

Effectiveness of Structured Teaching Programme on knowledge regarding Basic Cardiac life support (BCLS) among undergraduate nursing students of Nobel Medical College Teaching Hospital, Biratnagar

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Abstract:

Background: Basic life support refers to maintaining an airway, supporting breathing and circulation without using any equipment. It includes recognition of signs, e.g., sudden cardiac arrest, heart attack, stroke, and foreign-body airway obstruction; cardiopulmonary resuscitation (CPR); and defibrillation with an automated external defibrillator (AED). The American Heart Association guidelines recommend an adult BLS sequence of chest compressions-airway-breathing as an early CPR step because effective chest compressions are crucial for the victim's survival. Nurses during their practice have to deal with cardiac arrest situations and may have to perform BLS procedures for the survival of the individual. Thus, BLS training is a necessary and important topic in any nursing curriculum. All medical staff needs to know about BCLS as they encounter life-threatening emergencies in their routine life, which would highlight the deficits in curriculum and help in guiding future planning of BCLS programs among nursing students. This study aimed to assess the effectiveness of a structured teaching programme on BCLS among undergraduate nursing students at Nobel Medical College Teaching Hospital and to compare the mean difference between pre-test and post-test scores.

Materials and Methods: A Pre- experimental one group pre-test post-test research design was conducted at Nobel Medical College Teaching Hospital, Biratnagar. Total enumerative sampling techniques were used for participant selection. This setting was chosen due to the feasibility and adequacy of the sample. Data were analyzed using SPSS.

Results: The mean difference between pre-test and post-test scores was 5.75. Results showed a significant difference in pre-test and post-test scores. ($t=18.686$, $p < 0.05$).

Conclusion: The study shows the knowledge regarding Basic Cardiac life support among undergraduate nursing students has increased after STP.

Key Word: Basic Cardiac life support, Effectiveness, Knowledge

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I. Introduction

Cardiac arrest is a major public health issue and a cause of mortality worldwide. Higher rates of survival have been seen when cardiac arrests are witnessed.^{1,2} However, only a minority of cardiac arrest victims receive potentially lifesaving bystander cardiopulmonary resuscitation (CPR), thus indicating the need for improvements in resuscitation education.³ Basic life support refers to maintaining an airway and supporting breathing and circulation without using any equipment.⁴ As an early CPR step, the American Heart Association guidelines recommend an adult BLS sequence of chest compressions-airway-breathing because effective chest compressions are crucial for the victim's survival. Nurses during their professional practice may have to deal with cardiac arrest situations and may have to perform BLS procedures for the survival of the affected individual. Thus, BLS training is a necessary and important topic in any nursing curriculum.⁵ Medical professionals encounter such emergencies very often so they should have sufficient knowledge of BLS.⁶

II. Material And Methods

Pre- experimental one group pre-test post-test study was conducted at Nobel Medical College Teaching Hospital, Biratnagar, Nepal from September 17th to 23rd September 2021. A total of 118 samples were used in this study.

Study Design: Pre- experimental one group pre-test post-test study

Study Location: Nobel Medical College and Teaching Hospital, Biratnagar

Study Duration: September 17th to September 23rd, 2021

Sample size: 118 undergraduate nursing students

Sample size calculation: 118 participants were selected by total enumerative sampling techniques

Subjects & selection method: Nursing students of 2nd, 3rd, 4th year BSc and 2nd, 3rd BNS Nursing will be the population of the study. They will be selected because they were expected to have organized knowledge of Basic Cardiac Life Supports (BCLS) by this year. Total enumerative sampling techniques were used for participant selection. This setting was chosen due to the feasibility and adequacy of the sample

Inclusion criteria:

1. 2nd, 3rd, 4th-year B.Sc. Nursing students of Nobel Medical College Teaching Hospital
2. 2nd, 3rd BNS Nursing students of Nobel Medical College Teaching Hospital
3. Those nursing students who are willing to participate in Nobel Medical College Teaching Hospital

Exclusion criteria:

1. 1st Year B.Sc. Nursing students of Nobel Medical College Teaching Hospital
2. 1st BNS Nursing students of Nobel Medical College Teaching Hospital
3. Students who will be on sick leave or maternity leave during the data collection period of Nobel Medical College Teaching Hospital

Procedure methodology

After obtaining permission from the institutional review committee Informed consent was taken from the participants after adequate explanations of the objectives and procedure of the study before collecting the data.

The participants will be involved twice. First, the knowledge level of the participants will be assessed using a questionnaire and on the same day, a structured teaching programme on basic cardiac life support will be administered, and after a week, post-test knowledge will be assessed. Therefore, the participants will be involved twice in this study.

Data will be collected using a self-administered questionnaire comprising two parts and the participants are required to fill up the questionnaires and attend the class on basic cardiac life support. Part I of the questionnaire consisted of the Sociodemographic of the students. Part II of the questionnaire consists of knowledge regarding Basic Cardiac Life Support (BCLS) among undergraduate nursing students formed based on AHA guidelines. Similarly, Part II Contains items that elicit information on knowledge regarding Basic Cardiac Life Support (BCLS) among nursing students.

The tool consists of a 20-questionnaire to assess the knowledge of basic cardiac life support. The correct answer will be scored 1 and the incorrect answer will be scored 0, participants scoring more than 76% will be considered to have adequate knowledge, 51-75% will be considered to have moderate knowledge, and participants scoring less than 50% will be considered inadequate knowledge.

The researcher instrument will be maintained by pretesting in 10% of the estimated study sample who meets the inclusion criteria in a similar setting, and who will not be included in the study later. The study will be done only at Nobel Medical College Teaching Hospital on undergraduate nursing students; hence, the findings may not be generalized to working nurses in different departments. The study is STP so practical skills will not be assessed, the study is having one time post-test hence, the knowledge retention period also cannot be assessed and is considered a study limitation. The self-administered questionnaire will be used, different from what might have been obtained in a real-life situation.

Statistical analysis

The collected data was coded and converted into SPSS (Statistical Package for Social Science) version 20 for statistical analysis. For descriptive statistics percentage, mean, standard deviation, median, and interquartile range were calculated. For inferential statistics, the Wilcoxon Signed-Rank test was used to determine the mean difference between the pretest and post-test knowledge.

III. Result

The mean difference between the pre-test and the post-test score was 5.75. Results showed a significant difference in pre-test and post-test scores. ($t=18.686$, $p<0.05$) which shows knowledge has increased after STP. The mean age in years and standard deviation are 22.48 ± 1.86

Table no 1: Shows the socio-demographic characteristics of participants

Characteristics	Frequency (n=108)	Percentage (%)
Age (years) Mean (SD) ±22.48 (1.86)		
Education Level		
2 nd year	44	40.7
3 rd year	24	22.2
4 th year	40	37.1
Enrolled Nursing Programme		
BSC N	73	67.6
BNS	35	32.4
Source of Information	27	25.0
Seminar	7	6.5
Peer group	1	0.9
No information	4	3.7
Classroom	56	51.9
Other	13	12.0
Previous experience with CPR		
Yes	31	28.7
No	77	71.3
Exposure to BCLS training		
Yes	30	27.8
No	78	72.2

Table 1 depicts the socio-demographic characteristics of the participants. At the educational level, 40.7% belongs to the 2nd year. Regarding the enrolled nursing programme, 67.6% were studying B.Sc. nursing. In the previous source of information, more than half 51.9% had information from the classroom. Similarly, 71.3% of the participant had no previous experience with CPR and only 28.7% of participants had previous experience with CPR. Moreover, 72.2% of participants had been already to expose BCLS training.

Table no 2: Distribution of overall knowledge score (n=118)

Knowledge score	Pre-Test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Inadequate	78	72.2%	8	7%
Moderate	30	27.8%	29	26.9%
Adequate	-	-	71	66.1%

Table no 2 shows, In the pre-test assessment, the majority (72.2%) of the respondents had an inadequate level of knowledge while only more than one-quarter of the respondent (27.8%) had a moderate level of knowledge and none of the respondents had an adequate level of knowledge. Whereas, post-test knowledge of the respondents after educational intervention, about two-thirds (66.1%) of respondents had an adequate level of knowledge, while more than one quarter (26.9%) of the respondents had a moderate level of knowledge and only 6% of the respondents had an inadequate level of knowledge regarding BCLS.

Table no 3: Comparison of pre-test and post-test mean score

The table3 depicts the comparison of pre-test and post-test mean scores. The mean difference is 5.75 (p<0.05) and the T value is 18.68

Observation	Mean	Mean Difference	Standard Deviation	t value	P-value	Remarks
Pre-test score	8.29	5.75	2.88	18.68	<0.05	Significant
Post-test score	13.94		2.27			

Table no 3 shows that the knowledge score gained by respondents in the results shows that the mean value of knowledge in the pre-test was 8.29 ± 2.88 and in the post-test was 13.94 ± 2.27 Since the “p” value for the test is <0.05. The calculated ‘t’ value was 18.68 which shows that there was a significant difference between the mean pre-test and mean post-test knowledge score. This shows that the obtained mean difference of pre-test and post-test knowledge scores was a true difference and not by chance and the p-value is less than 0.05. Therefore, it can be concluded that the Structured Teaching Program significantly increased undergraduate nursing students’ knowledge regarding Basic Cardiac Life Support.

IV. Discussion

The results of this study revealed that knowledge regarding Basic Cardiac life support among undergraduate nursing students has increased after STP.

This finding was consistent with the study conducted by D. Ravivarman et al. which shows that the structured teaching program was highly effective to improve the student's knowledge.⁸

Another study conducted by Kose S et al. shows basic life support training improved knowledge and skills related to basic life support practices in nursing students. Periodic basic life support training is very important for competency in this area among nursing students.⁷

A study conducted by D. Ravivarman et al. include the First year of 59 undergraduate Nursing students who were chosen by the Purposive sampling technique. The data were collected by using demographic proforma and a self-structured knowledge questionnaire. Results show Pre-test and post-test knowledge scores revealed that during the pre-test, the mean score was 8.6 ± 3.07 (SD) which is 43% of the total mean score, whereas in the post-test, the mean score was 15.13 ± 2.26 (SD) which is 75.65% of the total mean score depicting difference of 32.65% increase in mean percentage of a score. The calculated 't' value of 24.89 which is higher than the $P < 0.05$, stated a highly significant difference between the pre-test and post-test. It proved that the structured teaching program was highly effective to improve the student's knowledge.

Likewise, the study conducted by Kose S et al. includes a convenience sample of 1st-year students enrolled in the undergraduate nursing class. The study sample consisted of 65 nursing students. Basic life support training included both theoretical and practical components. The students' knowledge and practices were assessed before basic life support training. Data were collected using the knowledge assessment questionnaire. The practical skills for basic life support were observed and assessed using a checklist. The pre-and post-assessment practice scores were compared. Results shows after basic life support training, the level of knowledge and practical skill scores were higher compared to pre-training scores ($t = -12.442$, $p = 0.000$; $t = -22.899$, $p = 0.000$). There was a significant and moderate association between the adult basic life support Knowledge Form scores and the adult basic life support practice assessment form scores obtained after the training ($r = 0.39$, $p < 0.01$). The study concluded that basic life support training improved knowledge and skills related to basic life support practices in nursing students. Periodic basic life support training is very important for competency in this area among nursing students.^{7,8}

Moreover, another pre-experimental research design was adopted among the First year 59 undergraduate Nursing students by the Purposive sampling technique. The data were collected by a self-structured knowledge questionnaire whose aim was to assess the effectiveness of a structured teaching programme on knowledge regarding Basic life support among first-year undergraduate Nursing students. Pre-test and post-test knowledge scores revealed that during the pre-test, the mean score was 8.6 ± 3.07 (SD) which is 43% of the total mean score, whereas, in the post-test, the mean score was 15.13 ± 2.26 (SD) which is 75.65% of the total mean score depicting difference of 32.65% increase in mean percentage of a score. The calculated 't' value of 24.89 which is higher than the $P < 0.05$, stated that highly significant difference between the pre-test and post-test. It proved that the structured teaching programme was highly effective to improve the student's knowledge.⁹

V. Conclusion

This study showed that knowledge regarding Basic Cardiac life support among undergraduate nursing students has increased after STP.

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