (< 50%) (< 10) | 20 (33%) | 10.45 | 2.28 | 5 - 15 | 20 |
| Moderately adequate (51 - 74%) (10 – 14) | 39 (62%) | | | | |
| Adequate (> 75%) (> 15) | 3 (5%) | | | | |

**Table - V** shows that majority had 39 (62%) moderately adequate knowledge, 3 (5%) had an adequate knowledge, 20 (33%) Inadequate knowledge,

The mean knowledge was 10.45 with standard deviation 2.28 and ranges from 5 – 15

**Table VI:** Frequency and Percentage Distribution according to their Skill

| Skill | Frequency & percentage | Mean | SD | Range of scores | Total score |
|---|---|---|---|---|---|
| Poor (< 95%) (< 14) | 54 (87%) | 8.79 | 3.58 | 5 - 15 | 15 |
| Good (95 - 100%) (14 – 15) | 6 (9%) | | | | |
| Excellent (100%) (15) | 2 (4%) | | | | |

Here percentage are take out by doing observation at their skill performance and after that only give tick in yes box and no box in each question

**Correlation of Knowledge and Skill of Students Regarding Basic Life Support n=62**

| | Mean | SD (Standard Deviation) | Correlation Coefficient (r) |
|---|---|---|---|
| Knowledge | 10.45 | 2.28 | 0.9 |
| Skill | 8.79 | 3.58 | |

**Table VII:** Association of Knowledge with Age, Gender, Religion, Training Regarding Basic Life Support. n=62

| 1. Age | MA | I | Total | Cal. value | Tab. value | df | remarks |
|---|---|---|---|---|---|---|---|
| 21 - 22 years | 19 | 14 | 33 | | | | |
| 23 - 25 years | 14 | 15 | 29 | 0.52 | 3.84 | 1 | NS |
| **total** | 33 | 29 | 62 | | | | |
| **2. Gender** | | | | | | | |
| Male | 5 | 1 | 6 | | | | |
| Female | 29 | 27 | 56 | 4.14 | 3.84 | 1 | S |
| **Total** | 34 | 28 | 62 | | | | |
| **3. Religion** | | | | | | | |
| Hindu | 18 | 15 | 33 | | | | |
| Christian | 10 | 19 | 29 | 5.14 | 3.84 | 1 | S |
| **Total** | 28 | 34 | 62 | | | | |
| **4. BLS training** | | | | | | | |
| Yes | 1 | 1 | 2 | | | | |
| No | 30 | 30 | 60 | 56.06 | 3.84 | 1 | S |
| **Total** | 31 | 31 | 62 | | | | |

**{NOTE:** For calculation purpose, clubbing of the scores were done and chi square formula is applied $x^2$ = P at 0.05}A= Adequate, MA= Moderately Adequate, NS= Not significant, SIGN=Significant, df = Degree of freedom.

**Age:** The table shows that the obtained $x^2$ value (0.52) was less than the tabulated value (3.84), (df = 1) at 0.05 level of significance. Hence, there is association between age and knowledge of the respondents.

**Gender:** The table shows that the obtained $x^2$ value (4.14) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between gender and knowledge of the respondents.

**Religion:** The table shows that the obtained $x^2$ value (5.14) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between religion and knowledge of the respondents.

**Training regarding basic life support:** The table shows that the obtained $x^2$ value (56.06) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between training regarding basic life support knowledge of the respondents.

**Table VIII:** Association of Skill with Age, Gender, Religion, Training Regarding Basic Life Support n=62

| **1. Age** | E | P | Total | Cal. value | Tab. value | df | Remarks |
|---|---|---|---|---|---|---|---|
| 21 - 22 years | 5 | 28 | 33 | | | | |
| 23 - 25 years | 3 | 26 | 29 | 0.31 | 3.84 | 1 | NS |
| **Total** | 8 | 54 | 62 | | | | |
| **2. Gender** | | | | | | | |
| Male | 2 | 4 | 6 | | | | |
| Female | 6 | 50 | 56 | 2.27 | 3.84 | 1 | NS |
| **Total** | 8 | 54 | 62 | | | | |
| **3. Religion** | | | | | | | |
| Hindu | 6 | 36 | 42 | | | | |
| Christian | 3 | 17 | 20 | 1.15 | 3.84 | 1 | NS |
| **Total** | 9 | 48 | 62 | | | | |
| **4. BLS training** | | | | | | | |
| Yes | 1 | 1 | 2 | | | | |
| No | 7 | 53 | 60 | 2.66 | 3.84 | 1 | NS |
| **Total** | 8 | 54 | 62 | | | | |

**{NOTE:** For calculation purpose, clubbing of the scores were done and chi square formula is applied $x^2$ = P at 0.05} P= Poor, E= Excellent, NS= Not significant, SIGN=Significant, df = Degree of freedom.

**Age:** The table shows that the obtained $x^2$ value (0.31) was less than the tabulated value (3.84), (df = 1) at 0.05 level of significance. Hence, there is association between age and knowledge of the respondents.

**Gender:** The table shows that the obtained $x^2$ value (2.27) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between gender and knowledge of the respondents.

**Religion:** The table shows that the obtained $x^2$ value (1.15) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between religion and knowledge of the respondents.

**Training regarding basic life support:** The table shows that the obtained $x^2$ value (2.66) was more than the tabulated value (3.84), (df= 1) at 0.05 level of significance. Hence, there is association between training regarding basic life support knowledge of the respondents.

## 4. Major Findings of the Study

**Section I: Demographic data**
**Age group:** Majority 35 (57%) of the respondents were in the age group of 21 - 22 years.
**Gender:** Majority 52 (83%) of the respondents were male.
**Religion:** Majority 32 (52%) of the respondents are Hindu religion.
**Training:** Majority 61 (98%) of the respondents are not attend any training before.

**Section II: Assessment of the knowledge and skill scores of the students regarding basic life support**
1) The first objective of the study was to assess the knowledge regarding basic life support in the selected nursing colleges. The analysis revealed that, knowledge level of majority of the students were 22 (34%) adequate, 36 (59%) moderately adequate and 4 (7%) had inadequate knowledge regarding basic life support with mean 10.45 and SD 2.28.
2) The second objective of the study was to assess the skill regarding basic life support in selected nursing colleges.
The analysis revealed that, skill level of majority of the students were moderate.

**Section III: Correlation between knowledge and skill of the students.**
3) The third objective of the study was to correlate the knowledge and skill regarding basic life support among the students. The correlation between knowledge and skill was analyzed by using Karl Pearson's correlation coefficient. The mean knowledge score was 10.45 with SD 2.28 and the mean skill score was 8.79 with SD 3.58. The Karl Pearson's correlation coefficient was (r = 0.08) which revealed that there was a moderately positive correlation between knowledge and skill regarding basic life support. Hence it implies that increase in knowledge might enhance the skill.

**Section IV: Association of knowledge and skill of the students with selected demographic variables.**
4) The fourth objective of the study was to find out the association between knowledge and skill of the students regarding basic life support with selected demographic variables. Chi square analysis was done to find out the association of knowledge with selected demographic variables such as age, gender, religion, training regarding BLS by applying $x^2$ and the results revealed below:

The analysis revealed that there was a significant association between knowledge with age group of the respondents as calculated value 0.035 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

The analysis also revealed that there was a significant association between knowledge of the gender respondents as calculated value 4.14 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

The analysis revealed that there was a significant association between knowledge with religion group of the respondents as calculated value 5.144 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

The analysis also revealed that there was a significant association between knowledge of the students before receiving any training respondents as calculated value 1712.71 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

Chi square analysis was done to find out the association of skill with selected demographic variables such as age, gender, training regarding BLS by applying $x^2$ and the results revealed below:

The analysis revealed that there was a significant association between skill with age group of the respondents as calculated value 0.031 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

The analysis also revealed that there was a significant association between skill of the gender respondents as calculated value 2.27 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

The analysis revealed that there was a significant association between skill with before receiving any training of the respondents as calculated value 2.66 (df=1) respectively which was more than the tabulated value (3.84) at 0.05 level of significance.

## 5. Conclusion

The knowledge and skill regarding basic life support students in selected nursing colleges was assessed by using structured questionnaire. The study reveals that more knowledge leads to better performance skill as it was found that there is moderately positive correlation between knowledge and skill.

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