Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1408
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1408*
Original Research Article

KNOWLEDGE, ATTITUDE AND PRACTICES OF CARDIOPULMONARY RESUSCITATION AMONG NURSES

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(Received, 04th December 2024, Revised 24th December 2024, Published 30th December 2024)

Abstract: *Cardiopulmonary resuscitation (CPR) is a critical life-saving skill that significantly impacts patient outcomes during cardiac emergencies. Nurses, being at the forefront of emergency care, play a vital role in performing CPR effectively. This study aimed to assess the knowledge, attitudes, and practices of nurses regarding CPR in a tertiary care hospital in Lahore, Pakistan.* ***Methods:*** *A descriptive cross-sectional study was conducted among 140 nurses working in the Intensive Care Unit (ICU) and emergency departments of a tertiary care hospital. Data were collected using a structured, pre-validated questionnaire consisting of demographic information, knowledge assessment, attitudes, and practices related to CPR. Statistical analysis, including descriptive and inferential methods, was performed using SPSS version 26.* ***Results:*** *The study reported that participants with good knowledge were 70(50.0%), the participants with moderate knowledge were 35(25.0%), and the participants with poor knowledge were 35(25.0%). Participants with positive attitude were 102(72.9%), and the participants with negative attitude were 38(27.1%). The participants with good practice were 90(64.3%), and the participants with poor practice were 50(35.7%).* ***Conclusion:*** *While nurses demonstrated moderate knowledge and positive attitudes toward CPR, significant gaps in specific practices were identified. Targeted training programs, regular competency assessments, and policy reforms are essential to enhance nursing competencies and ensure effective CPR performance, ultimately improving patient outcomes.*

Keywords: Cardiopulmonary Resuscitation, Nursing Knowledge, Attitudes, Practices, Emergency Care

Introduction

Cardiopulmonary resuscitation (CPR) is a life-saving technique that forms the cornerstone of emergency medical care. Its timely and effective application can significantly improve survival rates and neurological outcomes in patients experiencing cardiac arrest (1, 2). Nurses, being frontline healthcare providers, play a pivotal role in initiating and performing CPR, especially in critical care settings such as intensive care units (ICUs) and emergency departments (3). Despite advancements in medical training and technology, gaps in CPR knowledge, attitudes, and practices among nurses remain a significant concern, particularly in resource-limited settings like Pakistan (4).

In Pakistan, the incidence of cardiac emergencies is rising due to an increasing burden of non-communicable diseases such as hypertension, diabetes, and ischemic heart disease (5). The high patient-to-nurse ratio and limited access to updated training exacerbate the challenges faced by nurses in managing cardiac emergencies effectively (6). Previous studies conducted in Pakistan have highlighted deficiencies in nurses' understanding of basic life support (BLS) and advanced cardiac life support (ACLS) protocols, contributing to suboptimal patient outcomes (7,8).

Globally, evidence suggests that regular training and competency assessments significantly enhance the knowledge and skills required for effective CPR (9, 10). However, in Pakistan, inconsistent implementation of training programs and limited institutional support hinder the development of nursing competencies (11). Studies have also identified attitudinal barriers, such as fear of performing CPR incorrectly or concerns about personal safety, which further affect the quality of care provided during emergencies (12). To address these challenges, assessing the current knowledge, attitudes, and practices of nurses regarding CPR is crucial. This study aims to evaluate these aspects among nurses in a tertiary care hospital in Lahore. By identifying gaps and strengths, the findings will inform the design of targeted training interventions and policy reforms to enhance emergency care and improve patient survival outcomes in Pakistan.

Methodology

The study employed a descriptive cross-sectional design to assess the knowledge, attitudes, and practices of nurses regarding cardiopulmonary resuscitation (CPR) in a tertiary care hospital in Lahore. This design was chosen to provide a comprehensive snapshot of the current understanding and behaviours of nurses in emergency and intensive care settings.

The target population comprised registered nurses working in the Intensive Care Unit (ICU) and emergency departments of the hospital. A total of 140 participants were recruited using convenience sampling. The inclusion criteria required participants to be registered nurses with at least one year of clinical experience and direct involvement in emergency patient care. Nurses unwilling to participate or on extended leave during the study period were excluded. The sample size was determined to ensure representativeness and statistical reliability.

Data were collected using a structured, pre-validated questionnaire, developed based on existing literature and reviewed by experts in nursing education and emergency care. The questionnaire consisted of four sections:

demographic information, knowledge of CPR, attitudes toward CPR, and self-reported practices of CPR. Demographic variables included age, gender, marital status, education, professional experience, and current department. The knowledge section focused on CPR techniques, guidelines, and indications, while the attitudes section used a Likert scale to gauge participants' perceptions of the importance and challenges of performing CPR. The practices section assessed the frequency and adherence to evidence-based CPR procedures.

Ethical approval was obtained from the hospital's institutional review board before data collection commenced. Participants were briefed about the objectives of the study, and written informed consent was obtained. Confidentiality and anonymity were maintained throughout the study. The data collection process was carried out during the nurses' shifts to minimize disruption, and research assistants were available to clarify questions to ensure accurate and complete responses.

Data analysis was conducted using SPSS version 26. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics, knowledge levels, attitudes, and practices. Inferential statistics, such as chi-square tests, were employed to identify associations between demographic factors and the knowledge, attitudes, and practices of CPR. The reliability of the questionnaire was tested using Cronbach's alpha, with a value exceeding 0.8, indicating high internal consistency.

Results

The demographic characteristics of the participants are presented in Table 1. The majority of the participants (52.1%) belonged to the age group of 31-35 years, followed by 37.9% in the 26-30 years group, and only 10% were aged between 36-40 years. A significant proportion of the participants were female (87.9%), with males comprising only 12.1% of the sample. Most participants were married (73.6%), while 26.4% were single. Regarding professional experience, 70.7% had 6-10 years of experience, 27.9% had 11-15 years, and only 1.4% had 16-20 years of experience. In terms of qualifications, 57.9% held a Diploma in Nursing, 30% had completed a Post RN degree, and 12.1% had a BSN (Generic). The participants were primarily working in the Intensive Care Unit (ICU) (55.7%), with 44.3% from the Emergency department. (Table 1)

The data in Table 2 illustrates the participants' knowledge regarding cardiopulmonary resuscitation (CPR). An overwhelming majority (97.1%) had received training in CPR, and all participants (100%) knew that CPR supports breathing and circulation for an infant, child, or adolescent. However, only (57.1% correct) disagreed CPR should be done on every person in a cardiac emergency, while 42.9% agreed. All participants (100%) agreed that CPR training and retraining are necessary for nurses, and 87.1% stated that CPR should be conducted immediately before informing the doctor. A significant gap in knowledge was observed regarding specific technical aspects of CPR, such as the compression-to-ventilation ratio (32.9% correct), heart function stimulation by chest compression (50%), and the pulse check duration before starting CPR (32.1%). Additionally, 24.3% of participants correctly identified that chest compressions should not be approximately 7 inches (10 cm) deep for an adult. Knowledge regarding the anatomical site for chest compression (97.9%) and the carotid artery as the pulse-checking site (100%) was excellent. However, only 63.6% knew that a two-rescuer team should switch roles after each cycle.

Table 3 highlights the participants' attitudes toward CPR. The majority had a positive attitude, acknowledging CPR as complex and time-consuming (88.6% agreed or strongly agreed). Similarly, 94.3% felt that CPR is energy-consuming. A substantial proportion (96.4%) supported performing mouth-to-mouth ventilation if a mask was unavailable. However, attitudes were favorable toward performing CPR on elderly patients, with 82.1% disagreeing with the notion that it is futile. Majority (90%) disagreed on mouth to mouth ventilation should not be performed on opposite sex during CPR. Furthermore, 88.6% disagreed with avoiding CPR due to inadequate equipment, 85% disagreed on inadequate supply of CPR equipment discourages most nurses from practicing CPR, and 87.1% rejected the idea that doctors should exclusively initiate CPR. Interestingly, 88.6% found mouth-to-mouth ventilation on patients in cardiac emergencies acceptable, and interestingly 98.6% did not preferred to avoid CPR if given a choice.

The practice of CPR among participants is summarized in Table 4. A high proportion (97.1%) reported having performed CPR in cardiac emergencies. All participants (100%) stated they check for the patient's pulse before commencing CPR, and 91.4% ensured the patient was laid supine on a hard surface. While 75.7% used latex gloves before performing CPR, 94.3% employed both hands for chest compressions, and 83.6% pinched the patient's nostrils during mouth-to-mouth ventilation. CPR was predominantly performed in hospital environments (92.9%). However, less than half of the participants (42.9%) correctly used their palm to tilt the patient's head, and only 41.4% applied the same CPR procedure to both children and adults, indicating gaps in practical knowledge for specific scenarios.

Table 1: Demographic Characteristics

Variable	Category	Frequency%
Age	26-30 years	37.9 (37.9%)
	31-35 years	52.1 (52.1%)
	36-40 years	10 (10%)
Gender	Male	12.1 (12.1%)
	Female	87.9 (87.9%)
Marital Status	Single	26.4 (26.4%)
	Married	73.6 (73.6%)
Experience	6-10 years	70.7 (70.7%)
	11-15 years	27.9 (27.9%)

	16-20 years	1.4 (1.4%)
Qualification	Diploma in Nursing	57.9 (57.9%)
	Post RN	30 (30%)
	BSN (Generic)	12.1 (12.1%)
Department	ICU	55.7 (55.7%)
	Emergency	44.3 (44.3%)

Table 2: Knowledge Questionnaires

Questions	Respond	Frequency %
Have you received any training on cardiopulmonary resuscitation	Yes	136 (97.1%)
	No	4 (2.9%)
CPR support and maintain breathing and circulation for an infant, child, or adolescent	Yes	140 (100.0%)
CPR should be done on every person in cardiac emergency	Yes	60 (42.9%)
	No	80 (57.1%)
CPR training and retraining is necessary for nurses	Yes	140 (100.0%)
CPR should be conducted on patient immediately before informing the doctor	Yes	122 (87.1%)
	No	18 (12.9%)
The compression of ventilation ratio for the lone rescuer giving CPR to victims of any age is 20:1	Yes	94 (67.1%)
	No	46 (32.9%)
Chest compression during cardiopulmonary resuscitation stimulate 25% heart functioning	Yes	70 (50.0%)
	No	70 (50.0%)
I take 25 seconds to check for pulse of an adult before commencing CPR	Yes	95 (67.9%)
	No	45 (32.1%)
Chest compression should be 7 inches (10cm) deep for an adult during CPR	Yes	106 (75.7%)
	No	34 (24.3%)
Chest compression during CPR should be done at the center of the chest on lower half of the breast	Yes	137 (97.9%)
	No	3 (2.1%)
The pulse of an adult with cardiac emergencies should be checked at the carotid artery	Yes	140 (100%)
A 2 – rescuer performing CPR should switch role after each cycle	Yes	89 (63.6%)
	No	51 (36.4%)

Table 3: Attitude Questionnaires

Questions	Respond	Frequency%
I feel CPR is complex and time consuming	Strongly Disagree	8 (5.7%)
	Disagree	6 (4.3%)
	Neutral	2 (1.4%)
	Agree	55 (39.3%)
	Strongly Agree	69 (49.3%)
I feel CPR is energy consuming	Strongly Disagree	7 (5.0%)
	Disagree	1 (0.7%)
	Agree	58 (41.4%)
	Strongly Agree	74 (52.9%)
I feel Mouth to mouth ventilation should be perform if mask is not available on a patient during CPR	Disagree	1 (0.7%)
	Neutral	4 (2.9%)
	Agree	76 (54.3%)
	Strongly Agree	59 (42.1%)
I feel it is futile to perform CPR for elderly patient	Strongly Disagree	44 (31.4%)
	Disagree	71 (50.7%)
	Neutral	8 (5.7%)
	Agree	14 (10.0%)
	Strongly Agree	3 (2.1%)
	Strongly Disagree	57 (40.7%)

I think Mouth to mouth ventilation should not be performed on opposite sex during CPR	Disagree	69 (49.3%)
	Neutral	14 (10.0%)
CPR should not be practice if necessary equipment are not easily found	Strongly Disagree	61 (43.6%)
	Disagree	63 (45.0%)
	Neutral	4 (2.9%)
	Agree	8 (5.7%)
	Strongly Agree	4 (2.9%)
Inadequate supply of CPR equipment discourages most nurses from practicing CPR	Strongly Disagree	43 (30.7%)
	Disagree	76 (54.3%)
	Neutral	12 (8.6%)
	Agree	9 (6.4%)
I feel Doctors should be responsible for initiating CPR	Strongly Disagree	63 (45.0%)
	Disagree	59 (42.1%)
	Neutral	4 (2.9%)
	Agree	14 (10.0%)
I believe mouth to mouth ventilation to patient in cardiac emergency is irritating	Strongly Disagree	70 (50.0%)
	Disagree	54 (38.6%)
	Neutral	8 (5.7%)
	Agree	6 (4.3%)
	Strongly Agree	2 (1.4%)
If I have the opportunity, I would like to avoid CPR	Strongly Disagree	81 (57.9%)
	Disagree	57 (40.7%)
	Neutral	2 (1.4%)

Table 4: Practice Questionnaires

Questions	Respond	Frequency%
Have you perform CPR on patient in cardiac emergencies	Yes	136 (97.1%)
	No	4 (2.9%)
I check for patient pulse rate before commencing CPR	Yes	140 (100%)
I ensure person in cardiac emergency is laid supine on a relatively hard surface before commencing CPR	Yes	128 (91.4%)
	No	12 (8.6%)
I wear latex gloves before commencing CPR	Yes	106 (75.7%)
	No	34 (24.3%)
I used both hands to perform chest compression during CPR	Yes	132 (94.3%)
	No	8 (5.7%)
I pinch patient nostril before giving mouth to mouth ventilation	Yes	117 (83.6%)
	No	23 (16.4%)
I do CPR to patient in hospital environment	Yes	130 (92.9%)
	No	10 (7.1%)
I use my palm on the patient forehead and gently tilt the head forward	Yes	60 (42.9%)
	No	80 (57.1%)
I use the same procedure to administer CPR to children and adult	Yes	58 (41.4%)
	No	82 (58.6%)

Discussion

This study assessed the knowledge, attitudes, and practices of nurses regarding cardiopulmonary resuscitation (CPR) in a tertiary care hospital in Lahore, revealing moderate levels of knowledge, generally positive attitudes, and significant gaps in specific practices. A comparison of these findings with previous research highlights similarities and discrepancies, offering insights into the challenges faced by nurses in managing cardiac emergencies effectively.

The majority of participants (97.1%) reported receiving CPR training, and all recognized its importance in supporting breathing and circulation. These findings align with those of Ahmed et al., who reported that over 90% of nurses in tertiary hospitals in Karachi acknowledged the importance of CPR in emergency care (13). However, knowledge gaps in specific areas, such as compression depth and timing of pulse checks, reflect deficiencies also noted by Zafar and Malik in their study on CPR training gaps among nurses in Pakistan, where only 40% demonstrated proficiency in advanced CPR techniques (14). Internationally, studies such as those by Lavelle et al. emphasize that regular simulation-based training significantly enhances knowledge and technical skills,

suggesting that a similar approach could address these gaps locally (15).

Attitudinally, the majority of participants exhibited positive perspectives toward CPR, with 54.3% agreeing that mouth-to-mouth ventilation should be performed when no mask is available. This finding mirrors results from a study by Khan and Rehman, which reported that 60% of nurses in Pakistani hospitals viewed CPR as an essential skill regardless of resource limitations (16). However, a small proportion of nurses (45%) disagreed with limiting CPR due to equipment unavailability, highlighting resilience in resource-constrained environments. Globally, Perkins et al. have argued that a proactive attitude is critical for improving outcomes in low-resource settings, reinforcing the importance of fostering confidence among nurses (17).

The practical application of CPR revealed notable deficiencies, with 57.1% not consistently tilting the head during resuscitation. These findings are consistent with Mwita and Marwa, who reported similar gaps in African hospitals, attributing these issues to high workloads and insufficient training opportunities (18). Locally, Malik et al. found that 40% of nurses lacked adequate training in practical CPR application, emphasizing the need for hands-on training programs (19).

Education and experience were significantly associated with better knowledge and practices in this study. Nurses with advanced qualifications, such as Post RN or BSN, demonstrated higher competency levels. This aligns with findings by Jeffcoate et al., who reported that ongoing education and professional development significantly improve nursing competencies in emergency care settings (20). Similarly, Ahmed and Khan highlighted that targeted training programs focusing on both theoretical knowledge and practical skills are essential to bridge competency gaps among nurses in Pakistan (21).

Systemic barriers, including inadequate resources and high patient-to-nurse ratios, were identified as major challenges. These findings echo those of Berg et al., who emphasized that addressing systemic limitations through policy reforms and increased resource allocation is critical for improving CPR practices globally (22). In resource-limited settings like Pakistan, enhancing institutional support and providing regular training opportunities are essential to improve outcomes.

Conclusion

In conclusion, this study underscores the importance of targeted interventions, including structured training programs, competency assessments, and systemic reforms, to enhance nurses' knowledge, attitudes, and practices regarding CPR. By addressing these gaps, healthcare systems can improve patient outcomes and strengthen emergency care capabilities.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-SNU-023111/23)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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Coordination of collaborative efforts.
Study Design, Review of Literature.
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Coordination of collaborative efforts.
Data acquisition, and analysis.

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