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# BASIC LIFE SUPPORT TRAINING TO IMPROVE COMPETENCY FOR NURSING STUDENTS IN HANDLING CARDIAC ARREST PATIENTS: A SYSTEMATIC LITERATURE REVIEW

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**Abstract**

Cardiovascular diseases are the leading cause of death globally, with sudden cardiac arrest requiring immediate action during the critical period to prevent irreversible damage. Nursing students must be highly trained in Basic Life Support (BLS), particularly in cardiopulmonary resuscitation (CPR), to effectively manage emergency situations. This study employed a systematic literature review using the PICOT framework to analyze five peer-reviewed articles published between 2021 and 2025. The articles, sourced from Google Scholar and PubMed, examined the impact of BLS training on nursing students through quasi-experimental pre–posttest designs. The results consistently showed significant improvements in students' knowledge, technical skills, and readiness following BLS training. Simulation-based teaching, led by certified instructors, effectively enhances both cognitive and psychomotor skills. The observed low baseline competency prior to training underscores the necessity of integrating BLS into nursing curriculum. Ongoing simulation-based instruction is crucial for promoting clinical preparedness and building confidence among nursing students. BLS training substantially improves nursing students' ability to perform CPR. It is strongly recommended that nursing education institutions adopt regular and structured BLS training programs to ensure the preparedness of future healthcare professionals.

**Keywords:** ***Basic Life Support, Cardiopulmonary Resuscitation, Nursing Student, Training***

## INTRODUCTION

Heart disease remains a common problem worldwide. According to data fromWorld Health Organization, (2020)Heart disease remains the leading cause of death worldwide, with the death toll reaching around 17.9 million people each year.Ministry of Health of the Republic of Indonesia, (2023)reported that the prevalence of heart disease in Indonesia in 2023 was recorded at 0.85%. This indicates that approximately 0.85% of the total population has received a heart disease diagnosis from medical personnel, with an estimated number of cases based on weighted data reaching 877,531 people. People with heart disease are susceptible to heart attacks, which cause the heart to stop pumping. If blood is not pumped throughout the body, oxygen cannot be distributed properly, resulting in damage to body cells. Heart attacks require quick and accurate action, so that when someone experiences cardiac arrest, they experience the golden period, which is a crucial time that affects the patient's condition.

American Heart Association, (2020) The Golden Period for cardiac arrest is less than 10 minutes. If not treated promptly within this timeframe, permanent brain damage and death can occur. Meanwhile, the AHA states that Basic Life Support (BLS) is the immediate first aid measure for individuals experiencing cardiac and respiratory arrest. This intervention includes activating the emergency response system, performing cardiopulmonary resuscitation (CPR), and using an Automated External Defibrillator (AED) for defibrillation. Nursing students play a crucial role as a group capable of providing first aid and performing basic life support, including cardiopulmonary resuscitation (CPR) by lay rescuers. Emergency situations can occur suddenly and quickly, making an understanding of basic life support crucial for all individuals working in healthcare facilities to save lives and improve public health.(HermalaDewi, 2020)In Loulita's research at Kusuma Husada University in Surakarta, students before BLS training were found to be 100% in the low-skilled category. Then, in the research,Wisnu Kanita et al., (2024)Before the BLS training was carried out, the same thing was found (100%) of students were in the less skilled category. According toSuprayitno & Tasik, (2021) Nursing students are not yet considered ready to perform CPR due to limited

skills. One of the main factors contributing to this unpreparedness is a low level of knowledge, necessitating basic life support training to improve their competency in emergency situations. Knowledge and readiness to perform these actions play a crucial role in the success of basic life support, ensuring that students, when faced with a patient experiencing cardiac arrest, are able to take appropriate action to save the patient. Furthermore, participation in BLS training is a mandatory requirement for prospective nurses as a qualification for entering the workforce. The purpose of this literature review is to explore the role of Basic Life Support training in improving nursing students' competency in performing CPR.

## METHOD

The design of this study is a literature review conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). An electronic literature search was employed to identify relevant literature for this study. The researcher conducted a systematic search in electronic databases, specifically Google Scholar and PubMed. In line with the research question, relevant generic keywords from the PICO Framework and Medical Subject Headings (MeSH) were used to conduct a systematic search of relevant studies in the specified databases. The keywords used were, Population: "Nursing Students" AND “Competency” OR “Knowledge” OR “Skills”, Intervention: "Basic Life Support" OR “BLS” OR "Basic Trauma Care and Life Support" OR “BTCLS” OR "Life Support" AND "Cardiopulmonary Resuscitation" OR "CPR" These keywords were utilized to identify relevant literature. The search was limited to articles published between January 2021 and July 2025. To avoid confusion and facilitate translation, only articles published in Indonesian and English were selected for review. In conclusion, the inclusion and exclusion criteria for the literature search were as follows, Inclusion Criteria: Studies on how basic life support influences the competencies of nursing students, articles available in full text, and articles published between 2021 and 2025. Exclusion Criteria Studies on populations other than nursing students and articles written in languages other than Indonesian and English.

All references identified from all databases were exported to Zotero. This was done to facilitate the detection of article duplication and the pre-screening of titles and abstracts. The search process was conducted to check for article duplication and to pre-screen titles and abstracts. Five researchers independently conducted the screening by activating the blind mode. All retrieved references were then screened for full text to determine eligibility. Articles that met the inclusion criteria were assessed for quality using the Joanna Briggs Institute (JBI) tool. Subsequently, the researchers independently extracted data from the included studies using the data extraction form and discussed their approach to data extraction to ensure consistency with the research questions and objectives.

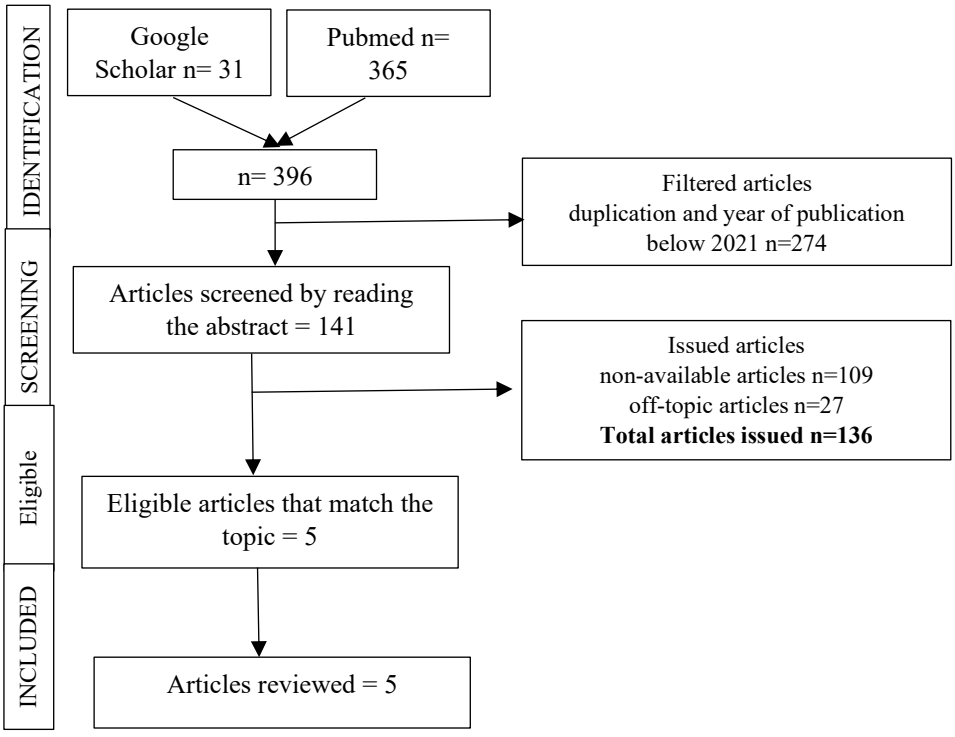


**Figure 1.** PRISMA Flow Diagram

## RESULTS

**Table 1.** Literature Review Results

| *No* | *Author, Year* | *Title* | *Design Study and Samples* | *Outcomes* |
|---|---|---|---|---|
| **1.** | Wisnu Kanita et al., (2024) | The Effect of Life Support Training on Cardiopulmonary Resuscitation Skills, Readiness, and Motivation in Nursing Students | *Quasi Experiment Pre and Posttest non control group, Sample*: 36 Nursing Students | Before training: 100% of respondents were less skilled and After training: 52.8% (19 respondents) were skilled. The Wilcoxon statistical test showed a p-value of 0.000 <0.05 indicating the effect of BHD training on CPR motivation. |
| **2.** | Requena-Mullor et al., (2021) | Effects of a Clinical Simulation Course about Basic Life Support on Undergraduate Nursing Students' Learning | 479 Nursing Students *Design: Quasi Experiment Pre and Posttest* | There was a statistically significant difference in the total pre-test and post-test scores after completing the BLS clinical simulation course. *Pre-test*: 12.61 (±2.30) *Post-test*: 15.68 (±2.06) *p-value*<0.001 |
| **3.** | Ayuningsyas et al., (2023) | THE EFFECT OF BASIC LIFE SUPPORT (BLS) TRAINING ON CARDIOPULMONARY RESUSCITATION SKILLS OF NURSING STUDENTS AT KUSUMA HUSADA UNIVERSITY, SURAKARTA | 36 Nursing students Design: Quasi Experiment Pretest and Posttest non control group | *Pre-test*: 100% (36 respondents) are in the "Less skilled" category *Post-test*: 47.2% (17 respondents) are in the "Quite skilled" category and 52.8% (19 respondents) are in the "Skilled" category. The Wilcoxon statistical test shows a p-value of 0.000 <0.05, which indicates the influence of BHD training on CPR skills. |
| **4.** | Nurichasanah, (2023) | THE EFFECT OF BASIC LIFE SUPPORT TRAINING ON CARDIOPULMONARY RESUSCITATION PREPAREDNESS IN NURSING PROFESSION STUDENTS AT KUSUMA | 36 Nursing students Design: Quasi Experiment Pretest and Posttest non control group | Pretest: The majority of respondents had readiness at the "sufficient" or |

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|---|---|---|---|---|
| | | HUSADA UNIVERSITY, SURAKARTA | | "insufficient" level before the training. Posttest: The majority of respondents were well prepared. The Wilcoxon statistical test shows a p-value of 0.000 <0.05, which indicates that there is an influence of basic life support training on the readiness to handle cardiopulmonary resuscitation in nursing professional students. |
| **5.** | Angkasa et al., (2023) | THE EFFECT OF BTCLS TRAINING ON EMERGENCY KNOWLEDGE OF PROSPECTIVE GRADUATES OF THE DIII NURSING STUDY PROGRAM IN PEKALONGAN | 125 respondents, consisting of 48 sixth-semester students and 77 graduates. Study Design: Quasi-Experimental Pre- and Posttest non-control group | Pre-test: Enough: 25 (20%) Less: 100 (80%) Post-test: Very Good: 15 (12%) Good: 110 (88%). The T-test obtained a significance value (p-value): 0.000 ($p < 0.05$) These results show that there is a significant influence on knowledge before and after BTCLS training. |

Based on Table 1, it was found that the majority of articles used a Quasi-Experimental pre- and post-test non-control group design (80%). The results of the analysis showed that there was a difference between before and after treatment (BLS training), resulting in an increase between before and after the intervention. From all articles, it was found that there was an effect between BLS training and improving nurse competence, especially in performing CPR.

## DISCUSSION

The findings presented in Table 1 demonstrate that most nursing students' prior and post-BLS training experiences had an impact. There was an increase after BLS training in both competency and readiness for Basic Life Support (BLS), particularly in CPR. This improvement can be influenced by knowledge. Prior to the training, nursing students' knowledge levels were very low. This was due to a lack of exposure to information about BLS and a lack of experience in treating patients requiring BLS. Training is a short educational process that combines theoretical and practical learning, making it a factor that can improve a person's knowledge.(Zulkarnaini et al., 2024). Training has a significant impact on increasing knowledge because it is supported by various factors. One factor supporting training effectiveness is the simulation method, which involves the involvement of certified instructors who directly guide participants throughout the training process.(Yunitasari, Dain & Rizky, Fauzan, 2023)Participants have the opportunity to directly ask questions and engage in discussions, deepening their understanding of the training material and applying it. Training is a form of learning that focuses on developing skills or psychomotor aspects, and serves as a foundation for applying individual abilities. Therefore, training needs to be conducted continuously to evaluate and update existing knowledge and skills.(Acim et al., 2024).

According to researchWisnu Kanita et al., (2024)There is an influence of BHD training on nursing skills. In line withWahyuningsih et al., (2022)which states that BLS training has a significant effect on CPR knowledge and skills. BLS training can improve knowledge and skills because it provides information on what to do in treating patients and conducts simulations on how to deal with patients who require BLS. This allows for the development of knowledge and skills due to exposure to previously unobtainable experiences. This indicates that training can effectively improve practical skills. Competency development can be carried out after an individual's knowledge has developed, as seen from the ability to apply it in various activities such as the learning process, follow-up, and the form of skills possessed. Nursing students require specific skills, which can be obtained by participating in BLS training. These skills need to be continuously honed, developed, and maintained so that nursing students are able to carry out their roles and responsibilities in providing basic life support (BLS), especially in performing CPR.(Riatmoko et al., 2023). Basic Life Support (BLS) training is considered crucial, and BLS skills can be improved through continuous practice. The American Heart Association (AHA) consistently recommends that individuals undergo BLS training to learn and practice cardiopulmonary resuscitation (CPR) skills, including the ability to perform high-quality chest compressions. Consistent with the findings of this study, Bhanji et al. inRequena-Mullor et al., (2021)demonstrated that individuals who had received BLS training demonstrated the ability to perform high-quality chest compressions and had higher levels of confidence compared to those who had not received training or had not received training in the past five years.

Nursing students who possess in-depth knowledge and skills in performing BHD can increase their confidence, which in turn, increases their preparedness to handle patients requiring BHD when faced with real-time patients. This is in line withNurichasanah, (2023)There was a significant influence on the level of students' readiness to perform CPR after receiving BHD training. Increasing readiness is inseparable from providing training because the higher a person's level of knowledge, the higher their self-confidence.(Kinanti et al., 2025). The level of readiness to help can also be influenced by knowledge, meaning that with higher knowledge, the level of readiness to help also increases. Training is a systematic process aimed at transferring specific knowledge, skills, and attitudes to improve an individual's competence in carrying out tasks and responsibilities according to established standards. This can make students more competent with the knowledge they have acquired.

## CONCLUSION

Based on the results of the literature review, it can be concluded that Basic Life Support (BLS) training can significantly improve the competence of nursing students, especially in the skills and readiness to perform cardiopulmonary resuscitation (CPR). Before the training, students tend to have a low level of knowledge and skills, but after being given theory-based training and simulation, there was a significant increase in cognitive, psychomotor, and affective aspects. Therefore, it is recommended that nursing educational institutions consistently provide BLS training in a structured and ongoing manner to ensure students have optimal readiness to face emergency situations, and are able to carry out their professional role in providing basic life support effectively and efficiently.

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