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Knowledge and Competency of First Aids and Basic Life Support (BLS) Skills in Speech and Hearing Students

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Abstract

Purpose This study aimed to analyze speech and hearing students' knowledge, awareness, and attitude regarding first aid and basic life support (BLS).

Methods A descriptive cross-sectional survey study was performed through a web-based questionnaire regarding knowledge of first aid and BLS skills, experience, and views about training on these skills among speech and hearing students.

Results Four-hundred forty-two students from 26 different speech and hearing colleges participated in the study. About 88.23% of participants reported the necessity of knowledge about BLS skills and first aids. Fifty-five percent of participants encountered at least one emergency during their training. There is significant difference between awareness and confidence in performing these skills (Mann–Whitney U test= 76.5; $|z| = -2.39$; $p = 0.019$; effect size = 0.27). Most of the students (92.5%) reported not being trained to perform first aid and BLS skills and seek inclusion of these skills in their academic curriculum.

Conclusions Overall confidence in first aid skills is less in the students of speech and hearing when compared with the awareness level. Hence, formal training of first aid and BLS should be introduced into the curriculum to provide students with sound knowledge and practical skills and help them boost their confidence.

Keywords
- first aid
- basic life support
- audiology
- speech and hearing

Introduction

Accidents and injuries are part of our daily lives. We never know when an injury can happen to ourselves and others in our immediate vicinity. Even seemingly minor accidents or injuries can have a massive impact on the person's life when not appropriately dealt and by the time medical help arrives, it could be too late. Heart attacks, drowning, electric shock injuries, suffocation, hemorrhage, and other medical problems that cause circulatory collapse can all raise the risk of fatality.[1] In these conditions, first aids and basic life support (BLS) skills increase patients' survival chances and reduce the damage when administered promptly and correctly.

National First Aid Science Advisory Board defined first aid as assessing and implementing interventions performed by a bystander (or by the victim) with minimal or no medical equipment.[2] The sole goal of first aid is to save lives, relieve pain, avoid future injury, or aid in rehabilitation until expert help arrives or the person recovers.[3]

Basic life support, or BLS, is the type of care given to patients experiencing cardiac arrest, respiratory distress, or an obstructed airway by the first responders, healthcare

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providers, and public safety officers. It necessitates expertise in cardiopulmonary resuscitation (CPR), the use of automated external defibrillators (AEDs), and the relief of airway blockages in patients of all ages.[1,4] BLS, a vital component of the chain of survival, decreases the arrest—CPR interval—and increases hospital discharge rate. CPR is a life-saving therapy that can effectively reduce mortality and morbidity in various medical emergencies, including heart attacks, drowning, electrical injuries, asphyxia, and other disorders.[1] Early intervention, the quality of CPR, and the time to defibrillation all play a crucial role in survival after a cardiac arrest.[5] This implementation, however, necessitates a certain amount of both knowledge and practice. Individuals in the community, particularly healthcare providers, should be familiar with BLS because they meet such situations frequently.[5,6]

Audiologists and speech-language pathologists are healthcare providers. Undergraduates and graduates in speech and hearing will eventually work in various setups, including hospitals, universities, general practice, industry, and schools.[7] Competent doctors are not always available at all times in all of these settings. Chances of injuries are everywhere, and hence being an allied healthcare practitioner, both audiologists and speech-language pathologists are expected to have sufficient knowledge in the first aids and BLS skills. Speech and hearing professionals may witness a wide range of medical emergencies like epistaxis, heart attacks, aspiration and choking in dysphagia cases,[8] foreign bodies in the ear, seizures, wounds, and bleeding in surgical patients. Therefore, it is essential to train them for these basic life skills and first aids.

To the best of our knowledge, there has been no previous research on the knowledge and attitudes of speech and hearing professionals about first aid and BLS. Therefore, this study aimed to analyze speech and hearing students' knowledge, awareness, and attitude regarding first aid and BLS. This study aims to find out the number of students who have received formal first aid training. We also aimed to assess the students' views in incorporating the first aids and BLS skills as a part of the curriculum to learn better or how they want these training to be conducted.

Method

A descriptive cross-sectional survey study was performed on undergraduate and graduate-level students in speech and hearing colleges in India. Both the male and female students were included between the age ranges of 18 to 30 years (mean age: 22.36 years $\pm$ 3.76). Total 442 (349 females and 93 males) fully submitted responses were recorded.

Design of Questionnaire and Validation

The authors designed a comprehensive questionnaire that contained 20 questions related to the awareness, knowledge, and confidence in basic first aid and BLS skills of the students studying speech and hearing. The primary domains of the questionnaire were demographic details, knowledge regarding the first aid and essential life support (BLS) skills, experience, and views about training on these skills at the college level. Five medical professionals with more than 5 years of experience validated the questions. The necessary corrections suggested by the medical professionals were incorporated into the final questionnaire that was used for the survey. Scale content validity index[9] was used and calculated score of 0.87 was obtained. Finally, 14-item questionnaire was developed and pilot studied among 10 students of speech and hearing (►**Table 1**).

The questions designed were mostly objective, with multiple choices. There was one open-ended question regarding the participants' views about the inclusion of training about first aid and life-saving skills in the field of speech and hearing.

The final version of the questionnaire was prepared in the e-survey in the form of google forms (see ►**Supplementary Appendix A**, available online) distributed through various social platforms by the researchers through convenient sampling. Approximately 2,400 students of 26 different speech and hearing colleges were reached out for the survey. Total of 450 (response rate: 18.75%) students responded to the survey. All the participants not responding to the survey were excluded from the study.

Statistical Analysis

The data obtained were subjected to statistical analyses using IBM Statistical package social sciences (SPSS) version 25.0 (SPSS Inc., Chicago, Illinois, United States). The results of the study were analyzed descriptively. Participants who were aware of and confident performing or handling emergencies were compared with the Mann–Whitney U test after assessing normality with the Shapiro–Wilk test. The measure of effect size $r = Z/\sqrt{N}$, where Z is the nonparametric statistic, and N is the population size,[10] was computed for parameters where significant differences were observed in non-parametric tests.

Table 1 Number of questions in different domains

Sl. no.	Domain	No. of questions
1.	Demographic details	4
2.	Awareness and knowledge of general human body anatomy, first aid, basic life support skills	3
3.	Awareness of active dying signs	1
4.	Encounter of a situation requiring first aid and saving skills and how the basic training would have helped prepare better in those conditions	5
5.	If knowledge about first aid and basic life skills to be included in the curriculum	2

Results

Most of the responses were from undergraduate students, comprising 68% of total responses, whereas 32% of responses were from postgraduate students. The responses were obtained from 26 different speech and hearing colleges across India.

Awareness, Knowledge, and Confidence

On a five-point Likert scale assessing the knowledge of general human anatomy and physiology, the participants' primary mean responses were 3.34, where five being very confident and one being least confident, suggesting an average knowledge in that domain. Similarly, a five-point Likert scale was used to assess the necessity of first aid and BLS skills in the field of speech and hearing. The mean rating score responded by the participants was 4.54 where five being very important and one being least significant. Furthermore, 88.23% of participants reported the necessity of knowledge about BLS skills and first aid, while 4.5% were against it.

Awareness about eight signs of active dying, which comprised of long pauses in breathing, a significant drop in blood pressure, changes in skin color, feeling cold on touch, lack of bladder and bowel control, hallucination, delirium, and agitation, build-up of fluids in lungs, and drop in oxygen saturation level was assessed. ►**Fig. 1** depicts the percentage of participants aware of a particular number of signs of active dying.

Awareness and confidence in performing first aid and BLS skills were assessed. ►**Table 2** shows the percentage of total participants reporting about being aware and confident in performing the different skills.

In comparison, confidence in performing each of the skills as mentioned above was lower than the awareness. This was further confirmed with inferential statistics, where the Mann–Whitney U test was performed as the data followed a nonnormal distribution (Shapiro-Wilk test [$p = 0.013$]; $p < 0.05$). Results from nonparametric test indicate that there is significant difference between awareness and confidence in performing these skills (U= 76.5; /z/= -2.39; $p = 0.019$; effect size = 0.27).

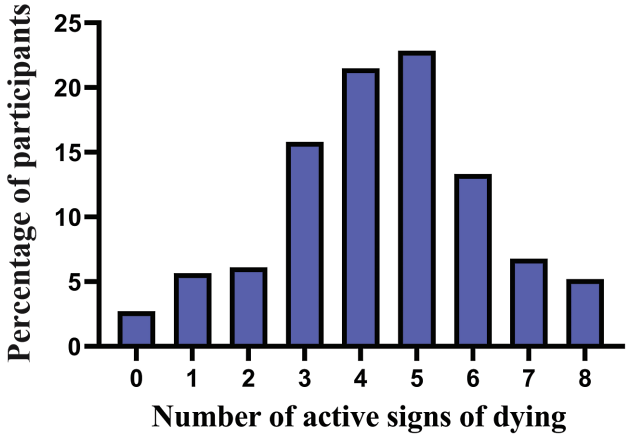

Fig. 1 Percentage of participants aware of a particular number of signs of active dying.

Table 2 Awareness and confidence of participants in First Aid and Basic Life Support Skills

First aid and basic life support skills	Number of participants aware	Number of participants confident
Recording of radial pulse	117 (26.5%)	80 (18.1%)
Recording of carotid pulse	111 (25.1%)	60 (13.6%)
Recording of respiratory rate	177 (40%)	88 (19.9%)
Recording of temperature	290 (65.6%)	256 (57.9%)
Recording of blood pressure	255 (57.7%)	149 (33.7%)
Basic life support (CPR)	217 (49.1%)	86 (19.5%)
Handling of wounds and bleeding	282 (63.8%)	216 (48.9%)
Handling of burns and scalds	166 (37.6%)	93 (21%)
Handling of sprain and fractures	102 (23.1%)	48 (10.9%)
Application of bandages	299 (67.6%)	232 (52.5%)
Handling of poisoning cases	48 (10.9%)	11 (2.5%)
Handling of bites and stings	119 (26.9%)	52 (11.8%)
Handling of heat-related illness (hypothermia/ hyperthermia)	76 (17.2%)	31 (7%)
Handling of small foreign body cases	79 (17.9%)	45 (10.2%)
Handling of road traffic accident cases	92 (20.8%)	27 (6.1%)
Handling of shock cases	61 (13.8%)	15 (3.5%)
Recording of oxygen saturation level (SpO2)	201 (45.5%)	142 (32.1%)
None of the above	18 (4.1%)	54 (12.2)

Abbreviation: CPR, cardiopulmonary resuscitation.

Training and Experience

The participants were also asked to report emergency conditions encountered during their clinical practice. Twenty-six percent of individuals reported having encountered a foreign body in the ear, nose, or throat followed by wounds and bleeding (22.6%) during their clinical practice and were not prepared for same. Apart from this, 49.5% of participants encountered no emergencies during their clinical training. The summary of these conditions is depicted in ►**Fig. 2**.

Most of the students (92.5%) reported not being trained to perform first aid and BLS skills and seek inclusion of these skills in their academic curriculum. Furthermore, they reported that formal training and visual information (hands-on sessions) would have helped them prepare for these situations.

Discussion

This study explored the need and necessity of basic first aids and BLS in speech and hearing students. The speech and hearing professionals work in various settings, including the

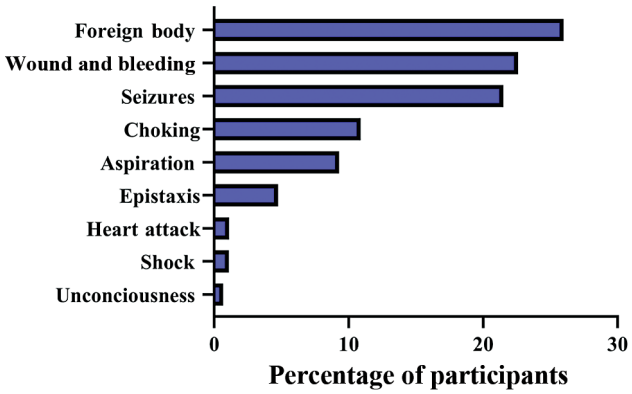

Fig. 2 Percentage of total participants reporting about being aware and confident in performing the different skills.

school setup, hospital, nursing homes, university, private practice, and others. Since speech and hearing students and professionals deal with various patients, from early newborns to older adults, chances of coming across numerous kinds of medical emergencies always exist. Childhood injuries are one of the leading causes of death between 5 and 14 years old.[11] Similarly, there is an increased chance of fall and injuries in the elderly and is one of the primary causes of hospital visit.[12] To date, no similar study evaluating the level of knowledge and competency in first aid and BLS skills among students of speech and hearing exists so far. Therefore, this study aimed to assess the knowledge and competency in first aid and BLS skills among speech and to hear students.

In this study, most of the participants rated highly for the necessity of the basic first aids and life support skills training in the students. Since the chances of coming across various kinds of medical emergencies always exist, speech and hearing students should have a basic understanding of anatomical structures and physiological mechanisms. However, in this study, most students were not too confident in their current understanding of basic human anatomy and physiology. The less retention of the skills taught in the courses in the first or second year might be an added issue.[13–16] Along with the primary structural and functional mechanism of areas involved in speech and hearing, the knowledge of the human body's anatomy and physiology will be integral for performing first aids and BLS skills. This would help individuals/students to act proactively for various medical emergencies. For example, a knowledge of normal pulse measurement points could help first aid provider to identify any case of medical emergencies relating to cardiovascular system.

During emergencies, any person, whether medical or nonmedical, should handle the condition before the medical help arrives. The delay in prompt action may even cause death if not appropriately managed. Knowledge about different signs and symptoms of the active dying phase is essential to recognize medical emergency conditions. Depending on the conditions, the proper help should be provided. For example, if the person is not breathing correctly, has drowned, or has an electric shock, CPR may be required. Unfortunately, most participants responded that they were aware of only three to five of the total eight signs of active dying mentioned in the questionnaire in this study. Results suggest a lack of adequate awareness regarding signs of active dying. Similar findings were reported in a study regarding the process of death and dying among audiology and speech-language pathology students in the United States.[17] This lack of awareness could be attributed to no hospital-based clinical training with emergency services, where one has to be always ready for death and dying situations.

Several different skills were assessed to see if the participants were aware of basic first aids and BLS skills and were confident enough to perform specific skills. Seventeen different categories were assessed. Most of the participants were unaware of the variety of the skills assessed. Even if they were aware and had theoretical knowledge about performing specific skills, they were not confident enough to perform those in time of need. The confidence was lower than the awareness level. Similarly, other studies have shown low retention of skills even after training in BLS skills, which might also contribute to low confidence in performing those skills.[18,19]

Our result is similar to the findings in other studies regarding the knowledge awareness and confidence to perform basic life-saving skills among medical, dental, and nursing students.[20–22] Consistent with our study, other researchers reported good awareness regarding basic life-saving skills among medical students but had no sound knowledge of the same.[23] Despite first aid and BLS being a part of the academic curriculum and clinical training in medical courses like medicine, dentistry, and nursing, poor knowledge in these skills in their early days of training is expected.[23] Hence, it is not surprising of our findings that students of speech and hearing are not confident in performing first aid and BLS when needed. This is because these students receive no formal training during their preprofessional training period. Also, the academic and clinical curriculum lacks such provision of training students in this field.

Another possible reason for lack of confidence in performing first aid and BLS could be the setup where students of speech and hearing are being trained. Though most Audiology and Speech Language pathology (ASLP) programs are hospital-based and require hospital exposure, students are not exposed or trained in managing any emergencies. This leads to no exposure of various emergency conditions requiring first aid and BLS support among the students of speech and hearing. Therefore, proper training for them should be provided in regular intervals to keep the students updated and make them able to perform the basic skills during the time of need.

Most speech and hearing students have encountered medical emergencies like wounds and bleeding, seizures or foreign body in ear, nose, or throat, and aspiration and choking. Especially for example, during the services like swallowing therapy, there is an increased risk of choking and aspiration. Moreover, during the making of ear impression, there have been incidents of molds being stuck in the ear or having foreign bodies in the ear itself. During clinical practice, speech and hearing professionals and students have high chances of encountering these conditions. Based on the work setting of the speech and hearing professionals, there might not be the availability of doctors or nurses, or other

trained personnel to manage these situations. Being a working health professional, they may need to step forward and manage the situation before the reach of proper medical help. For example, it has been found that survival after cardiopulmonary arrest depends on early intervention, quality of the CPR, and time to defibrillation.[24–26] Immediate and proper help may save the life of the individual. Hence, managing all these conditions should be taught and incorporated during the clinical training programs.

Most of the students (92.5%) reported not being trained to perform first aid and BLS skills. Similar responses were reported in a medical college-based study in Mangalore, where only 11.2% had previous training regarding first aids. Although being trained, their confidence in handling emergencies was still below average. This might be due to the lack of hands-on sessions during the training period, as most training sessions limit theory and are paper-based. Students lacking training in these domains (92.5%) in this study wish to be trained in the future and wish to get trained through formal education and visual and hands-on sessions. These responses are comparable with another study in Pakistan, where many undergraduates (94%) favored having first aid training as part of the curriculum.[27] Similarly another study in Singapore, 85.5% responded that a first aid course would be helpful to increase the skillset.[28] These skills will help all the students be confident and limit the gaps in knowledge about the various first aids and life-saving skills.

Limitation of the Study

This study only assessed the participants' views regarding their awareness and confidence of the different first aids and BLS skills. However, the actual knowledge about the same was not assessed. Hence in a future study, the knowledge of the skills set, both theoretical and practical, should be assessed to know the actual confidence during real-life situations. Furthermore, the extent of knowledge of speech and hearing students can be assessed in further researches with a prequestionnaire, followed by first aid and BLS training session and a postquestionnaire. Despite these limitations, the study's findings provide valuable information about the current knowledge and competency of audiology and speech-language pathology students and provide a framework for further studies in this area in the future.

Conclusion

Overall confidence in first aid skills is less in the students of speech and hearing when compared with the awareness level. Hence, if a formal training of first aid and BLS is introduced into the curriculum, this will provide students with sound knowledge and practical skills and help them boost their confidence. This should be complemented with hands-on activities to increase students' practical knowledge, followed by assessing and evaluating this knowledge. The skillsets regarding first aids and BLS are immense, and this study highlights the gaps in knowledge, awareness, and confidence in performing these skills in the time of need by speech and hearing students. This study further recommends incorporating a course in basic first aids and life support skills as part of the speech and hearing course curriculum. Hence, it is highly recommended to the stakeholders to look into this aspect in the future so that competent human resources are produced from their institute that could be a valuable contributor during emergency conditions.

Authors' Contributions

P. B., P. L., B. B., D. R. P., and A. S. were involved concept development, study design, data collection, analysis of the data, interpretation, and writing the manuscript; P. P. was involved in concept development and writing the manuscript.

Informed Consent

Informed consent was taken from all the participants in the form of a question in google form itself.

Ethical Approval

The manuscript adheres to the ethical standards according to the Declaration of Helsinki. Ethical approval was obtained from All India Institute of Speech and Hearing (AIISH) Ethical Review board for carrying out the study. Ethical guidelines formulated by the institutional board of All India Institute of Speech and Hearing (AIISH), Mysore, were followed for the study.

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None.

Conflicts of Interest

None declared.

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