

ORIGINAL ARTICLE

Anaesthetists' knowledge of cardiopulmonary resuscitation

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INTRODUCTION

A previous study by Desalu, *et al*, showed that anaesthetists were not applying proper resuscitation guidelines and that the lack of organized simulation practice resulted in deficient knowledge and skills.¹ Cardiac arrest is a life-threatening emergency situation, which outcome depends on timely

ABSTRACT

Background: Cardio-Pulmonary Resuscitation (CPR) is an integral part of an anaesthetist's knowledge and practice. In Nigeria, these skills are taught mainly during medical school and postgraduate training.

Objectives: The study sought to assess the knowledge of anaesthetists about CPR.

Methodology: A structured questionnaire containing close and open-ended questions was administered to trainee-anaesthetists and consultant anaesthetists at an update course.

Results: A total of thirty-nine questionnaires were returned fully completed with a response rate of 65%. There were 27 males and 12 females with age range of 25-48years, and mean age of 36.5years. The post-basic qualification experience ranged 4-22years. Fifty-nine percent of the respondents had attended an update course on CPR consisting of lectures only. Certified CPR Providers were 17.6%. Fifty-four percent of the anaesthetists said the CPR guidelines were last revised in 2010 while 31% responded correctly about the ratio of chest compression to expired air ventilation during basic life support when it is one rescuer. Fifty-nine percent of the respondents knew that laryngeal mask airways are useful in modern CPR.

Conclusion: Few anaesthetists have attended organized training programmes and practice sessions using simulators and this may have resulted in deficient knowledge and skills. Few anaesthetists in this study were Certified CPR Providers. There is a need for continuing training and certification in basic and advanced resuscitation for all anaesthetists according to the current CPR guidelines.

Keywords: Airway devices, endotracheal intubation, laryngeal mask airway, manikins, teaching

and effective cardio-pulmonary resuscitation (CPR).² Successful CPR attempts require staff members skilled in performing CPR amongst other things. In most countries, training in cardiopulmonary resuscitation (CPR) is predominantly carried out by a resuscitation council. Anaesthetists are in the forefront of cardiac arrest teams, and having adequate knowledge and skills makes them confident

and competent in their ability to manage patients with cardiac arrest.

We sought to assess the knowledge of a group of anaesthetists practising in Nigeria with a view to knowing how conversant they were with current CPR guidelines.

METHODOLOGY

A structured questionnaire containing close and open-ended questions was administered to trainee anaesthetists at various levels of training and consultant anaesthetists practising in different hospitals across Nigeria. The study population was drawn from a group of doctors attending an update course in March 2012 and some of their trainers using convenience sampling method. The data obtained was analyzed using the *Statistical Package for Social Sciences (SPSS) version 17.0* expressed in appropriate statistical methods. *Chi-square p-value* <0.05 was taken as statistically significant.

RESULTS

A total of 60 questionnaires were administered but only 39 were returned fully completed; a response rate of 65%. There were 21 Registrars, 8 Senior Registrars and 10 Consultants. Males were 27 and females 12, with age range of 25-48years, and mean age of 36.5years. The post-basic qualification experience ranged 4-22years. Of the respondents, 59% had attended an update course on CPR comprising lectures only (21.1%); lectures, seminars and discussions (57.9%); and lectures, seminars, discussions and simulated demonstrations (21%). Of those anaesthetists that attended CPR training, 76.5% were given certificates of participation, while only 17.6% were Certified CPR Providers. Majority of the respondents (79.5%) abstained from answering the question 'When did modern CPR start?'

The CPR guidelines were last revised in 2010 and only 53.8% of the anaesthetists gave the correct response. Of the respondents, 30.8% knew that the correct ratio of chest

compression to expired air ventilation during basic life support is 30:2 when only one rescuer is involved, and just 17.9% of the anaesthetists knew it is also 30:2 when there are two rescuers. On the recognized airway devices that can be used in modern CPR, 71.8% identified endotracheal tubes, 74.1% mentioned tracheostomy tubes, 59% laryngeal mask airway and nasopharyngeal airways, and 48% felt that oesophageal tracheal combi-tubes are useful in modern CPR.

DISCUSSION

When CPR is aggressively taught and standards maintained by examination and re-certification, the CPR is effective and the outcome is good.³ Majority of cardiac arrests in our hospitals are attended to by anaesthetists who provide the Advanced Life Support (ALS) equipment and drugs. It is assumed that by the nature of their job, they are well qualified to do this. Yet, a previous report by Desalu and co-workers showed that even anaesthetists did not adhere to existing guidelines during peri-operative cardiac arrests.¹

The post-basic qualification experience of respondents ranged from 4-22years with a mean of 13years, which to an extent was similar to the findings by Desalu, *et al*, in a study on CPR training. Desalu's mean time since medical qualification was 10years, during which period resuscitation guidelines had changed twice.⁴ It may, therefore, be essential that re-training on the new guidelines is done every 5years. Knowledge retention has been demonstrated to be low with longer periods since graduation.⁵ In teaching resuscitation, Zideman emphasized that no assumptions should, therefore, be made for any previous clinical knowledge.⁶

In this study, majority of the respondents had attended an update course on CPR comprising lectures, seminars, discussions and simulated demonstrations. Courses on resuscitation are supposed to not just instruct, but also test acquired skills.⁶ The 2-day course reported on by Desalu, *et al*, was sufficient to

produce a highly significant improvement of 78% in the mean post-test scores.⁴ Similar success had been documented in Turkey by Cimrin and colleagues.⁷ A deteriorating knowledge of CPR with increasing seniority had previously been reported as junior doctors are more likely to recall the guidelines because of their involvement in regular and recent examinations, while consultants are poor at maintaining and re-certifying their advanced resuscitation skills.^{8,9}

From the results of this study, majority of the respondents were given certificates of participation after attending courses on CPR, while only 17.6% were Certified CPR Providers. In Europe, it is recommended that residents are given regular mandatory hands-on ALS training, preferably using European oriented guidelines.⁵

Resuscitation training is not synchronized in Nigeria, at the present, as the Resuscitation Council is still in its formative stage. Although an organization known as Life Resuscitation Society of Nigeria (LiRESON), an affiliate body of the Nigerian Society of Anaesthetists, exists, its role in routine CPR training is unclear. CPR Guidelines from the European Resuscitation Council (ERC), Resuscitation Council (UK) or the American Heart Association (AHA), are adopted by individual hospitals and training institutions.

It was worrisome that though majority of the respondents gave the correct response that the CPR guidelines by the ERC were last revised in 2010, majority of the respondents did not give any answer to the question 'When did modern CPR start?' The large number that did not respond may be due to lack of knowledge of the correct answer.

Very few of the respondents knew that the ratio of chest compression:expired air ventilation during basic life support is 30:2 whether it is one rescuer or there are two rescuers. This low positive response showed poor knowledge of the ERC 2010 CPR guidelines, which was clear on the ratio of

chest compressions to ventilations as 30 to 2 for all adult victims of cardiac arrest.¹⁰

This same ratio should also be used for children when attended to by a lay rescuer. For an adult victim, the 2 initial rescue breaths are disregarded, with 30 compressions given immediately after cardiac arrest is established. The recommendation of 30:2 as the ratio for all age groups is intended to increase the number of compressions given and minimize the interruptions. It is also universally applicable and simplifies the instructions to rescuers from varied backgrounds.¹⁰ There is, therefore, a need to focus more on practice guidelines that will help all rescuers (whether lay or trained) to maintain high standards.

Although majority of the respondents in this study opined that endotracheal tubes, tracheostomy tubes, laryngeal mask airways and nasopharyngeal airways are useful in modern CPR, only 48% felt that oesophageal tracheal combi-tubes are useful in modern CPR. Thus, there is poor knowledge about emergency airway devices that are useful for modern CPR.

It has been demonstrated in Lagos, Nigeria that locally organized resuscitation training improved knowledge and skill of our doctors in cardiopulmonary resuscitation.⁴ Similar success with locally organized resuscitation trainings has also been documented in other developing countries with limited resources.¹¹ Variations in protocol of established international resuscitation training programmes may benefit patient outcome in less developed countries who may not have the recommended drugs and equipments.¹² It only remains to be seen how well this knowledge and skills are retained.

There is need to focus more on training and re-training of all doctors and, most especially, anaesthetists. The Life Resuscitation Society of Nigeria (LiRESON) should start a programme of certification and re-certification of all medical doctors on CPR.

Limitations

The sample was based on convenience sampling technique. Thus, the results obtained may not be representative of all Nigerian anaesthetists. The study did not compare anaesthetists' knowledge of CPR with that of other medical subspecialties.

CONCLUSION

Though anaesthetists in this study showed adequate basic knowledge about current CPR guidelines, only a minority were Certified Providers. Few anaesthetists attended organized training programmes and practice sessions using simulators and this might have resulted in deficient knowledge and skills. There is a need for continuing training and certification in basic and advanced resuscitation for all anaesthetists according to the current CPR guidelines.

REFERENCES

- Desalu I, Kushimo O, Akinlaja O. Adherence to CPR guidelines during peri-operative cardiac arrest in a developing country. *Resuscitation* 2006; 69: 517-520.
- Rajeswaran L, Ehlers VJ. 'Audits of emergency trolleys' contents in selected hospitals in Botswana', *Health SA Gesondheid Journal of Interdisciplinary Health Sciences* 2012; 17(1). <http://dx.doi.org/10.4102/hsag.v17i1.621>
- Smith J, Ryan K, Phelan D, McCarroll M. Cardiopulmonary resuscitation skills in non-consultant hospital doctors- The Irish experience. *Irish J Med Sci* 1993; 162: 405-407.
- Desalu I, Adeyemo WL, Erhenede O, Bello B, Ehioze-Osifo AA. Evaluation of CPR skills of doctors after resuscitation training in a tertiary hospital in Lagos Nigeria - does specialty matter? *Anaesthesia-on-Line*, Feb 2010. *Indian J Plast Surg* 2010; 43:54-59.
- Miotto HC, Couto BRGM, Goulard EMA, Amaral CFS, Moreira MCV. Advanced cardiac life support courses: Live actors do not improve training results compared with conventional manikins. *Resuscitation* 2008; 76: 244-248.
- Zideman DA. Cardiopulmonary resuscitation; new methods or improved training. *Anaesthesia* 1983; 38: 837-839.
- Cimrin AH, Topacoglu H, Karcioglu O, Ozsarac M, Ayrik C. A model of standardized training in basic life support skills of emergency medicine residents. *Advances in Therapy* 2005; 22:10-18.
- Cook B. Resuscitation skills of trainee anaesthetists (Corresp). *Anaesthesia* 1995; 50: 1094.
- Broster S, Cornwell L, Kaptoge S, Kelsall W. Review of resuscitation training amongst consultants and middle grade paediatricians. *Resuscitation* 2007 Sep; 74:495-499.
- Chapman R, Zideman D. Changes to the European Resuscitation Council guidelines for adult resuscitation Continuing Education in Anaesthesia, Critical Care & Pain | Volume 7 Number 6 2007; 187-190. doi:10.1093/bjaceaccp/mkm040
- Young S, Hutchinson A, Nguyen VT, Le TH, Nguyen DV, Vo TK. Teaching paediatric resuscitation skills in a developing country: Introduction of the Advanced paediatric lifesupport courses into Vietnam. *Emerg Med Australas* 2008; 20: 271-275.
- Jewkes F, Phillips B. Resuscitation training of paediatricians. *Arch Dis Child* 2003; 88: 118-121.