https://doi-ds.org/doilink/02.2024-37392575/GIJNR

Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

Effectiveness of training sessions on basic life support in terms of knowledge and practices among nursing students

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Article Information:

Type of Article: *Research Article (Original)* **Received On:** *1th February 2024*

Accepted On: *7th February 2024* **Published On**: *12th February 2024*

Abstract

Introduction: Basic life support (BLS) is a critical skill for both healthcare professionals and laypersons, allowing them to respond effectively in emergency situations to save lives. Our study aimed to assess the knowledge and attitude of nursing students towards BLS techniques through the implementation of a checklist-guided demonstration. Conducted under the supervision of an American Heart Association (AHA) trainer, this initiative aimed to equip students with the necessary competencies to independently perform CPR techniques. **Aim:** The primary aim was to evaluate the students' ability to independently practice CPR techniques without assistance, while the secondary objective was to gauge their knowledge of basic life support. **Method:** A purposive sampling technique was employed to select participants, consisting of B.Sc. Nursing students in their third semester. Data was collected through structured questionnaires supplemented with a demonstration using a checklist. **Results:** Sixty-

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seven female students participated in the study. Pre-test assessment revealed an average knowledge score of 15.75±4.52, with 49% of participants demonstrating an average level of knowledge. Following the intervention, the post-test average score significantly increased to 26.54±5.92, with 64% of participants exhibiting a good level of knowledge. **Conclusion:** The study underscores the importance of efficient and consistent CPR training in preparing individuals to respond effectively to crisis situations. Both healthcare organizations and individual providers should prioritize BLS training to enhance confidence in CPR success and potentially save lives. Future research should explore the impact of varying BLS training frequencies and target groups to optimize emergency response preparedness.

Keywords: Assess, Knowledge, basic life support, cardiopulmonary resuscitation, b.sc nursing students.

Introduction

The current landscape of heart attack fatalities in India, as reported by the National Crime Records Bureau (NCRB), paints a concerning picture, with deaths consistently exceeding 25,000 annually and a surge observed among individuals aged 18 to 30.[1] Concurrently, studies such as Arpita Innocent's investigation on nursing students at the Government College of Nursing Jodhpur underscore the pressing need for improved basic life support (BLS) knowledge and practices among healthcare professionals.[2] It's evident that comprehensive BLS training is essential in equipping individuals with the skills necessary to effectively respond to life-threatening situations.[3]

Basic life support (BLS) encompasses a range of emergency procedures designed to sustain a patient's life until advanced medical care can be administered.[4] These procedures include cardiopulmonary resuscitation (CPR) and various first aid treatments aimed at stabilizing a patient's condition.[5] While theoretical education is crucial, practical training in BLS practices is equally vital for successful implementation in real-life scenarios. Immediate recognition of cardiac arrest, activation of emergency medical services (EMS), and early initiation of CPR and defibrillation are pivotal in improving survival rates.[5,6,7,8]

Studies conducted globally have shed light on the state of BLS knowledge and training among various populations. Awais Ahmed and Naseem Akhtar's research on Jazan University students in Saudi Arabia revealed that while most participants had received BLS training, their

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knowledge levels remained mediocre. Interestingly, students with previous training demonstrated significantly better BLS knowledge compared to their counterparts.[9] Similarly, Mysara Alfakey and Ahmed Alkarani's study at Taif University in Saudi Arabia found that while the majority of students had attended a BLS course, their knowledge levels varied. However, overall, there was a positive attitude towards BLS training, and trained students exhibited better knowledge and skills.[10, 11]

In a study by Shanta Chandrasekaran et al., awareness of BLS among students, doctors, and nurses across various medical disciplines was found to be alarmingly low, with none possessing complete knowledge. This highlights the urgent need for comprehensive BLS education across healthcare disciplines.[12] Selmin Kose, Semiha Akin, and Onur Mendi's quasi-experimental study demonstrated that BLS training significantly improved knowledge and practical skills among nursing students.[13] Similarly, Hajra Sarwar et al.'s study in Lahore found that nursing students' BLS knowledge varied based on their qualifications and experiences, with years of experience and qualifications playing a significant role.[14]

In Nepal, Gautam Prasad Chaudhary et al. found that knowledge regarding BLS among healthcare workers was insufficient for the majority of participants. This underscores the necessity for ongoing education and training in BLS practices.[15] The collective findings from these studies emphasize the critical role of comprehensive BLS training in improving healthcare professionals' preparedness to respond effectively to emergencies.

In light of the escalating heart attack incidences, coupled with the insufficient BLS knowledge among healthcare professionals, the urgency for enhanced BLS training cannot be overstated. With proper training, individuals can acquire the skills and confidence needed to administer life-saving interventions promptly. This necessitates a multifaceted approach, including integrating BLS training into educational curricula, providing regular refresher courses, and fostering a positive attitude towards BLS education.[16,17]

In conclusion, BLS training plays a pivotal role in equipping healthcare professionals with the necessary skills to respond effectively to emergencies such as heart attacks. Studies worldwide highlight the need for comprehensive BLS education and training to improve knowledge, skills, and attitudes towards BLS practices among healthcare professionals. Moving forward, concerted efforts are required to ensure widespread access to quality BLS training and

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education, ultimately enhancing the collective ability to save lives in critical situations.[1,6,7,9,10,12,14,17]

Methodology:

The present study adopts a quantitative research approach, employing a one-group pre-test and post-test design to assess the impact of a Basic Life Support (BLS) training session on student nurses' knowledge and practice of BLS. Conducted at Era College of Nursing in Lucknow, the study population consists of student nurses enrolled in the institution. Utilizing a purposive sampling technique, 80 participants from the B.Sc. 3rd semester will be selected. Data collection will involve several tools, including a BLS training session, a structured knowledge questionnaire to evaluate BLS knowledge, and a BLS checklist to assess BLS practice among student nurses.

The data collection procedure will commence with obtaining formal administrative permission. Subsequently, the selected sample will be briefed about the study's purpose and assured of confidentiality. A pre-test using a structured knowledge questionnaire will be administered to gauge the subjects' baseline knowledge of BLS. Following the pre-test, a training session on BLS knowledge and practice will be conducted. At the conclusion of the training session, an identical post-test will be administered to evaluate the students' knowledge and practice of BLS.

In terms of data analysis and interpretation, demographic variables reveal that out of the 80 students, 67 subjects participated in the study, all of whom were female students enrolled in the B.Sc. Nursing III Semester.

Result:

Table: 1 Frequency and Percentage distribution of Demographic Data (Nursing Students)

n=80

	Demographic Variables	Frequency	Percentage (%)
1.	**Student status**		
	Total	**80**	**100%**
	Present	**67**	**83.75%**
	absent	**13**	**16.25%**
2.	**Age Status**		
	17-19	**60**	**75%**
	20-22	**12**	**15%**

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	23-25	**08**	**10%**
3.	**Sex status**		
	Male	**13**	**16.5%**
	Female	**67**	**83.5%**
	Transgender	**00**	
4.	**Qualification /education**		
	12 th STD	**62**	**77.5%**
	Degree (general)	**02**	**2.5%**
	Post graduate	**03**	**3.75%**
	Others	**13**	**16.25%**
5.	**Type of medium study in 12th STD**		
	English	35	43.75%
	Hindi	45	56.25%
6.	**Type of residency**		
	Urban	20	25%
	Rural	45	56.25%
	Regional	05	6,25%
	District	10	12.05%
7.	**Source of information**		
	WhatsApp	10	12.5%
	Facebook	12	15%
	Social media	25	31.25%
	Internet	05	6.25%
	Friends	03	3.75%
	Course /subject /institution	30	37.5%

Table 1 presents the frequency and percentage distribution of demographic data among nursing students (n=80). The table outlines various demographic variables including student status, age status, sex status, qualification/education, type of medium studied in 12th standard, type of residency, and source of information. Under student status, it indicates that out of the total 80 students, 67 were present (83.75%) and 13 were absent (16.25%). Regarding age status, the majority of students (75%) fell within the 17-19 age range, followed by 20-22 (15%) and 23-25 (10%). In terms of sex status, the majority were female (83.5%), while 16.5% were male. Under qualification/education, most students had completed 12th standard (77.5%), with smaller percentages holding a degree (2.5%), postgraduate degree (3.75%), or other qualifications (16.25%). The type of medium studied in 12th standard was predominantly Hindi (56.25%), followed by English (43.75%). In terms of residency, the majority hailed from rural areas (56.25%), followed by urban (25%), district (12.05%), and regional (6.25%) areas. The

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primary sources of information for students included social media (31.25%), course/subject/institution (37.5%), Facebook (15%), WhatsApp (12.5%), internet (6.25%), and friends (3.75%).

Knowledge Score Status:

For knowledge of subjects regarding BLS, the average score of pre-test was 15.75+-4.52 and the majority of the subjects (49%) had an average level of knowledge. The average score of the post-test was 26.54+-5.92 and the majority of subjects (64%) had good level of knowledge as shown in

Figure 1: Bar diagram showing the percentage distribution of student nurses according to their level of knowledge.

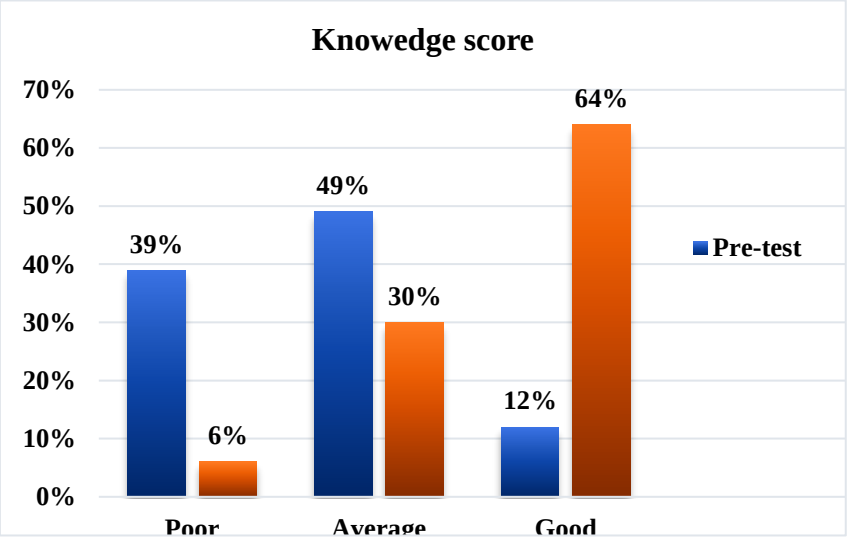

Figure 1: Bar Diagram presents the frequency and percentage distribution of student nurses' knowledge of basic cardiac life support (BCLS) before and after a training session, with a sample size of n=67. The levels of knowledge are categorized into Poor, Average, and Good based on the range of scores. In the pre-test assessment, 26 students (39%) scored within the Poor range (0-13), while 33 students (49%) fell within the Average range (14-25), and 8 students (12%) demonstrated Good knowledge (26-37). After the training session, there was a notable improvement in knowledge levels, with only 4 students (6%) scoring in the Poor range, while 20 students (30%) remained in the Average range. However, a substantial increase was observed in the number of students demonstrating Good knowledge, with 43 students (64%) scoring within this range. This table highlights the effectiveness of the training session in

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enhancing student nurses' knowledge of basic cardiac life support, as evidenced by the significant shift towards higher knowledge levels in the post-test assessment.

Table 2: Range, mean, and standard deviation of knowledge scores of student nurses on Basic Cardiac Life Support.

	Possible Range	Range Obtained	Mean	Mean Deviation	SD	df	t-value	p-value
Pre-test	0-67	8-26	15.75	10.79	4.52	66	13.2816	<0.0001
Post-test		12-34	26.54		5.92			

Table 2 presents the range, mean, and standard deviation of knowledge scores among student nurses on Basic Cardiac Life Support (BCLS) before and after a training session. The possible range of scores for both the pre-test and post-test is 0-67. In the pre-test, the range of obtained scores ranged from 8 to 26, with a mean score of 15.75. The mean deviation from the mean score is 10.79, and the standard deviation is 4.52. For the post-test, the range of obtained scores ranged from 12 to 34, with a mean score of 26.54 and a standard deviation of 5.92.

The statistical significance of the difference between pre-test and post-test scores is assessed through a two-tailed P value, which is reported to be less than 0.0001, indicating extreme statistical significance. Additionally, a 95% confidence interval of the difference in scores is provided, ranging from -12.41 to -9.17. Intermediate values used in calculations include the t-value (13.2816), degrees of freedom (df = 66), and standard error of difference (0.812). These values are crucial in determining the significance of the difference in knowledge scores before and after the training session, highlighting the effectiveness of the intervention in enhancing student nurses' knowledge of BCLS.

Section B Checklist for practices

Table: 3 frequency and percentage distribution of student nurses according to their level of Practice score.

Level of practices	Range of score	First attempt		Second attempt	
		Frequency	Percentage	Frequency	Percentage
Poor	0-5	03	4.4%	00	00%
Average	6-10	12	17.9%	03	4.4%
Good	11-15	52	77.6%	12	17.9%

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Table 3 provides the frequency and percentage distribution of student nurses according to their level of practice scores, categorized into Poor, Average, and Good, based on the range of scores achieved during the first and second attempts. The range of scores for each category is delineated as follows: Poor (0-5), Average (6-10), and Good (11-15). During the first attempt, 3 students (4.4%) scored within the Poor range, while 12 students (17.9%) fell within the Average range, and 52 students (77.6%) demonstrated Good practice scores. Remarkably, no students scored in the Poor range during the second attempt, with 3 students (4.4%) in the Average range and 12 students (17.9%) in the Good range. These findings underscore the significant improvement in practice scores among student nurses, with the majority demonstrating Good practice levels following the training session.

Discussion:

To enhance the knowledge and skills of Basic Life Support (BLS) among pre-graduation nursing students, it is proposed to incorporate BLS training as a graduation requirement. This study aimed to evaluate the efficacy of a training session on BLS in improving the knowledge and practice of B.Sc. Nursing 3rd semester students at Era College of Nursing, Lucknow. Among the 67 subjects assessed, the pre-test revealed an average score of 15.75+-4.52, with 49% displaying an average level of knowledge. Following the training session, the post-test average score significantly increased to 26.54+-5.92, with 64% demonstrating a good level of knowledge ($P < 0.0001$, 95% CI: -12.41 to -9.17). The BLS practice session utilized a checklist to evaluate performance, with 77.6% of subjects effectively executing all steps in the first attempt, 17.9% in the second attempt, and 4.4% in the third attempt. These findings underscore the effectiveness of structured BLS training sessions in enhancing both knowledge and practical skills among nursing students, supporting the integration of BLS training into nursing education curricula to ensure preparedness for emergency situations.

Conclusion

The study revealed a positive attitude towards Basic Life Support (BLS) training among respondents, with trained students demonstrating superior knowledge, skills, and attitudes compared to untrained peers. The findings emphasize the significance of consistent CPR preparation to ensure success in crisis situations. Both healthcare agencies and individual providers must prioritize completing relevant courses to enhance confidence in CPR

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effectiveness and potentially save lives. Future research should explore the impact of varying BLS preparation frequencies and target groups for further insights.

Implications

The study underscores the importance of Basic Life Support (BLS) training for nursing students, advocating for pre-program BLS courses and ongoing skill development. Nursing education should prioritize BLS theory and practical hours, encouraging participation in specialized seminars and workshops. Nurse administrators can use findings to assess nurse competencies and implement targeted in-service education programs on BLS, ultimately enhancing patient care and safety.

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