ORIGINAL ARTICLE

A Survey on The Knowledge, Attitude and Confidence Level of Adult Cardiopulmonary Resuscitation Among Junior Doctors in Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan, Malaysia

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SUMMARY

Junior doctors are often the "first line" doctors called to attend to patients in cardiac arrest. We performed an anonymous questionnaire study from October 2008 to December 2008 to assess the knowledge, attitude and skill of cardiopulmonary resuscitation among junior doctors in Hospital Universiti Sains Malaysia and Hospital Raja Perempuan Zainab II. Out of the 100 questionnaire forms sent out, 70 were returned completed. The majority (85.8%) stated that they were not confident of managing a resuscitation case. There was a statistically significant ($p<0.001$) association between duration of clinical practice and confidence level. Up to 77.1% said that BLS should be re-certified every two years.

KEY WORDS:
Cardiopulmonary resuscitation, Education, Training, Malaysia

INTRODUCTION

Cardiopulmonary resuscitation (CPR) training and knowledge among junior doctors is a topic of vital importance as the junior doctor is often the first person to attend to patients in emergency situations[1]. In Malaysia, it is stipulated that fresh medical graduates shall undergo a period of supervised training in six major postings, including the accident and emergency medicine posting[2]. This means that resuscitation knowledge among junior doctors is expected to be good and updated. Unfortunately, knowledge per se is not enough, as healthcare professionals need to have hands-on practice regularly in order to retain the skills[3-5]. Furthermore, it has been found that skill retention deteriorates as early as five months after CPR training[6]. This study was aimed at finding out the CPR knowledge, attitude and confidence level among junior doctors in Hospital Universiti Sains Malaysia (HUSM) and Hospital Raja Perempuan Zainab II (HRPZ II), Kota Bharu, Kelantan.

MATERIALS AND METHODS

This anonymous questionnaire study was carried out in HUSM and HRPZ II from October 2008 to December 2008. With help from ward sisters and research assistants, the questionnaire forms were handed to one hundred junior doctors in these two centres.

The questionnaire consisted of four parts:

1. Background, demographics and previous training in basic and advanced cardiac life support
2. Knowledge level: This part of the questionnaire was to test the participants' knowledge of cardiac life support based on the American Heart Association Guidelines for CPR and Emergency Cardiovascular Care 2005[7].
3. Attitude: This was to test the attitude of the participants towards resuscitation training
4. Confidence level: This final part of the questionnaire was to assess the participants' confidence level towards resuscitation.

The participants completed the questionnaire unmonitored. Completed questionnaire forms were returned to the ward sisters or research assistants.

In this study, we define a "junior doctor" as a qualified medical practitioner, recognized by the Malaysian Medical Council, and who has a working experience of three years or less, inclusive of the period of housemanship training.

Analysis between categorical variables was done using the Chi-square test. All statistical analysis was computed using Statistical Package for the Social Sciences (SPSS®) version 12.0.1. This study was approved by our institutional ethical review board and the Malaysian National Medical Research Registry.

RESULTS

The response rate was 70%, with 28 (40%) male participants and 42 (60%) female participants. Out of the total number of participants, 48 (68.6%) had working experience of less than one year and 22 (31.4%) had working experience of more than one year. Fifty-four participants (77.1%) graduated from a local university, and 16 (22.9%) graduated from foreign universities. The mean age was 26.3 years (range from 24 to 31 years old).

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Table I: Questions Asked To Assess Knowledge on CPR

No	Question (For each of the question below, the participants answer either 'T= True' or 'F = False')	Percentage of participants who gave the correct answer (n = 70)
1	According to Basic Life Support Guidelines 2005, the compression : ventilation ratio in two rescuers CPR is 30 : 2 (Correct answer: True)	51 (72.90%)
2	Rescue breathing for an adult victim should be delivered at a rate of 10 – 12 breaths per min (Correct answer: True)	36 (51.40%)
3	Defibrillation is indicated for documented Ventricular Fibrillation and Pulseless Ventricular Tachycardia (Correct answer: True)	60 (85.70%)
4	Adrenaline is indicated for treatment in cardiac arrest (Correct answer: True)	55 (78.60%)
5	Defibrillation is recommended for asystole patient (Correct answer: False)	53 (75.70%)
6	It is recommended that all procedures (for example, insertion of an advanced airway, administration of medications, etc) should be performed with minimal interruptions to chest compressions (Correct answer: True)	55 (78.60%)
7	The recommended rate of effective chest compression is 100 compressions per min (Correct answer: True)	39 (55.70%)
8	Single shock, rather than three stacked shocks, is indicated for initial defibrillation (Correct answer: True)	41 (58.60%)
9	Five cycles of continuous CPR is indicated before cardiac rhythm re-assessment (Correct answer: True)	55 (78.60%)
10	Pulse check is not recommended immediately after shock delivery (Correct answer: True)	29 (41.40%)

Table II: Questions Asked To Assess Participants' Attitudes towards Resuscitation

No	Question (For each of the question below, the participants answer either 'Agree' or 'Disagree')	Percentage of participants who answered 'Agree' (n = 70)
1	I feel that my internship training is adequate to equip me to handle resuscitation confidently	20 (28.60%)
2	All junior doctors must have Basic Life Support Certificate (BLS) before practice	69 (98.60%)
3	All junior doctors should have Advanced Cardiac Life Support (ACLS) course training before practice	66 (94.30%)
4	The BLS course should be re-certified every two years	54 (77.10%)
5	BLS course should be taught during undergraduate years	69 (98.60%)
6	Resuscitation should be initiated by a senior Medical Officer	33 (47.10%)
7	In my opinion, in many resuscitation cases, the junior doctors just follow the orders from the senior doctor/team leader without actually understand the principles behind the interventions	25 (35.70%)

Table III: Questions asked to assess participants' confidence level in carrying out various resuscitation procedures

No	"I am confident to be/to perform ....." (For each of the scenario below, the participants answer either 'Confident' or 'Not Confident)	Percentage of participants who answered "Confident"
1	A team leader	10 (14.30%)
2	Endotracheal intubation	24 (34.30%)
3	Performing chest compression	40 (57.10%)
4	Defibrillation	15 (21.40%)
5	Insertion of central venous line during resuscitation	18 (25.70%)

Table IV: Association between Selected Subject Variables and Confidence Level In Managing Resuscitation

Variables	Not Confident n (%)	Confident n (%)	p value
Place of Graduation			
Local	45 (83.3%)	9 (16.7%)	0.44
Overseas	15 (93.8%)	1 (6.2%)	
BLS certification			
Yes	41 (83.3%)	8 (16.7%)	0.48
No	20 (90.9%)	2 (9.1%)	
ACLS certification			
Yes	5 (62.5%)	3 (37.5%)	0.08

When asked "How many cardiac arrest cases have you attended throughout your working period?", 35 (50%) said they had attended more than 5 cases, 23 (32.9%) had attended fewer than 5 cases and 12 (17.1%) admitted that they had never attended any cardiac arrest before. Only 10 respondents (14.3%) said that they were confident of managing a resuscitation case.

The majority of the participants (48, 68.8%) had undergone Basic Life Support training, but only eight or 11.4% had been trained in Advanced Cardiac Life Support (ACLS). As many as 42 (60%) of the participants admitted that they had never handled a defibrillator before.

The list of questions we asked the participants in order to assess their knowledge of CPR as well as the results obtained is provided in Table I. Assessment of the participants' attitudes and confidence level are shown in Table II and Table III respectively. Analysis of the association between the various subject variables and the level of confidence showed that only duration of practice significantly influenced their level of confidence (Table IV).

Univariate analysis using Chi-square test shows that there is no statistical association between the percentage of participants who answered Question 6 correctly and those that answered Question 10 correctly ($p = 0.190$).

DISCUSSION

In terms of knowledge assessment, it was found that questions that address the fundamental facts of BLS (e.g. Questions 1, 3 and 5) were answered correctly by more than 70% of the participants. Although this does not necessarily mean that the participants had good theoretical knowledge, it does imply that the participants were up to date with their BLS knowledge. This is further supported by the fact that 68.8% of our participants had undergone BLS.

It is also interesting to find that although 78.8% answered correctly that all procedures should be performed with minimal interruption to chest compression (Question 6), only 41.4% answered correctly that pulse check is not recommended immediately after shock delivery (Question 10). This is further supported by the fact that, using Chi-square test, no significant association was found between the percentages of participants who answered Question 6 correctly versus those who answered Question 10 correctly.

In a way, Question 10 is a sequel to Question 6. Participants who understood that there should be minimal interruption to chest compression should know that pulse check is an interruption to the continuation of CPR. Pulse check should only be repeated after completion of five cycles or 2 minutes of CPR. This is clearly elucidated in the resuscitation guidelines[7]. Coupled with the finding that more than 70% had answered correctly questions pertaining to the fundamental facts of BLS, this may imply that our junior doctors may have dutifully memorised the facts and figures essential in BLS without really understanding the rationale behind them. This, indeed, is a concern for us as BLS and ACLS trainers.

The majority of our junior doctors (85.8%) were not confident in the practice of resuscitation. We found that only in the aspect of performing chest compression did more than half (57.1%) of the participants express confidence. The aspect where the least number of participants expressed confidence was becoming a team leader during resuscitation. Only ten (14.3%) participants said that they are confident of becoming the team leader.

As mentioned, this study also showed that the duration of practice significantly increases the level of confidence of our junior doctors in performing resuscitation. This suggests that the decision to extend the duration of compulsory housemanship training in Malaysia from one year to two years was a wise one. Furthermore, it also points to the fact that a more experienced or senior doctor should lead the resuscitation process rather than leaving the crucial clinical task to the junior ones.

In our study, we found that up to 60% of the participants said that they have never handled a defibrillator before. Yet, defibrillation is an integral and crucial part of resuscitation that significantly improves the chance of survival of a cardiac arrest victim[7]. Therefore, we suggest that the actual handling of a defibrillation should be made compulsory in every medical school. Every medical student should have actually performed a defibrillation on a manikin as part of a resuscitation moulage. Medical students should also be taught to identify which cardiac arrest rhythms require defibrillation, and which do not.

Almost all of the participants said that junior doctors should have BLS and ACLS certification before practicing. In fact, 77.1% said that BLS should be re-certified every two years. This points to the fact that the participants recognised the importance of being able to perform CPR well in their daily work. Perhaps BLS and ACLS should be incorporated as part of the compulsory core curriculum of every medical school in Malaysia. Indeed, it has been shown that formalised teaching of such procedural skills in the early stages of a medical degree programme can have long-term effectiveness in honing skill competencies as well as increasing the confidence of the students to apply these skills in their working environment[8]. Furthermore, it has been shown that the self-reported confidence level deteriorates after more than two years from the last CPR training[9]. Thus, there is an even greater need to conduct such courses regularly.

There are several limitations in this study. First, the sample size of the study was small and was sourced from only two hospitals within the same state in Malaysia. Hence, the results may not be applicable to other Malaysian states. Secondly, we did not test the practical skills of the participants. Only theoretical questions were asked. Consequently, those who said that they were confident may not be competent. Thirdly, because of the inherent nature of questionnaire surveys where participants are allowed to answer the questions unmonitored, it cannot be ascertained that the participants did not copy the answers from their colleagues or got the answers from textbooks. Thus, the answers provided by the participants may not truly reflect the responses from the participants themselves. Despite the limitations, we believe

this study paints a picture of the state of resuscitation training for junior doctors in Malaysia.

CONCLUSION

In conclusion, this study showed that our junior doctors lack the much needed confidence when it comes to an actual resuscitation case. It is important to address this issue as junior doctors are often the "first line" doctors called to manage ward emergencies before the arrival of more senior doctors.

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