Demographic Factors and Bystander CPR in Nigerian Athletes

Abstract

Background/Aim: There is limited research on bystander cardiopulmonary resuscitation (bystander CPR) involving athletes globally and in the Nigerian context specifically. The impact of age and gender of individualson the knowledge of bystander CPR and attitude towards it is variable. This study aimed at assessing the associations of age, gender and years of experience as athletes with knowledge and attitude towards bystander CPR. **Methods**: A national cross sectional study of Nigerian athletes covering 25 different sports was carried out. Four hundred and nineteen (419) athletes comprising 278 (66.3%) males and 141(33.7%) females with age range of 11- 49 years and mean age of 23.43 $\pm$ 5.66 (SD).filled and returned the questionnaire that tested the associations of the participants' age, gender and years of experience as athletes with their knowledge of bystander CPR and their attitude towards this life-saving procedure. In addition to descriptive statistics, the associations of their age, gender and years of experience as athletes with their bystander CPR knowledge and attitude were tested using the analysis of variance (ANOVA), while the significance level was set $P < .05$. **Results**: Age of the athletes did not have any statistically significant associations with their bystander CPR knowledge and attitude towards it ($P > .05$). Male or female gender did not give any statistically significant associations with their knowledge of and attitude towards bystander CPR ($P > .05$), as well as their years of experience as athletes with bystander CPR knowledge and attitude towards the procedure ($P > .05$).**Conclusion**: Neither age, gender nor years of experience as athletes of the participants gave any statistically significant associations with their bystander CPR knowledge and attitude towards this life-saving procedure.

Keywords: Bystander Cardiopulmonary Resuscitation, Age, Gender, Years of Experience, Nigerian Athletes

1. Introduction

It is generally a known fact that bystander cardiopulmonary resuscitation (Bystander CPR) improves survival from out-of-hospital cardiac arrest (OHCA). De Buck et al [1] opined that "first aid training including resuscitation is a cost-effective way to decrease the burden of disease and injury in low- and middle-income countries (LMIC)". "Since evidence from Western countries has shown that children are able to learn first aid, first aid training of children in LMIC may be a promising way forward" [1].

According to Leary et al [2], "clinical investigations have suggested that gender is associated with the quality of CPR, particularly chest compression (CC) depth, when performed by healthcare providers. However, they found that female gender was associated with shallower CC depth and this difference was not confounded by body mass index (BMI), but additionally reported that as lay providers increased in age, their CC depth decreased". Multiple authors investigated "practical and theoretical CPR performance and demonstrated gender differences related to schoolchildren CPR"[3]. "Female students were found to demonstrate higher motivation to attend CPR-training, to respond to cardiac arrest (CA), scored higher in a CPR-questionnaire, revealed better remembrance of the national emergency phone-number and showed a higher multiplier effect, while male students showed higher confidence in CPR-proficiency, revealed deeper chest compressions (CC); a higher CC-fraction and a higher arbitrary cardiac output simulated equivalent index" [3]. That systematic review concluded that In context of schoolchildren CPR, gender aspects are underestimated [3].

Amacher et al [4] found "important gender differences, with female rescuers showing inferior cardiopulmonary resuscitation performance, which can partially be explained by fewer unsolicited cardiopulmonary resuscitation measures and inferior female leadership, and recommended thatfuture education of rescuers should take gender differences into account". "Cardiopulmonary resuscitation knowledge raises awareness of the responsibility to help others and increases self-confidence to provide bystander cardiopulmonary resuscitation" [5]. They [5] concluded that "early cardiopulmonary resuscitation training for children is crucial, and should be a mandatory part of school curricula in those countries where cardiopulmonary resuscitation is not yet mandatory". In another study [6], "compression resistances of manikins, though influencing CPR performance, did not discourage 8 to 13 year old children after CPR training. The findings refute the view that young children are discouraged when receiving CPR training even though they are physically not able to perform adequate CPR". According to Dobbie et al [7], "the older a person was, the less likely they were to be CPR trained, show willingness to be CPR trained or be confident to administer bystander CPR with or without instruction from an emergency call handler".

None of the earlier Nigerian studieson bystander cardiopulmonary resuscitation in relation to age and gender [8-12] didinvolve athletes. Some studies globally on bystander cardiopulmonary resuscitation have shown clearly the associated increased risk of sudden cardiac arrests among athletes [13-21]. The onlytwoearlier publications involving Nigerian athletes are from a State in Nigeria [22, 23]. Considering the importance of this life-saving

procedure for the general public, especially athletes who are always involved in strenuous practices and cardiac exercises, the present Nigerian study aimed to assess the associations between age and gender of athletes, as well as their years of practice as athletes with their knowledge of and attitude towards bystander cardiopulmonary resuscitation. It is believed that such information could help in further advocacy for increasing CPR rates in the country. The hypotheses were that: (1) the age of the athletes would not have any significant impact on their knowledge of bystander CPR and their attitude towards it; (2) the gender of the athletes would not have any significant impact on their knowledge of bystander CPR and their attitude towards it; and (3) the years of experience as athletes would equally not have any significant impact on their knowledge of this life-saving procedure and attitude towards it.

2. Materials and Methods

2.1. Study Design

A national cross-sectional study using a self-administered questionnaire was carried out among Nigerian athletes; targeting the 2[1st] National Sports Festival (NSF) tagged Delta 2022 that took place in Asaba, Delta State of Nigeria from November 28 to December 10, 2022. The National Sports Festival (NSF), otherwise known as 'Nigerian Olympics,' started in 1973 as a way of uniting the country after the Nigerian civil war that ended in 1970. The 14-day sporting event expected 14, 000 athletes from the 36 States of the country including the Federal Capital Territory (FCT), Abuja. The News Agency of Nigeria reported that no fewer than 14,000 athletes participated in 38 sports at the festival [24].

2.2. Sampling / Data Collection

Of the about 14, 000 athletes that participated in the festival, 419 of them covering 25 sports filled and returned the questionnaire. Although the research Assistants were physically present to ensure samples were collected from all the different sporting events, the busy schedule of the athletes did not make this easy.The data collection with the questionnaire lasted for 6 months. Some of the participants filled and returned the questionnaire right there in the NSF Camp, while some were followed up in some of their States where they were served the questionnaire and were retrieved after they filled it. The questionnaire used is attached as an Appendix in this report.

2.3. Weighting of the Responses in the Questionnaire

For attitude, the responses were weighted as follows: Strongly Agree (SA) 5, Agree (A) had 4, Not Certain 3, Disagree (D) got 2, and Strongly Disagree (SD) 1. The responses for knowledge of bystander resuscitation (CPR) by the athletes were 5 for 'Yes', 2 for 'No' while 'No response' was given 3.

2.4. Null Hypotheses

The following null hypotheses were generated and tested:

Ho1 - that the age of the athletes would not have any significant impact on their knowledge of bystander CPR and their attitude towards it.

Ho1 (Alternate Hypothesis) - that the age of the athletes would have significant impact on the knowledge of bystander CPR and their attitude towards it.

Ho2 - that the gender of the athletes would not have any significant impact on their knowledge of bystander CPR and their attitude towards it.

Ho2 (Alternate Hypothesis) - that the gender of the athletes would have significant impact on their knowledge of bystander CPR and their attitude towards it.

Ho3 – that the years of experience as athletes would equally not have any significant impact on their knowledge of bystander CPR and attitude towards it.

Ho3 (Alternate Hypothesis) - that the years of experience as athletes would equally have significant impact on their knowledge of bystander CPR and attitude towards it.

Data Analysis

Using the SPSS version 25, the whole data was analysed descriptively, as well as using the analysis of variance (ANOVA). The significance level was set at $P < .05$.

3. Results

Four hundred and nineteen (419) athletes were involved in the study - 278 (66.3%) males and 141(33.7%) females with age range of 11- 49 years and mean age of 23.43 + 5.66 (SD).

Table 1 below gives the Analysis of Variance (ANOVA) of the age of the athletes and their bystander CPR knowledge showing that no statistically significant relationship between their age and their theoretical knowledge of bystander cardiopulmonary resuscitation (P > .05).

Table 1: ANOVA of the Age of the Athletes and their Bystander CPR Knowledge

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
K6	Between Groups	42.617	32	1.332	.782	.799
	Within Groups	657.521	386	1.703		
	Total	700.138	418			
K7	Between Groups	42.274	32	1.321	.977	.506
	Within Groups	521.827	386	1.352		
	Total	564.100	418			
K8	Between Groups	26.681	32	.834	.845	.711
	Within Groups	380.756	386	.986		
	Total	407.437	418			
K9	Between Groups	26.558	32	.830	.845	.711
	Within Groups	378.993	386	.982		
	Total	405.551	418			
K10	Between Groups	52.548	32	1.642	1.306	.128
	Within Groups	485.232	386	1.257		
	Total	537.780	418			
K11	Between Groups	43.008	32	1.344	1.134	.287
	Within Groups	457.679	386	1.186		
	Total	500.687	418			
K12	Between Groups	25.402	32	.794	.941	.562
	Within Groups	325.562	386	.843		
	Total	350.964	418			
K13	Between Groups	31.096	32	.972	1.200	.214
	Within Groups	312.532	386	.810		
	Total	343.628	418			
K14	Between Groups	39.766	32	1.243	1.292	.137
	Within Groups	371.198	386	.962		
	Total	410.964	418			
K15	Between Groups	37.916	32	1.185	1.231	.185
	Within Groups	371.387	386	.962		
	Total	409.303	418			
K16	Between Groups	41.536	32	1.298	1.437	.062
	Within Groups	348.660	386	.903		
	Total	390.196	418			

The Analysis of Variance (ANOVA) of age of the same participants and their attitude towards bystander cardiopulmonary resuscitation (CPR) is shown in Table 2 below with no statistically significant association found between the age of the athletes and their attitude towards bystander cardiopulmonary resuscitation (P > .05). Therefore, Tables 1 and 2 have shown the acceptance of the first null hypothesis of this study.

Table 2: ANOVA of Age of the Participants and their Attitude towards Bystander CPR

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Att23	Between Groups	14.959	32	.467	.754	.833
	Within Groups	239.175	386	.620		
	Total	254.134	418			
Att24	Between Groups	53.324	32	1.666	1.007	.461
	Within Groups	639.034	386	1.656		
	Total	692.358	418			
Att25	Between Groups	22.275	32	.696	.592	.964
	Within Groups	454.160	386	1.177		
	Total	476.434	418			
Att26	Between Groups	17.663	32	.552	.901	.626
	Within Groups	236.470	386	.613		
	Total	254.134	418			
Att27	Between Groups	24.128	32	.754	.774	.809
	Within Groups	375.896	386	.97		
	Total	400.024	418			
Att28	Between Groups	21.680	32	.678	.665	.920
	Within Groups	393.346	386	1.019		
	Total	415.026	418			
Att29	Between Groups	61.217	32	1.913	.878	.661
	Within Groups	840.659	386	2.178		
	Total	901.876	418			

Table 3 provides the ANOVA of gender of the participants and their bystander cardiopulmonary resuscitation (CPR) knowledge**,** which shows again that there is no statistically significant association between the gender of the athletes and theirtheoretical knowledge of bystander cardiopulmonary resuscitation (P > .05).

Table 3: ANOVA of Gender of the Participants and their Bystander CPR Knowledge

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
K6	Between Groups	.028	1	.028	.016	.898
	Within Groups	700.111	417	1.679		
	Total	700.138	418			
K7	Between Groups	.041	1	.041	.030	.863
	Within Groups	564.060	417	1.353		
	Total	564.100	418			
K8	Between Groups	.198	1	.198	.202	.653
	Within Groups	407.239	417	.977		
	Total	407.437	418			
K9	Between Groups	.317	1	.317	.327	.568
	Within Groups	405.234	417	.972		
	Total	405.551	418			
K10	Between Groups	.216	1	.216	.167	.683
	Within Groups	537.565	417	1.289		
	Total	537.780	418			
K11	Between Groups	.304	1	.304	.253	.615
	Within Groups	500.383	417	1.200		
	Total	500.687	418			
K12	Between Groups	1.774	1	1.774	2.119	.146
	Within Groups	349.190	417	.837		
	Total	350.964	418			
K13	Between Groups	.356	1	.356	.432	.511
	Within Groups	343.272	417	.823		
	Total	343.628	418			
K14	Between Groups	2.777	1	2.777	2.837	.093
	Within Groups	408.188	417	.979		
	Total	410.964	418			
K15	Between Groups	3.359	1	3.359	3.451	.064
	Within Groups	405.944	417	.973		
	Total	409.303	418			
K16	Between Groups	.008	1	.008	.009	.925
	Within Groups	390.187	417	.936		
	Total	390.196	418			

Below is Table 4 showing the ANOVA of the gender of the athletes and their attitude towards bystander CPR. Again, no statistically significant association is found between the gender of the participants and their attitude towards bystander cardiopulmonary resuscitation (P > .05). Tables 3 and 4 have shown that the second null hypothesis is also accepted.

Table 4: ANOVA of the Gender of the participants and their Attitude towards Bystander CPR

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Att23	Between Groups	14.959	32	.467	.754	.833
	Within Groups	239.175	386	.620		
	Total	254.134	418			
Att24	Between Groups	53.324	32	1.666	1.007	.461
	Within Groups	639.034	386	1.656		
	Total	692.358	418			
Att25	Between Groups	22.275	32	.696	.592	.964
	Within Groups	454.160	386	1.177		
	Total	476.434	418			
Att26	Between Groups	17.663	32	.552	.901	.626
	Within Groups	236.470	386	.613		
	Total	254.134	418			
Att27	Between Groups	24.128	32	.754	.774	.809
	Within Groups	375.896	386	.974		
	Total	400.024	418			
Att28	Between Groups	21.680	32	.678	.665	.920
	Within Groups	393.346	386	1.019		
	Total	415.026	418			
Att29	Between Groups	61.217	32	1.913	.878	.661
	Within Groups	840.659	386	2.178		
	Total	901.876	418			

The ANOVA of the years of experience as athletes by the participants and their bystander CPR knowledge is provided in Table 5 below. Again, no statistically significant association is found (P > .05). Table 6 below provides the ANOVA of the years of experience as athletes by the participants and their attitude towards bystander cardiopulmonary resuscitation(CPR), which equally shows that there is no statistically significant association (P >.05).

Table 5: ANOVA of the Years of Experience of the Participants as Athletes and their Bystander CPR Knowledge

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
K6	Between Groups	47.291	24	1.970	1.189	.247
	Within Groups	652.847	394	1.657		
	Total	700.138	418			
K7	Between Groups	25.811	24	1.075	.787	.754
	Within Groups	538.289	394	1.366		
	Total	564.100	418			
K8	Between Groups	21.738	24	.906	.925	.567
	Within Groups	385.699	394	.979		
	Total	407.437	418			
K9	Between Groups	34.683	24	1.445	1.535	.053
	Within Groups	370.869	394	.941		
	Total	405.551	418			
K10	Between Groups	43.186	24	1.799	1.433	.087
	Within Groups	494.595	394	1.255		
	Total	537.780	418			
K11	Between Groups	33.647	24	1.402	1.183	.253
	Within Groups	467.041	394	1.185		
	Total	500.687	418			
K12	Between Groups	24.048	24	1.002	1.208	.230
	Within Groups	326.916	394	.830		
	Total	350.964	418			
K13	Between Groups	15.316	24	.638	.766	.780
	Within Groups	328.312	394	.833		
	Total	343.628	418			
K14	Between Groups	28.985	24	1.208	1.246	.198
	Within Groups	381.979	394	.969		
	Total	410.964	418			
K15	Between Groups	29.673	24	1.236	1.283	.170
	Within Groups	379.630	394	.964		
	Total	409.303	418			
K16	Between Groups	28.405	24	1.184	1.289	.166
	Within Groups	361.791	394	.918		
	Total	390.196	418			

Table 6: ANOVA of the Years as Athletes of the participants and their Attitude towards Bystander CPR

ANOVA						
		Sum of Squares	Df	Mean Square	F	Sig.
Att23	Between Groups	8.458	24	.352	.565	.953
	Within Groups	245.675	394	.624		
	Total	254.134	418			
Att24	Between Groups	38.370	24	1.599	.963	.515
	Within Groups	653.988	394	1.660		
	Total	692.358	418			
Att25	Between Groups	22.137	24	.922	.800	.738
	Within Groups	454.298	394	1.153		
	Total	476.434	418			
Att26	Between Groups	16.389	24	.683	1.132	.305
	Within Groups	237.744	394	.603		
	Total	254.134	418			
Att27	Between Groups	29.612	24	1.234	1.312	.150
	Within Groups	370.412	394	.940		
	Total	400.024	418			
Att28	Between Groups	18.694	24	.779	.774	.770
	Within Groups	396.332	394	1.006		
	Total	415.026	418			
Att29	Between Groups	53.223	24	2.218	1.030	.426
	Within Groups	848.653	394	2.154		
	Total	901.876	418			

Note: K6-K16 stand for Knowledge of Bystander CPR; Att 23-29 stand for Attitude towards Bystander CPR

4. Discussion

This current Nigerian study on the relationship between Nigerian athletes' knowledge of bystander cardiopulmonary, their attitude towards it and their age, gender and their years of experience as athletes has generally shown no statistically significant associations with age, gender and their years of experience as athletes..Blewer et al [25] reported that incontext of schoolchildren CPR, gender aspects are underestimated. Female students seem to be more motivated to attend CPR-training, reach more people in the role of a multiplier and need to be individually addressed in intensified practical training. Male students achieve a more sufficient chest compression depth and -fraction and could benefit from individual motivation [25].

In an earlier related Nigerian study [11], both male and female participants had good CPR skills after their trainings. Neither male nor female gender showed any statistically significant association with any of the CPR skills ($P > 0.05$) within and between the CPR training groups. The gender of the participants did not show any statistically significant association with CPR skills. The need for further related studies on factors that could influence the quality of bystander CPR by Nigerian lay rescuers was recommended [11].

According to Finke et al [26], black and Hispanic children are less likely to receive bystander CPR than white children, according to a new study, which focused on settings outside a hospital, before emergency medical services arrive to help. Racial disparities in adult out-of-hospital cardiac arrest is known, but less was known about how children 17 and under fare [26].Researchers [27] combed through a national emergency medical services (EMS) database and found 7,285 out-of-hospital cardiac arrests in children between January 2016 and December 2019. Cardiac arrests from 2020 and 2021 were excluded because of possible changes during the COVID-19 pandemic.White children made up the majority of cases (52.3%) and received bystander CPR 75.1% of the time. CPR rates dropped to 67% for Black children (29.2% of cases) and 68.1% for Hispanic children (13.9% of cases).The first step toward eliminating these disparities is identifying them and improving our CPR knowledge and awareness across demographic lines, including race and ethnicity and socioeconomic status," he said.The study also uncovered differences by age. Cardiac arrests outside a hospital were most common in children under one year of age and least common in 6- to 10-year-olds.Looking deeper at those age categories, researchers found children ages 15-17 had the lowest rate of bystander CPR (62.6%). Children under one year of age had the second-lowest rate (71.9%).While the study didn't look at the causes behind those numbers, it was said the low bystander CPR rate for 15- to 17-year-olds might be because cardiac arrests caused by trauma, such as car accidents, increase as children get older. Another possibility is their cardiac arrests may be less likely to have a witness.For infants, the low rate might be due to a lack of bystander CPR knowledge or fears about not performing CPR correctly.

Another study [28] investigated the implementation rate of bystander cardiopulmonary resuscitation (CPR) and automated external defibrillator (AED) and 1-month survival after out-of-hospital cardiac arrest (OHCA) in Miyazaki prefecture and Miyazaki city district as well as compared them with those of eight prefectures in the Kyushu-Okinawa region in

Japan. In addition, the study analyzed pre-hospital factors associated with survival outcomes in Miyazaki city district. It found differences in 1-month survival rates after OHCA in the Kyushu-Okinawa region of Japan. The results suggest that on-field return of spontaneous circulation (ROSC) with defibrillation performed by nonfamily bystanders who witnessed the event determines 1-month neurological outcomes after OHCA in Miyazaki city district. [28].

Strong predictors of early and late survival were a short interval from collapse to defibrillation, bystander CPR, female gender and OHCA outside the home [29].A retrospective analysis of linked data (2011-2017) from clinical databases in British Columbia (BC) was conducted. Females have relatively unfavourable pre-hospital characteristics in OHCA and fewer hospital-based acute coronary diagnoses and interventions. However, among survivors to hospital discharge, it found no significant difference between males and females in 1-year survival, even after adjustment [30]. When someone is in need of CPR, every second counts. Unfortunately, people often hesitate or refuse to perform this life-saving techniqueon women based on lingering myths or fears. Sadly, this means female have a lower chance of survival during out-of-hospital cardiac arrest [31].

A study [32] examined the mediation effect of practical training on the relationship of demographic characteristics with bystander self-efficacy in cardiopulmonary resuscitation (CPR) performance. In the unadjusted CPR practical training model, the demographic characteristics associated with high self-efficacy in CPR performance were male gender (odds ratio [OR] = 2.54); 50s age group (OR = 1.30); college or more (OR = 1.39) and high school education (OR = 1.32); white collar (OR = 1.24) and soldier (OR = 2.98) occupational statuses. The characteristics associated with low self-efficacy were 30s age group (OR = 0.69) and capital (OR = 0.79) and metropolitan (OR = 0.84) areas of residence ($p < 0.05$). In the adjusted CPR practical training model, the significance of the relationship between demographics and self-efficacy in CPR performance decreased in male gender, 30s age group, college or more and high school education, and soldier occupational status (i.e., partial mediation), and disappeared in metropolitan residents (i.e., complete mediation). Thus, individualized educational strategies considering recipient demographics are needed for effective practice-based CPR training and improving bystander CPR performance [32].

Sudden cardiac death (SCD) in a young athlete commonly brings to the forefront the many gaps in knowledge regarding how to predict and prevent these rare tragic events. Although the number of athletic sudden deaths is relatively small, with ≈100 to 150 competitive deaths during sports in the United States annually, they represent an important and emotionally charged public health issue [33, 34]. On average, every 3 days in the United States a competitive athlete experiences a SCD, and many of these deaths are nationally noted. However, this same intense media speculation is not given to a nonathlete who experiences SCD or indeed to a competitive athlete who has SCD off the athletic field.On the basis of media reports it would appear that SCD deaths in athletes are much more common than in nonathletes [34]. Therefore, considering how emotional and the attention given to SCD among athletes, there is need to investigate further the factors that could predispose athletes to OHCA, outside the known medical conditions that are usually screened for in pre-participatory preparation of athletes.This Nigerian survey included both contact and non

contact sports. In 2011, it was confirmed in a survey of deaths in National Collegiate Athletic Association colleges in which the risk of SCD in male Division I basketball players was as high as 1 in 3100 person-years [35].Meanwhile, the authors of the current Nigerian study could not get any literature that has reported on the years of experience of athletesvis-a vis their knowledge of bystander CPR or their attitude towards it.

According to Peng et al [36], since the nationally televised cardiac arrest of American National Football League player Damar Hamlin in January 2023, commotiocordis has come to the forefront of public attention. Commotiocordis is defined as sudden cardiac arrest due to direct trauma to the precordium resulting in ventricular fibrillation or ventricular tachycardia [16]. Given that survival is closely tied to how quickly victims receive cardiopulmonary resuscitation and defibrillation, it is crucial to raise awareness of commotiocordis so that athletic trainers, coaches, team physicians, and emergency medical personnel can rapidly diagnose and treat this often-fatal condition [36].Also, it is known that emergency planning for the cardiovascular care of athletes in medical distress may differ based on the age of the athlete, sport, level of competition, venue and geographic layout of the event [13, 37].In addition to the unique considerations for athletes such as physical demands (athletes often have unique cardiovascular profiles due to their intensive training, making them susceptible to sudden cardiac events) and high-stress environments (competitive sports can lead to heightened stress levels, which may exacerbate existing cardiac conditions), elevating athlete safety by tailoring the CPR guidelines to the unique demands of each sport athletes, coaches and medical teams can ensure a swift and effective response in the event of a cardiac emergency [37].Therefore, there is increasing need to carry out more sport-specificCPR training studies, awareness campaigns, and the integration of medical resources that would contribute to a proactive and holistic approach to athlete well-being. Emphasizing CPR readiness among professional athletes reinforces the notion that a strong and healthy body is one that is not only trained to excel but also equipped to respond in times of crisis, safeguarding lives and underscoring the value of comprehensive athlete care [37]. The aim of all the efforts should be to increase attention on the usefulness of bystander CPR in sports and factors that could enhance the effectiveness of this emergency life-saving procedure.

The strength and weakness of this study

Although we could not get many of the athletes fill the questionnaire at the venue of the National Sports Festival (NSF), many of the participants (athletes) in this study were recruited from different States in Nigeria after the festival, which makes it a fair representation of the Nigerian athletes. In addition, a reasonable number of types of the sporting events were covered. However, not all the 36 States of Nigeria including the Federal Capital Territory (FCT), Abuja were covered contrary to the original plan of involving athletes from every State in the country.The relatively small sample size, the self-reported survey methodology of this study and lack of pre-test of the validity of the questionnaire are obvious limitations of the study. Therefore, care should be taken not to draw unguarded generalized inferences from this study.

5. Conclusion

1. The age of the athletes has no statistically significant association with neither their knowledge of nor attitude towards bystander cardiopulmonary resuscitation
2. The gender of athletes also did not give any statistically significant associations with their knowledge of bystander cardiopulmonary resuscitation or their attitude towards it.

Consent

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

6. Recommendations

- Bystander cardiopulmonary resuscitation training should be made compulsory for all Nigerian athletes and the facilities should be put in place at different places where the athletes can easily have access to be trained. This will certainly help in increasing the rates of bystander cardiopulmonary resuscitation generally in the country.This is necessary for both national and sub-national governments in Nigeria as a practical way of showing the importance they attach to the good health and well-being of these athletes.
- In addition, studies on sport-specific CPR trainings should be carried out in Nigeria and globally, which is expected to be more effective beyond increasing the needed awareness for the athletes, as well asthe coaches and other staff member in the athletic communities

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APPENDIX

QUESTIONNAIRE ON BYSTANDER CADIOPULMONARY RESUSCITATION (CPR)

Dear Respondent,

This questionnaire is basically to assess the awareness, knowledge, attitude and practise of Cardiopulmonary Resuscitation (CPR) among athletes. It is expected that the findings of this survey will help to plan better for the safety of athletes. Please answer the following questions as sincere as possible.

Thank you and God bless.

AOA.

Section A: Personal DataPlease tick as it applies to you

1. Gender: Male: Female:

2. Age in Years: ----------
3. Type of Sport: ----------
4. No of years as an Athlete: ----------

Section B: Please indicate either 'Yes' or 'No' for each of these statements as it applies to you or 'Not sure' if you are not certain

		Yes	No	Not Sure
5	I have had CPR training before now			
5a	If yes, the mode of my CPR training was through film			
5b	If yes, the mode of my CPR training was through television			
5c	If yes, the mode of my CPR training was through on-line			
5d	If yes, I was trained by a CPR instructor in an organized setting			
6	The first thing to do for a collapsed individual is to call for an ambulance			
7	The first thing to do for a collapsed individual is to get the person's response			
8	I will press the collapsed person's mouth to open the airway			
9	Chest compression ranges from 80-120			
10	I will tilt the head back and lift the chin to open the airway			
11	Chest compression is performed with the palm of the hands			
12	Each rescue breathe should last over 5seconds			
13	Each rescue breathe should last only for 1 second			
14	I'll remove victim's denture from the mouth before performing CPR			
15	A cycle of CPR is 30 chest compressions and 2 rescue breaths			
16	A cycle of CPR is 20 chest compressions and 4 rescue breaths			
17	I had performed CPR chest compression only on victims in the past			
18	I had performed mouth to mouth and chest compression on victims in the			

	past			

Section C: For each of the statements, please rate under the following scales: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

		SA	A	D	SD
23	When trained, I would like to teach others about CPR				
24	When trained, I would perform mouth-to-mouth ventilation on a stranger.				
25	I would perform CPR on a trauma victim, if needed.				
26	I would perform CPR on a relative, if needed.				
27	I would perform CPR on an elderly victim, if needed.				
28	I would like to perform CPR on a child.				
29	I would perform chest compression only without mouth-to-mouth ventilation				
30	CPR is just a trial and error thing, so it is not worthwhile to perform it on victims				
31	Sudden Cardiac Arrest victims can survive through CPR				
32	Every athlete should be trained in CPR so as to help any colleague that is a victim				
33	Have you ever witnessed a victim of sudden cardiac arrest that needed CPR?				
34	The gains of having every athlete trained in CPR outweigh the cost of training				

THE END. Your views will be reflected in the final analysis. Once more, thank you.