

## Original Article

# Knowledge, Attitude and Practice of Cardiopulmonary Resuscitation Among Nurses in Babcock University Teaching Hospital in Ilishan-Remo, Ogun State, Nigeria

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### Abstract

**Background:** Cardiac arrest is a substantial health problem estimated to account for 15–20% of all death. A timely performed cardiopulmonary resuscitation (CPR) can largely prevent sudden death as cardiopulmonary resuscitation is a critical component of basic life support. Hence, this study assessed the knowledge, attitude and practice of cardiopulmonary resuscitation among nurses in Babcock University Teaching Hospital in Ilishan-Remo, Ogun State, Nigeria.

**Method:** The study adopted a descriptive design which enabled the researcher in finding answers to the set research questions. A set of 135 structured questionnaires were administered to the respondents, which were filled and returned. SPSS version 22.0 was used for the data analysis.

**Result:** The results showed that whereas 74.9% of the respondents had good knowledge of cardiopulmonary resuscitation, 65.2% of the respondents had practiced cardiopulmonary resuscitation on patients and 56.3% of the respondents had negative attitude towards it. Further analysis showed that knowledge of cardiopulmonary resuscitation had significant influence on its practice.

**Conclusion and recommendation:** Majority of Nurses have good knowledge of cardiopulmonary resuscitation but only few of them had positive attitude towards its practice. Good knowledge influenced practice. The study showed that nurses have negative attitude towards CPR, it was recommended that the prevailing notion among nurses about cardiopulmonary resuscitation being a complex and time consuming process should be addressed through an intervention programme, to improve their attitude towards cardiopulmonary resuscitation.

**Key Words:** Cardiopulmonary resuscitation, Knowledge, Attitude, Practice, Nurses

### Introduction

Cardiovascular disease (CVD) has been identified as the leading cause of mortality, accounting for over 40% of all deaths in Africa (June, 2018). Sudden cardiac death is the most prevalent, yet preventable clinical problem, heart diseases are estimated to cause about 300,000 to 400,000 deaths annually (Beauchamp, Tom, Walters, Khan, & Anna, 2013). Ekeredu (2013) found that 52% of Nigerian adults suffer from

heart diseases, and the rate has raised from 52% in 2005 to 62.3% in 2012.

Cardiac arrest, a sudden cessation of functional cardiac activity, is capable of causing irreparable brain damage within few minutes, cardiac arrest is a substantial health problem estimated to account for 15–20% of all deaths (American Heart Association 2010). It is an important cause of cardiovascular morbidity and mortality in both developed and developing countries, more than 3

million sudden cardiac deaths occur worldwide every year and survival is lower than 8% (American Heart Association 2010). Because of the sudden nature of cardiac arrest, prompt cardiopulmonary resuscitation serves as a critical determinant of patient survival from a cardiac arrest.

Cardiopulmonary resuscitation (CPR) is a resuscitative medical procedure that involves a combination of rescue breathing and chest compression to ensure oxygenated blood flow to the brain to preserve brain function until further measures are taken to restore normal spontaneous blood circulation and breathing in a person who is in cardiac arrest (Bakhsha, 2014). It is a critical component of basic life support and the first line of response in cardiac arrest before defibrillation and advanced life supports are provided (American Heart Association, 2016). A timely performed CPR has a greater chance of successfully resuscitating a victim in cardiac arrest (Berg, Hemphill, Abella, Aufderheide, Cave, & Hazinski, 2010). CPR also has the potential to save lives in other life threatening emergencies such as stroke, respiratory arrest, trauma, drowning and airway obstruction (American Heart Association, 2016). It is associated with survival of victims and has the potential to prevent sudden death (Moser & Coleman, 2012).

The critical role of CPR in cardiac emergencies require that health care professionals are knowledgeable and competent in carrying out cardiopulmonary resuscitation. Berg, Hemphill, Abella, Aufderheide, Cave, and Hazinski, (2010) affirmed that when patients face a life threatening event such as cardiopulmonary arrest, successful management rely on the competence and skill of healthcare professionals. The need for health professionals to have adequate knowledge and skill on how to perform basic and advanced life support cannot be over-emphasized as they often encounter situations requiring this skill in their practice (Bakhsha 2010).

Nurses are often the healthcare providers closest to the bed side and the first to respond to patient's needs, therefore their knowledge of CPR and skills need to be optimal (Berg, et al, 2010). Nurses' competency in cardiopulmonary resuscitation is a critical factor in determining successful patient outcomes from a cardiac arrest (Moser & Coleman, 2012). It is however

unfortunate that in spite of all the advantages and benefits of cardiopulmonary resuscitation, findings from studies have compelling evidence that suggests that nurses across continents lack adequate knowledge and competence in the performance of cardiopulmonary resuscitation (Agunwah, 2010; Broomfield, 2016; Devlin, 2017).

Brown, Dias, Saini, Shah, Cofield, Terndrup, Kaslow, et.al (2016) in their study noted that despite nurses' exposure to training programmes and continuous nursing education on cardiopulmonary resuscitation, knowledge and practice of cardiopulmonary resuscitation was low. Bull and Alex (2017) reported that while some health professionals see the need to acquire knowledge and skills in cardiopulmonary resuscitation, many others do not recognize the need for it. A study conducted in rural communities in Hong Kong on knowledge of CPR among 157 public health nurse revealed that only 12% of the study population had received CPR training (Chung, 2013). This study was aimed at assessing the knowledge, attitude and practice of cardiopulmonary resuscitation among nurses in Babcock University Teaching Hospital, Ilishan Remo, Ogun state, Nigeria.

## Materials and method

**Research design:** The study adopted a descriptive survey design to assess knowledge, attitude and practice of cardiopulmonary resuscitation among nurses in Babcock University Teaching Hospital, Ilishan Remo, Ogun State, Nigeria.

**Population and sampling:** The study was conducted among nurses working in various units of Babcock University Teaching Hospital, Ilishan. The total population of nurses from the Human Resources record was 204. The sample from the population was derived using Taro Yamane's (1967) simplified formula to determine sample size:  $n = \frac{N}{1+N(e)^2}$ .

Where n = sample size, N = total population (204), e = Level of precision (0.05)

$$n = \frac{204}{1+204(0.05)^2} = 135.$$

Convenient sampling technique was used to select 135 nurses from all the units of Babcock University Teaching Hospital who were willing to participate in the study.

**Instrument for data collection:** The data for this study was collected through a four-section questionnaire developed by the researchers to assess the knowledge, attitude and practice of cardiopulmonary resuscitation among nurses in Babcock University Teaching Hospital after an extensive review of literature.

Section A comprised of five items on participants' socio demographic data, while section B contained twelve questions on knowledge of cardiopulmonary resuscitation, right answers had a weight of '2', while wrong answer had a weight of '1'. The maximum and minimum knowledge scores were 24 and 12 respectively, knowledge scores were categorised such that scores from 19-24 were grouped as "Good knowledge" while scores from 12-18 were grouped as "Poor knowledge". Section C had 10 items that elicited responses on attitude towards cardiopulmonary resuscitation. Responses were weighed such that the right answer had a weight of '2', while wrong answer had a weight of '1'. The maximum and minimum attitude scores were 20 and 10 respectively. Attitude scores were grouped such that scores from 16-20 were grouped as "Positive attitude" while scores from 10-15 were grouped as "Negative attitude". Section D had nine items on practice of cardiopulmonary resuscitation, responses were weighed such that the right answer had a weight of '2', while wrong answer had a weight of '1'. The maximum and minimum scores were 18 and 9 respectively. Scores from 14-18 were grouped as "good practice" while scores from 9-13 were grouped as "poor practice".

**Data analysis:** The questionnaires retrieved were coded and analysed using the computer assisted statistical software (SPSS Version 22). Descriptive statistics (frequency, mean, percentages and standard deviation) were used to describe the demographic characteristics, knowledge, attitude and practice of cardiopulmonary resuscitation. Chi square test was used for inferential statistics at 0.05 level of significance. Data was presented in frequency distribution table for quick interpretation and understanding of the result obtained.

**Ethical Consideration:** Ethical clearance was obtained from the Babcock University Health Research Ethics Committee (BUHREC) and a written permission was also obtained from the management of Babcock University Teaching Hospital (BUTH), Ilishan Remo before assessing

the participants. Informed consent was gained through verbal interaction with the participants and participants were allowed to voluntarily choose to participate in the study, confidentiality of participants was guaranteed and participants were told that there is no penalty for any participant who wishes to withdraw from the study at any time.

## Results

One hundred and thirty five (135) nurses participated in the study, the demographic data as presented in table 1 showed that majority of the participants (63.7%) were within the ages of 30-39, 82.2% had Bachelor of Nursing Degree (BNSc), 54.8% were Nursing Officers II on the professional ranking, and more than one quarter (38.5%) had 6-15 years working experience.

### Knowledge of cardiopulmonary resuscitation

The result as presented in the Table 2 showed that 54.8% of the respondents have received training on cardiopulmonary resuscitation. 72.6% understood that cardiopulmonary resuscitation supports and maintains breathing and circulation for an infant, child or adolescent, 66.7% supported that cardiopulmonary resuscitation should be done on every person in cardiac emergency. 100% of the respondents knew that cardiopulmonary resuscitation training and retraining is necessary for nurses. 96.3% agreed that cardiopulmonary resuscitation should be conducted on patient immediately before informing the Doctor. 97.8% were knowledgeable that chest compression stimulates 25% heart functioning during CPR. 84.4% had correct knowledge that chest compression during CPR should be done at the centre of the chest on lower half of the breast. 97.2% correctly indicated that the pulse of an adult with cardiac emergencies should be checked at the carotid artery. The computed mean score on nurses level of knowledge of cardiopulmonary resuscitation shown in table 3 revealed a mean score of 21.53 which fell within the range of good knowledge (scores of 19.0-24.0), indicating that nurses had good knowledge of CPR.

**Attitude towards cardiopulmonary resuscitation:** Table 4 showed the result of the respondents' attitude towards cardiopulmonary resuscitation. 35.6% of the participants strongly felt that cardiopulmonary resuscitation was complex and time consuming, 57.8% of the respondents indicated that cardiopulmonary resuscitation was energy sapping, 52.6% strongly agreed that mouth to mouth ventilation should

not be performed on opposite sex during cardiopulmonary resuscitation, 88.9% of the participants stated that inadequate supply of cardiopulmonary resuscitation equipment discouraged most nurses from practicing CPR, 57.8% indicated that mouth to mouth ventilation to patient in cardiac emergency is irritating and 51.1% of nurses stated that if they had the opportunity, they would avoid cardiopulmonary resuscitation. The computed mean on the attitude of nurses towards CPR as displayed in table 5 showed a mean score of 11.34 which fell within the range score of negative attitude (scores of 10-15.0), indicating that nurses had negative attitude toward cardiopulmonary resuscitation.

**Practice of cardiopulmonary resuscitation:** The result presented in table 6 showed that 78.5% of the participants had performed cardiopulmonary resuscitation on patient in cardiac emergencies. 65.2% of the participants checked patient pulse rate before commencing CPR, 74.1% ensured that patient was laid in supine position on a relatively hard surface before commencing cardiopulmonary resuscitation. The computed mean score on nurses level of practice of CPR as shown in table 7 revealed a mean score of 14.9 which fell within the range of good practice (scores of 15.0-19.0),

indicating that nurses practiced cardiopulmonary resuscitation.

**Relationship between knowledge and practice of cardiopulmonary resuscitation among nurses:** Cross tabulation of knowledge and practice of cardiopulmonary resuscitation showed that 79.2% of the respondents who had good knowledge of cardiopulmonary resuscitation practiced cardiopulmonary resuscitation, and 76.5% of those who had poor knowledge did not practice CPR. The test of this relationship had a chi-square value of 97.54 at  $p=0.001$ . The p-value was less than the 0.05 significant level which revealed that a significant relationship exist between knowledge and practice of cardiopulmonary resuscitation among nurses in Babcock University Teaching Hospital (table 8).

**Relationship between units where nurses worked and practice of cardiopulmonary resuscitation.:** Table 9 showed the cross tabulation of the practice of cardiopulmonary resuscitation by nurses' different units in Babcock University Teaching Hospital, the test showed a chi-square value of 7.02 at  $p=0.071$ . The p-value was more than the 0.05 indicating that no significant relationship existed between different units where nurses worked and their practice of cardiopulmonary resuscitation.

**Table 1: Frequency distribution table for the demographic data of respondents    n=135**

VARIABLES	FREQUENCY	PERCENTAGE
<b>Age (in years)</b>		
20 – 29	12	8.9
30 – 39	86	63.7
40 – 49	28	20.7
50 and Above	9	6.7
<b>Professional and Academic Qualifications</b>		
RN/Post Basic	18	13.3
BNSc	111	82.2
MSc	6	4.4
<b>Length of Years of Professional Experience</b>		
0 – 5	28	20.7
6 – 15	52	38.5
16 – 25	41	30.4
Above 25	14	10.4
<b>Professional Rank</b>		
NO II	74	54.8
NO I	36	26.7
SNO	12	8.9
PNO	6	4.4

ACNO	4	3.0
CNO	3	2.2
<b>Current Clinical Area</b>		
Medical Ward	26	19.3%
Surgical Ward	28	18.5%
Out Patient Department	9	5.2%
Accident and Emergency	20	16.3%
Obstetrics and Gynaecology	14	8.9%
Theatre	6	4.5%
Others	32	27.3%
<b>Total</b>	<b>135</b>	<b>100.0</b>

**Table 2: Responses on knowledge of cardiopulmonary resuscitation**

Question Items	Responses n=135	
	YES	NO
Have you received any training on cardiopulmonary resuscitation	74 (54.8%)	61 (45.2%)
CPR support and maintain breathing and circulation for an infant, child, or adolescent	98 (72.6%)	37 (27.4%)
CPR should be done on every person in cardiac emergency	90 (66.7%)	45 (33.3%)
CPR training and retraining is necessary for nurses	135 (100%)	0 (0%)
CPR should be conducted on patient immediately before informing the Doctor	130 (96.3%)	5 (3.7%)
The compression of ventilation ratio for the lone rescuer giving CPR to victims of any age is 20:1?	45 (33.3%)	90 (66.7%)
Chest compression during cardiopulmonary resuscitation stimulate 25% heart functioning	132 (97.8%)	3 (2.2%)
I take 25 seconds to check for pulse of an adult before commencing CPR	89 (65.9%)	46 (34.1%)
Chest compression should be 7 inches (10cm) deep for an adult during CPR	92 (68.1%)	43 (31.9%)
Chest compression during CPR should be done at the centre of the chest on lower half of the breast	114 (84.4%)	21 (15.6%)
The pulse of an adult with cardiac emergencies should be checked at the carotid artery	132 (97.2%)	3 (2.2%)
A 2 – rescuer performing CPR should switch role after each cycle	83 (61.5%)	52 (38.5%)

**Table 3: mean score on level of knowledge of cardiopulmonary resuscitation**

LEVEL OF NURSES' KNOWLEDGE ABOUT CARDIOPULMONARY RESUSCITATION				Mean	S.D.	Min.	Max.
Results	Range Scores	Frequency	Percentage	21.53	1.28	15.0	24.0
<b>GOOD</b>	19.0 – 24.0	101	74.89				
<b>POOR</b>	12.0 – 18.0	34	25.20				
Total		135	100.0				

**Table 4: Responses on the attitude of nurses towards cardiopulmonary resuscitation**

Question Statements	Responses n=135				
	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed
I feel CPR is complex and time consuming	48 (35.6%)	26 (19.3%)	8 (5.9%)	35 (25.9%)	18 (13.3%)
I feel CPR is energy consuming	78 (57.8%)	30 (22.2%)	3 (2.2%)	18 (13.3%)	6 (4.4%)
I feel Mouth to mouth ventilation should be perform if mask is not available on a patient during CPR	2 (1.5%)	1 (0.7%)	0 (0%)	109 (80.7%)	23 (17.0%)
I feel it is futile to perform CPR for elderly patient	46 (34.1%)	11 (8.1%)	0 (0%)	62 (45.9%)	16 (11.9%)
I think Mouth to mouth ventilation should not be performed on opposite sex during CPR	71 (52.6%)	35 (25.9%)	7 (5.2%)	18 (13.3%)	4 (3.0%)
CPR should not be practice if necessary equipment are not easily found	49 (36.3%)	33 (24.4)	0 (0%)	21 (15.6%)	32 (23.7%)
Inadequate supply of CPR equipment discourages most nurses from practicing CPR	120 (88.9%)	9 (6.7%)	0 (0%)	3 (2.2%)	3 (2.2%)
I feel Doctors should be responsible for initiating CPR	11 (8.1%)	14 (10.4%)	0 (0%)	17 (12.6%)	93 (68.9%)
I believe mouth to mouth ventilation to patient in cardiac emergency is	78 (57.8%)	16 (11.8%)	2 (1.5%)	5 (3.70%)	34 (25.2%)

irritating					
If I have the opportunity, I would like to avoid CPR	17 (12.6%)	69 (51.1%)	1 (0.7%)	33 (24.4%)	15 (11.1%)

**Table 5: mean score on nurses’ attitude towards cardiopulmonary resuscitation**

NURSES' ATTITUDE TOWARDS CARDIOPULMONARY RESUSCITATION				Mean	S.D.	Min.	Max.
Results	Range Scores	Frequency	Percentage	11.34	6.78	9.0	16.0
<b>POSITIVE</b>	16.0 – 20.0	59	43.7				
<b>NEGATIVE</b>	10.0- 15.0	76	56.3				
Total		135	100.0				

**Table 6: Responses on the practice of cardiopulmonary resuscitation      n=135**

Question Statements	Responses		
	Yes	No	Undecided
Have you perform CPR on patient in cardiac emergencies	106 (78.5%)	29 (21.5%)	0 (0.0%)
I check for patient pulse rate before commencing CPR	88 (65.2%)	43 (31.9%)	4 (2.9%)
I ensure person in cardiac emergency is laid supine on a relatively hard surface before commencing CPR	100 (74.1%)	29 (21.5%)	6 (4.4%)
I wear latex gloves before commencing CPR	48 (35.6%)	85 (62.9%)	2 (1.5%)
I used both hands to perform chest compression during CPR	105 (77.8%)	25 (23.8%)	5 (4.8%)
I pinch patient nostril before giving mouth to mouth ventilation	106 (78.5%)	16 (11.9%)	13 (9.6%)
I do CPR to patient in hospital environment	102 (75.6%)	15 (11.1%)	18 (13.3%)
I use my palm on the patient forehead and gently tilt the head forward	103 (76.3%)	23 (17.0%)	9 (6.7%)
I use the same procedure to administer CPR to children and adult	31 (22.9%)	94 (69.6%)	10 (7.5%)

**Table 7: mean score on the practice of cardiopulmonary resuscitation**

LEVEL OF PRACTICE OF CARDIOPULMONARY RESUSCITATION				Mean	S.D.	Min.	Max.
Results	Range Scores	Frequency	Percentage	14.9	1.25	10.0	17.0
<b>GOOD PRACTICE</b>	14.0 – 17.0	88	65.2				
<b>POOR PRACTICE</b>	10.0– 13.0	47	34.8				
Total		135	100.0				

**Table 8: Cross tabulation of knowledge and Practice of Cardiopulmonary Resuscitation**

Factors		Practice of cardiopulmonary resuscitation			$\chi^2$ (sig.)
		Yes	No	Total	
<b>Knowledge of cardiopulmonary resuscitation</b>	Good	80 (79.2%)	21 (20.8%)	101 (100%)	97.54 <i>p=0.001</i>
	Poor	8 (23.5%)	26 (76.5%)	34 (100%)	
Total		88 (65.2%)	47 (34.8%)	135 (100%)	

**Table 9: Cross tabulation of the practice of cardiopulmonary resuscitation by nurses’ different units in Babcock University Teaching Hospital.**

Factors		Practice of cardiopulmonary resuscitation			$\chi^2$ (sig.)
		YES	NO	Total	
<b>Nurses’ in different Units</b>	Medical Ward	16 (61.5%)	10 (38.5%)	26 (100%)	7.02 <i>0.071</i>
	Surgical Ward	21 (75.0%)	7 (25.0%)	28 (100%)	
	Outpatient Department	5 (55.6%)	4 (44.4%)	9 (100%)	
	Accident and Emergency	13 (65.0%)	7 (45.0%)	20 (100%)	
	Obstetrics and Gynecology	12 (85.7%)	2 (14.3%)	14 (100%)	
	Theatre	5 (83.3%)	1 (16.7%)	6 (100%)	
	Others	16 (50.0%)	16 (50.0%)	32 (100%)	
Total		88 (65.2%)	47 (34.8%)	135 (100%)	

## Discussion

The study revealed that nurses had good knowledge and practice of CPR, this finding is synonymous to the findings of Shahrakivahed, et al (2015), in their study conducted among nurses in Kigali health district, Rwanda, it was found that nurses had good knowledge of CPR, the result of Adebamowo and Ajayi (2015) in a study on knowledge and practice of cardiopulmonary resuscitation conducted in Kumasi, Ghana also supported the finding of the present study, their study showed that 75% of the health personnel had good knowledge of cardiopulmonary resuscitation and do practice it.

Contrary to these findings however, Brown, et.al, (2016) in their research on knowledge and practice of cardiopulmonary resuscitation among nurses, found that despite nurses' exposure to in-service training programmes and continuous nursing education on cardiopulmonary resuscitation, knowledge and practice of cardiopulmonary resuscitation was low, Olateju & Amoran (2014), also found poor knowledge of CPR among community nurses in Remo area of Ogun State, Nigeria. A study conducted in rural communities in Hong Kong regarding knowledge of CPR among the public health nurse also found that nurses had poor knowledge of CPR (Chung, 2013). The result of this study also contradict the findings of Sadoh, & Osariogiagbo (2009), in their study to determine knowledge and practice of cardiopulmonary resuscitation amongst Doctors and Nurses in Benin City, Nigeria, which revealed poor knowledge of CPR amongst the respondents.

The study revealed that despite having good knowledge of CPR, Nurses demonstrated negative attitude towards CPR. This finding is supported by the result of the study carried out on attitude of nurses towards performing cardiopulmonary resuscitation which revealed that the overall attitude of nurses to performing CPR was poor (Gebremedhn, Gebregergs, Bernard, and Nagaratnam, 2017). Majid, Foo, Luyt, Zhang, Theng, Chang, and Mokhtar (2011), disagreed with the research finding, in a study they conducted to explore nurses' knowledge and attitude towards cardiopulmonary resuscitation and factors

likely to encourage or create barriers to its practices in Singapore, they found that majority of the nurses expressed a positive attitude towards cardiopulmonary resuscitation, the findings of Santhosh Kumar (2017), also disagree with the research finding, in his study to assess the attitude of nurses in cardiopulmonary resuscitation, it was found that nurses showed positive attitude towards conducting cardiopulmonary resuscitation.

Findings from this study showed that 65.2% of the respondents had practiced cardiopulmonary resuscitation while 34.80% had not practice cardiopulmonary resuscitation. This finding supports the study of Hoffman, Cooper and Carrera (2016) in a study carried out in Botswana health district, which was reported that 6 out of every 10 healthcare provider in Botswana have practiced cardiopulmonary resuscitation.

Keenan, Lamacraft and Joubert (2009) disagrees with this result. In their study carried out at a tertiary hospital in Kenya, they reported that only 21% of nurses practice CPR. The finding of this study on practice of CPR also disagree with that of Dorothy, Alberta, and Affiong (2017), in a study they conducted in Calabar metropolis of Cross River State, Nigeria on knowledge and practice of cardiopulmonary resuscitation among public health nurse which revealed that the proportion of public health nurse who practiced cardiopulmonary resuscitation was significantly lower than the proportion of those who do not practice.

**Conclusion:** From the findings of the study, majority of Nurses had good knowledge of cardiopulmonary resuscitation, majority practised CPR but only few of the nurses expressed positive attitude towards the practice of CPR. Good knowledge of cardiopulmonary resuscitation influenced its practice but did not impact on individual's attitude toward CPR.

**Recommendation:** Based on the findings from the study there is need for an in house training; an educational intervention in hospitals towards improving attitude of nurses to cardiopulmonary resuscitation. Hospital management should organize periodic seminars and workshops on CPR for nurses

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