



# Pilot Study on the Knowledge and Attitude of Providing Bystander Cardiopulmonary Resuscitation in Out-of-Hospital Cardiac Arrest in Phalga, Rivers State

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## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

**Background:** Sudden cardiac death is a principal cause of death for millions of people yearly worldwide. The survival chances of an out of cardiac arrest are significantly increased by the provision of prompt and effective bystander cardiopulmonary resuscitation (CPR).

**Methodology:** A descriptive cross-sectional study was conducted among 61 respondents in PHALGA. SPSS version 2.0 was used for the data analysis.

**Results:** Finding from the study provided evidence for a good test-retest reliability and an acceptable Cronbach alpha value.

**Conclusion:** The majority of the community members have poor knowledge of cardiopulmonary resuscitation and only a few of them have a positive attitude toward providing bystander CPR. The positive or negative attitude towards cardiopulmonary resuscitation is influenced by their knowledge on cardiopulmonary resuscitation. The study showed that the majority had a negative attitude toward administering cardiopulmonary resuscitation. Health education, dissemination of information, and community training on CPR are needed to improve knowledge and positive attitude toward bystander CPR administration.

*Keywords: Knowledge; attitude; bystander; cardiopulmonary resuscitation; cardiac arrest.*

## 1. INTRODUCTION

Out of hospital cardiac arrest (OHCA) has a global incidence of 50 to 60 per 100 000 population and it poses a public health burden despite global healthcare improvements, the mortality rate for out of hospital cardiac arrest remains high [1]. Out-of-hospital cardiac arrest is not limited to developed nations but also occurs in many developing nations [2]. Cardiovascular diseases are the leading cause these diseases that account for 17.5 million deaths annually [3]. In Nigeria about 29% of all deaths are caused by Non communicable diseases with 11% caused by cardiovascular diseases (WHO, 2018). Nigeria is presently ill-prepared for this unlike many countries of the world as victims of out of hospital cardiac arrest are dependent on the bystanders' ability to perform early Cardiopulmonary resuscitation in such emergency situations but due to poor knowledge of what is expected of them to do cannot provide this important emergency service [2].

There is a need to train people in the art and science of bystander Cardiopulmonary resuscitation considering the ongoing global public health burden of hospital sudden cardiac arrest and the prompt need of high-quality Cardiopulmonary resuscitation initiation which significantly increases the survival rate of victims as reported by researchers and adds to the overall and long term benefits of the communities. (Adedamola, Chukwudi 2019). Cardiopulmonary resuscitation should be initiated immediately following the recognition of the cardiac arrest victim. It can be done by anyone and anywhere [4]. Cardiopulmonary resuscitation is a life-saving medical intervention that preserves intact brain function and tissue viability by circulating blood and oxygen manually around the individual's body, a function normally carried out by a beating heart [4]. Cardiopulmonary resuscitation central goal is to postpone the death of tissue during the period of time when the patient lacks perfusion [4]. Early response improves the survival chances and yet it is often not provided up until the arrival of medical responders [5]. Perfusion is dependent on compressions of the chest thus the importance of chest compressions should be of a high priority and initial action on a sudden cardiac arrest victim. High-quality cardiopulmonary resuscitation is not only important at the onset but throughout the course

of resuscitation hence the phrase "Push hard" and "Push fast" [5].

The survival rate from out of hospital cardiac arrest in high-income countries has been reported to be between 4.3% and 11% [6]. In low income, countries reports show spontaneous circulation return rates ranging from 0% and 62%, survival rates to discharge between 1% and 16.7%, and favorable neurological outcomes ranging between 1% and 9.3% [7].

Only a few patients experiencing out of hospital cardiac arrest are resuscitated successfully and lesser patients are discharged with minimal neurological impairment [8]. The provision of early bystander cardiopulmonary resuscitation (CPR) is necessary to improve survival chances in out-of-hospital cardiac arrest twofold however survival chances decrease by 7-10% each minute without cardiopulmonary resuscitation [9]. Cardiac death occurs most likely after 10 minutes of loss of oxygen to the brain, Brain damage is expected to occur from 6-10 minutes after cardiac arrest, brain damage is very possible from 0-4minutes and brain damage is virtually nonexistent from 0-4minutes of cardiac arrest if prompt cardiopulmonary resuscitation intervention is done [10].

The measurement of the knowledge and attitude of providing bystander cardiopulmonary resuscitation in out-of-hospital cardiac arrest in PHALGA, Rivers State is limited. The primary aim of the present pilot study was to identify possible obstacle areas and shortcomings in the main research project concerning bystander cardiopulmonary resuscitation in Rivers state. The secondary aims were to determine the feasibility of the main study protocol, to examine if the recruitment methods of participants are suitable, to pretest the questionnaire, and to determine the reliability method.

## 2. METHODS

### 2.1 Research Design

A pilot study was conducted to assess the knowledge and attitude of bystander cardiopulmonary resuscitation in out-of-hospital cardiac arrest with features of a community-based descriptive cross-sectional study which will be the main future research project.

## 2.2 Population and Sampling

The study was conducted among community members of PHALGA, Rivers State. 61 participants were recruited for this study which is 15% of the main study population

## 2.3 Participants and Participant Recruitment

In order to participate community members had to meet the inclusion criteria: People aged 20- 50 years. People that resides in the communities for more than 6months.

The individuals or group that were excluded from this study include:

Eligible participants who are not willing to participate in the study.

Eligible participants who are sick or disoriented.

Person's who meet the inclusion criteria but do not reside in the selected communities for over 6 months.

Participants were informed on the study purposes and a consent form was given to them once they accepted to participate. The researcher gave them informations on how to fill the questionnaire.

## 2.4 Instruments

A structured self-administered questionnaire developed by researchers from reviewed literature was used. The questionnaire consists of information on socio-demographic data, awareness of cardiopulmonary resuscitation, knowledge of cardiopulmonary resuscitation, and attitude toward cardiopulmonary resuscitation.

## 2.5 Data Analysis

The data obtained was properly screened for errors and completeness. SPSS version 25.0 was used to analyze the data. Descriptive statistics such as percentages and frequency were used for categorical variables. The mean and standard deviation for continuous variables. The Cronbach alpha was used to evaluate the reliability of each scale in the questionnaire and values >0.7 were considered acceptable.

## 3. RESULTS

### 3.1 Socio-Demographic Characteristics of the Respondents

Table 1 shows the respondents' socio-demographic characteristics of the respondents. About 48% of the respondents are between the age group 20-30years. More than half of the respondents were male, married (52.5%) and (52.5%) has B.sc as their highest level of Education. Less than One-fifths of the respondents were civil-servant. Majority (96.8%) of the respondents were Christian.

**Table 1. Frequency distribution of the respondent's socio-demographic characteristics**

Variables	N=61	%
<b>Age</b>		
20-30	29	47.5
31-40	17	27.9
41-50	15	24.6
<b>Sex</b>		
Male	32	52.5
Female	29	47.5
<b>Marital status</b>		
Single	26	42.6
Married	32	52.5
Separated	1	1.6
Widowed	2	3.3
<b>Education</b>		
None	3	4.9
Primary	2	3.3
Secondary	6	9.8
NCE	3	4.9
OND	4	6.6
HND	5	8.2
Bsc	26	42.6
Msc	9	14.8
Phd	3	4.9
<b>Occupation</b>		
Civil servant	16	26.2
Retired	5	8.2
Self-employed	10	16.4
Unemployed	2	3.3
Student	10	16.4
Trader	13	21.3
Other	5	8.2
<b>Religion</b>		
Christianity	59	96.8
Islam	1	1.6
Traditional	1	1.6

### **3.2 Sources of Cardiopulmonary Resuscitation (CPR) among Participants**

Table 2 shows the respondents' awareness of cardiopulmonary resuscitation. About 84% of the respondents have heard about cardiopulmonary resuscitation. Most (73.8%) of the respondents did not gain awareness of cardiopulmonary resuscitation through their families. More than two-fifths of the respondents gained awareness of cardiopulmonary resuscitation through their study. A majority (90.2%) of the respondents did not gain awareness of cardiopulmonary resuscitation through community health campaigns and healthcare workers (such as the doctors, nurses, etc). More than four-fifths of the respondents gained awareness of cardiopulmonary resuscitation through social media. Many (77%) of the respondents did not get their awareness of cardiopulmonary resuscitation through radio nor TV programs. Less than two-thirds of the respondents are not confident in their knowledge of cardiopulmonary resuscitation. Many (70.5%) of the respondents have not taken any form of training or course on cardiopulmonary resuscitation. Most (86.9%) of the respondents were not encouraged or require taking the course on cardiopulmonary resuscitation by work or school (93.4%). More than four-fifths of the respondents were not encouraged either by personal choice or previous experience to take the course on cardiopulmonary resuscitation. About 77% of the respondents have never witnessed a sudden cardiac arrest. About 10% of the respondents witness a sudden cardiac arrest among strangers.

### **3.3 Respondents' Knowledge of Cardiopulmonary Resuscitation (CPR)**

Table 3 shows the respondents' knowledge of cardiopulmonary resuscitation. About two-thirds of the respondents know that when they encounter a situation that requires cardiopulmonary resuscitation, they need to check the victim for unconsciousness and start cardiopulmonary resuscitation immediately before calling emergency services. More than two-fifths of the respondents know that

checking if a cardiac arrest victim is unconscious involves calling out or shaking the shoulder of the victim. Many (66.7%) of the respondents won't rush a cardiac arrest victim to the hospital before starting cardiopulmonary resuscitation. Most (83%) of the respondents know that high-quality cardiopulmonary resuscitation should be started within 10-15 sec of recognition of cardiac arrest in the victim. About 78% of the respondents know the recommended BLS sequence guideline of cardiopulmonary resuscitation. Less than half of the respondents know the recommended rate of chest compression per minute. 33.3% are aware that chest compression should be performed on a flat surface.

### **3.4 Respondents' Attitude towards Cardiopulmonary Resuscitation (CPR)**

The response to the questions "Which of the following will you give CPR without hesitation? 90.2% for a family member, 42.6% for a neighbour, 50.8% for a friend, for a stranger was 36.1%.

"I would abstain from performing CPR to a cardiac arrest victim was 13.1%.

"I would feel unsure of how to react when am faced with the following cardiac arrest victim? Family or friends was 68.9%, for a stranger was 70.5%.

#### **3.4.1 Barriers regarding CPR**

Barriers preventing respondents from administering cardiopulmonary resuscitation indicated that many (62.3%) of the respondents are afraid of being arrested by the police which prevents them from administering cardiopulmonary resuscitation. More than half of the respondents (55.7%) are afraid of being harassed due to negative outcomes of cardiopulmonary resuscitation which prevent them from administering cardiopulmonary resuscitation. Majority (90.2%) of the respondents are not disturbed by reprisal from gangs to administer cardiopulmonary resuscitation.

**Table 2. Frequency distribution of respondents awareness on CPR (N= 61)**

Variables	Yes (%)	No (%)
Heard of cardiopulmonary resuscitation (CPR) before now	51(83.6%)	10(16.4%)
Gain awareness on cardiopulmonary resuscitation through family	16(26.2%)	45(73.8%)
Gain awareness on cardiopulmonary resuscitation through personal reading/school	27(44.3%)	34(55.7%)
Gain awareness on cardiopulmonary resuscitation through a community health campaign	6(9.8%)	55(90.2%)
Gain awareness of cardiopulmonary resuscitation through Health care workers (Doctors, nurses)	6(9.8%)	55(90.2%)
Gain awareness of cardiopulmonary resuscitation through social media	50(82%)	11(18%)
Gain awareness of cardiopulmonary resuscitation through radio/tv programme	14(23%)	47(77%)
Confidence that your knowledge of cardiopulmonary resuscitation is adequate to assist a cardiac arrest when encountering with one	23(37.7%)	38(62.3%)
Have you taken a training /course on cardiopulmonary resuscitation	18(29.5%)	43(70.5%)
<b>What encourage you to take the training on cardiopulmonary resuscitation?</b>		
❖ Work Requirement	8(13.1%)	53(86.9%)
❖ School Requirement	4(6.6%)	57(93.4%)
❖ Personal choice	5(8.2%)	56(91.8%)
❖ Previous experience	2(3.3%)	59(96.7%)
❖ Have you ever witness a sudden cardiac arrest	14(23%)	47(77%)
❖ Witness a sudden cardiac arrest among family member	3(4.9%)	58(95.1%)
❖ Witness a sudden cardiac arrest among friends	5(8.2%)	56(91.8%)
❖ Witness a sudden cardiac arrest among strangers	6(10%)	55(90%)

**Table 3. Frequency distribution of respondents' knowledge of CPR (N= 18)**

Variables	True (%)	False (%)	Don't know (%)
The correct steps involved when you encounter a situation that requires cardiopulmonary resuscitation to check the victim for unconsciousness start CPR immediately before you call the emergency services	12(66.7%)	5(27.8%)	1(5.6%)
Checking whether a cardiac arrest victim is unconscious involves calling out "are you okay" or shaking the victims shoulder	8(44.4%)	8(44.4%)	2(11.1%)
In ideal situation, it is better to rush of a cardiac arrest to the hospital than to waste time to start cardiopulmonary resuscitation on the victim	6(33.3%)	12(66.7%)	
High quality CPR should be started after 10-15 sec of recognition of cardiac arrest in victims of all age	15(83.3%)	2(11.1%)	1(5.6%)
The recommended BLS sequence by AHA2010 guidelines of CPR is chest compression, airway, and breathing	14(77.8%)	1(5.6%)	3(16.7%)
The recommended adequate rate of chest compression is 100-120 compressions per minute	8(47.1%)	5(29.4%)	4(23.5%)
Delivery of chest compressions on a mattress or soft material provides effective and adequate compressions while protecting the victim's back	6(33.3%)	11(61.1%)	1(5.6%)

## 4. DISCUSSION

### 4.1 Objective One: To Assess Bystander Level of Knowledge on Cardiopulmonary Resuscitation

Fadi et al. [11] in a study among non-medical people in Saudi Arabia stated that In cardiac arrest victims, high-quality cardiopulmonary resuscitation (CPR) provision is a fundamental component of initial care, especially in the out-of-hospital settings. Findings from the study show there is a lack of knowledge regarding cardiopulmonary resuscitation as only 44.7% knew the correct depth and only 18.5% knew the correct compression-ventilation rate similar to this study with about 47% having the correct knowledge of compression ventilation rate. It recommended that there should be a coordinated national effort to improve public awareness about cardiopulmonary resuscitation performance such as mass education, specialized training, and setting legislation.

In this study about 84% of the respondents have heard about cardiopulmonary resuscitation similar to a study done by Matina et al. 2020 with Over 80% of respondents having heard of the procedure and bystander willingness to engage in cardiopulmonary resuscitation. A study done by Yaw, [12] shows that the most common sources of the respondents' knowledge were movies and television shows (32%), reading (18%), and school work (18%). In this study, the most common sources of respondent knowledge are social media (50%), personal reading (27%), and Family (16%).

In this study, 16% had received prior cardiopulmonary resuscitation training mostly from work (8%), and personal choice (5%) while the findings from a study done by Yaw, [12] show most of the respondents of the study obtained cardiopulmonary resuscitation training as a school or work requirement 51.6% and 46.5% respectively and 13.4% from health science courses, 44.2%.

### 4.2 Objective Two: To Assess the Attitude of Bystander towards Cardiopulmonary Resuscitation

In a study by Buranasakda, [13], on the knowledge and attitude toward bystander cardiopulmonary resuscitation among This stated that bystander cardiopulmonary

resuscitation is a paramount factor in improving out of hospital cardiac arrest survival rates. Findings show that lack of time and no known means of Basic life support (BLS) training canterers are major barrier and cause poor attitudes towards cardiopulmonary resuscitation practice, Low confidence, and fear of causing harm to the cardiac arrest victims. However, 80% of participants showed a positive attitude towards willingness to perform cardiopulmonary resuscitation which is also embedded in their cultural belief as help is a key value. The study recommended cardiopulmonary resuscitation training and refresher courses should be made available for everyone especially those in the rural region in other to foster a positive attitude toward cardiopulmonary resuscitation practice.

In line with other studies, most participants (90%) in this study would readily perform cardiopulmonary resuscitation for cohabiting family and relatives but the majority of respondents will not perform cardiopulmonary resuscitation to strangers due to health, legal, and safety concerns. 59.3% of respondents in a study done by Meng et al. [14] in China were will not perform cardiopulmonary resuscitation on strangers due to fear of legal issues. The major barriers to the practice of cardiopulmonary resuscitation to strangers as evidenced by many studies are fear of contracting an infectious disease, lack of confidence, and fear of causing harm to a stranger and its legal implications [12]. They were the main inhibiting factors in this study. The majority (63%) fear being arrested by police, and 38% are concerned of been harassed.

## 5. CONCLUSION

This pilot study has achieved its goal by ascertaining the reliability of the study. Properly evaluating the tool's feasibility for gauging Knowledge and Attitude of providing bystander cardiopulmonary resuscitation in Rivers State and recommending a number of research design improvements in the main study in a different study setting The study findings shows that majority of the community members have poor knowledge and poor attitude towards cardiopulmonary resuscitation. It was recommended that Adequate health education and cardiopulmonary resuscitation training should be planned and implemented in the community.

## CONSENT AND ETHICAL CONSIDERATION

Ethical clearance was obtained from Rivers State University teaching hospital. Formal permission was obtained from the community chairman. Informed consent (Verbal and written) were obtained from the participants. The participants were assured of information confidentiality. Participants can opt-out at any point as discussed. Every step involved in this research was explained in detail. The collection process lasted for 3days. Participants were informed on the study purposes and a consent form was given to them once they accepted to participate.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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