

Influence of Age, Gender and School Class of Nigerian Secondary School Students on Their Attitude towards Cardiopulmonary Resuscitation

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Abstract Objective: The aim of this study was to find out the influence of age, gender and school class on the attitude of secondary school students towards cardiopulmonary resuscitation (CPR). **Materials and Methods:** The pretest-posttest design type of quasi-experimental study was adopted with participants drawn from both public and private senior secondary schools in Obio/Akpor Local Government Area of Rivers State, South-South, Nigeria. Three hundred and thirty two (322) participants (155 males, 167 females) with two age groups (Group 1, 12-15 year-olds) and (Group 2, 16-19 year-olds) from senior secondary class 1 (SS1) and senior secondary class 2 (SS2) were assessed on their attitude towards CPR using the same questionnaire before CPR training, immediately after CPR training and six weeks post CPR training. Parametric and non-parametric statistics were used to analyze the data. **Results:** While age was found to have statistically significant influence on the attitude of the participants towards CPR ($P < 0.05$), gender and school class did not. **Conclusions / Recommendations:** Although gender and school class did not influence attitude of the participants towards CPR, there is need for a similar study in a Muslim-dominated part of the country due to the different religious and socio-cultural background.

Keywords Age, Gender, School Class, Attitude, CPR

1. Introduction

Age and gender are known as independent variables. They are sometimes called primordial variables which will always be independent [1]. An independent variable (IV) is defined as a mathematical variable that is independent of the other variables in an expression or function and whose value determines one or more of the values of the other variables [1]. This is also known as the manipulated variable. In other words, they are the values that can be changed in a given model or equation, providing the 'input' which is modified by the model to change the 'output' [2]. According to Shuttleworth [3], the independent variable, also known as the manipulated variable, lies at the heart of any quantitative experimental design.

Attitude is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation [4]. Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards. The four major components of attitude include affective (emotions or feelings), cognitive (belief or opinions held

consciously, conative (inclination for action) and evaluative (positive or negative response to stimuli) [4].

Aminrad et al [5] showed that increase in age and levels of education had effect on increase of environmental awareness and attitude. Pane and Salness [6] have shown that 52.6% of the general population studied who has been involved in cardiopulmonary resuscitation was below 20 years of age. Gender roles appear to be very closely related to gender differences in health-related behavior [7]. It is believed that behavioural factors are seen as fundamental causes in the etiology of gender difference in health and illness [8, 9].

Although there are published literature on attitude of secondary school children towards cardiopulmonary resuscitation [10-14], there is still paucity of information on the effect of age, gender and school class on this, especially in Nigeria. In a study involving cardiac patients, age, previous myocardial infarction and heart failure were significantly associated with the willingness or lack of willingness to undergo CPR [11]. It has been reported that interest in CPR training appears to decrease with advancing age, while other factors that did not encourage seeking for CPR training were inconvenience of having to leave the house, bad health, cost, lack of time or interest, inability to find a course, physical limitations, fear of contracting HIV, or fear of being sued [14-19]. Enami et al [20] identified previous CPR training, sex, rural area and student as part of

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the significant factors relating to attitude towards CPR in their study on the effects of the new CPR guideline toward basic life support in Japan.

In an attempt to contribute to some baseline data on CPR in Nigerian secondary schools, the study aimed at assessing the influence of age, gender and school class (independent variables) on the attitude (dependent variable) of the participants towards CPR. The null hypotheses were that: (1) there would be no statistically significant differences in the attitude of the participants towards CPR with respect to age before CPR training, immediately after the training and six months later; (2) there would be no statistically significant differences in the attitude of the participants towards CPR with respect to gender before CPR training, immediately after the training and six weeks later; (3) there would be no statistically significant differences in the attitude of the participants towards CPR with respect to school class before CPR training, immediately after the training and six months later.

2. Materials and Methods

Research Design

This study adopted the pretest-posttest design type of quasi-experimental design. The population for the study was drawn from all the 76 private and 17 public senior secondary schools in Obio/Akpor Local Government Area of Rivers State, Nigeria. The students in senior secondary 1 (SS1) class and senior secondary 2 (SS2) class were the respondents to the questionnaires. There were altogether 6400 SS1 and SS2 students in the Obio/Akpor Local Government - while 4000 were from public schools, 2400 were from private schools. These figures were given by the Director of Schools Board at the Obio/Akpor Local Government Secretariat, following a visit and oral discussion on May 13, 2012.

In addition to having the participants from two different school classes - senior secondary class 1 (SS1) and senior secondary class 2 (SS2), the ages of the participants were dichotomized into two groups (12-15 years) and (16-19 years) while the study involved both male (boys) and female (girls) participants.

Sample and Sampling Techniques

Due to some copies of the questionnaires that were discarded as a result of mistakes made by some of the students and some incomplete data, the final study sample dropped to the three hundred and twenty two (322) participants (that is, 322 students completed the information required on the same questionnaire at the three stages of the study – pre-training, immediate post training and six weeks post training stages).

This final sample size of 322 participants was drawn from SS1 and SS2 students of the total SS1 and SS2 students from the public and private schools in Obio/Akpor Local Government Area of Rivers State. Two public and two private schools were purposively selected and one hundred

students selected in each school to get the study cohort (fifty from SS1 and fifty from SS2).

Instrumentation

In addition to the questionnaire that the participants filled, the other instruments used for the study were lecture on CPR on power points, CPR skills steps on power points, manikin for skill practice and skill evaluation guide. The power point was used to deliver CPR lecture and CPR skills steps. It helped to impact CPR knowledge on the respondents and they were able to watch demonstration of skills on the screen. The manikin was used to demonstrate, train and evaluate CPR skill acquired by the selected students. The skill evaluation guide was used to evaluate the level of the hand-on skill acquired. However, this paper is centres on the effect of the age, gender and school class of these participants on their attitude to CPR.

The questionnaire was constructed by the researcher, using AHA 'Be-The-Beat' as a guide. It had two sections: Section A was used to elicit demographic information from the respondents while Section B contained the questions that assessed the attitude of the participants towards CPR. A modified Likert type scale was set against each item. The response options were graduated and weighted as follows: strongly agreed (4 points), agreed (3 points), disagreed (2 points), strongly disagreed (1 point).

Validity of the Instrument (Questionnaire)

To ensure that the questionnaire has validity, it was presented to four (4) experts in the field of human kinetics and health education as well as in the health sciences for evaluation. Each of the experts was given a draft copy of the questionnaire; research questions, hypotheses and instrument validation evaluation guide. Their comments and suggestions were incorporated in the final production of the questionnaire to ensure its validity.

Reliability of the Instrument (Questionnaire)

Test-retest method was used to establish the reliability of the instrument. Twenty copies of the instrument were given to SS2 students in one of the schools and were not included in the sample for the final study. Two weeks after, another twenty copies was re-administered to the same group of students. The overall reliability co-efficient of 0.83 was established.

Data Collection

The data was collected in three stages: pre-training, immediate post training and six weeks after training (retention).

Stage 1 (Pre-training): The attitude towards CPR of the 322 participants from the original 400 selected secondary school students were assessed using the questionnaire.

Stage 2 (Training and Immediate Post -Training): Copies of the same questionnaire on their attitude towards CPR were served to the same participants after the teaching on CPR, practical demonstrations and hands-on trainings were carried out for 135 minutes using power points, AHA

“Be The Beat” Video clips, Rap songs on CPR and manikin. This was done in each school that was involved in the study.

Stage 3 (Six weeks after training): The schools were visited six weeks after the training for re-assessment, using the same questionnaire.

The retrieval of the instrument was done by both lead researcher and the research assistants. A total of 1094 (pre, post and six weeks after) copies of the questionnaire were administered and retrieved. The questionnaires were tallied according to the number given to the students before training. Wrongly filled questionnaire and the ones that did not have complete set (that is, those not having the pre, post and six weeks post training information according to the tally given to the participants before training) were eliminated. A total of 966 questionnaires for 322 participants were properly filled with matching tally numbers. The percentage return rate of usable questionnaires retrieved was 88.2%.

Data Analysis

The data generated were coded, tallied, scored and put into frequency distribution table. Descriptive statistics of mean and standard deviation were calculated. To establish the criterion mean, the modified Likert scale with weighted points of 4, 3, 2, and 1 were added to give 10 points and were divided by 4 to get a mean of 2.50. ANOVA and t-test were used to test the hypotheses at the 0.05 level of significance.

3. Results

Table 1 shows the responses of the students in two age groups, group 1 (12-15 years) and age group 2 (16-19 years) to question items on attitude before training, immediately after training and six weeks after training on CPR. The age group 1 had mean score of 3.37 and age group 2 had 3.44 with mean score difference of 0.07.

Also, Table 1 shows the responses of the students (both males and females) to question items on attitude before training, immediately after training and six weeks after training. The mean score of males was 3.32 and the females

3.45, with females having slightly higher mean of 0.13. This implies that both the males and females had positive attitude towards CPR with males having slightly better attitude.

Concerning the school class on attitude towards CPR, mean score of SS1 was 3.37 and SS2 3.40 with SS2 having slightly higher mean of 0.03. This implies that both the SS1 and SS2 had positive attitude towards CPR with SS2 having slightly better attitude.

Table 2 shows the ANOVA test analysis of the attitude towards CPR with respect to age among the selected secondary school students before training, immediately after the training and six weeks after. From the table, the calculated F-value on attitude is 6.06 which is higher than F-critical of 2.61 at 0.05 significant level. This means that age has statistically significant influence on attitude. The null hypothesis here is, therefore, rejected.

Table 3 shows the ANOVA analysis of the attitude to CPR with respect to gender among the selected secondary school students before training, immediately after the training and six weeks later. From the table, the calculated F-value is .389, which is less than the F-critical of 3.85 at 0.05 significant level, which means that gender has no statistically significant influence on attitude towards CPR among the selected secondary school students before, immediately after training and six weeks later. The null hypothesis here is, therefore, accepted.

Table 4 gives the ANOVA test analysis of the attitude towards CPR with respect to school class among the selected secondary school students before training, immediately after the training and six weeks after. From the table, the calculated F-values is 2.69. This is less than the F-critical of 6.67 at 0.05 significant level, which means that class level has no statistically significant influence on attitude to CPR among the selected secondary school students before, immediately after training and six weeks later. The null hypothesis here is, therefore, accepted.

Figure 1 illustrates the graphic presentation of the changes in attitude towards CPR among the selected secondary school students that participated in this study.

Table 1. Age, Gender and School Class of the Participants

Variables	Groups	N	X	SD	X difference
Age	Group 1	735	3.37	.49	
	Group 2	231	3.44	.39	
Gender	Male	465	3.32	.46	
	Female	501	3.45	.48	
School Class	SS1	459	3.37	.48	
	SS2	507	3.40	.45	

Table 2. Influence of Age on Attitude towards CPR (Pre, Post and Retention)

Item	N	Sources of Variation	Sum of Square	Mean Square	DF	F-Cal	F-crit	P-value	Decision
Attitude	966	Between Group	200.329	66.776	3	6.06	2.61	.014	Rejected
		Within Group	21200.525	22.038	962				
		Group Total	21400.854		965				

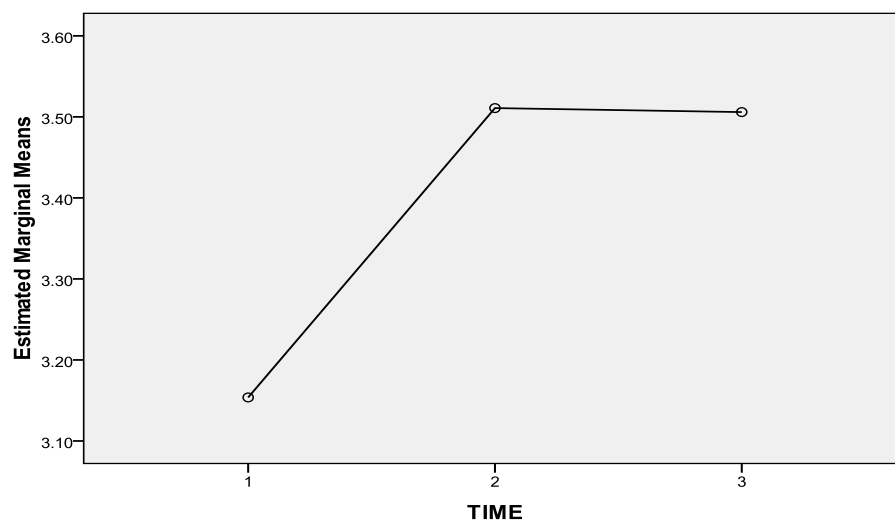
Significant at $p < 0.05$

Table 3. ANOVA analysis of Influence of Gender on Attitude towards CPR (Pre, Post and Retention)

Item	N	Sources of Variation	Sum of Square	Mean Square	DF	F-Cal	F-crit	p-value	Remark
Attitude	966	Between Group	8.643	8.643	1	.389	3.85	.133	Accepted
		Within Group	21392.211	22.191	964				
		Group Total	21400.854		965				

Significant at $p < 0.05$ **Table 4.** Influence of School Class on Attitude towards CPR (Pre, Post and Retention)

Item	N	Sources of Variation	Sum of Square	Mean Square	DF	F-Cal	F-crit	P-value	Remark
Attitude	966	Between Group	59.735	59.735	1	2.69	6.67	.101	Accepted
		Within Group	21341.119	22.138	964				
		Group Total	21400.854		965				

Significant at $p < 0.05$ **Estimated Marginal Means of Attitude****Figure 1.** Profile Plot of the Means of the attitude towards CPR (Pre, Post and Retention)

4. Discussion

Understanding the fact that not only that attitude can be measurable and changeable but it has the potential of affecting someone's emotion and behavior, it becomes very useful to investigate further into the factors that can affect it.

There is paucity of information on the influence of age and gender on attitude towards CPR. However, it has been shown that increase in age had effect on increase of environmental awareness and attitude and higher percentage of those who were involved in previous CPR training were mainly below 20 years of age [5, 6]. Meanwhile, Leary et al [21] reported that as age increased, both male and female chest compression (CC) depth decreased significantly. Female gender was associated with shallower chest compression depth and this finding was not confounded by body mass index (BMI) [21].

In this Nigerian study, age was found to significantly influence the attitude of the students to CPR. However, this

finding should be interpreted with caution as the participants in age group 1 in this study (12-15) were over three times more than those in age group 2 (16-19). Concerning gender and school class, the hypotheses of this study have been accepted. This is consistent with the enthusiasm that the students generally showed during this study. This finding is encouraging for the future of bystander CPR in Nigeria because neither gender nor school class should be a predicting factor for the rescuer's provision of CPR for a victim, especially in an out-of-hospital cardiac arrest situation. In Hong Kong, people with full time jobs and higher levels of education were more likely to have CPR training.

Meanwhile, the impact of gender on CPR simulation has been documented as the study have found: that rescuers were likely to remove more clothing from the male simulator, to avoid contact with the breast area, hand placement on the female was apt to be incorrect and there is need for standardized CPR training, regardless of patient sex [22].

Religion and the socio-cultural settings could be of influence to attitudes towards CPR.

5. Conclusions

- The study found statistically significant differences in the attitude of the participants towards CPR with respect to age before CPR training, immediately after training and six weeks later.
- No statistically significant differences were found in the attitude of the participants toward CPR with respect to gender before CPR training, immediately after and six weeks later
- No statistically significant differences were found in the attitude of the participants towards CPR with respect to school class before CPR training, immediately after training and six weeks later.

6. Recommendations

- Considering the growing importance of CPR globally, it will be worthwhile to investigate the possible influence of religion and gender (sex) in attitude towards CPR in a country like Nigeria where there is two major religions and the knowledge of bystander CPR is very low with its increasing need with increasing westernization. Therefore, it is recommended that this study should be repeated in a Muslim-dominated socio-cultural background.

REFERENCES

- [1] Merriam-Webster Dictionary.
- [2] Your Dictionary on line (Accessed last on May 14, 2016).
- [3] Shuttleworth M. Visual DOC MDO Software. Probabilistic Design Easily Automate Design Processes (Accessed last on May 14, 2016 online).
- [4] BusinessDictionary.com.
- [5] Aminrad Z, Zakaria SZBS, Hadi AS. Influence of Age and Level of Education on Environmental Awareness and Attitude: Case Study on Iranian Students in Malaysian Universities. *The Social Science* 2011; 6(1): 15-19.
- [6] Pane GA, Salness KA. A survey of participants in a mass CPR training course. *Ann Emerg Med* 1987; 16(10): 1112-6.
- [7] Sieverding M. Gender and Health-related Attitudes: The Role of a "Macho" Self-Concept Heart Disease: Environment, Stress and Gender. G. Weidner et al. (Eds.) IOS Press, 2002: 237-250.
- [8] Verbrugge LM, Pathway of health and death. In RD Apple (ed.), *Women, health and medicine in America*. New Brunswick, New Jersey: Rutgers University Press 1990: 41-79.
- [9] Reddy DM, Fleming R, Adesso VJ. Gender and health. In Maes S, Leventhal H, Johnston M (eds.), *International Review of Health Psychology*, Vol 1, Chichester: Wiley. 1992: 3-32.
- [10] Kanstad BK, Nilsen SA, Fredriksen K. CPR knowledge and attitude to performing bystander CPR among secondary school students in Norway. *Resuscitation* 2011; 82(8): 1053-9.
- [11] Thoren AB, Axelsson A, Herlitz J. The attitude of cardiac care patients towards CPR and CPR education. *Resuscitation* 2004 61(2): 163-71.
- [12] Chair SY, Hung NSY, Lui JCZ, Lee DTF, Shiu IYC, Choi KC. Public knowledge and attitudes towards cardiopulmonary resuscitation in Hong Kong: telephone survey. *Hong Med J* 2014; 20: 126-133. DOI: 10.12809/hkmj134076.
- [13] Al-Turki YA, Al-Fraih Y, Jalaly JA, Al-Maghlouth LA, Al-Rashoudi FH, Al-Otaibi AF, Thnayan AA, Trahzoni AI, Al-Shaykb AS. Knowledge and attitudes towards cardiopulmonary resuscitation among university students in Riyadh, Saudi Arabia. *Saudi Med J* 2008; 29(9): 1306-1309.
- [14] Vaillancourt C, Grimshaw J, Brehaut JC, Osmond M, Charette ML, Wells GA, Stiell IG. A survey of attitudes and factors associated with successful cardiopulmonary resuscitation (CPR) knowledge transfer in an older population most likely to witness cardiac arrest: design and methodology. *BMC Emerg Med* 2008; 8:13. DOI: 10.1186/1471-227-8-13.
- [15] Golberg RJ, Gore JM, Love DG, Ockene JK, Dalen JE. Layperson CPR –are we training the right people?. *Ann Emerg Med* 1984; 13: 701-704.10.1016/SO196-0644 (84) 80731-3.
- [16] Keim S, Anderson K, Siegel E, Spaite D, Valenzuela T. Factors associated with CPR certification within an elderly community. *Resuscitation* 2001; 51: 269-274. 10.1016/SO300-9572(0)00418-X.
- [17] Demirovic J. Cardiopulmonary resuscitation programs revisited: results of a community study among older African Americans. *Am J Geriatr Cardiol.* 2004; 13(182-187. 10.1111/j. 1076-7460.2004.02525,X.
- [18] Kliegel A, Scheinecker W, Sterz F, Eisenburger P, Holzer M, Laggner AN. The attitude of cardiac arrest survivors and their family members towards CPR courses. *Resuscitation* 2000; 47:147-154. 10.1016/SO300-9572(00)00214-8.
- [19] Ahrendsen J. Would you help a passenger in need? Trains boats and planes. *Iowa Medicine* 1999; 89: 16-17.
- [20] Enami M, Takaei Y, Goto Y, Ohta K, Inaba H. The effects of the new CPR guideline on attitude toward basic life support in Japan. *Resuscitation* 2010; 81(5): 562-7. Doi: 10.1016/j.resuscitation.2009. 12.012. Epub 2010 Feb 20.
- [21] Leary M, Buckler D, Agarwal A, Abella BS, Blewer A. The association of Gender and Age with the Quality of Layperson CPR Performance. *Circulation* 2014; 130: A278.
- [22] Kramer CE, Wilkins MS, Davies JM, Caird JK, Hallihan GM. Does the sex of a simulated patient affect CPR? *Resuscitation* 2015; 86: 82-7. Doi: 10.1016/j. resuscitation 2014.10016. Epub 2014Nov 4.