

# Attitude of a Group of Nigerian Athletes towards Bystander Cardiopulmonary Resuscitation

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**Abstract Background/Aim of study:** Despite the increasing global concern for out-of-hospital cardiac arrest (OHCA) and the impact of sudden cardiac arrest among athletes, there is paucity of data on bystander cardiopulmonary resuscitation (CPR) among athletes in Nigeria. This study aimed at assessing the attitude of a group of Nigerian athletes towards bystander CPR. **Materials and Methods:** A self-administered questionnaire-based cross-sectional study was carried out at the Bayelsa Sports Council, Bayelsa State, Nigeria. The participants (athletes) were asked to respond to the questions that addressed their attitudes towards bystander CPR without undue influence from anyone. One hundred and thirty-three copies of the questionnaire were distributed and 128 were completed and returned, giving 96.2% response rate. Attitudes were interpreted using 4-1-point Likert scales. Using SPSS, the data was analyzed using descriptive statistics, paired t-test and analysis of variance (ANOVA) with significance level set at  $P < .05$ . Generally, the athletes showed statistically significant positive attitude towards bystander CPR ( $P < .05$ ). Participants' genders showed positive attitudes towards bystander CPR with the male gender having statistically significant better positive attitude ( $P < .05$ ). Interestingly, the age of the athletes generally had statistically significant associations with their willingness to provide bystander CPR for the elderly and children ( $P < .05$ ), while the 13-16 age group had significant associations with willingness to perform CPR for children and performance of compression-only CPR ( $P < .05$ ). The 32-37 age group had statistical association with their desire for access to CPR training ( $P < .05$ ). **Conclusion:** The Nigerian athletes generally showed significant positive attitude to bystander CPR for both genders and age.

**Keywords** Attitude, Bystander CPR, Nigerian athletes

## 1. Introduction

The importance of bystander cardiopulmonary resuscitation (CPR) among athletes cannot be overemphasized. Globally, it is documented that athletes, coaches and even parents should be encouraged to have positive attitude, adequate knowledge and skills of bystander CPR so as to know how to help in emergency situation both on and off the field [1-16]. Meanwhile, attitude towards bystander CPR by the athletes could determine the extent to which they would be involved in the acquisition of both theoretical knowledge and skills of such life-saving procedure. According to Creswell [1], for successful treatment of athletes who suffer sudden cardiac arrest, the following four components are necessary - prompt recognition that cardiac arrest has occurred, early bystander

CPR, early defibrillation, and early advanced life support provided by emergency medical system. Abnormal heart rhythm is known to be the immediate cause of sudden cardiac arrest which makes the heart's electrical activity to become chaotic with the failure of pumping blood to the rest of the body. Ventricular fibrillation is a type of arrhythmia that is the most common cause of cardiac arrest. Some certain conditions in athletes known that can trigger sudden cardiac arrest (SCA) include coronary artery disease (especially in athletes over 35 years), cardiomyopathy, Long QT syndrome and Brugada syndrome, Marfan syndrome, and heart birth defects [17].

Therefore, safety should be the number one priority whenever dealing with athletes or sporting events because a life-threatening accident could happen at any time. It is very important that there should be fellow athletes or coaches around who are trained in CPR and First Aid to act quickly to save such a life because out-of-hospital cardiac arrest (OHCA) is a known major public health challenge [18].

According to Goodes [19], attitude of an athlete is pivotal in youth sports performance. **A positive sports attitude is essential to the success of the athlete, both on and off the playing field** [19]. Recognising the usefulness of attitude to

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bystander CPR, there are reports across the globe on the attitude of laypersons towards bystander CPR [20-23]. Nigeria is a sports-loving nation having a reasonable proportion of its population as youths. Generally, the passion associated with sports among children and youths, as well as many adults could be enormous. Loss of any sport man or woman during active competitions could have far-reaching effects on supporters and families. Also, sports have been found to be of vital economical value globally. Therefore, athletes generally need to be protected medically. One of the crucial things to do is to increase the awareness and teaching/training of sports men and women in bystander CPR. Hitherto, there is no Nigerian published report on bystander cardiopulmonary resuscitation among athletes. The only related studies on attitude in Nigeria were among students and teachers [24-27]. In our determined effort to increase the awareness and guide future initiatives and policies in our advocacy for introduction of mandatory training of athletes and coaches in bystander CPR in our environment, it became necessary to assess the attitude of a group of Nigerian athletes towards bystander CPR. It was hypothesized that: (1) there would be no statistically significant positive attitude towards bystander CPR among the athletes; (2) there would be no statistically significant gender difference in their attitude towards bystander CPR; and (3) there would be no statistically significant association of attitude towards bystander CPR with age of the athletes.

## 2. Materials and Methods

### Study Design

A questionnaire-based cross-sectional study was carried out with ten (10) different questions that assessed the attitudes of bystander cardiopulmonary resuscitation of the athletes.

### Population for the study

The professional athletes at the Bayelsa Sports Council, Bayelsa State, Nigeria constituted the study population. In October 2018, copies of the questionnaire were distributed to 133 participants over one-week period as they came for practice at their sports center. However, only 128 of them completed and returned the questionnaire, giving a response rate of 96.2%. They were not exposed to any pre-teaching or training on bystander cardiopulmonary resuscitation by the researchers before they were given the questionnaire to fill.

### Positive and Negative Attitude to Bystander CPR

Attitudes were interpreted using 4-point Likert scales. The questions in the questionnaire had options of Strongly Agree, Agree, Disagree and Strongly Disagree with scores of 4, 3, 2 and 1 allotted to the options, respectively. Scores of 4 or 3 were considered as positive attitude while 2 and 1 were regarded as negative attitude towards bystander CPR by the athletes.

The following research questions and null hypotheses were considered:

### Questions

- (1) What would be the attitude towards bystander CPR among the athletes?
- (2) What would be the attitude of the athletes towards CPR with respect to gender?
- (3) What would be the impact of age on their attitude towards bystander CPR?

### Null Hypotheses:

**Ho1:** There would be no statistically significant positive attitude towards bystander CPR among the athletes

**Ho2:** There would be no statistically significant gender difference in the their attitude towards bystander CPR

**Ho3:** There would be no statistically significant association of attitude towards bystander CPR with age of the participants.

### Data Analysis

Using SPSS, the data were appropriately analyzed using descriptive statistics of percentages and mean, while student's t-test, and analysis of variance (ANOVA) statistics were used to test the hypotheses with significance level set at  $P < .05$ .

## 3. Results

The study sample had 128 athletes with age range of 13-46 years and mean age of  $23.61 \pm 7.79$  (SD) years.

Table 1a shows the frequency distribution of the positive and negative attitudes of the athletes towards bystander cardiopulmonary resuscitation (CPR) with generally good positive attitudes revealed and the average positive attitude score of 82.25%. Table 1b gives the paired sample T-test analysis of the positive and negative attitude of the athletes which shows the rejection of the hypothesis 1 ( $P < .05$ ).

Table 1b shows the frequency distribution of gender and attitude towards CPR of the participants is shown in Table 2a with generally positive attitudes by both genders. Tables 2b reveals that both genders have significantly positive attitude ( $P < .05$ ). However, Table 2c reveals that male gender had significantly better positive attitude to bystander CPR compared to the female gender ( $P < .05$ ). The hypothesis 2 is, therefore, rejected.

Tables 3a and 3b show the frequency distribution of the attitude of the athletes towards CPR and their age, as well as the summary of the significance level of attitude towards CPR by age of the participants using the analysis of variance. Age bracket 13-16 show significant associations with questions 6 and 7, while age group 32-37 reveal significant relationship with question 10. For the whole sample pooled together, significant associations are seen in relation to questions 5 and 6, thereby rejecting the hypothesis 3 for those questions.

**Table 1a.** Frequency distribution of the positive and negative attitude of the athletes

	Questions on Attitude towards CPR	Negative N (%)	Positive N (%)
Q1	I would like to teach others about CPR	9(8.6%)	117(91.4%)
Q2	I would perform mouth-to-mouth ventilation on a stranger.	55(43%)	73(57%)
Q3	I would perform CPR on a trauma victim, if needed.	22(17.2%)	106(82.8%)
Q4	I would perform CPR on a relative, if needed.	7(5.5%)	121(94.5%)
Q5	I would perform CPR on an elderly victim, if needed.	17(13.3%)	111(86.7%)
Q6	I would like to perform CPR on a child.	14(10.9%)	114(89.1%)
Q7	I would perform chest compression alone	61(47.7%)	67(52.3%)
Q8	CPR is just a trial and error	16(12.5%)	112(87.5%)
Q9	Sudden Cardiac Arrest victims can survive through CPR	10(7.8%)	118(92.2%)
Q10	Athletes should have access to CPR Training	8(6.3%)	120(93.7%)

**Table 1b.** Paired sample T-test analysis of the of the positive and negative attitude of athletes

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Positive- Negative	87.80000	35.81992	11.32725	62.17597	113.42403	7.751	9	.000

**Table 2a.** Frequency distribution of gender and attitude towards CPR of the participants

	Questions on Attitude towards CPR	91 Males (71.1%)		37 Females (28.9%)	
		Negative	Positive	Negative	Positive
Q1	I would like to teach others about CPR	10(11.0%)	81(89.0%)	1(2.7%)	36(97.3%)
Q2	I would perform mouth-to-mouth ventilation on a stranger.	39(42.9%)	52(67.1%)	16(43.2%)	21(56.7%)
Q3	I would perform CPR on a trauma victim, if needed.	13(14.3%)	78(85.7%)	9(24.3%)	28(75.7%)
Q4	I would perform CPR on a relative, if needed.	3(3.3%)	88(96.7%)	4(10.8%)	33(89.2%)
Q5	I would perform CPR on an elderly victim, if needed.	12(13.2%)	79(86.8%)	5(13.5%)	32(86.5%)
Q6	I would like to perform CPR on a child.	8(8.8%)	83(91.2%)	6(16.2%)	31(83.8%)
Q7	I would perform chest compression alone	52(57.1%)	39(42.9%)	15(40.5%)	22(59.5%)
Q8	CPR is just a trial and error	11(12.0%)	80(88.0%)	5(13.5%)	32(86.5%)
Q9	Sudden Cardiac Arrest victims can survive through CPR	6(6.6%)	85(93.4%)	4(10.8%)	33(89.2%)
Q10	Athletes should have access to CPR Training	5(5.5%)	86(94.5%)	3(8.1%)	34(91.9%)

**Table 2b.** Paired sample T-test analysis of gender and attitude towards CPR

	Test Value =0					
	T	df	Sig.(2-tailed)	Mean Difference	95% Confidence Interval of the Differences	
					Lower	Upper
Male	84.399	90	.000	31.14286	30.4098	31.8759
Female	56.842	36	.000	32.62162	31.4577	33.7855

**Table 2c.** Paired sample T-test analysis of gender and attitude towards CPR

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95%Confidence Interval of the Difference				
				Lower	Upper			
Female--Male	1.83784	4.29155	.70553	.40696	3.26871	2.605	36	.013

**Table 3.** Frequency distribution of the Attitude of the athletes towards CPR and their age

		<b>13-16 (33) 26%</b>	<b>17-21 (23) 18%</b>	<b>22-26 (26) 20%</b>	<b>27- 31(23) 18%</b>	<b>32 –37 (17) 13.3%</b>	<b>38–46 (6) 4.7%</b>	<b>All Ages in the sample</b>
<b>Q1</b>	-VE	1 (3%)	4 (17.4%)	2 (7.7%)	2 (8.7%)	1(5.9%)	1(16.7%)	11(8.6%)
	+VE	32 (97%)	19 (82.6%)	24(92.3%)	21(91.3%)	16(94.1%)	5(83.3%)	117(91.4%)
<b>Q2</b>	-VE	12 (36.4%)	14 (60.9%)	11(42.3%)	11(47.8%)	3(17.6%)	4(66.6%)	55(43%)
	+VE	21 (63.6%)	9 (39.1%)	15(57.7%)	12(52.2%)	14(82.4%)	2(33.4%)	73(57%)
<b>Q3</b>	-VE	9 (27.2%)	4 (17.4%)	3(11.5%)	3(13%)	2(11.8%)	1(16.7%)	22(17.2%)
	+VE	24 (72.8%)	19 (82.6%)	23(88.5%)	20(87%)	15(88.2%)	5(83.3%)	106(82.8%)
<b>Q4</b>	-VE	3 (9.1%)	3 (13.1%)	-----	1(4.3%)	---	----	7(5.5%)
	+VE	30 (90.9%)	20 (86.9%)	26(100%)	22(95.7%)	17(100%)	6(100%)	121(94.6%)
<b>Q5</b>	-VE	8 (24.2%)	6 (26.1%)	----	--	2(11.8%)	1(16.7%)	17(13.3%)
	+VE	25 (75.8%)	17 (73.9%)	26(100%)	23(100%)	15(88.2%)	5(83.3%)	111(86.8%)
<b>Q6</b>	-VE	5 (15.1%)	1 (4.3%)	3(11.5%)	1(4.3%)	2(11.8%)	2(33.4%)	14(10.9%)
	+VE	28 (84.8%)	22 (95.7%)	23(88.5%)	22(95.7%)	15(88.2%)	4(66.6%)	114(89.1%)
<b>Q7</b>	-VE	16 (48.5%)	14 (60.9%)	.9(34.6%)	11(47.8%)	11(64.7%)	6(100%)	67(52.3%)
	+VE	17 (51.5%)	9 (39.1%)	17(65.4%)	12(52.2%)	6(35.3%)	-----	61(47.6%)
<b>Q8</b>	-VE	4 (12.1%)	2 (8.7%)	3(11.5%)	3(13%)	4(23.5%)	----	16(12.5%)
	+VE	29 (87.9%)	21 (91.3%)	23(88.5%)	20(87%)	13(76.5%)	6(100%)	112(86.5%)
<b>Q9</b>	-VE	5 (15.1%)	2 (8.7%)	2 (7.7%)	16(69.6%)	1(5.9%)	3(50%)	10(7.8%)
	+VE	28 (84.8%)	21 (91.3%)	24(92.3%)	7(30.4%)	16(94.1%)	3(50%)	118(92.2%)
<b>Q10</b>	-VE	3 (9.1%)	3 (13.1%)	11(42.3%)	1(4.3%)	---	1(16.7%)	8(6.3%)
	+VE	30 (90.9%)	20 (86.9%)	15(57.7%)	22(95.7%)	17(100%)	5(83.3%)	120(93.7%)

-Ve (Negative Attitude); +Ve (Positive Attitude)

**Table 3b.** Summary of the significance level of attitude towards CPR by age of the participants using the Analysis of Variance

	<b>Questions on Attitude towards bystander CPR</b>	<b>13-16 (33) 26%</b>	<b>17-21 (23) 18%</b>	<b>22-26 (26) 20%</b>	<b>27-31 (23) 18%</b>	<b>32-37 (17) 13.3%</b>	<b>38-46 (6) 4.7%</b>	<b>All ages in the Sample (128) 100%</b>
<b>Q1</b>	I would like to teach others about CPR	.974	.179	.823	.085	.713	.956	.549
<b>Q2</b>	I would perform mouth-to-mouth ventilation on a stranger.	.759	.689	.941	.774	.342	.626	.497
<b>Q3</b>	I would perform CPR on a trauma victim, if needed.	.959	.439	.688	.284	.526	----	.286
<b>Q4</b>	I would perform CPR on a relative, if needed.	.284	.470	.319	.429	.814	.422	.475
<b>Q5</b>	I would perform CPR on an elderly victim, if needed.	.572	.639	.564	.159	.197	.068	.030*
<b>Q6</b>	I would like to perform CPR on a child.	.035*	.770	.150	.186	.384	.056	.009*
<b>Q7</b>	I would perform chest compression alone	.015*	.593	.786	.771	.413	-----	.116
<b>Q8</b>	CPR is just a trial and error	.875	.977	.755	.071	.565	.854	.606
<b>Q9</b>	Sudden Cardiac Arrest victims can survive through CPR	.223	.324	.701	.565	.564	.354	.355
<b>Q10</b>	Athletes should have access to CPR Training	.793	.362	.159	.774	.002*	.854	.648

\*P &lt; .05

## 4. Discussion

This first study on attitude of Nigerian athletes towards bystander cardiopulmonary resuscitation has shown that this group of Nigerian athletes have generally significant positive attitudes towards bystander CPR with the males having significant better positive attitude than the females. Meanwhile, age was not significantly associated with their attitudes to bystander CPR except for their willingness to perform CPR on an elderly victim and on a child. Although the positive attitude towards bystander among Nigerian

secondary school students could be described as better than the present findings among athletes, the current findings in this present Nigerian study among athletes are comparable to that [24] first similar work among Nigerian secondary school children where the average positive score towards bystander CPR was 90.8% while the present study gave 82.25% [24]. In a similar age group [25], 84.95% in all had positive attitude to bystander CPR before they were exposed to bystander CPR training but changed to 92.33% post-training. The higher percentage in the study by Onyeaso and Imogie [24] could be attributed to the great enthusiasm exhibited by

the participants (secondary school students) in the first Nigerian study as they were very willing to learn new things unlike the older age group in the present study. Similarly, Al-Turki et al [28] reported that 88% of the students were willing to perform CPR.

Similarly, Onyeaso & Imogie [24] in their study reported that the question which had the least positive response was willingness to carry out mouth to mouth ventilation for a stranger with 68.5% agreeing to do so while the present Nigerian study gave only 57%. In a related study, only 57.3% of Nigerian University students would want to provide mouth to mouth bystander CPR to strangers before the participants received CPR training. The figure only changed to 70% after receiving the training. Meanwhile the 68.5% reported by Onyeaso & Imogie for mouth to mouth ventilation for a stranger was considered quite impressive because of the general fear usually exhibited by potential bystander responders concerning the provision of mouth to mouth ventilation because of the possibility of contracting infections in the process. However, it is important to note that there are personal protective equipment (PPE) that could be used while carrying out mouth to mouth ventilation to prevent communicable diseases such as HIV and certain viruses like Hepatitis B infection that could be contracted through blood or body fluids.

It is important to note here also that only 52.3% of the participants gave positive response to chest compression-only. This is not considered as disappointing since chest compression-only CPR is also a recognized effective bystander CPR technique that solves the problem associated with the conventional technique. Meanwhile, the participants were willing to provide CPR for relatives, if needed which accounted for the highest positive score of 94.5%.

Meanwhile, 98.7% of the participants were willing to give bystander CPR to family members or relatives [25]. This could be a reflection of emotional attachment to family members and relatives to save their lives in emergency situations. These findings are comparable those of Chen et al [20] that reported 98.6% of laypersons were willing to perform CPR on their family members but less of them (76.3%) were willing to do so on strangers. Chen et al [20] gave reasons for the lesser laypersons who were ready to provide bystander CPR to strangers as lack of adequate training on CPR and more importantly because of fear of legal issues in case of unsuccessful outcome of such procedure. In Nigeria, the main reason is lack of training on CPR and not necessarily due to legal matters. In a related study, Chair at al [29] reported that 45% of their participants were willing to perform CPR on family members despite poor previous CPR training.

The present study has shown that the athletes would have been interested in providing bystander CPR for the elderly and children with 86.7% and 89.1% positive attitudes, respectively. Onyeaso and Onyeaso [25] had the figures as 90.6% and 82%, respectively before they received bystander CPR training and 98% and 95.3%, respectively after training.

It should also be noted that this present study showed significant association between positive attitudes towards bystander CPR with the age of the athletes. Onyeaso and Onyeaso [27] found in a related study among student teachers (University undergraduates) that although gender and age were not statistically associated with attitude to bystander CPR, both generally showed positive attitudes to CPR. Our present study among athletes has revealed statistically significant positive association between male gender and attitude to bystander CPR while both genders showed positive attitudes to bystander CPR generally. Comparable to the findings of Onyeaso and Onyeaso [27], age in the present Nigerian study related positively with attitude to bystander CPR. In addition, for the whole sample, age was statistically significantly associated with some aspects of attitude to CPR (willingness to perform bystander CPR on the elderly and children. These additional findings are very interesting as these groups represent the vulnerable and often helpless in the society. May be, this could be a reflection of the compassionate nature of the Nigerian youths. In addition, it is a more welcoming finding because most out-of-hospital cardiac arrests (OHCA) happen in the homes of older people [30]. It is worthwhile to note that such positive attitude towards bystander CPR would enable them to become willing bystander responders in case of emergency which is not limited to co-athletes when eventually trained in bystander CPR provision in our community.

Kanstad et al [22] in their study reported that majority of the students approved mandatory training of students in basic life support while in our present Nigerian study 93.7% supported CPR training for athletes. According to Onyeaso and Imogie [24], 96.8% agreed that CPR training should be made available to all citizens in the country while Onyeaso and Onyeaso [25] reported that 92% of the participants before their CPR training wanted bystander CPR training given to all citizens while 99.3% after the training agreed that the procedure should be taught to all citizens.

### **Strength and Limitations of the Study**

Being the first study on attitude of Nigerian athletes towards bystander CPR and possibly the first study on bystander CPR among Nigerian athletes generally could be considered as strength for this study as it could serve as a baseline data for further related studies. However, the sample might not be considered as a very representative of all athletes in Nigeria since the study targeted only the athletes in Bayelsa State of Nigeria.

## **5. Conclusions**

- The Nigerian athletes studied showed generally positive attitude towards bystander cardiopulmonary resuscitation (CPR).
- Both male and female genders had statistically positive attitudes towards bystander cardiopulmonary resuscitation while the males were statistically

significantly associated with better positive attitude towards bystander cardiopulmonary resuscitation (CPR).

- Generally, age of the participants was positively related to attitude towards bystander cardiopulmonary resuscitation (CPR) while the association was statistically associated with willingness to perform bystander CPR for the elderly and children.

## 6. Recommendations

It is strongly recommended that further studies on cardiopulmonary resuscitation in relation to Nigerian athletes should be conducted involving larger samples with better representation of Nigerian athletes across all the States in Nigeria. This would not only increase awareness about the preventable deaths of young athletes in the field of play but will possibly intensify our advocacy for Nigerian athletes to receive bystander CPR training in our effort to have more potential bystander CPR providers in the country.

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