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Assessment of Knowledge andSkills of CPRamong Internsof two Medical Colleges in North-East India

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Abstract:
Introduction*: Cardiopulmonary Resuscitation (CPR) is an important life-saving first aid skill, practiced throughout the world.Over time, resuscitation skills have evolved into a proper protocol, which involves CPR commonly known as BLS. Invented in 1960, CPR is a simple but effective procedure that allows almost anyone to sustain life in the early critical minutes after cardiac and respiratory arrest. BLS includes both prompt recognition and immediate support of ventilation and circulation in case of respiratory or cardiac arrest..CPR provided immediately after sudden cardiac arrest can effectively increase the victim's chances of survival.So, keeping this in mind, the study was undertaken to determine the knowledge and skills about cardiopulmonary resuscitation among interns.*
Methods: *A cross sectional study was conducted at RIMS and JNIMS, Imphalbetween 19th Jul-10th Aug 2015. Eighty interns posted at the Community Medicine Department were included in the study. A self-administered questionnaire and assessment of skills were used for data collection. Data were analyzed using descriptive statistics such as frequencies and percentages. Chi-square test was used for analysis. P value of < 0.05 was considered as statistically significant.*
Results: *More than half of them knew when to start CPR but didn't know when to put a victim in a recovery position or how to open the airway. Nearly three fourth of them didn't know when they were suppose tostop CPR. Majority of them didn't know the correct site for chest compression. Very few of them checked for response and breathing and most of the participants had incorrect positioning while performing it. None of the participants knew how to give rescue breaths*
Conclusions: *Most of the interns were found to have inadequate knowledge and skills regarding CPR . Training programmes will be needed to maximize knowledge/skills so as to save more lives with this valuable maneuver.*
Keywords: *CPR, knowledge, Interns*

I. Introduction

Cardiopulmonary arrest is a major public health problem[1] and many patients sustained cardiac arrest in two years.[2] Approximately 4280 out of every one lakh people die every year from SCA in India alone.[3] Cardiopulmonary arrest is one of the most common unfortunate incidents that may occur in and out of the health facilities.[4,5]Cardiopulmonary resuscitation (CPR) is a lifesaving technique[6] and consists of chest compression and rescue breathing.[7] The quality of cardiopulmonary resuscitation depends on the sufficiency of the knowledge of health professionals and facilities.[8,9] Increasing survival of patients from cardiopulmonary arrest requires improvement in resuscitation education.[10,11] It is not surprising to note that even junior doctors at certain hospitals cannot perform the first aid skills satisfactorily.[12]BLS requires nothing as far as resources are concerned and its importance is undeniable. Knowledge of BLS and practice of the simple CPR techniques and maneuvers ensures the survival of the patient long enough till experienced medical help arrives and in most cases is itself sufficient for survival. Proper practice of the techniques enables a person to effectively resuscitate a victim. Ideally, everyone should know BLS and CPR but its awareness to medical graduates is invaluable. Newly qualified doctors are expected to take part in resuscitation from their first day.

Most of the SCD events occurs out-of-hospital before any contact with health professionals. It‟s estimated that more than 70% of ventricular fibrillation victims die before reaching the hospital.[13]Less than 1% of the general population can perform it effectively. It has estimated that if15-20% could perform BLS, out of hospital mortality could be significantly reduced.[14]The ideal situation would be to train the whole population, but it is impossible in a resources limited country like India. So, it limits trainings to be targeted to certain groups e.g. medical and police personnels etc. A study conducted in India showed that the knowledge of nursing students and interns about basic life support (BLS) was very poor.[15] Studies on BLS have been rarely conducted

among interns in this part of the country. So, keeping this in mind, this cross sectional study was carried out to assess the knowledge about CPR among interns in two colleges of Manipur.

II. Materials And Methods

A cross sectional study was carried out from 19th July to 10th August 2015 among interns of RIMS and JNIMS, Manipur. There were 111 and 98 interns in RIMS and JNIMS respectively at the time of study period. All the interns of the respective colleges who were doing internship in the department of Community Medicine during this period and who were willing to participate were taken eligible for the study. Those who were on leave were excluded.

The study intended to cover all the interns doing internship during the study period.A self-administered questionnaire containing socio-demographic and knowledge regarding CPR was used. A checklist was also used to assess the skills of CPR and was done through observation and video recording . All the participants were requested to come to Community Medicine Department, RIMS for data collection. After taking a verbal consent, they were asked to fill up the questionnaire in 15 minutes under observation. Assessment of skills on CPR were done individually for each participant using a mannequin. Two investigators (BA and AS) were involved in doing this, one for observing them while doing it and the other for recording the act. If any disagreement arises between the two, opinion of the third investigator (AC) was taken to come to a consensus. Data collected were checked for completeness and consistency and were analysed using IBM SPSS 21 for Windows. Descriptive statistics like frequency and percentage were used for analysis. Chi-square tests were used to see the association between the variables (knowledge on CPR with gender) and p- value of < 0.05 was considered as statistically significant. Approval was obtained from the Institutional Ethics Committee RIMS. Written permission from all the participating college authorities and verbal consent from all the participants were obtained. Confidentiality was maintained as identifiers like names were masked and access to data were restricted only to the investigators.

III. Results

A total of 80 participants took part in this study.59 from RIMS and the remaining from JNIMS. More than half (55%) of them were females. Less than half on an average knew about BLS, AED and EMS (65%, 12.5% and 25% respectively, Fig.1).

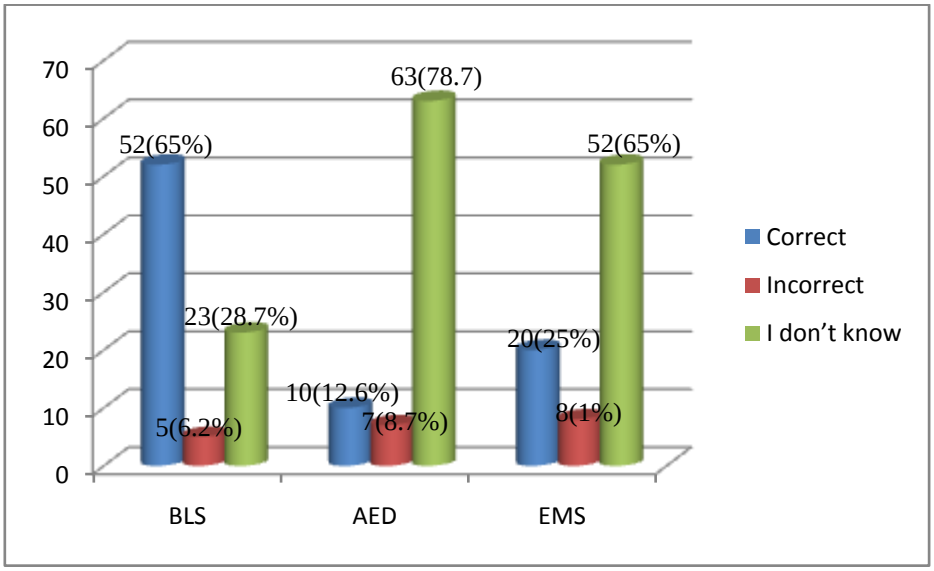

Fig 1: Response to full forms of BLS, AED and EMS (N=80)

Six out of ten knew when to start CPR but only few knew when to put a victim in a recovery position(11.2%) or how to open the airway (17.5%). Around thirty percent of them didn't know when to keep the victim in recovery position and nearly three fourth of them didn't know of the conditions when they were suppose to stop CPR(Table 1).

Table 1: Distribution of participants regarding knowledge on CPR. (N=80)

Knowledge				
Characteristics		Correct N(%)	Incorrect N(%)	Don't Know N(%)
Sequence Of Cpr		23(28.7)	41(51.3)	16(20)
Steps In Opening Airway		14(17.5)	47(58.7)	19(23.7)
When To Start Cpr		48(60)	25(31.2)	7(8.8)
When To Keep Victim In Recovery Position		9(11.2)	26(32.5)	45(32.5)
Site For Chest Compression	Adults	34(42.5)	35(43.7)	11(13.8)
	Infants	23(28.7)	31(38.8)	26(32.5)
Depth Of Chest Compression	Adults	15(18.7)	29(36.3)	36(45)
	Children	7(8.8)	25(31.2)	48(60)
	Infants	11(13.7)	22(27.5)	47(58.8)
Rate Of Chest Compression	Adults	28(35)	34(42.5)	18(22.5)
	Children	8(10)	41(51.2)	31(38.8)
Rescue Breaths	Adults	7(8.8)	34(42.5)	39(48.7)
	Children	2(2.5)	36(45	42(52.5)
% Of Oxygen In Rescue Breaths/Exhaled Air		9(11.3)	33(41.3)	38(47.5)
When To Stop Performing Cpr		11(13.8)	53(66.3)	16(20)

Very few of them checked for response (3.8%) and breathing (8.8%) and most of the participants had incorrect position while performing CPR. Almost all of the participants who performed rescue breaths, gave it wrongly or was left undone (Table 2).

Table 2: Distribution of participants on skills of CPR. (N=80)

Critical Performance Criteria (Skills)				
Criteria		Correct N(%)	Incorrect N(%)	Not Done N(%)
Check For Response(N=21)		3(3.8)	18(22.4)	59(73.8)
Check For Breathing(N=25)		7(8.8)	18(22.4)	55(68.8)
Steps Of Cpr				
Position	Rescuer	27(33.8)	53(66.3)	-
	Knee	27(33.8)	53(66.3)	-
	Hip	21(26.3)	59(73.8)	-
	Elbow	12(15)	68(85)	-
	Movement	8(10)	72(90)	-
Chest Compression	Site	45(56.3)	35(43.8)	-
	Hand Position	12(15)	68(85)	-
	Rate	5(6.3)	75(93.8)	-
	Depth	8(10)	72(90)	-
Rescue Breaths				
Position(N=53)	Rescuer	14(17.5)	66(82.5)	-
	Victim	7(8.8)	44(55)	29(36.3)
Nose Pinched(N=17)		9(11.3)	8(10)	63(78.8)
Mouth Well Covered(N=35)		1(1.3)	34(42.5)	45(56.3)
Chest Raising(N=35)		1(1.3)	34(42.5)	45(56.3)

As compared to males, females had more knowledge on steps of opening the airway and was found to be statistically significant (*P*=0.03, Table 3).

Table 3: Association between knowledge and gender.(N=80)

Questions		Characteristics	Responses, n(%) Correct	incorrect	Don't know	P value
Sequence of performing CPR		Male	7(19.4)	20(55.6)	9(25)	0.22
		Female	16(36.4)	21(47.7)	7(15.9)	
Steps of opening airway		Male	2(5.6)	24(66.7)	10(27.8)	*0.03*
		Female	12(27.3)	23(52.3)	9(20.5)	
Site of chest compression	Adult	Male	18(50)	13(36.1)	5(13.9)	0.41
		Female	16(36.4)	22(50)	6(13.6)	
	Infant	Male	14(38.9)	12(33.3)	10(27.8)	0.19
		Female	9(20.5)	19(43.2)	16(36.4)	
Depth of compression	Adult	Male	8(22.2)	12(33.3)	16(44.4)	0.74
		Female	7(15.9)	17(38.6)	20(45.5)	
	Infant	Male	2(5.6)	13(36.1)	21(58.3)	0.08
		Female	9(20.5)	9(20.5)	26(59.1)	
Rate of chest compression		Male	13(36.1)	17(47.2)	6(16.7)	0.51
		Female	15(34.1)	17(38.6)	12(27.3)	
When to stop CPR		Male	6(16.7)	24(66.7)	6(16.7)	0.68
		Female	5(11.4)	29(65.9)	10(22.7)	
SKILLS						
Rescuer position		Male	12(33.3)	24(66.7)		0.94
		Female	15(34.1)	29(65.9)		
Knee position		Male	10(27.8)	26(72.2)		0.31
		Female	17(38.6)	27(61.4)		
Hip position		Male	10(27.8)	26(72.2)		0.77
		Female	11(25)	33(75)		
Elbow position		Male	5(13.9)	31(86.1)		0.80
		Female	7(15.9)	37(84.1)		
Site of compression		Male	21(58.3)	15(41.7)		0.73
		Female	24(54.5)	20(45.5)		
Hand position		Male	6(16.7)	30(83.3)		0.71
		Female	6(13.6)	38(86.4)		

IV. Discussion

This study showed that a small percentage of interns knew how to carry out CPR.The level of knowledge about CPR was below fifty percent on an average among them. It also identified the key areas in which first aid knowledge was lacking. It seems that without a formal CPR training, interns may not acquire the confidence to correctly perform the procedure.

Our study showed that less than half of the participants had heard about BLS/AED/EMS (Fig.1). Several other studies[15,16,17,18] have shown similar findings like this regarding inadequate knowledge of CPR. Similar findings were observed in another study conducted by Kumar H et al[19] among under graduate medical students in coastal South India in 377 students where majority (84.6%) had heard of BLS/CPR. In another study by Zaheer H et al[20] conducted at Jinnah Medical and Dental College., 57.3% had no knowledge, among those 34% had heard BLS from somewhere, 22.9% had some knowledge out of which 50% had heard about it. There is thus a need for formal first aid training to be introduced in the medical curriculum..

Less than fifty percent of participants had any knowledge on performing CPR (sequence/steps/when to start CPR) as shown in table 1. This observation is mirrored in another study[19] done among medical students where only 30.6% of the participants could give the correct order of performing CPR. This means that, not only is first aid training required in our college, moreover, it has to be reinforced periodically with refresher training workshops in first aid

Skills regarding CPR was observed to be less than fifty percent on an average (table 2). Another study[20] done among medical students in 2006 showed similar findings having less number of students having skills for BLS (21%).One explanation could be that without proper knowledge of the subject it is impossible to have skills of the same. And even if its there, it can deteriorate and lose confidence over a period of time. This is possible only if the training is introduced at the beginning of the curriculum and to have repeated training over time.

There was no difference between males and females regarding knowledge on CPR (table 3). Similar findings were seen in a study conducted by Ralapanawa DM et al.[21]Another study done by Ravari H et al[22] among medical interns showed that males were more educated (p=0.041) than females. On the contrary, proper CPR information was higher among females(87%) than males (61%) in a study done among school students in Riyadh by Alanazi et al[23].

The main strength of our study was that questionnaire was answered by the respondents solely under supervision, thus discussion among the students might not occur which show the honesty of the answers.

The only limitation faced was that we adopted convenience method of sampling. Moreover, as the study was performed in the two medical colleges, the findings in this study cannot be generalized to all colleges in different parts of India.

V. Conclusion

From this study, it can be concluded that lack of awareness regarding BLS among medical students is a serious issue that needs to be addressed promptly.The level of knowledge about first aid was not good among most of the participants. The study also identified key areas in which first aid knowledge was lacking and further identified the need for introducing formal first aid training classes for medical students so that the trained students are competitive enough to provide first aid independently and spontaneously in real life situations. This should be backed up with periodic refresher training as level of knowledge in first aid skills fades with time. So, keeping this in mind, training in advanced life support should become a standardized and mandatory component of all medical school curriculum. Similar studies can be done (i) on a larger scale, ii) More research is warranted in our set up also involving other medical personnel and to determine an appropriate and efficient course design and iii)The findings necessitates the importance of establishing a curriculum for CPR.

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