



Awareness of Basic Life Support among Speech and Hearing Professionals

Ankita Suman^{1,2} Anuj Kumar Neupane² Arpita Singha Chowdhury^{2,3}

¹Sri Aurobindo Institute of Speech and Hearing, Sri Aurobindo Institute of Medical Sciences, Sri Aurobindo University, Indore, Madhya Pradesh, India

²School of Audiology and Speech Language Pathology, Bharati Vidyapeeth (Deemed to be University), Pune, Maharashtra, India

³Atharva Speech and Hearing Care Pvt. Ltd, Fortis (Mulund), Mumbai, Maharashtra, India

Address for correspondence Ankita Suman, MSc (Audiology), Sri Aurobindo Institute of Speech and Hearing, Sri Aurobindo Institute of Medical Sciences, Sri Aurobindo University, Indore 453555, Madhya Pradesh, India (e-mail: ankitasuman9@gmail.com).

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Abstract

Introduction One of the most important aspects of happiness is one's health. Increased industrialization in developing nations has contributed to a change in disease patterns away from infectious illness as the major cause of morbidity and mortality toward chronic diseases such as heart disease and trauma. Most emergency circumstances need immediate medical attention before a person is taken to the hospital; therefore, public awareness and training programs can aid in providing efficient basic life support care and services. Only a few works of literature on basic life support and prehospital emergency care in an Indian context are available and are usually studied among school teachers. However, no comparable research including allied health experts such as speech and hearing professionals has yet been published in the literature.

Aim The present study aimed at exploring the awareness of speech and hearing professionals regarding basic life support in an Indian context.

Methods The questionnaire consisted of two sections where section A comprised 6 questions related to demographic details and participant's experience, and section B composed of 17 questions related to knowledge of normal bodily physiology, medical emergencies, and first aid and related aspects. A cross-sectional exploratory study design was conducted on 250 participants. Out of 250 responses, 42 of them were incomplete and so were removed from the study. Therefore, a total of 208 complete responses received from the participants in the age range of 22 to 60 years from across 23 states and 1 union territory of India were included in the study.

Results The result revealed a low percentage of speech and hearing professionals with an adequate understanding of basic life support. The majority of them were found to have insufficient knowledge of normal bodily physiology, medical emergencies, and first aid and related aspects.

Discussion Being the first of its kind, the present study revealed limited awareness about basic life support among professionals, and therefore, the need to improvise the knowledge of basic life support and prehospital emergency care. This may be achieved by introducing training programs of various natures and dimensions to speech and hearing professionals.

Keywords

- basic life support
- emergency care
- first aid
- medical emergencies
- bodily physiology
- speech and hearing

Introduction

Health is one of the most important factors for well-being. Increased industrialization in developing countries has contributed to a shift in disease patterns away from infectious disease as the leading cause of morbidity and death and toward chronic diseases including heart disease and trauma.¹ To maintain a healthy life, one needs to have a proper understanding of bodily function and knowledge of handling any basic life support care before reaching the emergency ward of the hospital.^{2,3}

According to South Asian data, 39% of the primary health care setup lacks enough infrastructure.⁴ The World Health Organization macroeconomics and health report on India revealed that an average villager without a motor vehicle needs to travel 20 km for hospital care, 6 km for the blood test, and 2 km for basic medication such as paracetamol. When we compare the overall world population to that of India, it is equal to 17.7%. However, prehospital emergency care services are not easily accessible and vary across different regions of the country.³ Ambulance services have improved to some extent in metropolitan regions of India but not in rural zones. As a result, many patients are often deprived of emergency hospital care during the crucial hours posttrauma.^{5,6} According to UN data, the death rate due to various traumatic factors in India is 7.273% with a growth rate of 0.5%.⁷ As per the Global Burden of Disease, around 1.47 million people die due to high blood pressure and 1.12 million due to high blood sugar, whereas nearly 0.15 million due to road traffic accidents and around 0.44 million get injured due to similar reasons in India.⁸

Most emergencies require immediate medical actions before a person can be taken to the hospital, and so, public awareness along with training programs can be helpful in effective basic life support and services.⁹ Moreover, these programs need to be focused on enhancing baseline knowledge of basic life support of various professionals working in the public domain. In the Indian context, only a few works of literature are available on awareness of basic life support and are mostly studied among school teachers.^{3,10} Pandit and Berry conducted a study to investigate the level of awareness, knowledge, and attitude toward basic life support among interns from all physiotherapy colleges affiliated with the Maharashtra University of Health Sciences. The study revealed 50% of the 157 participants lacked proper training in basic life support. Therefore, the study suggested the need for effective strategies to train a maximum number of students.¹¹ Bhanja et al investigated the attitude and knowledge of basic life support among health care professionals, including junior doctors, physiotherapists, and nurses, in a tertiary care center in Sikkim. The study recommended that regular training on basic life support is necessary to enhance skills and boost confidence in saving lives promptly.¹² Similarly, Bhattarai et al attempted to investigate the knowledge of first aid and basic life support among students from the field of speech and hearing.¹³ Yet, in terms of speech and hearing professionals, such studies have never been mentioned in the literature. Speech and hearing professionals are health caregivers specialized in the diagnosis and

management of speech, language, swallowing, and hearing and balance disorders. Most often, these professionals provide rehabilitation services to various populations with communication disorders who may have comorbid neurological and radiological conditions.¹⁴ Also, a wide variety of medical situations, including epistaxis, heart attacks, aspiration and choking in dysphagia cases,¹⁵ foreign bodies in the ear, seizures, wounds, and bleeding in surgical patients, may be seen by speech and hearing professionals. This makes them very often acquainted in situations that demand basic life support care. Hence, it is crucial for these professionals to possess fundamental knowledge of basic life support care to deal with patients, whenever required. Hence, the present study aimed at exploring the awareness of basic life support care among speech and hearing professionals in India.

Methods

Materials

To meet the aim of the study, a cross-sectional exploratory study design was considered. A questionnaire-based survey utilizing open-ended as well as multiple-choice questions was developed, and therefore, all procedures were performed after the approval of the departmental scientific review committee. The questionnaire was circulated among five speech and hearing professionals, followed by a medical professional working in an emergency ambulance service for content validity. The questionnaire consisted of two sections where section A comprised six questions related to demographic details and participant experience and understanding of basic life support care (questionnaire section A, available online). Therefore, those professionals who accepted to have the understanding and exposure to emergency care in question number 6 of section A were further allowed to participate in the study. Section B of the questionnaire included information on the awareness of basic life support care among speech and hearing professionals ((questionnaire section B, available online)). It had four questions on knowledge of normal bodily physiology, eight questions on knowledge of medical emergencies, and five questions on knowledge of first aid and related aspects.

Participants and Procedure

Utilizing the purposive sampling technique, the validated questionnaire was distributed via Google Forms through various social media platforms to speech and hearing professionals registered under the Rehabilitation Council of India. All participants had a minimum qualification of a bachelor in the field of speech and hearing. The participant information sheet was provided before the initiation of the questionnaire followed by undertaking consent from each participant. The questionnaire survey was found to take approximately 10 minutes to complete for each participant.

Data Analysis

The collected data were entered into IBM SPSS software (Statistical Package for Social Sciences) version 22 and further descriptive statistical analysis was performed. The chi-square test was used to check the association between experience and

setup with knowledge on normal bodily physiology, medical emergencies, and first aid and related aspects.

Results

Out of 250 responses, 42 of them were incomplete and so were removed from the study. Therefore, a total of 208 complete responses received from the participants in the age range of 22 to 60 years from across 23 states and 1 union territory of India were included in the study.

Section A (Supplementary Material) showed the demographic details of the participants (►Fig. 1), where a majority of the participants around 35.6% ($n = 74$) belonged to Karnataka, 20.2% ($n = 42$) from Maharashtra, and the least responses were from Goa, Odisha, Mizoram, Andhra Pradesh, Chhattisgarh, Himachal Pradesh, Punjab, Nagaland, Meghalaya, and Manipur where only 2% ($n = 1$) participated from each state. Further, the majority of the participants around 90.4% ($n = 188$) were between the age range of 20 to 30 years, 7.7% ($n = 16$) were between 31 and 40 years, 0.5% ($n = 1$) were between 41 and 50 years, and rest 1.4% ($n = 3$) had an age range of older than 51 years. The majority of the participants around 53.8% ($n = 112$) had a bachelor's degree, 45.7% ($n = 95$) had a master's degree, and only 0.5% ($n = 1$) had a PhD. Most of them had been working at hospital setups followed by private and academic setups. The majority of them, 49% ($n = 102$) had a work experience of less than 1 year, 27.4% ($n = 57$) had an experience of 1 to 3 years, 16.8% ($n = 35$) had an experience of 3.1 to 6 years, and 6.7% ($n = 14$) had the experience of more than 6 years.

Out of these 208 participants, only those who accepted to have the understanding and exposure to basic life support care in question number 6 of section A were further allowed to participate in the study. It was found that 23.1% ($n = 48$) of the participants were confident in their knowledge of basic

life support care; however, 25.5% ($n = 53$) were less confident about it. However, more than half of the total participants, that is, 51.4% ($n = 107$) were not aware of basic life support care. Therefore, only 101 participants who agreed to have some sort of understanding of basic life support care were allowed to participate in the further part of the questionnaire in section B (Supplementary Material).

The first part of section B of the questionnaire focused on the knowledge of normal bodily physiology among participants as given in ►Table 1; 92.08% of participants reported correct responses for normal blood pressure levels as systolic –120 and diastolic–80. Also, 62.38% of them reported the correct response of 95 to 100% as the normal oxygen level in the human body. The normal pulse rate of 60 to 100 beats per minute was reported by 40.59% of participants correctly and normal body temperature was reported correctly as 37°C by 67.33% of them.

The second part of section B of the questionnaire focused on knowledge of medical emergencies among participants as given in ►Table 2. Regarding the question on common symptoms before cardiac arrest, 71.29% of participants reported the correct response as a shortage of breath. When participants were asked about the procedure to be followed when a person is choking, 70.3% of them correctly responded to put the thumb side of their fist slightly above the navel and well below the breastbone; 74.26% of them gave a correct response on the most common symptom of a stroke to be muscle weakness or numbness. For the question on the orientation of leaning to avoid nose bleeding, only 20.8% of participants reported correct responses to lean forward. To the question on the first step to be followed when a person gets a mild seizure attack, 56.43% of participants reported the correct response to guide the person away from hazards. When participants were asked what the first step will be when they witness a person who met with a road accident, 63.36% reported correctly calling an

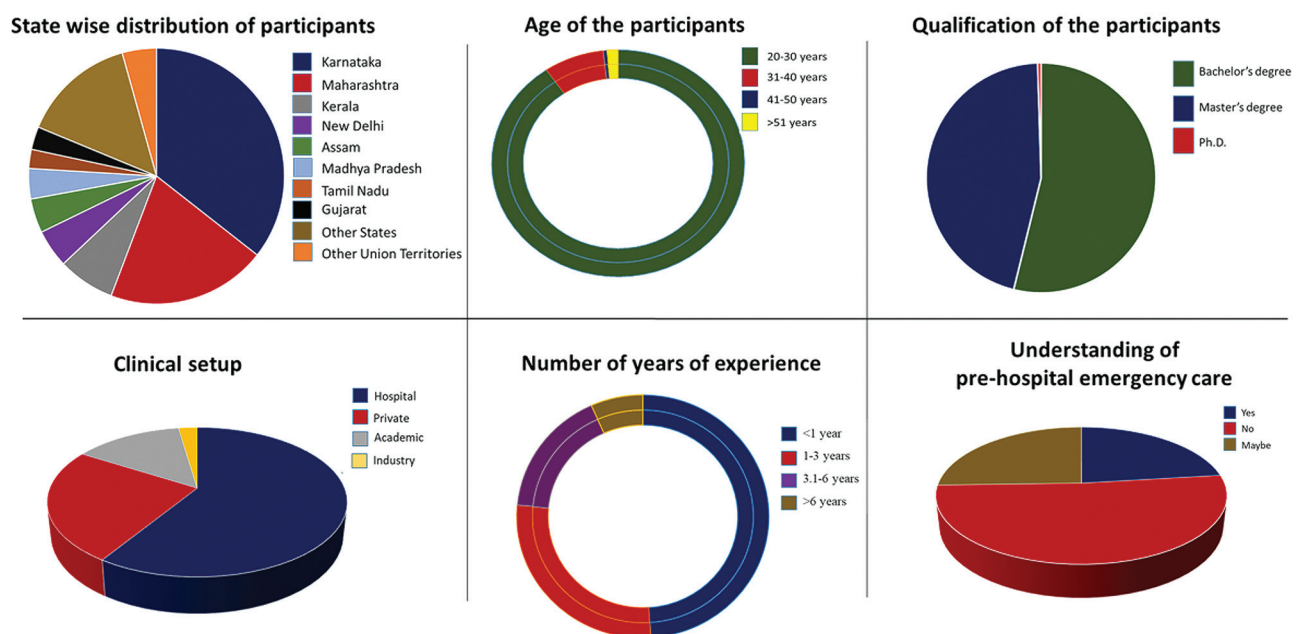


Fig. 1 Baseline demographic details of the participants ($n = 208$) retrieved from section A of the questionnaire.

Table 1 Knowledge of normal bodily physiology among participants ($n = 101$) retrieved from section B of the questionnaire

Sl No.	Questions	Frequencies	Percentage
1	What is the normal blood pressure level?		
	Systolic—120, diastolic—80 ^a	93	92.08
	Systolic—130–139, diastolic—below 80	2	1.98
	Systolic—140 or higher, diastolic—90 or higher	3	2.97
	Systolic—180 or higher, diastolic—120 or higher	2	1.98
2	What is the normal oxygen level?		
	88–92%	17	16.83
	95–100% ^a	63	62.38
	86–94%	10	9.9
	85–100%	10	9.9
3	What is the normal pulse rate?		
	50–80 beats per min	11	10.9
	50–60 beats per min	5	4.95
	60–100 beats per min ^a	41	40.59
	60–80 beats per min	43	42.57
4	What is the normal body temperature for humans?		
	97°C	32	31.68
	103°C	0	0
	37°C ^a	68	67.33
	50°C	0	0

^aCorrect answers.

ambulance. It was found that 57.42% of participants were aware of the national ambulance service number 102. In the question on ending the call after talking to the medical dispatcher, 48.51% of participants responded correctly to end the call after the dispatcher asked to cut the call.

The third part of section B of the questionnaire focused on knowledge of first aid and related aspects among participants as given in ►Table 3. It was found that only 2% of the participants responded correctly to the minimum requirement in a first aid box such as an adhesive bandage, roller gauze, and gloves/eye protection. Moreover, 64.36% of participants were aware of the composition of the antiseptic solution used in the first aid kit which includes hydrogen peroxide, alcohol, iodine, and chlorine. For the question on self-preparation before first aiding a wounded individual, 22.77% responded correctly emphasizing wearing personal protective equipment. Regarding the question on the condition to be maintained while applying first aid to an individual, 32.67% of participants responded correctly to avoid distractions. When participants were asked regarding steps for providing first aid, 79.2% of participants reported correctly first sanitizing their hands before touching the wound followed by making the person be seated in a comfortable position followed by cleaning the wound with antiseptic and applying a Band-Aid.

When inferential statistics (chi-square test) were used to determine whether experience and setup were related to knowledge of normal bodily physiology, medical emergen-

cies, and first aid and related aspects, it was found that there was no significant correlation between them, with an exception that experience was related to the steps to provide first aid to an individual and setup in which the participant was working having statistically significant association with the self-preparation before first aiding a wounded individual which is depicted in ►Table 4.

Discussion

The present study attempted to explore the awareness of basic life support care among speech and hearing professionals in India. Within the study, a significant portion of the participants hailed from Karnataka, making up the majority, while Maharashtra accounted for the second-highest representation. Conversely, Chhattisgarh, Himachal Pradesh, Nagaland, and Manipur had the lowest representation among the participants. This can be attributed to the factor that the state of Karnataka has been the hub of speech and hearing colleges and professionals in India.^{16,17} Also, a higher percentage of professionals from the state of Maharashtra can be attributed to its status as an economic hub in India. This has consequently made it the largest market for the speech and hearing care industry to prosper.¹⁸ In the case of other states, a lower response rate can be due to lesser awareness about basic life support care, and therefore, professionals might not have participated in the study. Additionally, the study revealed that a majority of the participants fell within the younger

Table 2 Knowledge of medical emergencies among participants ($n = 101$) retrieved from section B of the questionnaire

Sl. No.	Questions	Frequencies	Percentage
1	Most common symptom before cardiac arrest is:		
	Fast rate of breath	20	19.80%
	Shortage of breath ^a	72	71.29%
	Giddiness	7	6.93%
	Urge of eating more	1	0.99%
2	What should be done when a person is choking:		
	Put the thumb side of your fist slightly above the navel and well below the breast bone ^a	71	70.3%
	Put the thumb side of your fist slightly below the navel	7	6.93%
	Put the thumb side of your fist slightly to the side of the navel	11	10.9%
	Drink water	11	10.9%
3	Most common symptom of stroke is:		
	Fast rate of breath	8	7.92%
	Shortage of breath	7	6.93%
	Muscle numbness or weakness ^a	75	74.26%
	Involuntary eye movement	10	9.9%
4	A person with nosebleed should lean:		
	Backward	68	67.33%
	Forward ^a	21	20.8%
	Straight	10	9.9%
	Sideward	1	1%
5	What should be done when a person gets a mild seizure attack?		
	Guide the person away from hazards ^a	57	56.43%
	Avoid it	2	2%
	Make the person seated	36	35.64%
	Others	5	4.95%
6	What will be your first step if you witness a person who met with a road accident?		
	Call an ambulance ^a	64	63.36%
	Call police	2	1.98%
	Neglect	0	0
	Take that person to the hospital on your own	34	33.66%
7	What is the national ambulance service number?		
	100	10	9.9%
	101	28	27.72%
	102 ^a	58	57.42%
	112	4	4%
8	When do you cut the call while talking to a dispatcher?		
	After delivering your message	28	27.72%
	After listening to the dispatcher	20	19.80%
	After the dispatcher ask to cut the call ^a	49	48.51%
	Before conveying the message to the dispatcher	3	2.97%

^aCorrect answers.

Table 3 Knowledge of first aid and related aspects among participants ($n = 101$) retrieved from section B of the questionnaire

Sl. No.	Questions	Frequencies	Percentages
1	What is the minimum requirement in a first aid box? (Apply only three which suit your answer) Adhesive bandages, regular pain killer, cotton, wound cleaning agent, Roller gauze, gloves/eye protection		
	Adhesive bandage, roller gauze, and gloves/eye protection ^a	3	2.9%
	Other item combinations mentioned by participants	98	97.1%
2	What is the composition of the antiseptic solution used in the first aid kit?		
	Hydrogen peroxide, alcohols, iodine, chlorine ^a	65	64.36%
	Alcohols, iodine, potassium, lithium	8	7.92%
	Iodine, chloroform, hydrogen peroxide, alcohols	15	14.85%
	Chlorine, iodine, sodium, hydrogen peroxide	12	11.88%
3	Before providing first aid to an individual, one should:		
	Call for help	29	28.71%
	Wait for ambulance to arrive	2	1.98%
	Wear personal protective equipment ^a	23	22.77%
	Introspect the person about the wound	46	45.54%
4	While applying first aid to an individual, one should:		
	Avoid distractions ^a	33	32.67%
	Ask other people for help	8	7.92%
	Ask the patient about the cause of the wound	55	54.45%
	Others	4	3.96%
5	Steps for providing first aid:		
	i. Clean the wound with antiseptic		
	ii. Sanitize your hand before touching wound		
	iii. Apply Band-Aid		
	iv. Make the patient be seated in comfortable position		
	ii > i > iv > iii	6	5.94%
	ii > iv > i > iii ^a	80	79.2%
	i > ii > iii > iv	7	6.93%
	iv > iii > ii > i	8	7.92%

^aCorrect answers.

age of 20 to 30 years, with the lowest number of participants being above 51 years of age. It is worth noting that a higher percentage of younger participants, especially those with ≤ 1 year of work experience, were observed in the study. Furthermore, the majority of participants in the study had completed their postgraduation, while some had completed their graduation and PhD degrees in the field. In addition, most of the participants were working at hospital setups followed by private and academic setups. However, the majority of participants lacked exposure and understanding of basic life support care. This can likely be due to the exclusion of basic life support care from the curriculum designed for speech and hearing courses in India.¹⁹ To add, it was found that the majority of participants never had attended any basic life support care-related conference, workshop, and/or seminar to date.

In section B of the questionnaire, the present study centered on understanding the awareness of various basic aspects of life support care among speech and hearing

professionals. The first part of section B focused on understanding the knowledge of normal bodily physiology among the participants. The study yielded relatively positive responses, with the highest correct scores obtained for questions regarding normal blood pressure level, followed by normal body temperature and normal oxygen level in the human body. However, the lowest correct score was observed for the question related to normal pulse rate. This outcome indicates a limited knowledge of certain aspects of basic normal bodily physiology among speech and hearing professionals.

Further, the second part of section B on the knowledge of medical emergencies revealed fair responses from the participants. More than two-thirds of them were found to have an understanding of the Heimlich maneuver to relieve choking. Though the present study is the first of its kind, performed among speech and hearing professionals, similar results have been reported earlier among school teachers.^{3,20} Additionally,

Table 4 Association between setup and experience with knowledge of normal bodily physiology, medical emergencies, and first aid and related aspects

	Questions	Setup		Experience	
		Chi-square	Asymptotic significance (two-tailed) (p)	Chi-square	Asymptotic significance (two-tailed) (p)
Normal bodily physiology	Normal blood pressure level	7.638	0.959	16.671	0.162
	Normal oxygen level	16.35	0.429	4.427	0.974
	Normal pulse rate	10.585	0.834	10.88	0.539
	Normal body temperature for humans	0.94	0.919	3.505	0.32
Medical emergencies	Common symptom before cardiac arrest	16.763	0.401	8.755	0.724
	When a person is choking	8.42	0.935	6.599	0.883
	Symptom of stroke	6.759	0.978	16.423	0.173
	When nose bleed	10.564	0.836	6.843	0.868
	Mild seizure attack	15.076	0.995	21.084	0.634
	When witness a road accident	6.04	0.914	4.925	0.841
	National ambulance service number	8.154	0.773	13.386	0.146
	When to cut the call while talking to a dispatcher	8.865	0.919	7.576	0.817
First aid and related aspects	Minimum requirement in a first aid box	98.372	0.817	95.312	0.187
	Composition of antiseptic solution	15.964	0.455	8.681	0.73
	Before providing first aid	35.846	0.003 ^a	7.57	0.818
	Steps for providing first aid	12.493	0.709	28.499	0.005 ^a

^ap-Value < 0.05.

these findings were relatively better than the responses reported by health care providers and preschool teachers in Shanghai.²¹ In the present study, more than two-thirds of the participants were found to be aware of the shortage of breath as the most typical sign preceding cardiac arrest. A similar trend was observed regarding the awareness of muscle numbness as a common sign of stroke. However, less than one-third of the participants were aware that they should bend forward during nose bleeding. Also, less than two-thirds of them were aware of guiding the person away from hazards during a mild seizure attack. These responses were comparatively lower than that of the school teachers as mentioned in an earlier study.³ On the other hand, a majority of speech and hearing professionals were aware of the national ambulance service number, which aligns with the findings among school teachers.²² Moreover, when connecting to the ambulance service, approximately half of the participants had the understanding that they should conclude the call solely upon the dispatcher's request, a similarity that is consistent with the reported figures among school teachers.³

Further, the third part of section B on the knowledge of first aid and related aspects resulted in a variable degree of responses from the participants. There was poor understanding regarding the minimum requirement in a first aid box among the participants. Less than two-thirds of the participants were aware of the composition of the antiseptic solution used in the first aid kit. Additionally, fewer than one-third of the participants were aware of the importance

of personal protective equipment before delivering first aid to an individual. Speech and hearing professionals were found to have comparatively lower scores than school teachers as reported in earlier studies.^{3,17,23,24} Further, the participants in the study exhibited a limited understanding when it came to the importance of avoiding distractions while administering first aid to an individual. However, more than two-thirds of them were aware of the steps for providing first aid, starting from sanitization of the hands before touching the wound followed by making the person seated in a comfortable position and therefore, cleaning the wound with antiseptic and applying a Band-Aid.

Hence, in the present study, most of the segments of the questionnaire revealed sparse knowledge of speech and hearing professionals on basic life support care in the Indian context. Similar results have been reported among school teachers³ and speech and hearing students¹¹ as well. This can be contributed to the factors such as the nature of the work these professionals typically handle on a daily basis, which may not involve life-threatening situations.²⁵ However, it is important to acknowledge that these professionals can still encounter scenarios where basic life support is required when dealing with patients who have communication disorders. During emergencies, it can take time to have skilled medical staff onsite. Casualties must be given first assistance at the scene of the accident to avoid problems with injuries and preserve lives. Therefore, the result of the study indeed highlights the fact that speech and hearing professionals may lack

the necessary competence to effectively manage medical emergencies and further emphasizes the need for these professionals to receive more intensive education and training in medical emergencies. Further, the present study strongly suggests the inclusion of a syllabus on basic life support care in the curriculum designed for speech and hearing courses.

Strengths

No similar studies regarding awareness of basic life support care among speech and hearing professionals have ever been done in India. Being the preliminary, the present study revealed limited awareness about basic life support care among professionals, and therefore, the need to improvise the knowledge of basic life support care. This may be achieved by introducing training programs of various natures and dimensions to speech and hearing professionals.

Conclusion

The proportion of speech and hearing professionals with an understanding of basic life support care was found to be low. Therefore, frequent and well-organized courses on basic life support should be held on both practical and theoretical levels. Professionals should attend the programs and be self-sufficient in performing basic life support care in medical, environmental, and injury situations.

Conflict of Interest

None declared.

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