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RESEARCH ARTICLE

Knowledge and Attitude regarding Cardio Pulmonary Resuscitation (CPR) among Nurses in Bangladesh

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ABSTRACT

Cardiac arrest remains a leading cause of mortality worldwide. The effective management of cardiac arrest requires a thorough understanding of cardiopulmonary resuscitation (CPR) techniques. As frontline healthcare providers, nurses are pivotal in identifying cardiac arrest and initiating CPR. This study aimed to evaluate the level of knowledge and attitude regarding CPR among nurses at Chittagong Medical College Hospital (CMCH), Bangladesh. A descriptive cross-sectional study was conducted involving government-registered nurses employed at CMCH. A convenience sampling method was employed to select participants. Data were collected using self-administered semi-structured questionnaires. The study found that 68.1% of the nurses had a diploma in nursing and limited experience in CCU/ICU and emergency departments. Furthermore, 76% of the nurses had not received CPR training. Only 1.4% of the participants exhibited good knowledge of CPR, 37.2% had an average level of knowledge, and 61.5% demonstrated poor knowledge. Regarding attitudes towards CPR, 24% of the nurses had a good attitude, while 76% had an average attitude. The findings indicate that nurses at CMCH possess inadequate knowledge of CPR despite a moderate attitude towards its practice. This study provides foundational data that could guide efforts to enhance CPR training and knowledge among nurses in Bangladesh.

Keywords: Attitude, cardiac arrest, CPR, knowledge.

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1. Introduction

Cardiac arrest, characterized by the cessation of effective heart contractions, poses a severe threat to survival [1]. Cardiopulmonary resuscitation (CPR) is a vital life-saving technique that enhances survival chances by restoring life in individuals experiencing cardiac [2], [3]. Timely intervention is crucial as untreated cardiac arrest can lead to severe complications or death. Early recognition and CPR are key components of Basic Life Support (BLS), which maintains airway, breathing, and circulation until advanced medical care is available [4].

Healthcare professionals must be proficient in BLS and CPR as part of their mandatory training [5]. Research shows that survival rates drop significantly if the heart remains in persistent fibrillation, underscoring the need for effective CPR and defibrillator use [6]. Despite this, many providers fail to adhere to American Heart Association (AHA) guidelines [5].

Timing is critical due to rapid neuronal damage from asphyxia within minutes of cardiac arrest. Cardiovascular diseases account for about 30% of global deaths, approximately 17 million annually, with cardiac arrest contributing to 300,000 to 370,000 deaths each year Ventricular fibrillation causes sudden cardiac death in 59%–60% of cases Despite advancements in resuscitation techniques, survival rates have not improved significantly, highlighting the need to enhance BLS training [5], [7].

Institutional factors affect CPR outcomes, including policies and resuscitation protocols [8]. To improve survival rates, the AHA's 2015 guidelines emphasize high-quality CPR, including early chest compressions and defibrillation within two minutes. Delays in recognizing cardiac arrest and initiating CPR reduce survival chances by 10% per minute [9]. The European Resuscitation Council (ERC) suggests that early resuscitation and defibrillation can lead to survival rates exceeding 60% [10], [11].

Studies indicate varying CPR knowledge and attitudes among healthcare workers, with challenges in implementing effective BLS training in developing countries like Bangladesh [11]–[14]. This research aims to assess CPR knowledge and attitudes among Chittagong Medical College Hospital nurses to guide future training and policy development.

2. Materials and Methods

This study used a descriptive cross-sectional design. The research was conducted at Chittagong Medical College Hospital (CMCH), Chittagong, Bangladesh, from January 2024 to June 2024. The focus was on government-registered nurses employed at CMCH. The study included 302 nurses, determined using Yamane's formula. A non-probability convenience sampling method was used to select participants who met the inclusion criteria and provided consent.

According to the inclusion criteria we adopted, only the nurses who were on duty during data collection, not occupied with duties, and well were included in the study. Data were collected by a self-administered, semi-structured questionnaire developed by the researcher based on an extensive literature review and validated by physician expertise in relevant field.

Specialists in the relevant discipline validated the questionnaire. It comprised three sections: (1) Sociodemographic characteristics (7 items), (2) knowledge about CPR (22 items), and (3) attitudes towards CPR (19 items). Ethical approval was obtained from the Chittagong Medical College Ethical Review Board (ERB No: Memo No.59.27.0000.013.19. PG.2024.009/309). Informed consent was obtained from all participants, who were assured confidentiality and their right to withdraw. Data were analyzed using IBM SPSS v23. Descriptive statistics (frequency and percentage) were used to present the results.

3. Results

3.1. Sociodemographic Characteristics of Participants

Among the 288 participants, the age ranged from 23 to 56 years, with a mean of 32.66 years. Gender distribution was predominantly female (93.4%). Most participants were diploma-level nurses (68.1%), followed by BSc (24.7%) and Master's-level nurses (7.3%). Experience varied, with 45.1% having less than 5 years and 27.4% each having 5–10 years and more than 10 years of experience. Regarding ICU, CCU, and emergency department experience, 31.6% had less than 6 months, 22.9% had 6 months to 1 year, 34.0% had 1 to 5 years, and 11.5% had no experience. CPR training was received by 24% of the nurses. CPR performance frequency varied: 26% had performed CPR more than 5 times, 19.8% more than 10 times, and 17.4% numerous times, while 36.8% had never performed CPR (see Table I).

3.2. Knowledge of CPR

A majority of participants (92.7%) identified cardiac arrest or shock as indications for CPR. Correct identification of signs of cardiac arrest (unconsciousness and pulselessness) was noted in 47.6%, while 44.1% chose chest pain and bradycardia. Knowledge about the timing to check breathing before starting CPR was varied: 50.7% answered correctly (10 seconds), while others provided incorrect answers. Most participants (79.2%) knew CPR should start within 1 minute after cardiac arrest confirmation. Over half (55.6%) correctly stated that the patient should be placed on a hard surface for CPR.

Participants had mixed knowledge about chest compression depth and rates. For adults, 55.9% identified the correct depth (2 inches) and 61.8% the correct rate (100 per minute). The correct compression-to-ventilation ratio for adults with one rescuer was identified by 81.6%, but only 37.2% knew the correct ratio for infants. Knowledge of drug-related CPR procedures varied, with 70.8% correctly

TABLE I: Sociodemographic Characteristics of Participants (N = 288)

Variable	Category	n (%)
Gender	Male	19 (6.6)
	Female	269 (93.4)
Education	Diploma	196 (68.1)
	BSc	71 (24.7)
	Masters	21 (7.3)
Work experience	<5 years	130 (45.1)
	5–10 years	79 (27.4)
	>10 years	79 (27.4)
ICU/CCU/Emergency experience	<6 months	91 (31.6)
	6 months–1 year	66 (22.9)
	1–5 years	98 (34.0)
	No experience	33 (11.5)
CPR training	Yes	69 (24.0)
	No	219 (76.0)
CPR performed	>5 times	75 (26.0)
	>10 times	57 (19.8)
	Numerous times	50 (17.4)
	None	106 (36.8)

TABLE II: Knowledge Variables among Participants (N = 288)

Variable	Category	n (%)
Indication of CPR	Cardiac arrest or shock	267 (92.7)
Confirmatory signs	Unconscious and pulseless	137 (47.6)
Time to check breathing	10 seconds	146 (50.7)
Starting CPR timing	Within 1 minute	228 (79.2)
CPR placement	Hard surface	160 (55.6)
Airway opening method	Tilt head, lift chin	235 (81.6)
Chest compression location	Center of chest	161 (55.9)
Hand placement	One hand on top of the other	267 (92.7)
Compression depth (Adults)	2 inches	161 (55.9)
Compression depth (Infants)	1/2 of chest size	119 (41.3)
Compression rate (Adults)	100 per minute	178 (61.8)
Compression ratio (Adults, 1 Rescuer)	30:2	235 (81.6)
Compression ratio (Infants, 1 Rescuer)	15:2	167 (58.0)
Compression ratio (Two rescuers)	30:2	156 (54.2)
Rescue Breathing (Infants)	Seal both nose and mouth	82 (28.5)
CPR continuation	Until spontaneous circulation	165 (57.3)
Adrenaline dose & frequency	1 mg every 3–5 minutes	204 (70.8)
Preferred adrenaline access	Peripheral intravenous	158 (54.9)
Amiodarone indication	Ventricular tachycardia or fibrillation	179 (62.2)
First dose of amiodarone	150 mg	160 (55.6)
Atropine role	Increases heart rate and blood pressure	180 (62.5)
DNR understanding	Policy	74 (25.7)

identifying adrenaline dosage and 62.2% recognizing the indication for Amiodarone (see Table II).

3.3. *Attitudes Toward CPR*

Participants largely agreed that cardiac arrest is life-threatening (62.8% agree, 33% strongly agree). Most (74.7%) believe CPR helps during cardiac arrest, but a notable portion (57.6%) disagreed that CPR is mandatory. A significant number (68.1%) felt it was important to understand their role in CPR, and 70.1% agreed on the importance of CPR in clinical practice. Attitudes towards CPR as a basic emergency need were positive (66.3% agree, 24% strongly agree). Awareness of CPR's importance for novice nurses was also high (64.6% agree, 26.4% strongly agree). Participants felt CPR was stressful (62.8% agreed) and complex (60.4% agreed) (see Table III).

TABLE III: Distribution of Attitude Variables among Participants (N = 288)

Variables	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Cardiac arrest is a life-threatening condition	95 (33.0%)	181 (62.8%)	6 (2.1%)	2 (0.7%)	4 (1.4%)
CPR helps a person during cardiac arrest	60 (20.8%)	215 (74.7%)	6 (2.1%)	3 (1.0%)	4 (1.4%)
CPR is not mandatory for cardiac arrest	10 (3.5%)	29 (10.1%)	35 (12.2%)	166 (57.6%)	48 (16.7%)
Drug is sufficient for cardiac arrest	11 (3.8%)	106 (36.8%)	33 (11.5%)	125 (43.4%)	13 (4.5%)
Understanding the role of the nurse during CPR procedure	51 (17.7%)	196 (68.1%)	29 (10.1%)	11 (3.8%)	1 (0.3%)
CPR is not done without mouth-to-mouth breathing	25 (8.7%)	105 (36.6%)	41 (14.2%)	101 (35.1%)	16 (5.6%)
Awareness of the importance of CPR in clinical practice	57 (19.8%)	202 (70.1%)	18 (6.3%)	11 (3.8%)	0 (0.0%)
CPR is a basic emergency need for the betterment of mankind's health status	69 (24.0%)	191 (66.3%)	17 (5.9%)	10 (3.5%)	1 (0.3%)
Orientation on CPR is important for every novice nurse	76 (26.4%)	186 (64.6%)	19 (6.6%)	6 (2.1%)	1 (0.3%)
Clearly understanding CPR and its risks/benefits	42 (14.6%)	179 (62.2%)	47 (16.3%)	17 (5.9%)	3 (1.0%)
CPR is a stressful situation	31 (10.8%)	181 (62.8%)	38 (13.2%)	31 (10.8%)	7 (2.4%)
CPR is complex, time, and energy-consuming	40 (13.9%)	174 (60.4%)	36 (12.5%)	36 (12.5%)	2 (0.7%)
Competent enough to provide CPR	37 (12.8%)	168 (58.3%)	48 (16.7%)	34 (11.8%)	1 (0.3%)
Nurses should understand their role in cardiac arrest	79 (27.4%)	193 (67.0%)	10 (3.5%)	6 (2.1%)	0 (0.0%)
Good knowledge of CPR could cause hesitation to perform	39 (13.5%)	147 (51.0%)	39 (13.5%)	51 (17.7%)	12 (4.2%)
Mouth-to-mouth ventilation is helpful during CPR	45 (15.6%)	187 (64.9%)	32 (11.1%)	21 (7.3%)	3 (1.0%)
Participation in awareness programs and saving experience	75 (26.0%)	194 (67.4%)	10 (3.5%)	6 (2.1%)	3 (1.0%)
Knowledge about correct CPR procedures is mandatory for all healthcare providers	99 (34.4%)	178 (61.8%)	5 (1.7%)	4 (1.4%)	2 (0.7%)
Teaching and mastering CPR interventions should be mandatory	89 (30.9%)	184 (63.9%)	7 (2.4%)	6 (2.1%)	2 (0.7%)

TABLE IV: Distribution of Participants by Knowledge (N = 288)

Level of knowledge	n	%
Poor knowledge	177	61.5
Average knowledge	107	37.2
Good knowledge	4	1.4
Total	288	100.0

TABLE V: Distribution of Participants by Attitude (N = 288)

Level of attitude	n	%
Average	219	76
Good	69	24.0
Total	288	100.0

3.4. Levels of Knowledge of and Attitudes Toward CPR

Among the participants, only 1.4% demonstrated a good level of knowledge regarding CPR, while 37.2% had an average level of knowledge, and 61.5% had poor knowledge. Regarding attitude, 24% of participants had a good attitude, and 76% had an average attitude regarding CPR (Tables IV and V).

4. Discussion

The study found a predominance of female nurses, which aligns with Ali *et al*. from Egypt [15]. Most participants held a diploma, contrary to findings by another study reported a higher prevalence of technical nursing institute graduates [13], [15]. The working experience of nurses in this study, predominantly 1–5 years in CCU/ICU/Emergency departments, is consistent with study of Nepal [12]. However, this contrasts with study of India [10], who found better knowledge and performance in ICU and emergency department staff. The current study also revealed a lack of CPR training among most nurses, consistent to research conducted in Egypt which reported a majority not having previous CPR training [16].

The study indicates that most nurses (61.5%) had poor CPR knowledge, 37.2% average knowledge with only 1.4% demonstrating good knowledge. This is supported by study in Lahore, Pakistan and Uganda [13], [17] though it contrasts with study in New Delhi, India [10], who reported a higher level of CPR knowledge among Indian nurses. Inconsistent findings are also noted when compared to studies from Nigeria [18] and another study in Bangladesh where most participants had satisfactory knowledge [19].

The majority (76%) of participants displayed an average attitude towards CPR, which differs from another study [20] but aligns with Mendhe *et al*. [21]. Participants recognized the importance of CPR and the role of nurses during resuscitation, which results is consistent [15]. Despite understanding CPR's benefits, many perceived it as complex and hesitated to perform it, reflecting stress-related issues, as noted in another study in Egypt [20]. Participants agreed on the necessity of CPR orientation for novice nurses and mandatory CPR training, supported by another study [15], [22]. The findings from Egyptian study also reinforce the need for high-quality CPR training among critical care nurses and healthcare professionals [16].

5. Conclusion

The study highlights that nurses exhibit a moderate attitude towards CPR but generally possess poor knowledge of key aspects, such as cardiac arrest signs, patient positioning, and CPR techniques. Despite recognizing CPR's importance, many view it as complex and demanding. There is, however, a strong willingness among nurses to engage in CPR training. Establish mandatory CPR certification and integrate CPR training into nursing education curricula. Further research should investigate the impact of CPR training programs and factors influencing CPR practices across hospitals in Bangladesh.

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Conflict of Interest

The researchers declare that they do not have any conflict of interest.

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