

*Original Research Article*

# Knowledge and Practice of Cardiopulmonary Resuscitation among Nursing Students in Teaching Hospital

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## Abstract

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Cardiopulmonary resuscitation (CPR) is a life-saving procedure done in an emergency when the heart stops beating. Cardiopulmonary resuscitation (CPR) is one of the most continuously developing fields of medicine today. The proper knowledge and practice about cardiopulmonary resuscitation is very important to perform an effective and efficient CPR. Nursing students begin their careers, they must be able to initiate and perform effective cardiopulmonary resuscitation (CPR). The study found that CPR or basic life support training increased nursing student's knowledge and abilities related to basic life support procedures. Objective To determine the knowledge and practice regarding cardiopulmonary resuscitation among nursing students of teaching hospitals. Cross sectional descriptive study design was used in this study. This study was carried out among 145 nursing students. The participants were selected by a convenient sampling technique using a structured questionnaire. SPSS version 21 used for data analysis. A total of 145 nursing students participated in this study. Findings showed that 15.17% respondents have good knowledge regarding CPR and 10.34% respondents have moderate knowledge and 74.48% have poor knowledge and overall score of practice is n=47 38.30%, 18 respondents are competent to perform and 61.70 %, 29 respondent are not competent and performed properly BLS skill. Conclusion: The current study found that nursing students' knowledge and practice about CPR scores were low. Nursing students must get repeated training with practical demonstration in order to gain practical knowledge

**Keywords:** Cardiopulmonary resuscitation(CPR), Basic life support, (BLS), Cardiopulmonary Arrest (CA)

## INTRODUCTION

Cardiopulmonary resuscitation (CPR) is a life-saving procedure done in an emergency when the heart stops beating. It is the combination of chest compression and rescuers breathing which is given to the suspected victim in an emergency situation. Cardiopulmonary resuscitation

(CPR) is one of the most continuously developing fields of medicine today. CPR is a life-saving technique that can be used in a number of emergency situations. The proper knowledge and practice about cardiopulmonary resuscitation is very important to perform an effective

and efficient CPR (Pozner and Page, 2021).

The theoretical understanding of CPR obtained through practice, training, and education is referred to as knowledge. The application of CPR, knowledge, and abilities in a training setting is referred to as practice. CPR stands for cardiopulmonary resuscitation, which is an attempt to keep the brain functioning by taking additional steps to restore normal spontaneous blood circulation and breathing (Al-Mohaissen, 2017).

Before starting CPR, following knowledge is necessary about, Is the environment safe for the person and must check for responsiveness of the person. In case of an emergency tap or shake the shoulder of the unresponsive victim. If the individual doesn't respond, call for help. Another bystander get the AED (automated external defibrillator) Start CPR immediately. American Heart Association recommend to individuals that remember the order to perform CPR steps in C-A-B (Compression, Air way, Breath) instead A-B-C. Push straight down on the chest for at least 2 inches (5 cm) but no more than 2.4 inches in order to reestablish blood flow (6 centimeters). When doing compressions, utilize your entire body weight, not just your arms, and conduct compressions sparingly hardly (Merchant et al., 2020).

Compressions are performed at a rate of 100 to 120 compressions per minute. After every 30 compression give two rescuing breathing and let the chest to bounce back (recoil). Continue chest compressions until emergency medical services arrive. To open the person's airway, use the head-tilt, chin-lift maneuver. To open the airway and administer rescue breath, softly tilt the person's head back with your palm on the forehead, then gently push the chin forward with the other hand. As soon as an automated external defibrillator (AED) is available, use it and follow the on-screen instructions. Continue chest compressions for two minutes after the first shock before giving the second shock. If an AED is unavailable, Continue CPR until the person appears to be breathing or until emergency medical help arrives (Yılmaz and Simsek, 2019).

CPR is an essential medical intervention in the event of a life-threatening emergency. Poor CPR performance is caused by a lack of knowledge and practice, which has been associated with a reduction in spontaneous circulation and a lower survival rate. To enhance the survival rates and neurologic outcomes of cardiac arrest patients. A competent post-cardiac arrest therapy, as well as adequate resuscitation with defibrillation as soon as possible, are also required (Reihani, 2015).

In developed countries, healthcare professionals' CPR knowledge and skills is different. Many CPR studies conducted in developed countries such including the United States, the United Kingdom, France, and Ireland have indicated that healthcare professionals lack

appropriate CPR knowledge and practice (Vincelette et al., 2018; Vural et al., 2017). A shortage of CPR facilities affects over 92 percent of out-of-hospital cardiac arrest (OHCA) victims worldwide. Out-of-hospital cardiac arrest (OHCA) is a leading cause of mortality and morbidity in developing countries, accounting for around 10% of overall mortality. According to the World Health Organization (WHO), Pakistan has one of the highest rates of road traffic accidents and accidental fatalities. According to a recent study, road accidents result in around 146,000 deaths (death rate) and 2.8 million disabilities (Hasselqvist-Ax Riva., 2015).

The code blue team is responsible for response to a cardiac arrest in a timely and professional manner. It has been found that immediately performing CPR reduces the chance of sudden death and increase survival rates. It is important for a nursing students to have a good command on fundamental of cardiac life support knowledge and practices, because health-care workers deal with such emergency situations on daily basis (Mendhe et al., 2017). However, there is a lack of confidence among nursing students .It has been reported that students have been doing CPR Europe. It was found that 87.9% medical students had very low knowledge about CPR. This lack of knowledge, leads to fail or unable to perform CPR in that situations where is urgently needed. In Riyadh government schools, 77% of students reported a need for BLS practice. It is generally known that both nursing students lack confidence in their abilities to perform efficient CPR. According to earlier study this is mostly due to a lack of training programs and their experiences (Stephens, 2019; Thorne et al., 2017).

When nursing students begin their careers, they must be able to initiate and perform effective cardiopulmonary resuscitation (CPR). Often, the nurse is the first person to arrive at the site of a cardiac arrest in the hospital. The study found that CPR or basic life support training increased nursing student's knowledge and abilities related to basic life support procedures.

Regular basic life support program is essential for nursing students for competence their skills even though the nurses and physicians are educated in CPR, they frequently do not administer high-quality CPR. Poor CPR practice performance may be as a result of ineffective initial training, and also it is usually due to the result of practitioners inability to retain these skill Without refreshers and retraining their abilities. A few minutes of practice each month significantly maintained and improved CPR psychomotor performance (Toubasi et al., 2015).

Someone from nursing student may refuse to do CPR for a many reasons, including fear of disease transmission from mouth-to-mouth respiration, doing it

wrong or facing legal action in case of CPR is unsuccessful.

## MATERIAL AND METHODS

**Study Design:** A cross-sectional descriptive study design was used in the research.

**Target population:** The study population comprises nursing students who work in the university of Lahore teaching hospital .

**Sampling Technique:** A convenience sampling method was used to select the stud Sample size was 145.

### Sample Size

Using the Danial sample size calculation, a sample size of 145 was estimated for this investigation. The basic formula below (Daniel, 1999) might be used.

$$n = \frac{Z^2 p(1 - p)}{d^2} \quad (\text{Daniel, 1999})$$

Where,

n = number of people in the sample, 145

For a degree of confidence, Z = Z statistic (95)

P = Prevalence or percentage expected (0.84)

d = precision (in proportion to one; for example, if the percentage is 5%, d =0.06).

**Sample Selection:** Nursing students (BScN)

### Exclusion Criteria

- Staff Nurse
- Medical student
- Nursing students who were on leave

### Data Procedure

A well developed questionnaire to assess the knowledge regarding CPR that has been adapted from an article (Sarwar et al., 2020) distributed among nursing student of Lahore teaching hospital also was used and practice will observed by checklist (Sarwar et al., 2020). Questionnaire was used to collect and assess the knowledge regarding of cardiopulmonary resuscitation among medical students.

### Study Duration

The study was conducted from September 2021 to December 2021.

### Data analysis method

The information was analyzed using SPSS version 21. The data was analyzed using descriptive statistics and provided in the form of a figure, tables, and percentages. A measure of central tendency was used to characterize the research sample (mean, median, and mode). Demographic data, such as age, gender, professional and academic qualifications, and current clinical area, were included in the descriptive data. Nursing students at a teaching hospital were polled about their understanding and practice of cardiopulmonary resuscitation.

## RESULTS

Results are being shown in the form of a table and chart. Figure 1 shows that 77 responders were male, 53.1% and 68 were female, 46.9% in age group of 20-32 yrs, in which from medical students 70, 48.3% were 75, 51.7% are nursing students. Figure 1 shows that 15.17% respondents have good knowledge regarding CPR and 10.34% respondents have moderate knowledge and 74.48% have poor knowledge.

Figure 2, Table 2 shows that the overall score of practice is n=47 38.30%, 18 respondents are competent and 61.70 %, 29 respondents are not competent and performed properly with BLS skill.

## DISCUSSION

This study was conducted in the University of Lahore teaching hospital Lahore Pakistan among nursing students. The purpose of the study was to assess the nursing students knowledge and practice regarding Cardiopulmonary Resuscitation. A survey in hospital shows that 53% respondent were female, n=145 and 46% respondents were male. Maximum age group that was between 46.1% 20-24 yrs were 46% respondents of age group 25-28 were 42%, 29-32 age group respondents were 11.3% were nursing students.

According to this study nursing students have poor knowledge and practice regarding Cardiopulmonary Resuscitation. 15.17% respondents have good knowledge regarding CPR and 10.34% respondents have moderate knowledge and 74.48% have poor knowledge

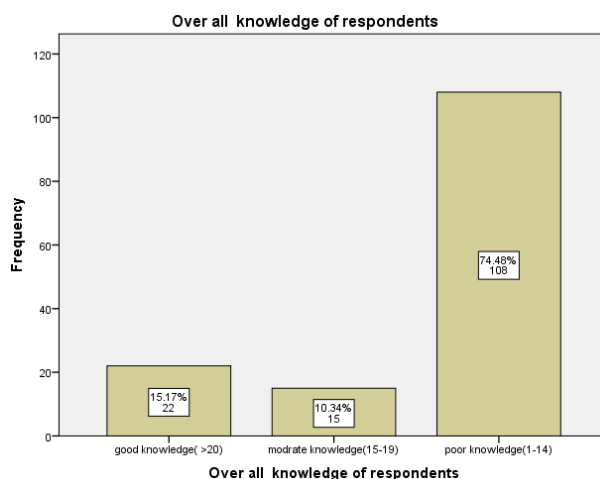


Figure 1. Knowledge Assessment Tool for Basic life Support

Table 1. Demographic characteristic of the study participant

Over all knowledge of respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good knowledge (>20)	22	14.5	15.2	15.2
	Average knowledge(>.16)	15	9.9	10.3	25.5
	poor knowledge(<.15)	108	71.1	74.5	100.0
	Total	145	95.4	100.0	
Total		145	100.0		

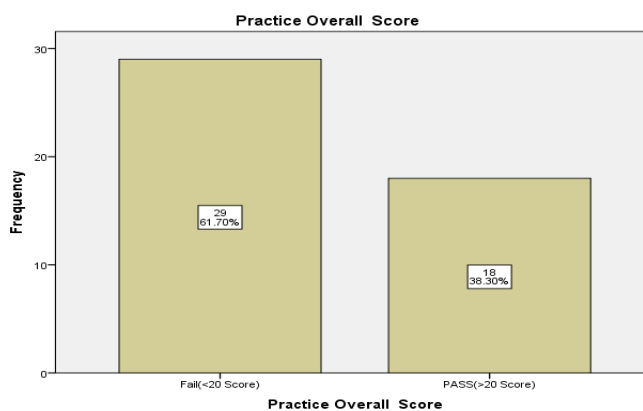


Figure 2. Assessment Tool for Basic life Support(practice checklist)

Table 2. Over all practice score of participants

	Frequency	Percent	Valid Percent	Cumulative Percent
Fail(<20 Score)	29	49.2	61.7	61.7
Valid PASS(>20 Score)	18	30.5	38.3	100.0
Total	47	79.7	100.0	
		100.0		

and overall score of practice is n=47 38.30%, 18 respondents are competent and 61.70 % ,29 respondent are not competent and performed properly BLS skill similarly, in a research done at Shalimar Institute of Health Sciences, nursing students' knowledge was compared, and the p-value was 0.088, which was considered insignificant (Mani et al., 2014)

According to Indian research, the study found that nursing students of nursing interns had a BLS or CPR knowledge and practice score of 4 with an inter-quartile of bad knowledge and 46 % of nursing interns had a low knowledge score (Salameh et al., 2018).

## CONCLUSION

The current study found that, despite having a positive and respectable attitude about BLS or CPR, nursing students' knowledge and practice scores are low. BLS training should be established in the curriculum. Nursing students must get repeated training with practical demonstration in order to gain practical knowledge. Poor quality retraining programmers and educational workshops, and the duration between sessions, as well as busy work schedules, a lack of motivation, and a lack of resources, might all contribute to poor performance. Nurses are frontline healthcare workers who must detect and respond to medical emergencies like sudden cardiac arrest and other life-threatening conditions. Nurses must be well trained in order to be effective. They have perfected and mastered their abilities. There are several types of education and training available. Nurses' BLS training techniques that are being utilized to improve their skill and knowledge. understanding of how to do cardiopulmonary resuscitation in an emergency.

## LIMITATIONS AND RECOMMENDATIONS

### Limitations

There are certain limitations to the study that must be acknowledged when interpreting the results. Because this is cross-sectional research, no conclusions about the direction of the correlation can be formed; however, case-control and cohort studies should be done to establish the causative relationship.

In the data gathering procedure, convenient sampling was used, however the probability sampling approach can improve the induction of various classes of participants. This investigation was completed in a short period of time. The use of a convenient sampling procedure was also a problem. Only teaching hospital patients were included in the study. Due to this lack of

time, nursing students decline to participate due to a lack of interest.

## Recommendations

Policymakers should prioritize make mandatory BLS education a priority in their curriculum and position on the establishment of mandatory training schedules and certifications for their degree registration. Nursing students should get regular training and educational sessions to improve their understanding and practice of CPR.

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## REFERENCES

- Al-Mohaisse MA (2017). Knowledge and attitudes towards basic life support among health students at a Saudi women's university. *Sultan Qaboos University Medical Journal*, 17(1), e59.
- Aziz K, Lee HC, Escobedo MB, Hoover AV, Kamath-Rayne BD, Kapadia VS, Szyld E (2020). Part 5: neonatal resuscitation: 2020 American heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 142(16\_Suppl\_2), S524-S550.
- Basic Life Support Programs among Healthcare Providers. *Annals of Punjab Medical College (APMC)*, 14(3), 227-232.
- Berg KM, Cheng A, Panchal AR, Topjian AA, Aziz K, Bhanji F, Kurz MC (2020). Part 7: systems of care: 2020 American Heart association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 142(16\_Suppl\_2), S580-S604.
- Bittner V (2020). The New 2019 AHA/ACC Guideline on the Primary

- Prevention of Cardiovascular Disease. *Circulation*, 142(25), 2402-2404.
- Bray F, Laversanne M, Weiderpass E, Soerjomataram I (2021). The ever-increasing importance of cancer as a leading cause of premature death worldwide. *Cancer*.
- Creutzfeldt J, Hedman L, Medin C, Heinrichs WL, Felländer-Tsai L (2010). Exploring virtual worlds for scenario-based repeated team training of cardiopulmonary resuscitation in medical students. *J. Med. Internet Res.* 12(3), e38.
- Fatima N, Akram M, Hamza M (2018). Knowledge, attitude and practices regarding basic life support among medical students of Rawalpindi Medical University, Rawalpindi. *J. Rawalpindi Med. College*, 22(S-1), 41-43.
- Iqbal A, Nisar I, Arshad I, Butt UI, Umar M, Ayyaz M, Farooka MW (2021). Cardiopulmonary resuscitation: Knowledge and Attitude of doctors from Lahore. *Ann Med Surg (Lond)*, 69, 102600.
- Mani G, Annadurai K, Danasekaran R, Ramasamy J (2014). A cross-sectional study to assess knowledge and attitudes related to Basic Life Support among undergraduate medical students in Tamil Nadu, India. *Progress in Health Sciences*, 4(1), 47-52.
- Mendhe HG, Burra L, Singh D, Narni H (2017). Knowledge, attitude and practice study on cardiopulmonary resuscitation among medical and nursing interns. *Int J Community Med Public Health*, 4(8), 3026.
- Merchant RM, Topjian AA, Panchal AR, Cheng A, Aziz K, Berg KM, Groups S. o. C. W. (2020). Part 1: executive summary: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation*, 142(16\_Suppl\_2), S337-S357.
- Pozner CN, Page RL (2021). Adult basic life support (BLS) for health care providers.
- Salameh B, Batran A, Ayed A, Zapen M, Ammash A, Taqatqa A, Naser D (2018). Comparative assessment of basic life support knowledge between professional nurses and nursing students. *Archives of Medicine and Health Sciences*, 6(1), 54.
- Sarwar H, Sehar S, Afzal M, Gilani SA, Hanif A, Alam MM, Qasim AP (2020). Effect of Interactive Computer Based and Traditional Instructor-Led Based Training of
- Stephens N (2019). Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst parents residing in Southern Tasmania.
- Thorne C, Lockey A, Kimani P, Bullock I, Hampshire S, Begum-Ali S, Perkins G (2017). e-Learning in Advanced Life Support—What factors influence assessment outcome? *Resuscitation*, 114, 83-91.
- Toubasi S, Alostta MR, Darawad MW, Demeh W (2015). Impact of simulation training on Jordanian nurses' performance of basic life support skills: A pilot study. *Nurse education today*, 35(9), 999-1003.
- Tsegaye W, Tesfaye M, Alemu M (2015). Knowledge, attitude and practice of cardiopulmonary resuscitation and associated factors in Ethiopian university medical students. *J. General Practice*, 1-5.
- Vincelette C, Lavoie S, Fortin O, Quiroz-Martinez H (2018). Intensive care unit nurses' knowledge, skills and attitudes regarding three resuscitation procedures: A cross-sectional survey. *Canad. J. Critical Care Nurs.* 29(4), 29-35.
- Vural M, Koşar MF, Kerimoğlu O, Kızırcan F, Kahyaoğlu S, Tuğrul S, İşleyen HB (2017). Cardiopulmonary resuscitation knowledge among nursing students: a questionnaire study. *Anatolian J. Cardiol.* 17(2), 140.
- Yılmaz A, Simsek E (2019). Evaluation of cardiopulmonary resuscitation (CPR) practice of nurses at a tertiary hospital.
- Zamir Q, Nadeem A, Rizvi AH (2012). Awareness of cardiopulmonary resuscitation in medical-students and doctors in Rawalpindi-Islamabad, Pakistan. *JPMA. J. Pakistan Med. Assoc.* 62(12), 1361-1364.