Original Article

Awareness, Attitude, and Knowledge of Basic Life Support among Medical, Dental, and Nursing Faculties and Students in the University Hospital

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ABSTRACT

Objective: To assess the awareness, attitude, and knowledge about basic life support (BLS) among medical, dental, and nursing students and faculties and the proposal of BLS skills in the academic curriculum of undergraduate (UG) course. Recognition, prevention, and effective management of life-threatening emergencies are the responsibility of health-care professionals. These situations can be successfully managed by proper knowledge and training of the BLS skills. These life-saving maneuvers can be given through the structured resuscitation programs, which are lacking in the academic curriculum.

Materials and Methods: A questionnaire study consisting of 20 questions was conducted among 659 participants in the Kalinga Institute of Dental Sciences, Kalinga Institute of Medical Sciences, KIIT University. Medical junior residents, BDS faculties, interns, nursing faculties, and 3rd-year and final-year UG students from both medical and dental colleges were chosen. The statistical analysis was carried out using SPSS software version 20.0 (Armonk, NY:IBM Corp).

Results: After collecting the data, the values were statistically analyzed and tabulated. Statistical analysis was performed using Mann–Whitney U-test. The results with $P < 0.05$ were considered statistically significant. Our participants were aware of BLS, showed positive attitude toward it, whereas the knowledge about BLS was lacking, with the statistically significant P value.

Conclusion: By introducing BLS regularly in the academic curriculum and by routine hands on workshops, all the health-care providers should be well versed with the BLS skills for effectively managing the life-threatening emergencies.

KEYWORDS: *Attitude, awareness, basic life support, knowledge, questionnaire*

INTRODUCTION

Basic life support (BLS) is the medical procedures and skills which are used to save the victim from the life-threatening emergencies until the medical care is provided at the hospital. BLS procedures include cardiopulmonary resuscitation (CPR), bleeding control, artificial ventilation, and basic airway management.[1,2]

The General Medical Council states that preregistration house officers should have training in BLS before they begin their first post and they should receive advanced life support training during the 1st year.[3]

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Life-threatening emergencies can occur anytime, anywhere, and to anyone. They most commonly occur during the dental procedures due to increased level of stress. This ultimately is the dentist's responsibility to effectively manage the emergency situation in the dental office. Legal complications and tragic consequences will result due to lack of training and inability to cope with the emergencies.[4]

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It is important for all medical and paramedical staffs to know about BLS as they encounter life-threatening emergencies in their routine life.[5]

As recommended by the American Heart Association (AHA, 2004), the students and teachers should be given training regarding the BLS.[6]

BLS has been routinely recommended training procedure for all health-care professionals in the US since 1966, and their demand for courses is increasing throughout the world.[7]

However, BLS and resuscitation training is not routinely practiced in developing countries like India, and there is still no standard. Hence, in Indian scenario, doctors working in casualties of private and government hospitals will handle most of the emergencies.[8]

Hence, the present study was conducted with the aim of assessing the awareness, knowledge, and skills involved in BLS/CPR and the prospective of introducing these skills into regular curriculum.

Materials and Methods

The study was conducted at Kalinga Institute of Dental Sciences (KIDS), Kalinga Institute of Medical Sciences (KIMS), KIIT University, Bhubaneswar, Odisha, India. The ethical clearance (KIMS/KIIT/IEC/125/2017) was taken from the Institutional Ethical Committee. Informed consent of those who were willing to participate in the study was taken. The study was conducted from February 4, 2017, to March 4, 2017.

The study was carried out among junior residents (JRs) of KIMS, BDS faculty members of KIDS, undergraduate (UG) students (3rd and 4th year), interns, nursing faculties of both the colleges, who were on duty in different departments, who were present during the study period, and who were willing to participate were included in the study. The purpose of the study was explained to each and every individual. After assessing these criteria, a total number of 659 participants were included in the study.

The questions were incorporated after going through various literature related to that, which consisted of self-prepared 20 basic questions regarding adult BLS, including the experience and attitude of the participants to BLS/CPR, theoretical and practical knowledge of the participant to BLS/CPR, and previous experience and exposure to BLS. The last two questions were about rating the participant themselves on BLS knowledge (poor, below average, average, good, and excellent) and reason for the lack of knowledge (busy curriculum, lack of interest, and no professional training) [Table 1]. The questionnaire prepared was then assessed by carrying out a pilot study among the experienced medical fraternity, and the necessary corrections were made accordingly.

The answers were received on the next day of the survey and analyzed. Incomplete responses were excluded from the study. The professional qualifications of the participants were considered.

After evaluating the individual answer sheets, the scores were segregated and compared between the medical and dental UGs, JRs, interns, BDS, and nursing faculties.

Statistical analysis was performed using Mann–Whitney U-test. The results with $P < 0.05$ were considered statistically significant. The conclusions were drawn based on the results of the analysis.

Results

After collecting data, the values were statistically analyzed and tabulated.

Among the groups, the sample size was more in the dental and medical UG students (192 and 189, respectively). Less sample size was seen in nursing faculties, 23 from medical and 18 from dental side. The ratio of faculty and interns in medical college was more than double of the same in the dental college [Table 2].

Among all the subjects, most of them were aware and had positive attitude toward BLS (94%). The knowledge of BLS was less among the respondents since most of them had not undergone prior BLS training or performed BLS by self. The respondents had average knowledge regarding the individual components of BLS [Table 3].

Among eight groups, medical JRs, BDS faculties, and both medical and dental interns showed high level of awareness and need for usefulness of knowledge regarding BLS as compared to medical and dental UGs [Table 4] with the $P = 0.00001$ which was statistically significant (Q1 and Q2).

Faculties (JRs and BDS) and interns of both the groups favored the BLS inclusion in their academic curriculum, thus stressing the need for BLS training as a part of the curriculum. However, nursing faculties and UGs of both medical and dental showed less interest in the academic inclusion, with the significant $P = 0.00001$ (Q3).

Faculties (JRs and BDS) and interns of medical and dental knew that BLS can be performed both inside and outside the hospital setup unlike the other groups, which showed the statistically highly significant $P = 0.00001$ (Q4).

Only 100% medical JRs, 97% medical interns, 93% BDS faculty, and 88% dental interns had observed BLS being performed. However, medical and dental UGs and nursing

Table 1: Questions

Parameters	Q1-20	Questions
Awareness and attitude toward BLS	Q1	Able to expand the term BLS
	Q2	Aware of the necessity and usefulness of knowing BLS
	Q3	Recommended BLS inclusions in academic curriculum
Knowledge of BLS	Q4	Knowledge of setups where BLS can be performed
		a. In only hospital setup
		b. Both with inside and outside hospital setups
	Q5	Observed BLS being performed
		a. Yes
		b. No
	Q6	Performed BLS by self
		a. Yes
		b. No
	Q7	Obtained prior BLS training at work shops
		a. Yes
		b. No
Knowledge of individual components of BLS	Q8	Knowledge of rate of external cardiac massage per minute during BLS
		a. Knows
		b. Does not know
	Q9	Knowledge of ratio of cardiac compressions to breaths delivered during BLS
		a. Knows
		b. Does not know
	Q10	Knowledge of location for chest compression while delivering BLS
		a. Correct location
		b. Wrong location
	Q11	Knowledge of sequence to be followed while performing BLS
		a. Correct sequence
		b. Wrong sequence
	Q12	Depth of chest compression in adults during CPR
		a. Knows
		b. Does not know
	Q13	If you do not want to give mouth-to-mouth CPR, the following can be done
	Q14	Please indicate the dialing number for help in case of a medical emergency in your setup?
	Q15	For how long the pulsation should be checked?
	Q16	In "ABCD" of basic life support "D" denotes defibrillation
	Q17	What does abbreviation EMS stands for?
	Q18	What does abbreviation AED stands for?
	Q19	Self-assessment of reasons for their lack of BLS knowledge
		a. Nonavailability of professional training
		b. Lack of interest
		c. Busy curriculum
		d. Various combinations of above 3 factors
	Q20	Self-grading of BLS knowledge level
		a. Poor
		b. Below average
		c. Good
		d. Excellent

BLS=Basic life support, CPR=Cardiopulmonary resuscitation, AED=Automated external defibrillator, EMS=Emergency medical services

faculties (47%, 36%, 73%, and 38%, respectively) showed poor hands on experience ($P < 0.00001$).

Majority of the participants had not performed the BLS by self, and only few of them had attended the BLS

Table 2: Distribution of medical and dental samples by groups

Groups	Medical professionals	Percentage	Dental professionals	Percentage	Total	Percentage
Faculty	65	17.38	30	10.53	95	14.42
Interns	97	25.94	45	15.79	142	21.55
Nursing faculty	23	6.15	18	6.32	41	6.22
UGs (3rd and 4th)	189	50.53	192	67.37	381	57.81
Total	374	100.00	285	100.00	659	100.00

Table 3: Item-wise correct responses of respondents (numbers are correct answers out of 659)

Questions	Number of respondents	Percentage of respondents
Q1	624	94.69
Q2	614	93.17
Q3	624	94.69
Q4	593	89.98
Q5	411	62.37
Q6	314	47.65
Q7	225	34.14
Q8	491	74.51
Q9	486	73.75
Q10	509	77.24
Q11	473	71.78
Q12	470	71.32
Q13	454	68.89
Q14	586	88.92
Q15	489	74.20
Q16	362	54.93
Q17	576	87.41
Q18	464	70.41
Total	659	100.00
Reposes of respondents in Q19 and Q20		
Q19		
Poor	56	8.50
Below average	140	21.24
Average	183	27.77
Good	216	32.78
Excellent	64	9.71
Q20		
No professional training	432	65.55
Lack of interest	78	11.84
Busy curriculum	149	22.61
Total	659	100.00

training at workshops, indicating the poor exposure to BLS training (Q6 and Q7).

Level of knowledge about the BLS skills was superior (100%) among medical JRs and interns as compared to the other groups (Q8–18).

After analyzing their self-grading of BLS knowledge level, medical JRs were excellent (61%) as compared to the other groups (Q19).

Majority of the participants in all the groups gave the reason for the lack of BLS knowledge is due to lack of professional training (Q20).

Discussion

Although inevitable tragedies occur in dental office, the dentists should be aware of such incidents in terms of patient assessment, how and when to manage them, which would likely reduces such uneventful things. Hence, all the medical and dental academic institutions should give an immense value in training all the students and faculties in the simple procedures collectively known as BLS.

Medical and dental UGs should be taught how to handle stress as it affects their quality of life and also affects the effectiveness of their management of patients.[9]

The sample size in our study was 659 as compared to study conducted by various authors: Roshana *et al*.,[7] 121; Narayan *et al*.,[10] 202; Sharma and Attar,[11] 162; Srinivas *et al*.,[12] 500; Sudeep,[4] 250; Avabratha *et al*.,[13] 270; Kumar *et al*.,[8] 190; Chaudhary *et al*.,[14] 117; Aroor *et al*.,[15] 520; Carvalho *et al*.,[16] 20; Zaheer and Haque,[17] 86; and Baduni *et al*.,[18] 104. However, 1054 participants were there in the study conducted by Chandrasekaran *et al*.[5]

The current study can be compared to the study conducted by Chandrasekaran[5] in selection of participants – UGs, interns, JRs, BDS, and nursing faculties from both medical and dental colleges – unlike the studies done by Srinivas *et al*.,[12] which included only the students; Sharma and Attar,[11] only interns; and Aroor *et al*.,[15] only students and interns of both medical and dental colleges. However, studies done by Avabratha *et al*.,[13] Kumar *et al*.,[8] Chaudhary *et al*.,[14] Phillips and Nolan,[3] and Zaheer and Haque[17] included only the participants from medical college whereas only from the dental colleges were included in the studies by Sudeep *et al*.,[4] Roshana *et al*.,[7] Narayan *et al*.,[10] Baduni *et al*.,[18] and Carvalho *et al*.[16]

In our study, the participants were aware of the BLS and had positive attitude toward it, similar to the

Table 4: Comparison of eight groups in each item (numbers are only correct answers)

Questions	Medical JRs	Percentage	Medical nursing faculty	Percentage	Medical interns	Percentage	Medical UGs (3rd and 4th)	Percentage	Dental faculty (BDS)	Percentage	Dental nursing faculty	Percentage	Dental interns	Percentage	Dental UGs (3rd and 4th)	Percentage	χ^2	*P*
Q1	65	100.00	97	100.00	19	82.61	180	95.24	30	100.00	45	100.00	12	66.67	176	91.67	51.5950	0.00001*
Q2	65	100.00	97	100.00	18	78.26	179	94.71	30	100.00	45	100.00	12	66.67	168	87.50	55.6070	0.00001*
Q3	65	100.00	97	100.00	19	82.61	181	95.77	30	100.00	45	100.00	12	66.67	175	91.15	53.2220	0.00001*
Q4	65	100.00	97	100.00	18	78.26	168	88.89	30	100.00	45	100.00	10	55.56	160	83.33	63.1430	0.00001*
Q5	65	100.00	95	97.94	17	73.91	89	47.09	28	93.33	40	88.89	7	38.89	70	36.46	196.2000	0.00001*
Q6	52	80.00	88	90.72	15	65.22	80	42.33	22	73.33	21	46.67	1	5.56	35	18.23	191.4720	0.00001*
Q7	51	78.46	66	68.04	2	8.70	70	37.04	5	16.67	8	17.78	1	5.56	22	11.46	173.3310	0.00001*
Q8	65	100.00	97	100.00	17	73.91	125	66.14	28	93.33	42	93.33	8	44.44	109	56.77	116.5840	0.00001*
Q9	65	100.00	97	100.00	17	73.91	128	67.72	27	90.00	40	88.89	3	16.67	109	56.77	129.3110	0.00001*
Q10	65	100.00	97	100.00	15	65.22	139	73.54	26	86.67	41	91.11	8	44.44	118	61.46	95.6000	0.00001*
Q11	65	100.00	97	100.00	16	69.57	126	66.67	22	73.33	35	77.78	8	44.44	104	54.17	102.8980	0.00001*
Q12	65	100.00	97	100.00	16	69.57	126	66.67	22	73.33	35	77.78	8	44.44	101	52.60	107.2310	0.00001*
Q13	65	100.00	97	100.00	15	65.22	124	65.61	20	66.67	35	77.78	6	33.33	92	47.92	125.8190	0.00001*
Q14	65	100.00	97	100.00	18	78.26	168	88.89	28	93.33	42	93.33	12	66.67	156	81.25	44.7750	0.00001*
Q15	65	100.00	97	100.00	17	73.91	130	68.78	27	90.00	40	88.89	6	33.33	107	55.73	117.9620	0.00001*
Q16	65	100.00	97	100.00	15	65.22	80	42.33	22	73.33	41	91.11	8	44.44	34	17.71	281.7470	0.00001*
Q17	65	100.00	97	100.00	18	78.26	171	90.48	27	90.00	41	91.11	12	66.67	145	75.52	59.0310	0.00001*
Q18	65	100.00	97	100.00	13	56.52	129	68.25	20	66.67	35	77.78	8	44.44	97	50.52	114.1120	0.00001*
Total	65	100.00	97	100.00	23	100.00	189	100.00	30	100.00	45	100.00	18	100.00	192	100.00		
Comparison of eight groups in each Q19 and Q20																		
Q19																		
Poor	0	0.00	0	0.00	5	21.74	11	5.82	0	0.00	0	0.00	8	44.44	32	16.67	301.4530	0.00001*
Below average	0	0.00	0	0.00	8	34.78	44	23.28	3	10.00	0	0.00	7	38.89	78	40.63		
Average	5	7.69	20	20.62	10	43.48	69	36.51	12	40.00	10	22.22	3	16.67	54	28.13		
Good	20	30.77	65	67.01	0	0.00	60	31.75	10	33.33	34	75.56	0	0.00	27	14.06		
Excellent	40	61.54	12	12.37	0	0.00	5	2.65	5	16.67	1	2.22	0	0.00	1	0.52		
Q20																		
No professional training	58	89.23	88	90.72	15	65.22	127	67.20	21	70.00	29	64.44	6	33.33	88	45.83	79.0980	0.00001*
Lack of interest	2	3.08	2	2.06	5	21.74	22	11.64	2	6.67	4	8.89	8	44.44	33	17.19		
Busy curriculum	5	7.69	7	7.22	3	13.04	40	21.16	7	23.33	12	26.67	4	22.22	71	36.98		
Total	65	100.00	97	100.00	23	100.00	189	100.00	30	100.00	45	100.00	18	100.00	192	100.00		

*P <0.05 is statistically significant, P<0.001 is highly significant, JRs=Junior residents

other studies: Kumar *et al*.,[8] Carvalho *et al*.,[16] Roshana *et al*.,[7] Narayan *et al*.,[10] and Sharma,[11] whereas the participants were less aware and showed poor attitude toward it in the studies conducted by Chandrasekaran,[4] Srinivas,[12] Sudeep *et al*.,[4] Aroor,[15] Zaheer,[17] and Alanazi *et al*.[1]

The study done by the Chandrasekaran *et al*.[5] included 20 basic questions regarding the awareness and skills of BLS and showed the practitioners and teaching doctors had less knowledge and not good in carrying out the effective CPR as compared to nursing faculty, indicating to standardize the teaching in BLS and making it a mandatory component in the UG curriculum. Similar study done by Srinivas[11] among dental, medical, and nursing students, he found that medical students were poor and dental students were poorer in terms of knowledge about the individual components of BLS. Hence, inclusion of BLS in their academic curriculum and hands-on courses to improve their practical skills is recommended for the students of both the profession at an early stage to decrease the mortality and morbidity. Avabratha[13] his their study found scattered knowledge about the individual components of BLS indicating lack of structured teaching of BLS in medical curriculum.

Kumar *et al*.[8] had studied the knowledge according to separate components such as indication, signs of successful CPR, response to emergency situation, and perception toward BLS. Final-year medical students are in a better position to do the guesswork showing lack of knowledge. Training improves the knowledge and skills only if training is introduced at the beginning of curriculum rather than in final year.

Aroor[15] showed that both awareness and knowledge of BLS skills were serially increasing from students, interns, to residents in medical, dental, and nursing profession, indicating the necessity of reinforcement and refreshing hands on courses at regular intervals to retain the skills.

Carvalho[16] and Zaheer[17] in their study showed poor knowledge and skills, implementing the refreshment of BLS courses at regular intervals.

As found by Chaudhary,[14] there was a significant improvement in the knowledge and skills among the medical and paramedical staffs after the end of BLS training session as compared to that of pretraining and showed that BLS training is essential for the retention of skills and to maintain the competency in the same.

Both the studies done by Chandrasekaran *et al*.[5] and Alanazi *et al*.[1] recommended BLS training not only in the UG curriculum but also for high-school and college students as the younger students can grasp the knowledge and help the people with emergency situation.

Phillips[3] devised a questionnaire survey in BMA students of UK, regarding the BLS and advanced life support indicating the need for compulsory certified training in BLS and advanced life support for UGs and practicing doctors.

Roshana *et al*.[7] in their study showed inadequate knowledge of BLS among medical, dental, and paramedical staffs despite their positive attitude toward it, resulting in fear of being inefficient to further harm the victim while performing the resuscitation. In their study, the knowledge of trained personnel was better than those of untrained one, forcing the periodic reinforcement by refreshing training to attain adequate CPR skill and to maintain competency in the teaching.

Baduni[18] in his study proved that inadequate knowledge and skills among the dentist about BLS and CPR. Hence, he stressed on the theoretical knowledge, practical demonstration, and regular practice.

In the questionnaire survey done by Sharma[11] about adult BLS among medical and dental interns, medical interns had average knowledge and he favored the structured BLS training.

Narayan *et al*.[10] conducted a cross-sectional survey among dental interns and PG students about BLS, who found an average knowledge among them, indicating its involvement in the academic curriculum and workshops on regular basis.

In our study, majority of medical JRs (61%) were rated themselves as excellent; 67% and 75.56% of medical and dental interns, respectively, as good; 36.5%, 43.48%, and 40% of medical UGs, medical nursing faculties, and BDS faculties, respectively, as average; 40.63% of dental UGs as below average; and 44.44% of dental nursing faculties were rated as poor regarding the BLS knowledge, which is in favor of many of the studies.

No professional training and busy curriculum were the reasons for lack of BLS knowledge in our study, which was simulating the other studies done by Avabratha *et al*.,[13] Kumar *et al*.,[8] Aroor *et al*.,[15] Zaheer and Haque,[17] Roshana *et al*.,[7] and Narayan *et al*.[10]

In 2010, AHA has changed the sequence of BLS for adults and pediatric patients (excluding newborn) steps from "A-B-C" to "C-A-B." Because of updating of guidelines from 5 years, repetitive training courses are needed to ensure the changes.

Conclusion

Since dentistry is confined to oral cavity, any emergency in the dental office is not managed by the dentist due to shallow knowledge about BLS, lack of professional training resulting in legal complications. Dental

institutions should develop the confidence in the dental students to evaluate and manage the emergency situations by a routine visit of them to the hospitals. In the present study, we could not elicit the practical skills of BLS/CPR among the participants.

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Conflicts of interest

There are no conflicts of interest.

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