

# Attitudes to Cardiopulmonary Resuscitation by Nigerian Practising Professional and Student Teachers Compared

Adedamola Olutoyin Onyeaso<sup>1,\*</sup>, Onyedikachi Oluferanmi Onyeaso<sup>2</sup>

<sup>1</sup>Department of Human Kinetics and Health Education, Faculty of Education, University of Port Harcourt, Port Harcourt, Nigeria

<sup>2</sup>Department of Community and Social Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

**Abstract Background:** There is an understandably global trend to have bystander cardiopulmonary resuscitation (CPR) training encouraged in schools and many countries of the world especially the developed nations are complying but the situation is different in Nigeria. School teachers are expected to play central role in the success of this programme. This study aimed at comparing the attitude of Nigerian practising professional teachers and the undergraduate student (upcoming) teachers. **Methods:** A quasi-experimental study involving two cohorts (practising professional teachers and undergraduate student teachers) of forty-one (41) participants each was carried out. Their pre-training and post-training attitudes of both groups were assessed using the same self-administered questionnaire. The data was analysed using SPSS and tested statistically using both descriptive statistics of percentages, means with standard deviations and paired sample T-test for the null hypotheses while significance level was set at  $P < .05$ . **Results:** The null hypotheses generated in this study were accepted because both groups (practising professional and student teachers) had statistically significantly similar positive pre-training and post-training attitudes to CPR. The relatively generally better attitude of student teachers to CPR was not significant ( $P > 0.05$ ). **Conclusion:** The practising professional teachers and the student teachers have statistically significantly similar positive attitudes to CPR before and after the training. This is considered a very positive finding for the future of bystander CPR training and provision in Nigerian schools system and ultimately the general public.

**Keywords** Practising /Student Teachers, Attitude, CPR

## 1. Introduction

The importance of training school children and the teachers in cardiopulmonary resuscitation (CPR), as well as the general vital life-saving role of timely bystander cardiopulmonary resuscitation provision in the management of out-of-hospital cardiac arrests (OHCA) have been widely documented [1-31].

The public health challenge of out-of-hospital cardiac arrests (OHCA) is not only with the developed parts of the world but it is also a source of concern in relatively low socio-economic areas [31, 32]. In fact, Krishna et al [31] recently concluded that to improve the outcome of CPR and the low survival rates after an OHCA event in India, focused strategies should be designed to create a centralized medical emergency body which could provide guidelines for setting up emergency medical system (EMS), preparing emergency protocols, imparting technical assistant and training. They added that there was an urgent need of a national initiative to boost the rates of bystander CPR and education of the lay

public in basic CPR, which is very critical to improve the survival of OHCA events. However, for teachers to fully participate in learning CPR and eventually give this useful service to their schools and eventually to their communities, they must have the right attitude to CPR. Attitude to something is the way that one thinks and feels about it, especially when this shows in the way one behaves or the way a person views something or tends to behave towards it, often in an evaluative way [33].

Some studies have reported different attitudes of teachers to cardiopulmonary resuscitation in different parts of the globe [9, 11, 13, 14, 29, 30].

Although few studies in Nigeria recently reported on attitude of some Nigerian teachers to cardiopulmonary resuscitation [34, 35], there is need for more basic data in this aspect as the advocacy for introduction of cardiopulmonary resuscitation programme into the Nigerian schools curricula deepens. The present Nigerian study aimed at comparing the attitudes of Nigerian practicing professional and student teachers to cardiopulmonary resuscitation (CPR). We hypothesized as follows: 1. that there would be no statistically significant difference in the pre-training attitudes to CPR of the practising professional teachers and the student teachers; and 2. that there would be no statistically significant difference in their post-training attitudes to CPR.

\* Corresponding author:

adedamola.onyeaso@uniport.edu.ng (Adedamola Olutoyin Onyeaso)

Published online at <http://journal.sapub.org/ajmms>

Copyright © 2017 Scientific & Academic Publishing. All Rights Reserved

## 2. Materials and Methods

A major part of the methodology used in the study has been reported recently [35]. As part of a larger study, this report involving two cohort groups of forty one (41) each - 41 Post National Certificate of Education (Post NCE) teachers, who are pursuing Bachelor degree in Education majoring in Human Kinetics and Health Education, that came for their long vacation studies in the Faculty of Education of the University of Port Harcourt, Nigeria and another 41 student teachers in 200 level in the Department of Human Kinetics and Health Education, Faculty of Education, University of Port Harcourt, was carried out.

The two cohort groups were matched for sex but not for age because the two groups belonged to different age groups. The study took place between September 2016 and June 2017 at the University of Port Harcourt, Port Harcourt, Nigeria.

The participants are teachers from various primary and secondary schools in Nigeria while the undergraduate student teachers were admitted into the Bachelor of Science in Education from different states of Nigeria. This convenience sample (the two cohort groups) was naturally drawn which makes it a fairly representative sample.

The following null hypotheses were generated and tested:

**Ho1:** That there would be no statistically significant difference in the pre-training attitudes to CPR of the practising professional teachers and the student teachers.

**Ho2:** That there would be no statistically significant difference in their post-training attitudes to CPR.

### Study Design

In this quasi-experimental study design, the current report is on the attitude to cardiopulmonary resuscitation of the two cohort groups.

### Stage 1 (Pre-training)

A questionnaire containing a section for the demographic data of the participants and a section having 14-item questions on CPR to assess their pre-training attitude to cardiopulmonary resuscitation was used.

### Stage 2 (Training and Post-training Assessment)

Teaching was carried out using American Heart Association (AHA) CPR guideline which is available online. Their post-training attitude to CPR was also tested using the same questionnaire after the teaching and training on CPR (see Appendix). The conventional CPR technique using the manikins for their hands-on session was used. The power point teaching and training with their practical sessions took about 4 hours.

### Determination of 'Positive CPR Attitude' and 'Negative CPR Attitude'

There are four options [strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD)] for each of the fourteen items / questions testing the attitude of the participants to cardiopulmonary resuscitation. Strongly agree has 4 points, Agree – 3 points, Disagree – 2 points while Strongly disagree attracts 1 point. Any score on any of the items or questions that is 3 or 4 means positive attitude while any score of 2 or 1 shows negative attitude.

### Statistical Analysis

The Statistical Package for Social Sciences (SPSS) was used to analyse the data. In addition to descriptive statistics, two-sample T-test statistics were employed in the analysis and testing of the null hypotheses with significance level set at  $P < 0.05$ .

## 3. Results

The two cohorts - the practising teachers and student teachers had 9 (21.95%) male and 36(78.05%) female each with age ranges of 20-50 years for practising teachers and 18-28 years for the student teachers.

Table 1 below gives the summary of the frequency scores for the two cohorts showing their pre-training and post-training attitudes with similar patterns for both groups. However, the student teachers show overall better percentages.

**Table 1.** Summary of the frequency scores for pre-training and post-training attitudes

QUESTIONS ASSESSING ATTITUDE OF THE PARTICIPANTS TO CPR		PRE-TRAINING		POST - TRAINING		PRE -TRAINING		POST-TRAINING	
Questions		Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude
1	After learning CPR, I would like to teach others.	40 (97.6%)	1 (2.4%)	40 (97.6%)	1 (2.4%)	40 (97.6%)	1 (2.4%)	38 (92.7%)	3 (7.3%)
2	I would perform mouth-to-mouth ventilation on a stranger.	22 (53.7%)	19 (46.3%)	41 (100%)	----	27 (65.9%)	14 (34.1%)	28 (68.3%)	13 (31.7%)
3	I would perform CPR on a trauma victim, if needed.	32 (78%)	9 (22%)	34 (82.9%)	7 (17.1%)	32 (78%)	9 (22%)	40 (97.6%)	1 (2.4%)
4	I would perform CPR on a relative, if needed.	36 (87.8%)	5 (12.2%)	39 (95.1%)	2 (4.9%)	41 (100%)	----	41 (100%)	----

QUESTIONS ASSESSING ATTITUDE OF THE PARTICIPANTS TO CPR		PRE-TRAINING		POST - TRAINING		PRE -TRAINING		POST-TRAINING	
Questions		Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude	Positive Attitude	Negative Attitude
5	I would perform CPR on an elderly victim, if needed.	33 (80.5%)	8 (19.5%)	40 (97.6%)	1 (2.4%)	38 (92.7%)	3 (7.3%)	41 (100%)	----
6	I would like to perform CPR on a child.	36 (87.8%)	5 (12.2%)	36 (87.8%)	5 (12.2%)	36 (87.8%)	5 (12.2%)	41 (100%)	----
7	I would perform chest compression alone	22 (53.7%)	19 (46.3%)	38 (92.7%)	3 (7.3%)	23 (56.1%)	18 (43.9%)	25 (61.0%)	16 (39.0%)
8	CPR is not just a trial and error	28 (68.3%)	13 (31.7%)	25 (61%)	16 (39%)	33 (80.5%)	8 (19.5%)	39 (95.1%)	2 (4.9%)
9	There is increased hope of survival for a victim of sudden collapse who receives bystander CPR	40 (97.6%)	1 (2.4%)	33 (80.5%)	8 (19.5%)	39 (95.1%)	2 (4.9%)	41 (100%)	----
10	Sudden Cardiac Arrest victims can survive	36 (87.8%)	5 (12.2%)	41 (100%)	----	39 (95.1%)	2 (4.9%)	38 (92.7%)	3 (7.3%)
11	I believe there could be survival through CPR	39 (95.1%)	2 (4.9%)	41 (100%)	----	41 (100%)	----	41 (100%)	----
12	CPR should be taught often on Television	39 (95.1%)	2 (4.9%)	41 (100%)	----	39 (95.1%)	2 (4.9%)	39 (95.1%)	2 (4.9%)
13	CPR should be formally taught in Nigerian Universities	40 (97.6%)	1 (2.4%)	39 (95.1%)	2 (4.9%)	40 (97.6%)	1 (2.4%)	41 (100%)	----
14	CPR should also be taught to other citizens who are not in schools.	40 (97.6%)	1 (2.4%)	40 (97.6%)	1 (2.4%)	38 (92.7%)	3 (7.3%)	41 (100%)	-----
Overall Average Percentages		483 (84.15)	91 (15.83)	528 (91.97)	45 (7.84)	506 (88.15)	68 (11.85)	534 (93.03)	40 (6.97)

**Table 2.** Descriptive statistics showing attitude to CPR means with standard deviations for the two cohort groups

		N	Mean	St. Deviation	Std. Error Mean
Pre-Training	Practising teachers	41	25.7073	1.84721	.28849
	Student teachers	41	26.3902	1.44703	.22599
Post-Training	Practising teachers	41	26.8780	1.20820	.18869
	Student teachers	41	27.0244	.87999	.13743

**Table 3.** The Paired Sample T-test statistical analysis of the pre-training attitudes of the two cohorts

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-training student teachers Attitude -Pre-training practising teachers Attitude	.68293	2.25210	.35172	-.02792	1.39378	1.942	40	.059

**Table 4.** The Paired Sample T-test statistical analysis of the post-training attitudes to CPR

Paired Differences						T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95%Confidence Interval of the Difference				
				Lower	Upper			
Post-training student teachers attitude-post-training practising teachers attitude to CPR	1.4634	1.44154	.22513	-.30867	.60135	.650	40	.519

Table 2 provides further descriptive statistics of the means with standard deviations of the pre-training and post-training attitude scores for the two groups. The student teachers again have higher post-training means.

Table 3 gives the testing of the first null hypothesis with the paired sample T-test, which shows the acceptance of the hypothesis ( $P > .05$ ). This means that the pre-training attitudes of the two cohorts were not statistically different from each other.

The second null hypothesis was also accepted ( $P > .05$ ) as shown in Table 4, meaning that the post-training attitudes of the two groups (practising professional teachers and the student teachers) were not found to have statistically significant differences.

## 4. Discussion

This comparative quasi-experimental Nigerian study on attitudes of practising professional teachers and the potential future (student) teachers has revealed no statistically significant differences in both their pre-training and post-training attitudes to cardiopulmonary resuscitation (CPR). Although the descriptive statistics showed that the student teachers had slightly better pre-training and post-training attitudes to CPR than the practising teachers, these differences were not found statistically significant ( $P > .05$ ).

This study has shown that both professional teachers and student teachers are promising as potential CPR trainers for school children. In a related study aimed for CPR trainers in southern Finland, Makinen et al [36] reported that two-thirds of their participants felt that their undergraduate training in cardiopulmonary resuscitation-defibrillation (CPR-D) had not been adequate. Also, satisfaction with undergraduate defibrillation training correlated with the Nontechnical Skills scale ( $P < 0.01$ ). They concluded that the quality of undergraduate education affects the work of CPR trainers and some feel uncertain of defibrillation, believing that the quality of undergraduate education may affect the work of CPR –D trainers. The train-the- trainers' courses and undergraduate medical education should focus more on practical scenarios with defibrillators and nontechnical skills [36].

The good pre-training and post-training attitudes to CPR in the current Nigerian study involving the expected trainers of CPR is definitely a good sign for a hopeful CPR programme in Nigerian schools. What is then needed is to adequately prepare them for this assignment or duty which they are going to assume sooner or later by ensuring that CPR teaching and training is incorporated into the educational curricula of National Certificate of Education and Undergraduate courses, especially for education programmes such as health education, human kinetics and others, in addition to medical, nursing and paramedical

programmes. While aware that positive attitude does not necessarily translate to satisfactory practice of CPR [37], it must be noted that poor preparation of trainers can lead to lack of confidence to carry out bystander CPR or training of school children as similarly reported among nurses by Makinen et al [36, 38, 39].

In a related Nigerian study involving medical practitioners, who are another group of CPR trainers, it was noted that there was generally poor awareness with only 40% of the respondents having had previous attendance to basic and advanced life support training programme. The study called for increase in awareness among medical practitioners [40]. Soo et al [41] had much earlier emphasized on the need for general medical practitioners to be involved in community-based resuscitation of out-of-hospital cardiac arrest (OHCA) for better outcomes of such cases. Combined efforts by medical practitioners, nurses, school teachers and school children and the general public would be ideal in Nigerian situation where general awareness of bystander CPR is relatively poor compared to many parts of the world. Chair et al [42] reported that only 21% of the respondents had received CPR training among the public in Hong Kong with most of them (48%) doing that because of job requirement. They also reported that 72% of the respondents who had CPR training were willing to attempt it at home for any victim while our present Nigerian study has this as 95.1% for practising teachers post-training and 100% for student teachers. On readiness to carry out CPR on strangers, 42% of the respondents who had CPR training were willing while the current Nigerian study gave 100% for practising teachers and 68.3% for student teachers.

Although an increasing number of people in China know CPR compared with the situation in the past, CPR training in China is much less common than in many developed countries [43]. The majority of the laypersons (98.6%) would perform CPR on their family members as against 76.3% willing to perform CPR on strangers. The figure from this Nigerian study is comparable except that Nigerians seem more willing to attend to strangers. This could be partly a reflection of Nigerians very caring, friendly and sociable nature generally. In addition, part of the barriers to laypersons CPR in China is fear of legal prosecution for unsuccessful attempt which has led to the recommendation of providing legal protection through passage of relevant laws in this regard. The situation is different in Nigeria but it is worthy of note that such legal protection should be provided along while pursuing the goal of introducing CPR in Nigerian school system and encouraging generally the training and practice of laypersons CPR in Nigeria.

While the current Nigerian study has the strength of having a relatively representative sample, it must be interpreted carefully because it does not have much participants from the northern part of country being dominated by the Muslims because attitude could be influenced by religious beliefs and culture.

## 5. Conclusions

Both the Nigerian practising professional and student teachers had significantly similar positive pre-training and post-training attitudes to cardiopulmonary resuscitation (CPR). This is considered a very positive finding for the future of bystander CPR training and provision in Nigerian schools system and ultimately the general public.

## 6. Recommendations

It will be very helpful to repeat such a study in other parts of Nigeria especially in the northern parts of the country as a basic useful data for the present and the upcoming generation.

## ACKNOWLEDGEMENTS

The authors are very appreciative of the enormous support from Professor C O Onyiaso throughout the study.

## REFERENCES

- [1] Wissenberg M, Lippert FK, Folke F, Weeke P, Hansen CM, Christensen EF, et al. Association of national initiatives to improve cardiac arrest management with rates of bystander intervention and patient survival after out-of-hospital cardiac arrest. *JAMA* 2013; 310 (13): 1377-84.
- [2] Sayre MR, Berg RA, Cave DM, Page RL, Potts J, White RD, et al. Hands-only (Compression-only) cardiopulmonary resuscitation: a call to action for bystander response to adults who experience out-of-hospital sudden cardiac arrest: a science advisory for the public from the American Heart Association. Emergency Cardiovascular Care Committee. *Circulation* 2008; 117(16): 2162-7.
- [3] School CPR (Free Student CPR by Protrainings). States where CPR Training is Mandatory for Teachers. Last accessed on September 23, 2017.
- [4] Alharbi MM, Horaib YF, Almutairi OM, Alasuaidan BH, Alghoraibi MS, Alhadeedi FH, Alrowithi AS. Exploring the extent of knowledge of CPR skills among school teachers in Riyadh, KSA. *Journal of Taibah University Medical Sciences* 2016; 11(5): 497-501, doi:10.1016/j.tumed.2016.07.007.
- [5] Aaberg AM, Larsen CE, Ramsussen BS, Hansen CM, Larsen JM. Basic life support knowledge, self-reported skills and fears in Danish high school students and effect of a single 45-min training session run by junior doctors: a prospective cohort study. *Scand J Trauma Resusc Emerg Med* 2014; 22-24.
- [6] Bohn A, Van Aken HK, Mollhoff T, Wienzek H, Kimmeyer E, Wild E, Dopker S, Luka RP, Weber TP. Teaching resuscitation in schools: annual tuition by trained teachers is effective starting at age 10. A four-year prospective cohort study. *Resuscitation* 2012; 83: 619-625.
- [7] Resuscitation Council (UK). Guidelines 2015: Education and implementation of resuscitation. Last Accessed on September 23, 2017.
- [8] Abella BS, Aufderheide TP, Eigel B, Hickey RW, Longstreth WT Jr, Nadkarni V, et al. Reducing barriers for implementation of bystander-initiated cardiopulmonary resuscitation: a scientific statement from the Association Heart Association for healthcare providers, policymaker, and community leaders regarding the effectiveness of cardiopulmonary resuscitation. *Circulation*. 2008; 117(5): 704-9.
- [9] Mpotos N, Vekerman E, Monsieurs K, Derese A, Valcke M. (2013). Knowledge and willingness to teach cardiopulmonary resuscitation: A survey amongst 4273 teachers. *Resuscitation* 2013; 84: 496-500.
- [10] Patsaki A, Pantazopoulos I, Dontas I, Passall C., Papadimitriou L, Xanthos T. Evaluation of Greek high school teachers' knowledge in basic life support, automated external defibrillation, and foreign body airway obstruction: implication for nursing intervention. *J Emerg Nurs* 2012; 38: 176-81.
- [11] Al Enizi BA, Saquib N, Zaghloul MSA, Alaboud MSA, Shahid MS, Saquib J. Knowledge and attitude about Basic Life Support among secondary school teachers in Al-Qassim, Saudi Arabia. *Int J Health Sci (Qassim)* 2016; 10(3): 415-422.
- [12] McNally B, Robb R, Vellano K, Valderrama AL, Yoon PW. et al. Out-of-hospital cardiac arrest surveillance – Cardiac Arrest Registry to Enhance Survival (CARES), United States, October 1, 2005 – December 31, 2010. *MMWR Surveill Summ*. 2011; 60(8): 1-19.
- [13] Urban J, Thode H, Stapleton E, Singer AJ. Current knowledge of and willingness to perform Hands-Only CPR in laypersons. *Resuscitation* 2013; 84:1574–8.3.
- [14] Compton S, Swor RA, Dunne R, Weich RD, Zalenski RJ. Urban public school teachers' attitudes and perceptions of the effectiveness of CPR and Automated External Defibrillators. *Am J Health Educ* 2003; 34(4): 186-192.
- [15] Hoyme DB, Atkins DL. (2015). CPR Training in Schools: What can be learned from Iowa's experience. *Circulation* 2015; 132: A12740.
- [16] Plant N, Taylor K. How best to teach CPR to schoolchildren: A systematic review. *Resuscitation* 2013; 84: 415-421.
- [17] Highlights of the (2015). American Heart Association Guidelines Update for CPR and ECC; 2015.
- [18] Meissner TM, Kloppe C, Hanefeld C. Basic Life Support skills of high school students before and after cardiopulmonary resuscitation training: A longitudinal investigation. *Scand J Trauma Resusc Emerg Med* 2012; 14: 20: 31.doi: 10.1186/1757-7241-20-31.
- [19] Lore, T., Steen, P.A., Wik, L. (2010). High school students as ambassadors of CPR – A model for teaching the most appropriate target population? *Resuscitation* 2010; 81(1): 78-83.
- [20] Field M, Hazinski MF, Sayre MR, Chameides L, Stephen M, Schexnayder R, Hemphill SR, Hoek V. Part 1: Executive summary: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010; 122: S640-S658. DOI: 10.1161/CIRCULATIONAHA.110.970.889.

- [21] Miro O, Diaz N, Diaz JE, Escalada FX, Perez-Puejo FJ, Sanchez M. Cardiopulmonary resuscitation Program for secondary schools (PROCES); Conclusions after 5 years. *Resuscitation* 2012; 83: e116-7.
- [22] Connolly M, Tone RP, Connolly D, McClusky DR. The 'ABC' for life programme - teaching basic life support in schools. *Resuscitation* 2007; 72: 270-9. Epub 2006 Nov 28.
- [23] Lotfi K, White L, Rea T, Cobb L, Copass M, Yin L, Eisenberg M. (2007). Cardiac arrests in schools. *Circulation* 2007; 116: 1374-1379.
- [24] Liebermann M, Golberg N, Mulder D, Sampalis J. Teaching cardiopulmonary resuscitation to CEGEP students in quebec-a pilot project. *Resuscitation* 2000; 47:249-257.
- [25] Uray T, Launzer A, Ochsenhofer A, Tannikel L, Zingerie R, Lillie P, et al. Feasibility of Life Supporting First-Aid (LSFA) training as mandatory subject in primary schools. *Resuscitation* 2003; 59: 211-20.
- [26] Lafferty C, Larsen PD, Galletly D. Resuscitation teaching in New Zealand schools. *New Zealand J Med* 2003; 116 (1181): U582.
- [27] Lorem T, Palm A, Wik L. Impact of a self-instruction CPR kit on 7th grades' and adults' skills and CPR performance. *Resuscitation* 2008; 79: 103-109.
- [28] Chew KS, Yazid MNA. The willingness of final year medical and dental students to perform bystander cardiopulmonary resuscitation in an Asian community. *Int J Emerg Med* 2008; 1(4): 301-9.
- [29] Somaraj V, Shenoy RP, Panchmal GS, Jodalli PS, Sonde L, Karkal R. Knowledge, attitude and anxiety pertaining to basic life support and medical emergencies among dental interns in Mangalore City, India. *World J Emerg Med*. 2017; 8(2): 131-135.
- [30] Roshana S, Batajoo KH, Piryani RM, Sharma MW. Basic life support: knowledge and attitude of medical / paramedical professionals. *World J Emerg Med*. 2012; 3(2): 141-5.
- [31] Krishna CP, Showkat HI, Taktani M, Khatri V. Out of hospital cardiac arrest resuscitation outcome in North India – CARO study. *World J Emerg Med*. 2017; 8(3): 201-204.
- [32] Soo L, Natasha H, David G, John H. Geographical distribution of cardiac arrest in Nottinghamshire. *Resuscitation* 2001; 48: 137-147.
- [33] [www.collinsdictionary.com/dictionary/english/attitude](http://www.collinsdictionary.com/dictionary/english/attitude). Last accessed on September 22, 2017.
- [34] Onyeaso AO, Onyeaso OO. Nigerian public primary and secondary school teachers' knowledge and attitude towards cardiopulmonary resuscitation. *Int J Adv Res* 2016; 5(1): 89-95.
- [35] Onyeaso AO, Onyeaso OO. Bystander Cardiopulmonary Resuscitation: The Attitude of Some Nigerian Student Teachers. *Int J Recent Sci Res* 2017; 8(8): 19618-19621.
- [36] Makinen M, Castren M, Nurmi J, Niemi-Murola L. Trainers' Attitudes towards Cardiopulmonary Resuscitation, Current Care Guidelines, and Training. *Emerg Med Int*. 2016 (2016), ID 3701468, 6 pages, <http://dx.doi.org/10.1155/2016/3701468>.
- [37] Heng KWJ, Fong MK, Wee FC, Anantharaman V. The role of nurses in the resuscitation of in-hospital cardiac arrests. *Singapore Med J*. 2011; 52(8): 611-615.
- [38] Makinen M, Niemi-Murola L, Kaila M, Castren M. Nurses' attitudes towards resuscitation and national resuscitation guidelines – nurses hesitate to start CPR-D. *Resuscitation* 2009; 80(12): 1399-1404.
- [39] Makinen M, Axelsson A, Castren M, Nurmi J, Lankinen I, Niemi-Murola L. Assessment of CPR-D skills of nursing students in two institutions: reality versus recommendations in the guidelines. *Eur J Emerg Med*. 2010; 17(4): 237-239.
- [40] Olajumoke TO, Afolayan JM, Raji SA, Adekunle MA. Cardiopulmonary resuscitation –knowledge, attitude and practices in Osun State, Nigeria. *J West Afr Coll Surg*. 2012; 2(2): 23-32.
- [41] Soo L, Smith N, Gray D. The place of general practitioners in the management of out-of-hospital cardiopulmonary resuscitation. *Resuscitation* 1999; 43 (1): 57-63.
- [42] Chair SY, Hung MSY, Lui JCZ, Lee DTF, Shiu IYC, Choi KC. Public knowledge and attitudes towards cardiopulmonary resuscitation in Hong Kong: telephone survey. *Hong Kong Med J* 2014; 20 (2): 126-33. DOI: 10.12809/hkmj134076.
- [43] Chen M, Wang Y, Li X, Hou L, Wang Y, Liu J, Han F. Public Knowledge and Attitudes towards Bystander Cardiopulmonary Resuscitation in China. *Biomed Res Int*. 2017; volume 2017, Article ID 3250485, 7 pages <https://doi.org/10.1155/2017/3250485>.