IBOM MEDICAL JOURNAL
Vol.17 No.3 | September - December, 2024 | Pages 413 - 416
www.ibommedicaljournal.org

Cardiopulmonary Resuscitation: Knowledge, Attitude, and Experience of House Officers and Junior Residents in a Tertiary Health Institution in Nigeria

Ekpemiro UC, Chukwu IS

Department of Surgery, Federal Medical Centre, Umuahia, Abia State

Abstract

Background: From time to time, doctors would be faced with situations requiring them to perform Cardiopulmonary Resuscitation (CPR) on patients. They would also play a leading role in the training of lay Responders. It is therefore important that doctors have the right attitude, sufficient knowledge and experience for satisfactory performance. To gain insight into this and act appropriately is the aim of this study.
Method: This is a cross-sectional study of House Officers and Junior Residents in the Federal Medical Centre Umuahia. Data was collected, using a questionnaire that was based on the 2005 American Heart Association (AHA) Guidelines for CPR and Emergency Cardiovascular Care (ECC). The data was fed into a password protected computer and analyzed using the Statistical Package with Social Sciences (SPSS).
Results: The total number of doctors was 69; with a mean age (years) of 31.45, a Standard deviation (SD) of 3.96 and a range of 24 – 40. Males were 54 (78.26%); females were 11 (15.94%); and 4 (5.80%) did not provide their gender. House Officers were 23 (33.33%) and Junior Residents 46 (66.67%). Only 13 (18.84%) of the respondents had a score of ≥ 50%. Some (60.87%) had not been faced with making contact and ventilating a patient with their mouth. Some of the respondents (86.96%) had been faced with requirement for chest compression on a patient. Most (78.26%) had never ventilated someone with their mouth while 15 (21.74%), only Junior Residents, had done so. The mean of survival rates expected by the respondents (N=55) was 55.10% (SD 21.01).
Conclusion: The knowledge and experience of Junior Residents and House Officers are low and their expectations concerning survival following CPR too high and unrealistic. Training in CPR is important to them but most of them would not make contact and ventilate an adult with their mouth and some would not do so for a neonate or a child. Periodic training of the doctors in all aspects of CPR is proposed to enhance their knowledge and modify their attitude.

Keywords: Cardiopulmonary resuscitation; Knowledge; Attitude; Junior Residents; House Officers.

Introduction

Cardiopulmonary resuscitation (CPR) is the manual application of chest compressions and often with ventilations to patients in cardiac arrest, aimed at maintaining viability – preventing death and permanent brain damage until additional measures can be instituted to ensure spontaneous blood circulation and breathing.[1] It is a part of the "chain of survival"; a concept put forward by Mary Newman and adapted in the 1992 guidelines for CPR and Emergency Cardiovascular Care (ECC) of the American Heart Association (AHA)[2,3,4] The Links in the adult chain of survival include: prevention of the arrest, early recognition of the emergency and activation of the Emergency medical services (EMS)/Emergency Response system, early and high quality CPR, early defibrillation, rapid advanced life support (ALS), and post-resuscitation care.[5,6]

The links in the paediatric chain of survival are prevention, early and high quality CPR, prompt access to the EMS/Emergency Response system, and rapid paediatric advanced life support (PALS), followed by integrated post-cardiac arrest care.[5,7] The EMS assessed incidence of Out-of-Hospital Cardiac Arrest (OHCA)

Corresponding Author:

Dr Chukwu IS
Department of Surgery, Federal Medical Centre, Umuahia, Abia State, Nigeria

isaacchukwu8@gmail.com | +2348138270270

DOI: 10.61386/imj.v17i3.483

in the USA is 103 (101.3, 105.1) per 100 000 with a Survival to Discharge rate of 5.6 (5.3 – 5.8)%.8 In the UK the incidence of in-hospital cardiac arrest (IHCA) following an analysis of the UK National Cardiac Arrest Audit data-base between 2011 and 2013 (patients ≥ 16 years of age) is 1.6 per 1000 hospital admissions and an unadjusted survival rate of 18.4%.[8]

From time to time, doctors would be faced with situations requiring them to perform CPR on patients. Besides this, they would also play a leading role in the training of lay Responders. It is therefore important that doctors have the right attitude, sufficient knowledge and experience for satisfactory performance. To gain insight into this and act appropriately, the knowledge, attitude, and experience of House Officers and Junior Residents in a tertiary health institution – Federal Medical Centre Umuahia is assessed.

Method

This is a cross-sectional study of House Officers and Junior Residents at the Federal Medical Centre, Umuahia. Consultants were excluded and Senior Residents were virtually lacking in the hospital at the time of data collection in 2009.

Data was collected, using a questionnaire that was based on the 2005 American Heart Association (AHA) Guidelines for CPR and Emergency Cardiovascular Care (ECC). The first part is a test with a minimum score of zero and a maximum score of twenty-five. The second part consist of ten questions. The data were fed into a password protected computer and analyzed.

Results

The total number of doctors was 69; with a mean age (years) of 31.45, a Standard deviation (SD) of 3.96 and a range of 24 – 40 in the 51 participants who provided their ages (Figure 1). Males were 54 (78.26%); females were 11 (15.94%); and 4 (5.80%) did not provide their gender (Figure 2). House Officers were 23 (33.33%) and Junior Residents 46 (66.67%) (Figure 3). The Department of Medicine provided 25 respondents (36.23%); Obstetrics and Gynaecology, 21 (30.43%); and Surgery, 23 (33.33%) (Figure 4).

The mean test score for the 69 respondents was 10.43 (41.72%) [SD (10.64%); a range of 5.00 – 19.00] and only 13 (18.84%) of the respondents had a score of ≥ 50%.

The mean score for males was 10.72 (SD; 2.72); for females it was 8.91 (SD; 2.21); and the mean difference of 1.81 between males and females was statistically significant at p=0.0427.

The mean test score for Junior Residents was 10.56 (SD; 2.46); for House Officers it was 10.05 (SD; 3.11) and the mean difference of 0.51 between these two groups was not statistically significant at p=0.4606. The mean test scores for Medicine, Obstetrics & Gynaecology, and Surgery were 10.48 (SD; 2.10), 10.19 (SD; 2.77), and 10.61 (SD; 3.16) respectively and the mean differences between these departments were

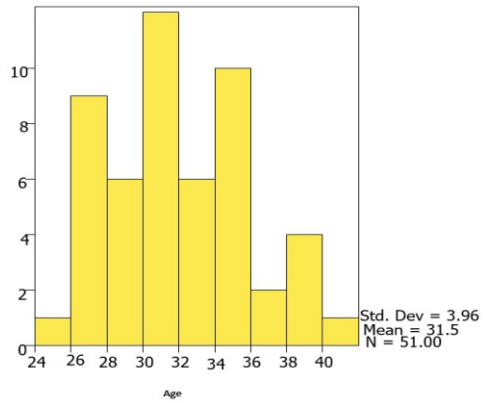

Figure 1: Age distribution of participants

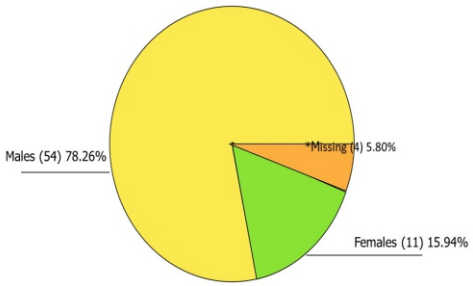

Figure 2: Sex distribution of the participants

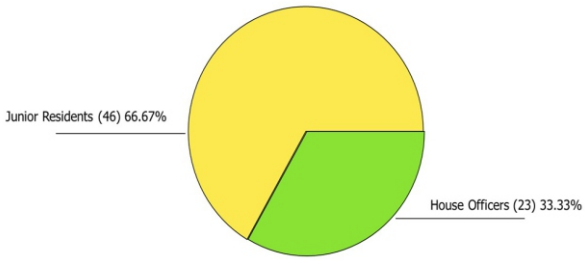

Figure 3: Cadre of the participants

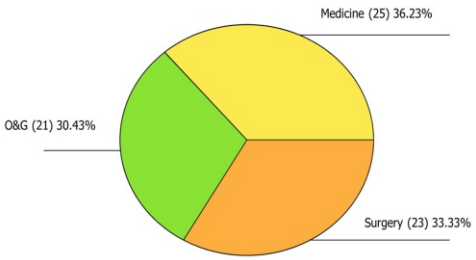

Figure 4: The disposition of the participants

not statistically significant at p=0.6885.

In response to question 1, "how important is a training in CPR to you?" 50 (73.53%) of the 68 respondents stated that it was extremely important to them while 18 (26.47%) stated that it was very important to them and there were no significant differences between males and females, Junior Residents and House Officers, and between the various departments.

In response to question 2, "how confident are you that you have basic life support skills?" 5 (7.35%) out of the 68 respondents were extremely confident, 13 (19.12%) were very confident, 39 (57.35%) were confident, and 11 (18.97%) were not confident; and there was a statistically significant difference between males (Mean 2.11; SD 0.70) and females (Mean 2.73; SD 1.01), showing that females were more confident than males that they have basic life support skills; there was none between Junior Residents and House Officers, and none between the departments.

Some respondents (60.87%) had not been faced with a situation requiring making contact with and ventilating a patient with their mouth but 27/69 (39.13%) had. 22/46 Junior Residents (47.83%) and 5/23 House Officers (21.74%) belonged to the latter group. The difference was statistically significant.

Some of the respondents (86.96%) had been faced with a situation requiring chest compression on a patient while 9/60 (13.04%) had not. There was no statistically significant difference between the Junior Residents and House Officers.

About half (57.45%) of the respondents had not been faced with a situation requiring cardiac defibrillation on a patient while 20/47 (42.55%) had been faced with such. There was no statistically significant difference between the Junior Residents and the House Officers.

Some (78.26%) respondents had never ventilated someone with their mouth while 15/69 (21.74%) had done so. Those who had done so were all Junior Residents; none was a House Officers. The difference was statistically significant.

Some (69.57%) were willing to make contact with and ventilate a neonate or a child while 21/69 (30.43%) were unwilling. There was no statistically significant difference between the Junior Residents and the House Officers.

Some (63.64%) were unwilling to make contact with and ventilate an adult with their mouth but 24/66 (36.36%) were willing. There was no statistically significant difference between the Junior Residents and the House Officers.

About half (56.52%) of the respondents were not confident that they had advanced life support skills; 24/69 (34.78%) were confident; 4 (5.80%) were very confident; 2 (2.90%) were extremely confident; and there was no statistically significant difference between males and females, between Junior Residents and House Officers, and between the departments.

The mean of the survival rates expected by the respondents, (N=55), was 55.10% (SD 21.01) and there was a statistically significant mean difference between the mean survival rates expected by female respondents (78.33; SD 16.58) and male respondents (51.32; SD 18.35).

Discussion

It is evident that Junior Residents and House Officers in this study were deficient in the knowledge of CPR and therefore required training. In a study of over 400 medical students and medical officers in a tertiary care hospital in Sri Lanka, the average knowledge score was 67.61% (SD 16.45; n = 411);12.7% of the sample scored <50%.[9] This apparently better performance may be accounted for by the fact that medical students were educated and trained on Advanced Life Support (ALS) at the commencement of the 4th year, and all pre-intern doctors underwent an ALS training program organized by the Sri Lanka Medical Council prior to their medical internship.[9]

Junior Residents and House Officers in this study see training in CPR as important to them. This should present trainers with a favorable condition for transferring the necessary knowledge and skills to them but it should not be assumed that they would on their own seek such training since a greater proportion (81.03%) were confident that they had basic life support skills.

A greater proportion of the respondents (60.87%) had not been faced with a situation requiring making contact with and ventilating a patient with their mouth while 39.13% had been faced with it. However, only 21.74% of the respondents had made contact and ventilated someone with their mouth. The proportion of respondents willing to make contact with and ventilate a neonate or a child with their mouth (69.57%) was greater than the proportion willing to perform this in adults (36.36%). Mouth to mouth ventilation should be performed whenever it is indicated but care should be taken to avoid exposure to highly transmissible microbes and toxic chemicals.[10]

Most of the respondents had been faced with a situation requiring chest compression (86.96%) but Chest Compression-Only CPR is only recommended for those who are unwilling to do airway and breathing maneuvers or for those untrained in CPR or are

uncertain how to do CPR.[10]

Only 20/47 (42.55%) respondents stated that they had been faced with a situation requiring cardiac defibrillation while 27/47 (57.45%) had not been faced with such. Defibrillation is both a basic and an advanced life support skill.[10] In a survey on medical practitioners in Osun State, Nigeria, only 30% of respondents knew how to use an Automated Electrical Defibrillator (AED) device.[11]

A greater proportion of respondents in this study (56.52%) stated that they were not confident that they had advanced life support skills while 67.9% of participant's in the study in Sri Lanka were not confident of saving a life with their current ALS knowledge.

The mean survival rates expected by the doctors who participated in this study and who answered the question "what is your expected survival rate?" are too high compared to the rates in real life. It is hoped that with training and experience, doctors would appreciate the challenges encountered in the conduct of CPR and the need to not only participate fully but to help build capacity for enhanced outcomes within and outside the hospital.

Conclusion

The knowledge and experience of Junior Residents and House Officers are low and their expectations concerning survival following CPR too high and unrealistic. Their level of confidence that they have basic life support skills appears excessive when one considers the above findings. However, training in CPR is important to them but most of them would not make contact and ventilate an adult with their mouth and some would not do so for a neonate or a child.

Periodic training of the doctors in all aspects of CPR is proposed to enhance their knowledge and modify their attitude.

References

1. Farlex I. Medical Definition of Cardiopulmonary resuscitation. The Free Dictionary. https://medical-dictionary.thefreedictionary.com/cardiopulmonary+resuscitation. Published 2018. Accessed May 17, 2018.
2. Newman M. *Chain of Survival Concept Takes Hold*. Vol 14.; 1989.
3. Cummins R, Ornato JP, Thies WH, et al. Improving Survival From Sudden Cardiac Arrest : The " Chain of Survival " Concept of SURVIVAL. *Circulation*. 1991;83:1832-1847. doi:10.1161/01.CIR.83.5.1832
4. Emergency Cardiac Care Committee And Subcommittees AHA. Guidelines for cardiopulmonary resuscitation and emergency cardiac care, I: introduction. *JAMA*. 1992;268(16):2172-2183.
5. Nolan JP, Hazinski MF, Billi JE, et al. Part 1: Executive summary: 2010 International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Resuscitation*. 2010;81(1 SUPPL.1). doi:10.1016/j.resuscitation.2010.08.002
6. Travers AH, Rea TD, Bobrow BJ, et al. Part 4: CPR overview: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(SUPPL. 3):676-685. doi:10.1161/CIRCULATIONAHA.110.970913
7. Berg MD, Schexnayder SM, Chameides L, et al. Part 13: Pediatric basic life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(SUPPL. 3). doi:10.1161/CIRCULATIONAHA.110.971085
8. Mozaffarian D, Benjamin EJ, Go AS, et al. *Heart Disease and Stroke Statistics-2015 Update : A Report from the American Heart Association*. Vol 131.; 2015. doi:10.1161/CIR.0000000000000152
9. Ralapanawa DMP, Jayawickreme KP, Ekanayake EMM, Kumarasiri PVR. A study on the knowledge and attitudes on advanced life support among medical students and medical officers in a tertiary care hospital in Sri Lanka. *BMC Res Notes*. 2016;9(1):462. doi:10.1186/s13104-016-2270-5
10. ILCOR, AHA E. 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations, Part 2: Adult basic life support. *Circulation*. 2005;112(22 SUPPL.):III-5-III-16. doi:10.1161/CIRCULATIONAHA.105.166472
11. Olajumoke TO, Afolayan JM, Raji SA, Adekunle MA. Cardiopulmonary Resuscitation - Knowledge, Attitude & Practices in Osun State, Nigeria. *J West African Coll Surg*. 2012;2(2):23-32.http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4767296&tool=pmcentrez&rendertype=abstract.