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Knowledge and Attitudes towards Basic Cardiopulmonary Resuscitation (CPR) among Community Nurses in Remo Area of Ogun State, Nigeria.

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KEYWORDS

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ABSTRACT

Background
Cardiac arrest is not often discussed as a public health problem. This study assessed the knowledge and attitudes towards Basic Cardiopulmonary Resuscitation (CPR) among Community Nurses in Remo Area of Ogun State, Nigeria with the purpose of improving emergency care at primary health care delivery system.

Methodology
It was a questionnaire-based cross-sectional study that involved 70 nurses. The study was carried out between January and August, 2010. The nurses were tested on their theoretical knowledge of basic life support with semi-structured practical questions partly from the resuscitation guideline of 2005 generated by International Liaison Committee on Resuscitation and scores were awarded to ten positive responses. Data were reported using SPSS version 15.0. The mean score was compared for age, marital status, those that were taught CPR, had certified CPR training by using Paired Sample T-test and year of experience by using one way ANOVA. P value < 0.05 was taken as significant.

Results
A total of 70 nurses with mean age of 40.2 ± 7.7 years were studied. Majority 58 (82.9%) have heard about CPR mostly at School of Nursing. Only four (5.7%) knew the correct approach to a person with cardiac arrest. Eight (11.4%) had certified CPR training out of which none of those certified had the training within the last two years. Only 13 (18.6%) had correct theoretical knowledge of 2005 guidelines for compression: ventilation ratio. None of the respondents who were unwilling to do mouth-to-mouth rescue breathing knew that compression alone could be life saving for a stranger or relative. There was a better performance in the younger age group $p=0.04$ and those with less than five years of experience $p=0.09$.

Conclusion
Knowledge of basic CPR amongst nurses at primary health care level is generally poor with the young ones having better performance. This suggests the need for regular CPR training and re-training.

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Introduction

Cardiac arrest is the sudden cessation of spontaneous and effective heart function in an individual who was not expected to die at that point in time. It may result from road traffic accident, near drowning, electric shock, drug overdose, poisoning and severe electrolyte imbalance from diarrhea.[1] Out-of hospital cardiac arrest is a leading cause of death in about one in 8000 per annum in the United States of America[2] and about 250,000 deaths each year as reported by Thygerson.[3] Cardiopulmonary arrest is life threatening and is the most urgent of emergencies and consequently, diagnosis must be made without delay. Nurses at Primary Health Care Centres are expected to be conversant with the steps in cardiopulmonary resuscitation as hypoxia should not last more than 3 to 4 minutes before intervention. It was estimated that 92 percent of victims who experienced cardiac arrest died with 21.6% dead before getting to the hospital.[4]

The tolerance of the heart to hypoxia is relatively high, but the brain will show irreversible damage if it persists. Therefore, community health workers must be able to make diagnosis without delay as they are responsible for more than half of out-of-hospital resuscitation attempts.[5]

Broad knowledge of early CPR has a community benefit, as CPR must be applied quickly after a patient's heart has stopped. CPR maintains the blood flow and perfusion to the brain and other vital organs, buying time until professional medical help arrives. Immediate CPR can double the victim's chance of survival from sudden cardiac arrest.[6] There is no doubt of the need for the health workers to have practical knowledge and skill of how to perform Basic Life Support (BLS) at primary health care level.

In 2005, reviewed CPR guidelines were published by the International Resuscitation Council.[7] The primary goal of these changes was to simplify CPR for lay rescuers and health care providers alike. The latest guidelines were published in 2010.

Basic Life Support could also be part of the life saving basic principles in emergency care that even lay persons in the community should know this as they are familiar with Oral Rehydration Therapy (ORT) as the first aid treatment for diarrhoea before secondary care management. Cardiac arrest especially of non-cardiac origin does occur in the community.

Data on the incidence of this is rare in Nigeria and the few that were reported were mostly of cardiac origin.8 Good understanding of BLS by nurses at the grass root level is necessary before they can save lives and also impart the knowledge on members of the community.

Few surveys are available about the subject in this study area but none among the community nurses. The aim of the study is to assess the knowledge and attitude towards basic CPR among community nurses at primary health care level. The study also attempts to assess the effect of age, marital status, training and year of experience of nurses on the theoretical knowledge of basic CPR.

Methodology

This was a descriptive cross sectional study using cluster sampling technique that quantitatively assessed the knowledge and attitude towards basic CPR among Local Government Nurses in Remo Area of Ogun State. Ogun state was divided into four clusters based on zones namely Remo, Ijebu, Egba and Yewa / Awori. Only Remo was selected by random sampling.

All the nursing staff at the primary health centres of three Local Governments of Remo area were the target population. Letters of introduction were written by the Co-ordinator, Master in Public

Health (MPH) programme, Olabisi Onabanjo University to the chairmen of these local governments. The study was a dissertation for the award of MPH. The instrument used was a semi-structured questionnaire.

It was adapted partly from the American Health Association (AHA) and European Resuscitation Council of 2005 guidelines on CPR. The questionnaire contained 24 items which covered socio-demographic data, experience, knowledge, attitude of respondents and 2005 guidelines about CPR. Ten practical questions of those items were used with each carrying a mark totaling 10. A minimum of 7 marks defined good knowledge.

The questionnaires were given to all heads of units to be distributed, filled at various meetings and returned immediately through these heads to the health educator from where the questionnaires were centrally collected. The data were coded and entered into a computer data base using SPSS (Statistical Package for Social Scientists) 15.0 software.

Percentages or means and standard deviations were computed for variable of respondents. The data analysis focused on the univariate frequency table and bivariate cross tabulations that identify important relationships between two variables.

The relationships between the mean scores of positive responses and age, marital status, CPR taught, certified CPR training were determined by using Paired Sample T-test and years of experience by using one way ANOVA . P value < 0.05 was taken as statistically significant.

Results

The mean age of respondents was 40.2±7.7 with male:female ratio of 1:16. Fifty-one (62.8%) respondents were taught CPR, 13 (28.7%) were never taught and 6 (8.5%) did not respond to the question. CPR was last taught in more than half 40 (57.1%) at School of Nursing, 3 (4.3%) at place of work, 8 (11.4%) at seminal/workshop and were CPR certified. Of those that were taught, only 2 (3.1%) had it within the last two years and all those that were CPR certified had it more than 2 years ago.

Table 1 shows that a very few, 4 (5.7%) respondents

Table I: Breakdown of positive responses from nurses to questions related to CPR showing frequencies and percentages

	n= (%)
Heard about CPR	58(82.9)
Correct approach to a person with cardiac arrest	4(5.7)
Had certified CPR training	8(11.4)
Correct interpretation of CPR order	47(67.1)
Had witnessed CPR being done for a person in the past	20(28.6)
Had participated in CPR for at least a person in the past	22(31.4)
Knew 2005 guidelines for compression/ventilation ratio of 30:2	13(18.6)
Willingness to perform mouth to mouth rescue breating on a relative	57(81.4)
Willingness to perform mouth to mouth rescue breathing on a stranger	34(48.6)
Knew what to do to help the person if unwilling to do mouth to mouth rescue breathing	0(0.0)

Table II: Relationship between mean scores of positive responses and age, marital status, certified CPR training and years of experience

Respondent's characteristics	Mean score	p value
Age		
Less than 40 years	6.0 ± 1.73	0.04
40 years and above	4.8 ± 2.18	
Marital status		
Single	6.3 ± 1.67	0.22
Married	5.0 ± 2.10	
CPR learning		
CPR taught	5.1 ± 1.71	0.43
CPR not taught	3.7 ± 1.85	
CPR certified training		
Yes	6.3 ± 2.25	0.42
No	5.3 ± 1.96	
Years of experience		
<5 years	5.9 ± 2.05	0.09
6-10 years	5.3 ± 1.04	
11-20 years	5.6 ± 1.92	
>20 years	4.7 ± 2.17	

Table III: Correlation between respondents' positive response and age, marital status, CPR knowledge and years of experience

Positive response on CPR	**Age(years) N =70**			**Marital status N = 70**			**CPR knowledge N= 70**			**Experience(years) N= 70**		
	<40	>40	P value	Single	Married	P value	CPR taught	CPR not taught	P value	<5	>5	P Value
Heard about CPR	29	29	0.23	13	45	0.50	52	6	0.00†	18	40	0.48
New CPR order	28	28	0.40	13	34	0.51	47	9	0.00†	17	39	0.21
Had witnessed CPR	22	20	0.35	8	34	0.57	40	2	0.00†	16	39	0.03†
Had participated in CPR	9	11	0.17	4	16	0.36	20	0	0.00†	7	13	0.27
Knew AHA 2005 guidelines	11	6	0.77	6	11	0.25	17	0	0.00†	7	10	0.33
Will give mouth to mouth respiration to relation	27	30	0.28	13	44	0.73	48	7	0.00†	18	39	0.35
Will give mouth to mouth respiration to stranger	16	18	0.31	7	27	0.16	30	4	0.00†	8	26	0.56

†Correlation is statistically significant N represents number of respondents

knew what to do for a person with cardiac arrest, few 13 (18.6%) knew the correct compression: ventilation ratio of 30:2 and less than one-third had participated in CPR for at least a person in the past.

Also, none (0%) of the respondents knew what to do if they were unable to do mouth to mouth breathing for either family member or stranger who needed CPR. The knowledge scoring was initiated from the sum of ten positive responses in table I.

The scores obtainable ranged from 2 to 8 with mean of 5.34±2.06. Only 16 (22.9%) scored 7 and above while 54 (77.1%) that scored below the cut-off point which was statistically significant (p=0.000). The proportion of those that had better knowledge and practice of basic CPR was more generally in the younger ones (less than 40 years of age) $p < 0.05$ and in the respondents of 0-5 years of experience than those of greater than 6 years of experience (Table II).

Also, the numbers of respondents with positive responses were more than those that were taught CPR compared to those that were not taught. The difference was statistically significant (Table III). Majority 67 (98.5%) of the respondents were willing to know more about CPR if given the opportunity.

Discussion

Cardiac arrest may occur in the community and deaths have also been reported.[9, 10] It is amazing that there was inadequate knowledge of basic cardiopulmonary resuscitation among local government nurses in the community studied. The lack of knowledge and inability to cope with these emergencies can lead to loss of lives.

The findings of this study agree with previous studies of Crouch et al,[11] Nagashima et al.,[12] Osinaike et al.,[13] and Kavari et al[14] in which knowledge of CPR was poor among health professionals. Out of 70 health workers that participated in this study, 82.9% had information about CPR which was higher than 70% in Kavari and Chohedri study.[14] Although this figure is good, but majority (68.6%) had neither observed nor experienced the act of CPR in their practices which was lower when compared to 92% in the Kavari study.[14]

Basic life support (BLS) involves a number of life saving procedures targeted on the “ABC” of pre hospital emergency care with A, B an C meaning Airway, Breathing and Circulation respectively. A new development: "CAB" in that order is the latest recommendation in the highlights of the 2010 AHA guidelines.[15] It was revealed in the old sequence that chest compressions which are easier to perform are often delayed while the rescuer opens the airway. In this study which was conducted before the 2010 guidelines, less than one-halve 97 (36.3%) of the respondents knew the correct order of ABC of resuscitation. Specific aspects of knowledge relating to basic CPR was poor which was not different from Larsen et al study.[16] Although there were no records of people dying from cardiac arrest in this community, training of nurses in this important topic could have direct impart on patient's safety. In a Saudi Arabian study,[17] 36.9% of participants versus 43.1% in this study attended CPR training of which 54.2% attended within the last year contrast to 0% as reported in this survey. Sotumbi[18] in her own opinion saw the need to put in place structured clinical guidelines for practice and training at the national level. All nursing professionals must be well trained to manage cardiac arrest when it occurs in the community.

The old recommendation of 15:2 in adult CPR produces many interruptions of chest

compressions while the two ventilations are given.[19] This leads to marked reduction in blood flow and blood pressure. The BLS guidelines of year 2005 have been made to reflect the greater importance placed on chest compressions[7]. These include that a diagnosis of cardiac arrest could be made if a victim is unresponsive and not breathing normally; a ratio of compressions to ventilations of 30:2 for all adult victims of sudden cardiac arrest and the initial 2 rescue breaths could be omitted in an adult while 30 compressions are given immediately after cardiac arrest is established.

Few (18.6%) respondents in this study knew the 2005 guidelines of 30:2 for chest compressions/ventilation in Adult BLS. In fact, only 5.7% knew the correct approach to a person with cardiac arrest meaning that majority had both poor theoretical and practical knowledge of CPR.

Ogunlesi et al in their study also showed that the knowledge of respondents about appropriate actions to be taken during resuscitation was poor.[20]

Any victim who is not breathing after the airway has been secured requires artificial breathing and this can be achieved by mouth-to-mouth with the victim lying supine. In this study, proportion of the respondents (81.8%) were more likely to perform mouth-to-mouth ventilation for a family member compared with a stranger (48.6%) and the difference is statistically significant (p=0.00) which is similar to Caves and Irwin study.[21] None of those who were unwilling to do mouth to mouth know that compression of chest alone as stipulated in 2005 guidelines is life saving pending the arrival of experts.

Most of the nurses had received education and training in CPR as students as reported by Nagashima et al.[12] Similar education was given to medical students at the end of their undergraduate anaesthesia posting as reported by Caves and Irwin.[21] Although, above average (57%) of our respondents were taught at school and 11.4% had certified CPR training, their performance was not statistically significant when compared to those who were never taught. This is because they would have forgotten most of the things taught at school with reduced exposure as years at work advanced. This suggests the need for frequent reinforcement with updates and training on CPR.

The desire of a high majority (98.5%) to know more about CPR which was higher than in two previous studies 80% (Nagashima)[12] and 73% (Larsen)[16] respectively is an evidence based justification to re-introduce regular CPR training for these community nurses to form part of continued medical education before yearly renewal of their professional certificate. Practical demonstrations of CPR with the use of manikins and on the spot assessment of respondents were not done in this study due to limited resources. Further studies in this direction are suggested.

Conclusion

This study showed a poor knowledge as most of the respondents did not know much about CPR and those that were either taught or CPR certified did not update their knowledge on current guidelines and regular training as at the time of the study. This implies that cardiac arrest victims would be at risk in their hands. However, there was a better performance among the younger ones. The research has provided an insight into an important but often neglected aspect of emergency medical care in public health.

Recommendation

Now that cardiac arrest is becoming a public health issue in our environment, community nurses and other health workers who are usually involved in public enlightment programme should have regular

certified training and re-training in basic CPR at least every two years. This would definitely improve their much needed knowledge, attitudes and skills in managing life threatening conditions before handing over to the medical experts.

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