Is Life Support Competencies an Urgent Issue in Undergraduate Medical Education of Bangladesh?

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Abstract:

Background: Life support skills is the golden key for any emergency situation for survival of patient from endanger situation. Medical students, intern doctors and medical graduates learn from medical teachers and emergency consultants in the emergency care settings. **Objectives-** To identify the current life support competencies among the undergraduate medical students of Bangladesh. **Methods:** This cross-sectional study was conducted from July 2022 to June 2023 to identify the Life Support Competencies that the medical students and interns are acquiring /acquired. A self-administered semi- structured questionnaire was administered to collect data from conveniently selected 300 fifth year medical students and 321 interns, 114 recent graduate and 300 clinical teachers. **Results:** A 6 point semantic differentials scale was used to get the views of the respondents. Study revealed that out of 6- point scales (0-5) the mean of the respondent's views regarding knowledge on management of life support competency were 1.77 to 3.06 but the means of the skilled based competencies were 1.15 to 2.75. The views of the recent graduates were statistically significantly lower on ten issues out of sixteen issues than other respondents groups. **Conclusion:** The medical students and interns are acquiring inadequate life support competencies in their courses. Necessary action to be taken to improve the competencies of medical students and interns on life support emergencies.

Keyword: Life support, Skills on Emergencies, Undergraduate medical education.

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Introduction

Life is very precious for us. The care and treatment which plays a vital role in emergency situation called Emergency Medical Care or Lifesaving care. Any delay may fall the patient life in danger situation.[1]

For self-development and increases confidence level all Medical students should take emergency training on advanced cardiac life support (ACLS), Basic life support (BLS) and advanced trauma life support (ATLS). It is very important now a day. It also improves practical skill on management of various lives threating medical emergencies.[2]

Now a day's healthcare improvement is an urgent issue. In UK for establishing high quality care for all, they found trauma care should be on of the eight priority areas among all health related areas, for this they already started to establish some organization, who are providing and developing trauma care training. They are very concern on undergraduate curriculum to expand number of subjects for approaching trauma patient management.[3]

Primary care plays key role in management of medical emergencies. Because it is the first areas to provide necessary health care service by health care provides. So updated knowledge, hands on training facility, trained staff, necessary medications, equipment are the facility index for management of emergencies. Without these it is very difficult to provide life support of critically injured patient. At emergency lack of practical skill is the most important barriers mentioned by primary care physicians. Being the front line care givers it's the organizational accountability and responsibility to trained their concerned staff who are close to emergences.[4]

It is not only duty for emergency physician to do train in emergency and updated himself but it is also duty for those healthcare workers who are not involved now a days at emergency department.These emergency trained needed for all health professionals for managing emergency patients whenever and wherever needed to give life support and being capable of a skilled team member in critical situation. Emergency department multidisciplinary approach. so team work is essential in between different professions and specialist.[5]

Emergency is time bound situation. To avoid mistake and service delay team cooperation is

the first step to approach on it. So cooperated emergent traumatic patient management, trauma care is important.[6] The aim of the study was to find out stakeholders' views regarding current status of emergency care in undergraduate medical education of Bangladesh.

Methods: This cross- sectional study was conducted for one year from July 2022 to June 2023 after getting approval from government Institutional Review Board (IRB) of Center for Medical Education (CME) of Bangladesh. Data was collected from the respondents conveniently selected eight medical colleges of Bangladesh, out of which four were government and four were non-government; four of the

medical colleges located at Dhaka and four located outside Dhaka. Total sample size was 1040. Three almost similar categories of self-administered semi-structured questionnaires were used to collect data from the respondents: one for 114 clinical teachers, one for 300 recent graduates and another for 300 fifth year students and 321 interns. A 6 point (0-5) semantic differential scale was used to obtain the views of the respondents on different issues of the life support competencies. The competencies of interns and medical students were categories on the mean scores as follows 0= Nil, 1=Very minimum, 2=Minimum, 3=Average, 4=High, 5=Very High. Data were entered, processed and analyzed by using SPSS software program version 25.

Results:

Table 1: Distribution of the respondents by their opinion regarding knowledge on advanced life support emergency that the students and interns were acquiring or already acquired during the studentship and internship to provide initial care to the patients

Health problems	Respondents	Descriptive statistics			Inferential statistics		
		N	Mean	Std. Dev.	Statistic (t)	df	P value
Advanced cardiac life support (ACLS)	Teacher[1]	23	2.61	1.530	2.504[§]	322	0.013
	Student[1]	386	2.14	1.713	2.960[¥]	671.15	0.003
	Interns[1]	275	2.69	1.485	7.285[§]	574	0.000
	Recent graduate[2]	301	1.77	1.541	Control group		
Basic life support (BLS)	Teacher[1]	23	2.70	1.460	2.292[§]	320	0.023
	Student[1]	386	2.22	1.727	2.228[¥]	671.724	0.026
	Interns[1]	275	2.81	1.465	6.948[§]	572	0.000
	Recent graduate[2]	299	1.94	1.522	Control group		
	Teacher[1]	23	2.83	1.642	1.842[§]	323	0.066

Advanced Trauma life support (ATLS)	Student[1]	390	2.71	1.703	4.293¥	650.32	0.000
	Interns[1]	273	3.06	1.333	7.157¥	563.25	0.000
	Recent graduate[2]	302	2.16	1.686		Control group	

1. Clinical teachers, medical students and Interns viewed the competencies the student and interns are acquiring.
2. Recent medical graduates viewed the competencies they have acquired.
§: Regular independent t tests were done to compare means due to presence of insignificant difference between variances.
¥: Robust tests (Welch independent t tests) were done to compare means due to presence of significant difference between variance

From the table 1 it is observed that out of 6-point scale (0 to 5) the mean score of the respondents regarding the Management of life support emergencies were very minimum to average (1.77 to 3.06). Where the mean of the agreement of recent graduates were statistically significantly different (P=0.000 to 0.020) than the views of interns, students and clinical teachers.

Table 2: Distribution of the respondents by their opinion regarding the knowledge of airway management and emergency pharmacology that the students and interns were acquiring or already acquired during the studentship and internship to provide initial care to the patients

Health problems	Respondents	Descriptive statistics			Inferential statistics		
			Mean	Std. Dev.	Statistic (t)	df	P value
Airway Management	Teacher[1]	23	2.91	1.379	1.895§	322	0.059
	Student[1]	389	2.61	1.593	2.747§	688	0.006
	Interns[1]	271	3.01	1.260	6.202¥	563.69	0.000
	Recent graduate[2]	301	2.28	1.558		Control group	
Emergency Local anesthesia for severe pain management	Teacher[1]	23	2.78	1.242	2.132¥	27.662	0.042
	Student[1]	390	2.44	1.629	1.975§	686	0.049
	Interns[1]	273	3.00	1.344	6.566¥	566.85	0.000
	Recent graduate[2]	298	2.20	1.561		Control group	
Emergency pharmacology	Teacher[1]	23	2.87	1.140	2.364¥	29.066	0.025
	Student[1]	388	2.74	1.626	3.793§	686	0.000
	Interns[1]	268	2.81	1.384	4.341¥	565.58	0.000
	Recent graduate[2]	300	2.27	1.597		Control group	

Symbols similar to table 1.

From the table 2 it is observed that out of 6-point scale (0 to 5) the mean score of the respondents regarding the Management of airway and pharmacological emergencies were

minimum to average (2.20-3.01). Where the man of the agreement of recent graduates were statistically significantly different (P=0.000 to 0.049) than the views of interns, students and clinical teachers.

Table 3: Distribution of the respondents by their opinion regarding cardio-pulmonary emergency procedural skills that interns were acquiring / already acquired during the internship to provide initial care to the patients

Health problems	Respondents	Descriptive statistics			Inferential statistics		
		N	Mean	Std. Dev.	Statistic (t)	df	P value
CPR	Teacher[1]	100	2.38	1.293	-0.221[§]	398	0.825
	Interns[1]	265	2.33	1.407	-0.693[§]	563	0.489
	Recent graduate[2]	300	2.42	1.484		Control group	
Endotracheal intubation	Teacher[1]	100	1.44	1.445	-1.677[§]	391	0.094
	Interns[1]	262	2.34	1.520	4.757[§]	553	0.000
	Recent graduate[2]	293	1.73	1.512		Control group	
Tracheostomy	Teacher[1]	102	1.15	1.374	-2.031[¥]	209.296	0.044
	Interns[1]	260	2.20	1.540	5.274[§]	542	0.000
	Recent graduate[2]	284	1.49	1.627		Control group	
Intercostal needle aspiration for (Pneumothorax, tension-pneumothorax)	Teacher[1]	98	2.18	1.409	-.144[¥]	202.305	0.885
	Interns[1]	264	2.57	1.481	2.668[¥]	552.459	0.008
	Recent graduate[2]	292	2.21	1.727		Control group	

Symbols similar to table 1.

From the table 3 it is observed that out of 6-point scale (0 to 5) the mean score of the respondents regarding the competencies of emergency procedure of interns were very minimum to minimum (1.15 to 2.57). Where the mean of the agreement of recent graduates were statistically significantly different (P=0.000 to 0.008) than the views of interns, students and clinical teachers.

Table 4: Distribution of the respondents by their opinion regarding emergency procedural skills that interns were acquiring or already acquired during the internship to provide initial care to the patients

Health problems	Respondents	Descriptive statistics			Inferential statistics		
		N	Mean	Std. Dev.	Statistic (t)	df	P value

Health problems	Respondents	N	Mean	Std. Dev.	Statistic (t)	df	P value
Emergency Drug Administration	Teacher[1]	103	2.87	1.117	0.592[¥]	222.51	0.554
	Interns[1]	265	2.75	1.304	-0.329[§]	557	0.743
	Recent graduate[2]	294	2.79	1.405	Control group		
Emergency Prescription Writing	Teacher[1]	104	2.72	1.354	-1.647[§]	394	0.100
	Interns[1]	264	2.82	1.352	-1.389[§]	554	0.165
	Recent graduate[2]	292	2.99	1.429	Control group		

Symbols similar to table 1.

From the table 4 it is observed that out of 6-point scale (0 to 5) the mean score of the respondents regarding emergency pharmacotherapy of interns were minimum (2.72 to 2.99). Where the mean of the agreement of recent graduates were statistically significantly different (P=0.1) than the views of interns, students and clinical teachers.

Table 5: Distribution of the respondents by their opinion regarding emergency procedural competencies that interns were acquiring / already acquired during the internship to provide initial care to the patients

Health problems	Respondents	Descriptive statistics			Inferential statistics		
		N	Mean	Std. Dev.	Statistic (t)	df	P value
First aid (Splint, Bandage, Surgical Toileting	Teacher[1]	104	3.39	1.325	0.129[§]	396	0.897
	Interns[1]	261	3.09	1.366	-2.457[§]	553	0.014
	Recent graduate[2]	294	3.37	1.371	Control group		
Cardiac monitor handing	Teacher[1]	101	2.46	1.331	-1.019[¥]	210.87	0.309
	Interns[1]	261	2.68	1.492	0.455[¥]	554.369	0.649
	Recent graduate[2]	296	2.62	1.636	Control group		
Oxygen administration	Teacher[1]	103	3.50	1.128	-0.868[¥]	207.79	0.386
	Interns[1]	263	3.12	1.292	-4.448[§]	563	0.000
	Recent graduate[2]	302	3.61	1.341	Control group		
Nebulization	Teacher[1]	102	3.55	1.310	-1.844[§]	399	0.066
	Interns[1]	264	3.11	1.244	-6.751[§]	561	0.000
	Recent graduate[2]	299	3.82	1.246	Control group		

Symbols similar to table 1.

From the table 5 it is observed that out of 6-point scale (0 to 5) the mean score of the respondents regarding the emergency procedural skill were minimum to average (2.46 to 3.82). Where the mean of the agreement of recent graduates were statistically significantly different (P=0.000 to 0.014) than the views of interns, students and clinical teachers.

Discussion:

From the present study of clinical teachers, medical students and interns it was found that the students and interns were acquiring minimum to moderate competencies (mean scores 2.14 to 3.06) during their studentship and internship on management of life support health related emergencies. On the other hand, the recent graduates agreed that they had acquired poor to minimum competencies (mean scores 1.94 to 2.16) on management of the health problems . In a cross sectional study conducted by researcher in Bangladesh on recent medical graduate on selected learning outcomes of MBBS curriculum (use of mouth gag, airway tube, bag-mask ventilation, administration of oxygen) mean score according to opinions of medical teachers, graduate doctors and interns were 2.75(55%), 3.02(60.4%) and 3.06 (61.2%) respectively out of 5-point liker scale.[7] In another study which was conducted in Australia, it was found that mean emergency skills competencies of GPs' on dealing component of emergency cardiac life support of ECG rhythm recognition and diagnosis, external cardiac compression, mouth to mouth resuscitation, bag and musk resuscitation, mouth to mask resuscitation, defibrillation were 3.2(80%), 3.5(87.5%),

3.4(85%), 3.4(85%), 3.4(85%), 2.7(67.5%) respectively out of 4 -point scale.[8]

From the present study of clinical teachers, medical students and interns it was found that the students and interns were acquiring minimum to moderate competencies (mean scores 2.61 to 3.01) during their studentship and internship on management of airway and emergency pharmacological health related emergencies. On the other hand, the recent graduates agreed that they have acquired minimum competencies (mean scores 2.20 to 2.28) on management of the health problems . Based on undergraduate practical skill training at Iraq the respondent of a cross sectional study conducted by researcher opined that half of the practical training were inadequate in several areas.[9] In different study in Australia, it was found that mean emergency skills competencies of GPs' on dealing administering emergency drugs was 3.3 out of 4 -Point scale (82.5%).[8]

From the present study on clinical teachers and interns it was found that the interns were acquiring poor to minimum competencies (mean scores 1.15 to 2.57) during their studentship and internship on emergency procedure related competencies; on the other hand, the recent graduates agreed that they have acquired poor to minimum

competencies (mean scores 1.49 to 2.42) on emergency procedural competencies. A study in Malaysia on intern doctor for their undergraduate clinical skill training found the results on areas of adults resuscitation, intubation was grossly inadequate to poor based on majority of supervisor (72%), Where as 23% of interns really felt that their skill were inadequate to poor on that areas.[10] The mean emergency skills competencies of GPs' on dealing component of emergency cardiac life support of, external cardiac compression, mouth to mouth resuscitation, endotracheal intubation, emergency needle tracheostomy, emergency needle thoracentesis were 3.5(87.5%), 3.4(85%), 2.8(70%), 2.3(57.5%), 2.2(55%) respectively out of 4 -Point scale in another study in Australia.[8]

From the present study of clinical teachers and interns it was found that the interns were acquiring minimum competencies (mean scores 2.72 to 2.87) during their studentship and internship on emergency procedure related competencies. On the other hand, the recent graduates agreed that they have acquired minimum competencies (mean scores 2.79 to 2.99) on emergency procedural competencies. Based on different Study in Australia it was found that when the GPs' dealing with emergency drugs administration their competency scale was 3.3 out of 4-point scale (82.5%)[8],

From the current study of clinical teachers and interns it was found that the interns are acquiring minimum to moderate competencies (mean scores 2.46 to 3.55) during their studentship and internship on emergency procedure related competencies; on the other hand, the recent graduates agreed that they have acquired minimum to moderate competencies (mean scores 2.62 to 3.82) on emergency procedural competencies. A study on fourth – year medical student for visualization of different practical skill like suturing, urinary catheterization researcher found that more than half of those medical students did not actually practiced two times or less and the students also confirmed that they were unable to perform the declared nine practical procedures by Medical School Objective Project (MSOP) of the Association of American Medical Colleges (AAMC) without Assistance.[11]

Conclusion: A doctors' prime duty is to save patients' life. For this it is very urgent to be competent on life support skills. So if we want to walk in the path of the emergency we have to arrange periodic training on life support skill in a integrated way. Through proper supervision and team work we can build a medical society who will be skilled on emergencies.

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