

Knowledge of Cardiopulmonary Resuscitation among Some Secondary School Students in Nigeria

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Abstract

Cardiopulmonary Resuscitation is indeed an important life-saving first aid skills practiced throughout the world. It is perhaps the only known effective method of keeping a victim of cardiac arrest alive long enough for definitive treatment to be delivered. When trained in CPR, children and adolescents can recognize the need for care and administer CPR and it has been established to be successful in saving victims life when effectively performed. This study adopted quasi-experimental design aimed at assessing the CPR knowledge among four purposively selected secondary schools in Obio/Akpor Local Government Area of Rivers State of Nigeria before and after training in CPR. Four hundred (400) students were drawn from the schools and copies of the self-administered questionnaire were given to the participants before and after the training in CPR to respond to. At the end of the exercise, 322 questionnaires were found to have been properly filled, giving a response rate of 80.5%. The findings revealed that the level of pre-training knowledge was 8.9% compared to post training knowledge of 88.6%. The knowledge difference between pre and post training in CPR was statistically significant ($P < 0.05$). It was concluded that Cardiopulmonary Resuscitation training was possible among Nigerian students and should be incorporated in Nigerian school curriculum in line with best practices as recommended by the International Liaison Committee on Resuscitation.

Keywords: CPR, Knowledge, Secondary school students, Nigeria

1. Introduction

Sudden collapse and death have been associated with cardiovascular diseases. Cardiovascular diseases are the number one causes of death globally, more people die annually from cardiovascular diseases than from any other cause (WHO 2011).

Cardiopulmonary resuscitation is a combination of rescue breaths and chest compressions which are intended to re-establish cardiac function and blood circulation in an individual who has suffered cardiac or respiratory arrest (Field 2010). Cardiac / respiratory arrest is a very common emergency in not just the adult group but also in the neonatal period (WHO 2012). When trained in CPR, children and adolescents can recognize the need for care and administer CPR and it has been established to be successful in saving victims life when effectively performed. Cardiopulmonary Resuscitation is indeed an important life-saving first aid skills practiced throughout the world. It is perhaps the only known effective method of keeping a victim of cardiac arrest alive long enough for definitive treatment to be delivered (Hazinski 2010).

The International Liaison Committee on Resuscitation in 2001 strongly recommended that instruction in CPR be incorporated as a standard part of the school curriculum (Cave et al 2011). This will act as part of their preparation for response to medical emergencies both in the school and at home. It is believed that on a long term basis, children trained in CPR will contribute significantly to the number of adults trained in any community. It is expected that this will have a direct benefit of increasing the number of people trained to perform CPR, thereby increasing the likelihood that a victim of out-of-hospital cardiac arrest (OHCA) will promptly receive CPR. In addition, students are likely to train family members and share materials used in school-based programme at home which can further increase the yield of the programme in terms of the total number of members of the community trained per unit of class time expended (Lorem 2008; Lotfi 2007). Accordingly, many countries have initiated CPR programme for school children and much research work has been done to support the justification of CPR in schools (Lotfi 2007).

Although many school systems in other parts of the world have complied with these international standards (Isbye & Meyhoff 2007; Lorem & Palma 2008), the situation is different in Nigeria with no published work on cardiopulmonary resuscitation involving the Nigerian school system to the best of the researcher's knowledge. Therefore, this study aimed at assessing the knowledge of Cardiopulmonary Resuscitation (CPR) among a selected group of secondary school students in Rivers State, Nigeria. The researchers went into the study with the following research question in mind: what was the level of CPR knowledge among the selected secondary school students before (Pre) the training and immediately after (Post) training? The research hypothesis equally generated was that there would be no statistically significant difference in the level of CPR knowledge among the selected secondary school students before and immediately after the training.

2. Methodology

This study adopted the quasi-experimental design conducted among four purposively selected secondary schools in Obio/Akpor Local Government Area of Rivers State of Nigeria; the data was collected in stages: pre-training and post training

Stage 1 (Pre-training): The level of the knowledge of CPR among 400 selected secondary school students were assessed using a seven item modified self structured questionnaire with response option pick the most appropriate answer.

Stage 2 (Training and Immediate Post-Training): Teaching was carried out for 135 minutes using power points, modified AHA “Be The Beat” Video clips, Rap Songs on CPR.

Immediately after training in each school, copies of the same questionnaire were re-administered to the students and retrieved. The total number of questionnaires that had both pre and post tallied name were 644 having eliminated the wrongly filled ones and those who were at the pre training but did not complete the training.

The data generated were coded, tallied, scored and put into frequency distribution table. Descriptive statistics of mean and standard deviation were used to provide answers to the research questions. ANOVA and t-test were used to test the hypotheses at 0.05 significant level.

3. Result

In responding to questions on knowledge before training, 4% claimed to know what to do when they come across a collapsed person, 39.4% knew why they would shake and tap a collapsed person, 2.5% knew the action to use in opening the airway, 12.7% knew what to do in assessing the airway, 2.2% knew what CPR acronym stands for, 0.9% knew about rescue breathe and 0.9% knew the ratio of chest compression to rescue breathe. However immediately after training, 82.9% claimed to know what to do when they come across a collapsed person, 91.9% knew why they would shake and tap a collapsed person, 91.3% knew the action to use in opening the airway, 93.2% knew what to do in assessing the airway, 94.7% knew what CPR acronym stands for, 78.0% knew about rescue breathe and 88.2% knew the ratio of chest compression to rescue breathe.

Table 1: Level of CPR Knowledge among the secondary school students

	Question Items	% Score Pre-Training	% Score Post-Training	% Gain
1.	First thing to do if a person collapses	4.0	82.9	78.9
2.	Why would you shake and shout at a collapsed victim	39.4	91.6	52.2
3.	What action would you use to open airway	2.5	91.4	88.9
4.	What do you look for in assessing breathing	12.7	93.2	80.5
5.	What does CPR stand for	2.2	94.8	92.6
6.	For how long does a rescue breathe last?	.9	78.0	77.1
7.	No of chest compressions & rescue breaths/cycle	.9	88.2	87.3
	Cluster %	8.9	88.6	79.7
	Mean & SD	1.71± .93	12.41 ±2.05	10.70 ± 2.17

Table 1 shows that Pre-test mean score on question items on knowledge was 1.71, while the post-test mean score was 12.41 with the mean gain being 10.70 (79.7%). This reveals very poor knowledge of CPR before the training but the total percentage mean score of knowledge acquired at the end of the training was 88.6%. This shows tremendously marked knowledge change after the training.

Table 2: Paired t-test analysis of the difference in the level of knowledge among the selected secondary school students (Pre and Post-test)

Paired Sample	$\bar{x} \pm s$	DF	t-cal	t-crit	p-value (2-tailed)	Decision
Pre & Post Knowledge	10.70 ±2.17	321	88.30	1.96	.000	Rejected

Significant at $p < 0.05$

Table 2 above shows the t-test analysis of the difference in the level of CPR knowledge among the selected secondary school students before and immediately after the training. From the table, the calculated t-value for pre and post test on knowledge is 88.30. This value is very much greater than the t-critical table value of 1.96 at 0.05 significant level. The null hypothesis of no significant difference is, therefore, rejected, showing that there is significant difference between the level of CPR knowledge before training and immediately after the training.

4. Discussion

Adequate knowledge of CPR among children and adolescents is not only needed for them to serve as effective bystanders in cases of emergencies but holds promise for a greater proportion of any community to eventually be

part of the chain of survival. The present Nigerian study has shown that there was statistically significant difference in the knowledge of CPR among the selected secondary school students before and after the CPR training. The majority of the students had very poor knowledge of CPR before the training. However, immediately after the training, the level of knowledge exhibited was quite considerable.

This finding is consistent with the much interest showed by the participants during the training programme. This finding is in agreement with the study conducted in Ireland by Burke, Morgan, and McGee (2010) with students' average score of 85% immediately after training as compared to 88.6% found in the present Nigerian study. They concluded that the school system, both primary and post-primary, offers a promising route to the widespread dissemination of CPR skills. Schools provide a suitable environment for training and reinforcement of knowledge and skills. School children are more accessible and more easily motivated than adults; they learn quickly and retain skills well (Burke, Morgan, & McGee 2010). This assertion was clearly demonstrated in this study because at the initial stage of the study, the students knew little or nothing as shown by their scores in table 1. The result of the present Nigerian study seems to show that the incorporation of music and power points in the teaching of the participants was very useful.

This finding is also in agreement with a study carried out by Ponnanttil (2012) which assessed the effectiveness of video assisted teaching programme on CPR among intermediate students between 16-20 years of age studying at Kasthurba Gandhi Junior College at Secunderabad. It was concluded that there was an increase in the knowledge of school children when the pre-test and post test values were compared, and that the video programme on CPR was effective in improving knowledge among higher secondary school children (Ponnanttil 2012).

4.1. Conclusions

Based on the findings above, the following conclusions have been drawn:

- The pre-training knowledge of CPR among the participants was virtually non-existent. This could be attributed to the obvious lack of teaching or training on CPR in the secondary schools in Rivers State, which is likely to be same in other Nigerian secondary schools. However, their level of CPR knowledge became quite impressive immediately after the training.
- The difference in the pre and post training knowledge of CPR (gain in the CPR knowledge) among the participants was highly statistically significant, meaning a rejection of the null hypothesis.

4.2. Recommendations

- Cardiopulmonary Resuscitation should be included in Nigeria's school curriculum in line with best practices as recommended by The International Liaison Committee on Resuscitation. Schools play an important role in providing students with basic emergency lifesaving skills as part of the school health education programme. This will also act as part of their preparation for response to medical emergencies both in school environment and at home.
- By incorporating resuscitation training into the Nigerian school curriculum, it is hoped that greater awareness and acceptance of CPR as well as specific resuscitation skills might be inculcated routinely into the upcoming generation.

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