Dental Professionals' Awareness on Updated Guidelines for Basic Life Support in COVID-19 Patients

Kumari Abhilasha[1] D. Jayanthi[2] Lalith Vivekananda[2]

[1] Department of Periodontics, Dental Health Clinic, Bangalore, Karnataka, India
[2] Department of Periodontics, MR Ambedkar Dental College, Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka, India

Address for correspondence Kumari Abhilasha, Flat No. 502, A wing, Ajmera Nucleus Apartments, Electronic City Phase-2, Bangalore 560100, Karnataka, India (e-mail: drk.abhilasha@gmail.com).

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Abstract

Background Members of dental fraternity have a duty of care to provide safe services to the patients. The satisfactory performance in a medical emergency in dental practice has wide-range implications. But, in the current scenario, the challenge is to ensure that patients with or without coronavirus disease 2019 (COVID-19), who undergo any medical emergency, get the best possible chance of survival without compromising the safety of rescuers, who will be needed to take care for future patients.

Aim This article assesses the awareness and knowledge on interim guidelines for Basic Life Support in adults with suspected or confirmed COVID-19 among various dental health care professionals.

Materials and Methods An online questionnaire-based survey was conducted; framed in Google Forms and sent to various dental health care professionals through WhatsApp, email, and other means. Results were then analyzed and are presented in the form of frequency and percentage.

Results In the study, 224 responders were included comprising undergraduates, postgraduates, and dental practitioners. Dismally, none of them had complete knowledge on the interim guidance for Basic Life Support for suspected or confirmed COVID-19 patients.

Conclusion The study suggests that updated interim guidelines were unknown to maximum percentage of dental professionals which implies that there is need to keep ourselves up-to-date to provide safe services.

Keywords
- basic life support
- COVID-19
- dental practitioners
- interim guidelines for BLS

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease which is caused by the severe acute respiratory syndrome coronavirus 2 virus. It leads to various signs and symptoms that causes severe acute respiratory syndrome. Most people who get affected by COVID-19 experience mild to moderate symptoms and recover under moderate care; however, some become seriously ill and require timely cardiopulmonary resuscitation (CPR) for a favorable outcome.[1] Owing to the contagious nature of the disease several guidelines were proposed while handling COVID-19-affected individuals. One such guideline was in view of Basic Life Support (BLS)

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implementations and the knowledge of which had to be widespread among all professionals in the health care services. This concept led to the foundation for present study.

In view of any medical emergency, the biggest challenge was to ensure that patients with or without COVID-19 who experience cardiac arrest get the best possible chance of survival without affecting or compromising the life of care giver.[2] Like any other health care professionals, the members of dental team have a duty of care to set the seal to provide an effective and safe services to the patients.[3]

Emergency in dental practice is a well-known fact. Since ages, we have been tackling the medical emergency in dental setup with the recommended BLS guidelines. COVID-19 has had a substantial impact on every aspect of our lives including our candidacy toward medical emergencies.

The current guidelines of BLS do not address the challenges of providing resuscitation in the setting of COVID-19 global pandemic.[2] In addition, this fact was also emphasized by Indian Resuscitation Council by stating that resuscitation guidelines may require modifications in line with the emerging scientific data related to resuscitation of patients with suspected or confirmed COVID-19 infection.[1]

To address this gap, the American Heart Association, in collaboration with the American Academy of Pediatrics, American Association for Respiratory Care, American College of Emergency Physicians, The Society of Critical Care Anaesthesiologists, and American Society of Anaesthesiologists, and with the support of the American Association of Critical Care Nurses and National Association of EMS Physicians, has compiled guidelines to help rescuers treat individuals with medical emergency with suspected or confirmed COVID-19.[2] Similar detailed methodology of resuscitation has been published and described by the Indian Resuscitation Council.[1] Hence, this study was conducted to assess the awareness regarding these amendments among dental health care professionals.

Aim

The aim of the study was to assess the awareness about interim guidelines for BLS of adults with suspected or confirmed COVID-19 among various dental health care professionals.

Materials and Methods

This study was cross-sectional, anonymous online questionnaire-based survey conducted during September to October 2020 among various dental health professionals including undergraduates, postgraduates, and dental practitioners. The study was conducted by assessing the response to 15 dichotomous questions (set of self-prepared multiple choice question) pertaining to general BLS guidelines and updated interim guidelines for suspected COVID-19 cases. The reliability and validity of questionnaire was designed based on Consensus Reports by the American Heart Association, June 30, 2020, on knowledge of BLS.

►**Fig. 1** describes the summary of BLS health care provider adult cardiac arrest algorithm for patients with suspected or confirmed COVID-19.[2]

The questionnaire was framed in a type of online survey form using Google Form—a service for forms and questionnaire designing which is free of cost for every individual having a Google account. This tool allows to collect data that were sent to various dental health care professionals through different social media platforms.

Statistical Analysis

The collected data were calculated with Microsoft Excel and then statistical analysis was made by Statistical Package for Social Science (SPSS) 21 version. The results were calculated in the form of frequency and percentages. Mean score of correct responses were compared between professional qualification groups using one-way analysis of variance. *p*-Values of < 0.05 were considered statistically significant.

►**Table 1** shows the questionnaire asked in the survey.

Results

In the study, 224 responders were included comprising 127 (57%) postgraduates, 54 (24%) dental practitioners, and 43 (19%) undergraduates. ►**Table 2** demonstrates the demographic data of participants.

Unfortunately, none of the responders had hundred percent knowledge on the basic and updated BLS guidelines. However, knowledge on universal BLS guidelines had better response with 69, 78, and 80% correct answers by undergraduates, postgraduates, and dental practitioners, respectively (►**Fig. 2**). While considering the responses on updated interim guidelines on BLS for suspected or confirmed COVID-19 cases, the data revealed quiet a low level of correct responses irrespective of the categories of respondents. Thirty-two percent of undergraduates, 42% of postgraduates, and only 44% of dental practitioners responded correctly to the questions (►**Fig. 3**). Mean score comparison of correct responses by these groups showed statistically significant value ($p < 0.001$) (►**Table 3**).

Looking closely at the individual groups, the knowledge on both universal BLS guidelines and updated interim guidelines were at very low percentage among undergraduates. Only 36% were aware of the full form of BLS which shows that BLS course should be considered for inclusion in the Bachelor of Dental Surgery curriculum. Among postgraduates, the basic guidelines were well known and had better idea on the personal protective guidelines as compared with undergraduates but the knowledge on newer guidelines were still in question. In regard to dental practitioners, data showed that they had awareness on the BLS knowledge and skills but needs to be updated with change in protocols done by the American Heart Association after COVID-19 pandemic (►**Table 4**).

Discussion

It is said that "*a patient could collapse on any premises at any time, whether they have received treatment or not*."[3] Dental office is not immune to occurrence of any such life-threatening conditions. Cardiac arrest or cardiopulmonary arrest is

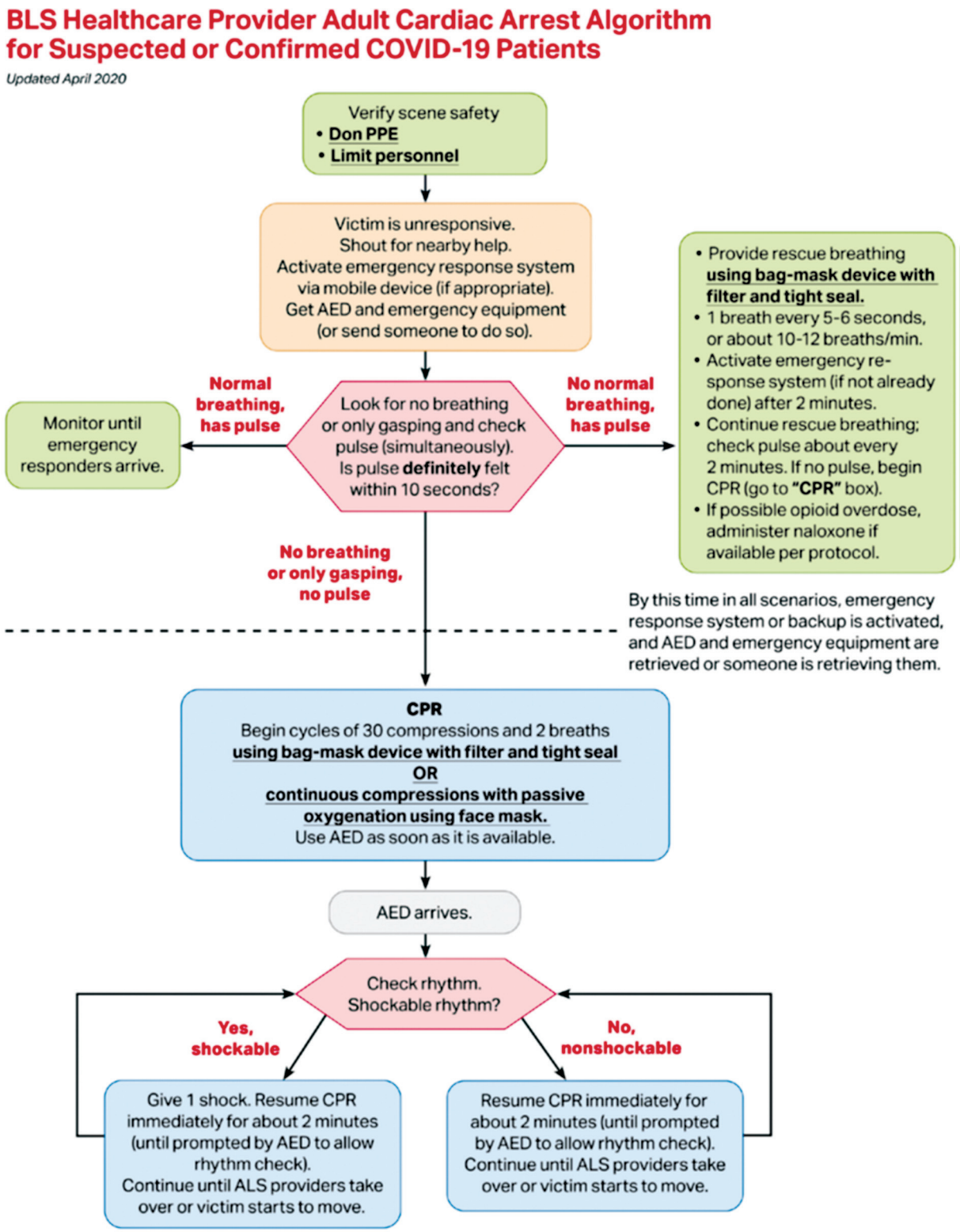

Fig. 1 Summary on Basic Life Support (BLS) algorithm in adults. AED, automated external defibrillator; ALS, advanced life support; CPR, cardiopulmonary resuscitation; PPE, personal protective equipment.

the most common medical crisis which can occur leaving the victims with severe morbidities or can even lead to death if not addressed straight away.[4]

BLS is the phase of emergency cardiac care that prevents respiratory or circulatory arrest or insufficiency through prompt recognition and intervention. In addition, it also supports the ventilation of a victim of respiratory arrest with rescue breathing or the ventilation and circulation of a victim of cardiac arrest with CPR. The major objective of performing any rescue breathing or CPR is to provide oxygen

Table 1 List of questionnaire with answers

General BLS guidelines questions
1. What does BLS stands for?
2. Is chest compression the first step when you find a person unresponsive?
3. Is compression given at least 2-inch-deep at center of chest?
4. Is 30:2 compression to ventilation ratio?
5. Do you look for presence or absence of pulse at carotid artery?
BLS for suspected or confirmed COVID-19 patients
6. Is the delivery of chest compression an aerosol generating procedure?
7. Does delivery of chest compression increase infection transmission?
8. Do limiting personnel at the scene reduces chances of infection spread?
9. Is it necessary to don PPE during resuscitation?
10. Is face shield or pocket mask sufficiently effective viral filters during resuscitation?
11. Can mechanical device be used as an alternative to manual chest compression?
12. Is hand-only CPR recommended in current COVID-19 scenarios?
13. Is it recommended to place mask over patients face before starting chest compression?
14. Do you know about minimum droplet precautions PPE?
15. What does HEPA stands for?
Answer key
1) Basic Life Support
2) No
3) Yes
4) Yes
5) Yes
6) Yes
7) Yes
8) Yes
9) Yes
10) No
11) Yes
12) Yes
13) Yes
14) Yes
15) High efficiency particulate air

Abbreviations: COVID-19, coronavirus disease 2019; CPR, cardiopulmonary resuscitation; PPE, personal protective equipment.

Table 2 Demographic data of participants

	Undergraduate	Postgraduate	Dental practitioner
Gender (total)	43	127	54
Female	28	77	34
Male	15	50	20
Age (average years)	22 ± 3.54	25 ± 3.54	30 ± 3.54

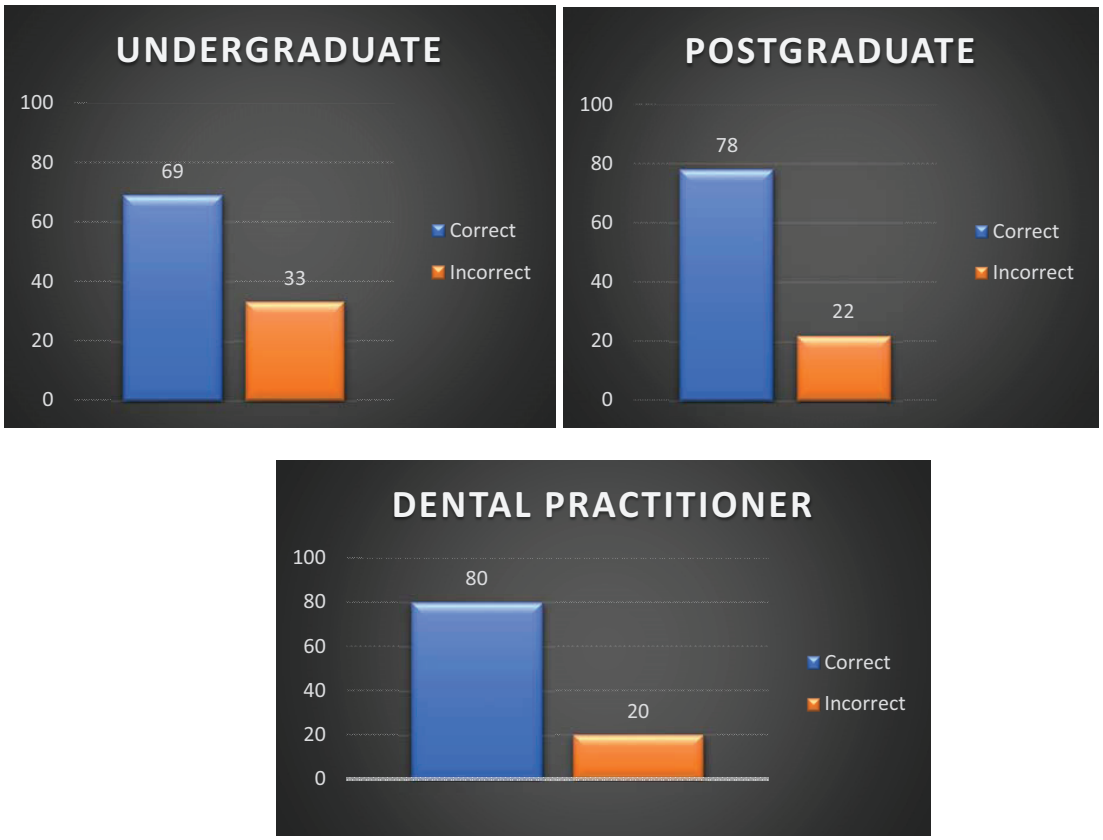

Fig. 2 Universal Basic Life Support (BLS) guidelines responses by undergraduates, postgraduates, and dental practitioners.

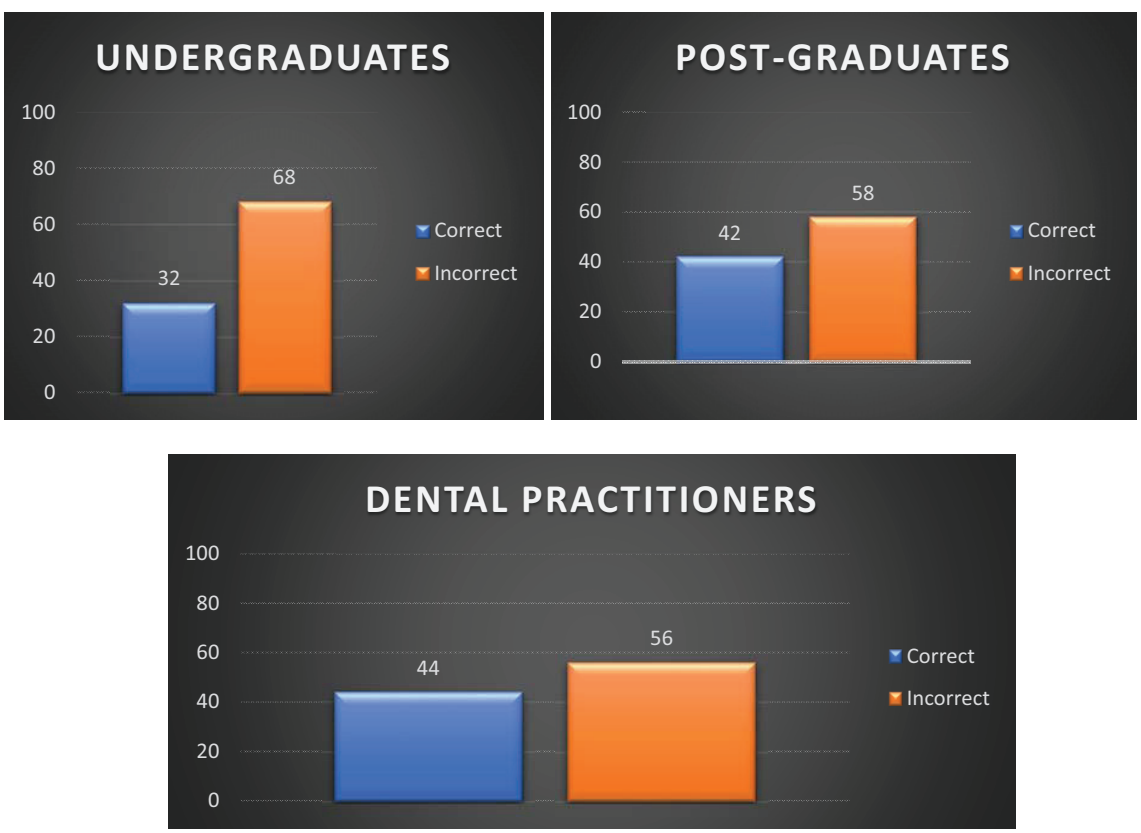

Fig. 3 Basic Life Support (BLS) guidelines for coronavirus disease 2019 (COVID-19) cases (suspected or confirmed) responses by undergraduates, postgraduates, and dental practitioners.

Table 3 Intergroup comparison of correct mean score

	Mean score of correct response	Standard deviation	*p*-Value
Undergraduates	22.1333	9.723805	< 0.0001
Postgraduates	68.06667	32.88609	
Dental practitioners	30.66667	14.20094	

Table 4 Questionnaire with correct responses by undergraduates, postgraduates, and dental practitioners

Questionnaires	Undergraduates correct answers (%)	Postgraduates correct answers (%)	Dental practitioners correct answers (%)
What does BLS stands for?	36 (83.33)	109 (85.92)	52 (96.55)
Is chest compression the first step when you find a person unresponsive?	25 (58.33)	88 (69.01)	39 (72.41)
Is compression given at least 2-inch-deep at center of chest?	33 (75)	107 (84.51)	45 (82.76)
Is 30:2 compression to ventilation ratio?	18 (41.66)	85 (67.61)	30 (55.17)
Do you look for presence or absence of pulse at carotid artery?	37 (87.5)	107 (84.51)	50 (93.10)
Is the delivery of chest compression an aerosol generating procedure?	14 (33.33)	12 (28.17)	11 (20.69)
Do delivery of chest compression increase infection transmission?	9 (20.83)	13 (29.58)	19 (34.48)
Do limiting personnel at the scene reduces chances of infection spread?	34 (79.17)	98 (77.47)	45 (82.75)
Is it necessary to don PPE during resuscitation?	23 (54.17)	73 (57.75)	41 (75.86)
Is face shield or pocket mask sufficiently effective viral filters during resuscitation?	14 (33.33)	70 (26.77)	19 (34.48)
Can mechanical device be used as an alternative to manual chest compression?	28 (66.67)	70 (54.92)	32 (58.62)
Is hands-only CPR recommended in current COVID-19 scenarios?	7 (16.67)	36 (28.17)	13 (24.14)
Is it recommended to place mask over patient's face before starting chest compression?	19 (45.83)	37 (29.58)	15 (27.59)
Are you aware of minimum droplet precautions PPE for resuscitation?	19 (45.83)	43 (33.80)	17 (31.03)
What does HEPA stand for?	16 (37.5)	73 (57.75)	32 (58.62)

Abbreviations: BLS, Basic Life Support; COVID-19, coronavirus disease 2019; CPR, cardiopulmonary resuscitation; HEPA, high efficiency particulate air; PPE, personal protective equipment.

to the brain and heart till the time appropriate, definitive medical treatment can restore normal heart and ventilatory action.[5]

Several factors may affect the quality of CPR provided which can include feedback, education, and monitoring and it has been accentuated that these should be developed together to improve quality.[6,7] The window of opportunity for survival of patients from sudden cardiac arrest is very narrow.[8] The lack of training and incompetence to deal with such emergencies can have legal consequences and tragic outcomes.

This study shows that although there was an adequate knowledge on universal BLS guidelines, updated interim guidelines were still unknown to maximum percentage of dental professionals. More than 70% did not know that CPR can produce aerosols and pocket mask is not a sufficiently effective viral filter, and many more. Several educational institutions should focus toward organizing more of academic meets to refurbish the knowledge on BLS among several health care professionals. Active workshop should be conducted for students to learn and practice. Familiarizing oneself to such situation of urgency can only be a way to avoid any mishap in future. Hence, there is need to keep ourselves up-to-date to provide safe services.

However, as limitation of the study, the practical skills could not be analyzed and only theoretical knowledge was assessed.

Conclusion

Knowledge of BLS is very important among all the health care providers. The present study reveals the lack in knowledge about updated guidelines of resuscitation. We suggest a strict accreditation program and periodic reassessment among students and practitioners.

Authors' Contributions
K.A. wrote the paper. Other two authors read, edited, and approved the final version of the manuscript.

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None.

Conflict of Interest
None declared.

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