International Journal of Innovative Research in Health Science
Published: August 2026
Volume 2, Issue 8, Pages 1-4

Research Article
DOI: https://doi.org/10.63349/ijirhs.202639

Exploring The Knowledge Level of Nursing Students on Compression-Only Basic Cardiac Life Support Techniques

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Abstract:

Introduction: Compression-only CPR, which emphasizes high-quality chest compressions without rescue breaths, has emerged as a critical skill, particularly for bystanders who may fear performing the full BCLS due to anxiety about providing rescue breaths. **Aim:** This study aimed to explore the knowledge level of Compression-Only Life Support (COLS) training among 125 second-semester B.Sc. Nursing students at Sharda University. **Methodology:** Using a descriptive, prospective study design, the study evaluated students' knowledge and performance in COLS through simulation-based training and Objective Structured Clinical Examination (OSCE) methodology. **Results:** The results revealed that 96% of students demonstrated poor performance in COLS, with only 4% exhibiting average performance. Chi-Square tests showed significant associations between performance levels and demographic variables, including gender ($p = 0.034$), region ($p = 0.000$), and prior knowledge of COLS ($p = 0.000$). These findings underscore the importance of considering these factors in nursing education to improve CPR training and enhance performance in emergency situations. **Conclusion:** The study concludes that regular, hands-on practice and tailored training programs are essential for bridging the gap between theoretical knowledge and practical application in critical life-saving techniques like COLS.

Key words: Knowledge, nursing students, basic cardiac life, support techniques

INTRODUCTION

Exploring the knowledge level of nursing students on compression-only basic cardiac life support (BCLS) techniques is vital in preparing future healthcare providers to manage cardiac emergencies effectively. Compression only CPR, which emphasizes high quality chest compressions without rescue breaths, has emerged as a critical skill, particularly for bystanders who may fear performing the full BCLS due to anxiety about providing rescue breaths.

Nursing students, as frontline healthcare workers, need to be proficient in CPR, as they often are the first responders in emergencies. In a study by Baloch et al., a significant majority of nursing students (83.8%) recognized CPR as an emergency procedure for cardiac arrest, reflecting a solid understanding of its importance (Baloch et al., 2024). However, despite this awareness, many studies have reported gaps in knowledge and confidence related to CPR among nursing students. For example, Alaryani et al. found that many nursing students understood the significance of CPR but lacked practical skills, primarily due to insufficient training (Alaryani et al., 2021).

Simulation-based training has been shown to enhance both knowledge and practical skills in CPR among nursing students. Research by Mohamed and Fashafsheh demonstrates that simulation scenarios can lead to statistically significant improvements in nursing students' communication skills, self-efficacy, and overall clinical competency concerning

Effectiveness in CPR is linked not only to educational training but also to the attitudes and beliefs cultivated during nursing education. Moon and Hyun found that nursing students' self-efficacy significantly contributes to their actual performance of CPR (Moon & Hyun, 2019). This underscores the importance of fostering a positive attitude toward continuous training and practice, which can mitigate anxiety and enhance readiness to respond to cardiac emergencies when they arise (Sok et al., 2020).

Despite these positive training outcomes, ongoing assessments reveal that many nursing students still face barriers in effectively applying their knowledge in real life situations. A worrying trend noted in the literature is that even with reasonable theoretical knowledge, practical performance often falls short, necessitating more hands-on and repeat training methods (Vural et al., 2017). Therefore, it is crucial for nursing curricula to emphasize routine practice and refresher courses in CPR to address these gaps and empower nursing students to perform CPR confidently and competently (Khaledi et al., 2024).

In conclusion, while nursing students demonstrate a foundational understanding of the principles behind compression-only CPR, there is a need for improved training methods that actively engage students and foster both knowledge retention and skill competency. Incorporating simulation and recurrent training into nursing education can help bridge the gap between theoretical knowledge and practical application, ultimately enhancing patient outcomes

METHODOLOGY

A descriptive, prospective study design was employed to assess the effectiveness of Compression-Only Life Support (COLS) training among B.Sc. Nursing students in the 2nd semester at Sharda University. Ethical approval was obtained from the institutional ethics committee. The study was conducted at the Sharda School of Nursing Science and Research, Sharda University, with a total of 125 students enrolled in the 2nd semester during the study period from May 21st to May 24th, 2025. The inclusion criteria for the study were B.Sc. Nursing students enrolled in the 2nd semester, who were available during the study period and willing to participate. Exclusion criteria included students who were not enrolled in the 2nd semester of the B.Sc. Nursing program, those who declined participation, and students who were unavailable during the study period.

The study included B.Sc. Nursing students enrolled in the second semester at Sharda University who were available during the study period (May 21–24, 2025) and willing to participate. Students who were not enrolled in the second semester, declined participation, or were unavailable during the study period were excluded. An Objective Structured Clinical Examination (OSCE) checklist for Compression Only Life Support (COLS) was used to assess practical skills. The checklist comprised nine key steps, including briefing, scene and safety assessment, victim assessment, chest compressions, correct technique, continuous compressions, rescue breathing where applicable, victim monitoring, and calling for help.

Data were collected prospectively over four days of COLS skill training, with students assessed across four OSCE stations using a BLS mannequin. Their performance was evaluated using the standardized nine-step checklist, including appropriate introduction, delivery of 30 quality chest compressions, safety assessment, victim assessment, and activation of emergency assistance. Descriptive statistics, including frequency and percentage, were used to summarize demographic characteristics and performance levels. The Chi-square test of independence was performed using SPSS to determine the association between performance levels and selected demographic variables.

RESULT

Table 1 showed that all the participants are aged between 18 and 25 years. The gender distribution is 40% male and 60% female. All students are undergraduates, and the entire sample consists of students. In terms of regional distribution, 80% of the students are from urban areas, while 20% are from rural areas. Regarding prior knowledge of COLS, 48% of the students have prior knowledge, while 52% do not have prior knowledge.

Table 2 presents the performance levels of 125 students. The majority of students (96%) demonstrated poor performance, with a frequency of 120 students. Only a small percentage (4%) of students exhibited average performance, totalling 5 students. This table highlights a clear predominance of poor performance among the students in the sample.

Table 3 presents the association between students' performance levels and selected demographic variables. Gender, region, and previous knowledge of COLS were found to have statistically significant associations with performance levels, as their p-values were less than 0.05. This indicates that students' performance in COLS was significantly influenced by these demographic and background characteristics. levels.

DISCUSSION

The study findings revealed a considerable gap in Compression Only Life Support (COLS) skills among nursing students, with the majority demonstrating poor performance despite being within the 18–25-year age group and having access to educational resources. This finding suggests that exposure to theoretical education alone may not be sufficient to develop adequate practical competence in emergency life-support skills. Gender, region, and previous knowledge of COLS were significantly associated with students' performance levels, indicating that both demographic characteristics and prior exposure to life-support training may influence practical competency.

The gender distribution showed that females constituted the majority of participants, while a significant association was observed between gender and performance. Jain (2022) reported differences in confidence levels between male and female participants following BLS training, suggesting that gender-related differences in confidence and training experience may influence performance. Similarly, although most students in the present study were from urban areas, region was significantly associated with performance. This indicates that living in an urban area does not necessarily ensure adequate practical preparedness, as access to resources alone may not translate into competency. Harnanto and Sunarto (2022) also highlighted that access to healthcare resources does not always correspond with better BLS knowledge among nursing students.

Previous knowledge of COLS was also significantly associated with performance. Students with prior exposure to COLS were more likely to demonstrate better performance, emphasizing the importance of repeated practice and reinforcement of life-support skills. This finding is consistent with Al-Mohaissen (2017), who emphasized that early BLS exposure and periodic refresher training are important for improving knowledge retention and practical skills. Bylow et al. (2019) similarly identified gaps in emergency response education and recommended strengthening BLS training within nursing curricula. Hands-on practice, simulation-based learning, and regular competency assessments may therefore help improve skill retention and confidence among nursing students, as reported in previous studies (Köse et al., 2019; Kumar et al., 2022).

Overall, the findings demonstrate that poor COLS performance remains an important concern among nursing students. The significant associations with gender, region, and prior knowledge highlight the need to consider students' background and previous training when planning educational interventions. Incorporating structured practical sessions, simulation-based training, repeated skill demonstrations, and periodic assessments into nursing education may improve students' competency and preparedness to respond effectively during life-threatening emergencies.

CONCLUSION

The study results showed that the majority of nursing students (96%) exhibited poor performance, while only 4% demonstrated average performance. This indicates a significant need for academic support and intervention for the majority of students. The Chi-Square test of independence revealed that performance levels were significantly associated with demographic factors, such as gender, region, and prior knowledge of COLS. These findings suggest that gender, geographic background, and prior knowledge of COLS are key factors influencing student performance, and addressing these factors may help improve student outcomes.

RECOMMENDATIONS

It is recommended to implement targeted support programs tailored to students' gender, region, and prior knowledge of COLS, such as specialized tutoring and workshops. Additionally, providing comprehensive COLS training for all students is essential. Further research should explore other factors influencing performance, with longitudinal studies to assess long-term effects.

LIMITATION

The study's sample size of 125 nursing students limits generalizability. The cross-sectional design prevents establishing causal relationships, and future research should use longitudinal designs. Self-reported data may also introduce bias, suggesting the need for objective measures in future studies.

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Table 1: Demographic variables of the nursing students. N= 125

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age (in years)	18-25	125	100%
Gender	Male	50	40%
	Female	75	60%
Educational Background	Undergraduate (UG)	125	100%
Designation	Student	125	100%
Region	Urban	100	80%
	Rural	25	20%
Previous Knowledge of COLS	Yes	60	48%
	No	65	52%

Table 2: Performance level the students. N=125

Performance Level	Frequency (n)	Percentage (%)
Poor Performance	120	96%
Average Performance	5	4%

Table:3 Chi-Square Test Results for Association of Performance Levels with Demographic Variables

Demographic Variable	Chi-Square Value	p-value
Gender	4.47	0.034*
Region	15.95	0.000*
Previous Knowledge of COLS	28.45	0.000*

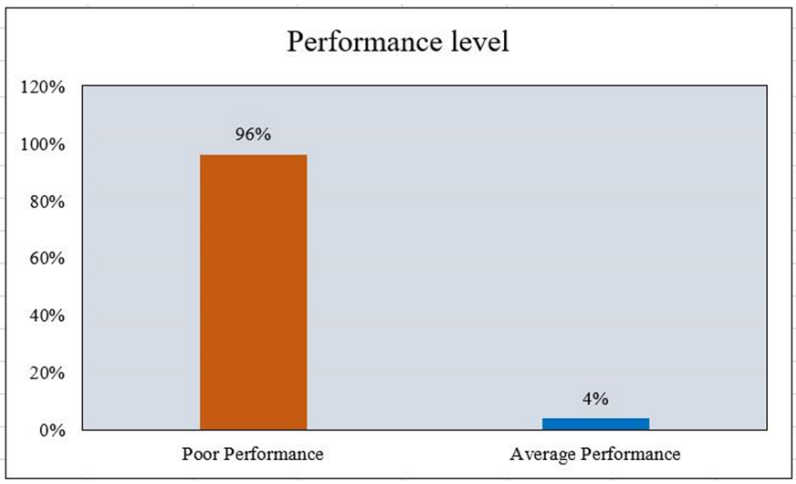

Figure: 1 Percentage distribution of the performance of the level of the students

Cite this article as: Diwakaran chitra (2026). 'Exploring The Knowledge Level of Nursing Students on Compression-Only Basic Cardiac Life Support Techniques' International Journal of Innovative Research in Health Science, 2(8), 1-4

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