International Journal of Medical Science in Clinical Research and Review
Online ISSN: 2581-8945
Available Online at http://www.ijmscrr.in Volume 7|Issue 02 (March-April) |2024 Page: 363-369

Original Research Paper

Assessment of Basic Life Support Knowledge among Allied Health Professionals: A Cross-Sectional Study in India.

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Article Received: 06-March-2024, Revised: 26-March-2024, Accepted: 16-April-2024

ABSTRACT:
Background: The study aimed to evaluate the basic life support (BLS) knowledge among allied health professionals in India, recognizing the critical role of BLS in cardiac arrest management. An online survey was conducted in January 2024, comprising socio-demographic questions and a BLS knowledge assessment. **Method**: The Data were analyzed using descriptive statistics and categorized based on predefined scoring criteria. An online self-administered survey was used in a cross- sectional study to evaluated allied health professional's knowledge of BLS. A multiple-choice survey administered in January 2024 in India was used to collect data for this study. **Result:** Most participants were aged 17-25, with 0-5 years of work experience in clinical settings. Overall, respondents demonstrated strong BLS knowledge, with correct responses ranging from 51% to 90%. Areas of proficiency included compression rate and depth, while gaps were observed in initial steps for an unresponsive adult. **Conclusion**: The findings indicate the effectiveness of current BLS training programs but also highlight areas for improvement, emphasizing the need for continuous education and targeted interventions. Comparisons with existing literature suggest consistency in BLS knowledge trends among healthcare professionals. Enhancing BLS readiness among allied health professionals through tailored training interventions can optimize outcomes in cardiac emergencies. Future research could explore BLS knowledge across diverse healthcare settings to inform global practices. This study provides valuable insights into BLS knowledge among allied health professionals in India, underscoring the importance of ongoing education and skill development to improve response to cardiac emergencies.

Keywords: Allied health Professionals, BLS, CPR, Cardiac arrest, Medical Emergency

Highlights
- Study assessed BLS knowledge among allied health professionals in India via an online survey.
- Majority aged 17-25, with most having 0-5 years of clinical experience.
- Strong overall BLS knowledge observed, with proficiency in compression rate; gaps identified in response to unresponsive adults.
- Emphasizes need for continuous education and targeted interventions.

INTRODUCTION:

The primary method of preserving life after cardiac arrest is basic life support, or CPR.[1] In these individuals, cardiopulmonary resuscitation (CPR) is a critical link in the chain of survival that can bridge critical the time between early defibrillation and early access to emergency care. Effective CPR must be started right away in order to save a life. 70% of cardiac arrests, a potentially fatal medical emergency, take place outside of a hospital.[2] A delayed start to effective life support can have a very negative impact for the patient; the best chance of survival is achieved if professionally trained

personnel begin CPR within 2 minutes of the arrest.[3] Participants in the BLS curriculum learn how to quickly identify a number of life-threatening situations, provide adequate ventilations, do excellent chest compressions, deploy an automated external defibrillator (AED) and remove air way obstruction as soon as possible.[4, 5] Basic recommendations include the Hemlich manoeuvre for managing upper airway blockage by foreign objects, recovery position, and the identification of abrupt cardiac arrest.[6] Every minute that goes by without starting BLS raises the death rate by 7-10%.[7,8] Numerous studies conducted throughout different regions of the world have demonstrated variations in the knowledge and attitudes of healthcare professionals. The need for BLS courses is rising in developed countries. Developing and underdeveloped countries, however do not routinely practice training.[9] The European Resuscitation Council (ERC) states that more than 60% of patients can survive with early resuscitation and rapid defibrillation (within 01 minute).[10]

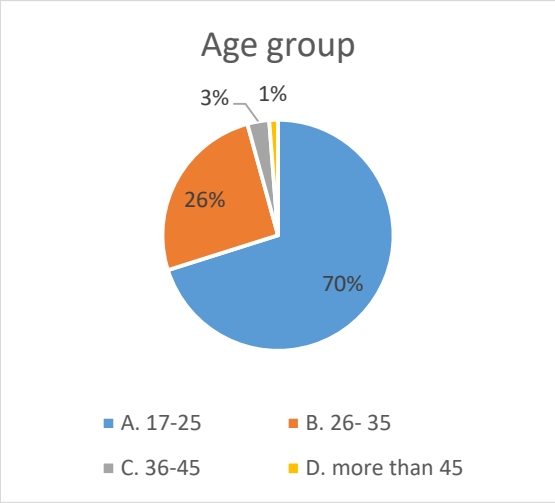
METHODS:

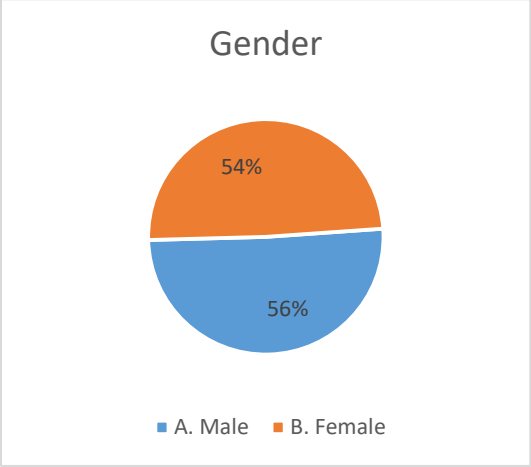
An online self-administered survey was used in a cross-sectional study to evaluated allied health professional's knowledge of BLS.[9] A multiple-choice survey administered in January 2024 in India was used to collect date for this study. Data were collected using a self-structured, closed-ended questionnaire. Part 1 of the questionnaire asks questions on socio-demographics such age, gender, work experience and education level. Part 2 of the questionnaire has questions about knowledge of basic life support. The marking key was created, with 01 mark being given for each right response and 0 for each incorrect response. The items maximum score was therefore 10, while the lowest was 0.[11] As a result, the allied health professional's highest overall knowledge score was 10.Knowledge scores of at least 8 or > 70% were deemed to be ″adequate, ″ scores of 5-7 or 50%-70% were deemed to be ″moderate, ″ and the scores of < 5 or less than 50% were deemed to be ″inadequate″.[12] The data collected by google form, designed and calculated with Microsoft word/ excel software. Throughout the whole study, information confidentiality was maintained.[13, 14] The ethical approval is not required. The inclusion criteria: Allied health professionals and exclusion criteria: General population.

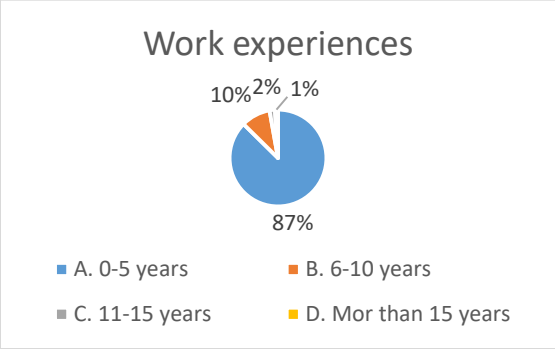
RESULTS:

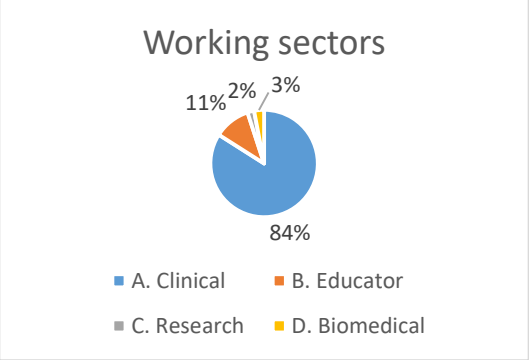
The Sample distribution based on demographic data.

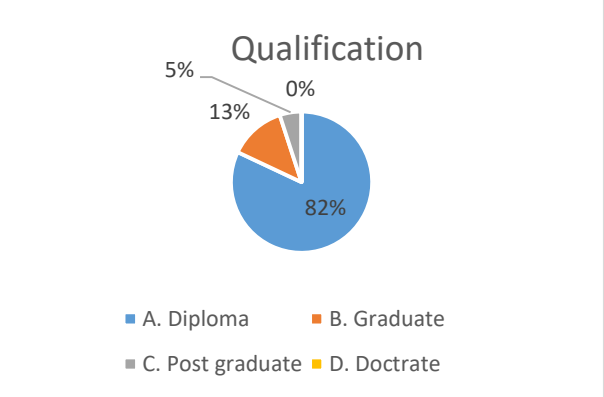
The majority of participants (70%) belong to the age group 17-25, followed by 26-35 (26%). Participants aged 36-45 and those above 45 constitute a smaller portion of the sample. The gender distribution shows a slight imbalance, with a slightly higher percentage of males compared to females in the sample. The majority of participants (87%) have 0-5 years of work experience, indicating a relatively young and early career sample. Most participants work in clinical setting (84%), followed by a smaller proportion in education (11%) and biomedical field (3%). Research has the lowest representation at 2%.











These results are based on a survey assessing knowledge related to cardiopulmonary resuscitation (CPR). The table.1 summarizes the percentage of correct and incorrect responses for each question. The majority of respondents (90%) correctly identified the ideal pace for CPR in adults, which is crucial for effective resuscitation efforts. A moderate percentage of respondents (60%) correctly recognized the duration for which a pulse check should be conducted, which is vital for timely assessment in emergency situations. A significant portion of respondents (73%) correctly identified methods for clearing the airway, essential for maintaining open air passages during CPR. The majority of respondents (81%) correctly identified the subsequent action to take if no pulse is detected, critical for initiating CPR promptly. A moderate percentage of respondents (61%) correctly identified the next step if a pulse is present, which is important for proper triage and decision-making during emergency situations. Respondents were almost evenly split in identifying the first step when encountering an unresponsive adult on the road while being alone, indication a need for further education or clarity on this critical aspect of CPR. A majority of respondents (68%) correctly identified the appropriate depth of compression during CPR, essential for effective chest compressions. The majority of respondents (80%) correctly identified the location of for applying chest compressions in adults, crucial for maximizing blood circulation during CPR. A significant majority of respondents (85%) correctly identified the recommended compression rate during CPR in adults, which is vital for maintaining adequate perfusion. The majority of respondents (80%) correctly identified the abbreviation for Automated External Defibrillator (AED), an important device used in cardiac emergencies. Overall, the majority of respondents demonstrated good understanding, with correct responses ranging from 51% to 90% across the different questions. These results provide an overview of the participants' understanding of various aspects related to CPR, indicating strong knowledge in some areas and potential areas for improvement in others.

Table.1

Q. No.	Questionnaires	Correct responses	Incorrect responses
6.	The ideal CPR pace for an adult is breaths per chest compression.	151 (90%)	16 (10%)
7.	Take a pulse check for no longer than-	100 (60%)	67 (40%)
8.	Which method can be apply to clear the air way?	122 (73%)	45 (27%)
9.	If there is not a pulse , the next appropriate step is to-	135 (81%)	32 (19%)
10.	If pulse is present, the next suitable action is to-	102 (61%)	65 (39%)
11.	What will be your first step? When you find an adult person unresponsive on the road? (Note: If you are alone at that place)	84 (51%)	83 (49%)
12.	What is an adult's Depth of compression when performing CPR?	114 (68%)	53 (32%)
13.	In adults, where should chest compression be applied?	133 (80%)	34 (20%)
14.	The chest compression rate in adult during CPR?	142 (85%)	25 (15%)
15.	Abbreviation AED stands for?	133 (80%)	34 (20%)

DISCUSSION:

The abrupt stoppage of heart activity that results in a halt to breathing and blood flow is known as cardiac arrest.[15] Since the majority of adult cardiac arrests occur suddenly and are caused by a main cardiac cause, chest compressions are crucial in promoting circulation.[15] The enough space is needed for the CPR.[16] Early cardiopulmonary resuscitation (CPR) is valuable because it may extend the survival of the primary cardiac arrest patient by sustaining adequate blood supply to the heart and central nervous system to sustain temporary viability. However, CPR needs to be started as soon as possible in order to achieve this.[17] The results of our study indicate a generally positive level of knowledge among allied health professionals regarding BLS and CPR. Across various aspects assessed in the survey, respondents demonstrated strong understanding, with correct responses ranging from 51% to 90%. This suggests that the majority of participants have a solid grasp of essential CPR techniques and protocols. Our findings align with previous research indicating varying levels of BLS knowledge among healthcare professionals. Studies conducted in different regions have reported similar healthcare professionals. Studies conducted in different regions have reported similar trends, highlighting both areas of proficiency and potential gaps in knowledge.[18] However, it's worth nothing that direct comparisons may be limited due to differences in survey methodologies, participant demographics and healthcare systems. The high percentage of correct responses in certain areas, such as identifying the ideal compression rate and depth during CPR, reflects the effectiveness of current training programs and emphasizes the importance of continuous education and skill reinforcement. These finding suggest that existing BLS training initiative have been successful in instilling key concepts and techniques among allied health professionals. Conversely, the moderate to lower percentage of correct responses in specific areas, such as the initial steps to take when encountering an unresponsive adult while alone, indicates potential areas for improvement in training curricula. Addressing these gaps through targeted education and training interventions can enhance the overall readiness of healthcare professionals to respond effectively to cardiac emergencies.

The findings of this study have important implications for BLS training and healthcare practice. They underscore the critical need for ongoing skill development among allied health professionals to ensure

timely and effective responses to cardiac arrest cases. Health care providers can customize training programmes to fill in specific knowledge deficits and raise overall BLS and CPR skills by identifying areas of strength and weakness.

It's important to acknowledge the limitations of our study, including the reliance on self-reported survey data and the potential for response bias. Additionally, the study was conducted in a specific geographical region (India), which may limit the generalizability of the findings to other contexts. Future research could explore BLS knowledge and training practices in diverse healthcare settings and populations to provide a more comprehensive understanding of the global landscape.

CONCLUSION:

In conclusion, our study provides valuable insights into the knowledge levels of allied health professionals regarding BLS and CPR. While the majority of respondents demonstrated strong understanding in various aspects, there are opportunities for further improvement, particularly in addressing specific knowledge gaps. By leveraging these finding to enhance BLS training programs and educational initiatives, healthcare organizations can better equip their workforce to effectively respond to cardiac emergencies and improve patient outcomes.

Acknowledgement:

I would like to express my heartfelt appreciation to everyone engaged in the study, both directly and indirectly.

Conflicts of Interest: There are no conflicts of interest.

Financial Support and sponsorship: Nil

Ethical Approval: Not required

Statistical Analysis: Not required

Author's Contribution: The study idea and design, data collection, data analysis and interpretation of results and text were all contributed by all authors.

REFERENCES:

1. Muralee Mohan , S.M. Sharma , Tripthi Shetty & Prabhakar Gupta, Awareness of basic life support (BLS) among Dental interns and Dental practitioners, Journal of Health and Allied Sciences NU 05(03):014-018
2. AlQahtani, N. T., Albassam, A. M., Alonzi, T. H., Al-Harbi, O., Alshamma, A. R., Alhamdan, H. A., Alonzi, M. S., & Alenzi, A. S. (2023). Assessment of basic life support (BLS) knowledge and awareness among teachers in Al-Kharj City, Saudi Arabia.International Journal of Health Sciences,7(S1), 3038–3049.
3. Tariq Alam,1 Yasir Jamil Khattak,1 Muhammad Anwar,1 and Asif Alam Khan, Basic Life Support: A Questionnaire Survey to Assess Proficiency of Radiologists and Radiology Residents in Managing Adult Life Support in Cardiopulmonary Arrest and Acute Anaphylactic Reaction,Hindawi Publishing Corporation Emergency Medicine International Volume 2014, Article ID 356967, 4 pages
4. Gautam Prasad Chaudhary , 1 Kalyani Sah,2 Juhi Malla,2 Nikita Das,2 Sabina Chaudhary , 2 Indrajeet Chaudhary , 2 and Jitendra Pandey 1, Knowledge regarding Basic Life Support among Health Care Workers of the Hospital of Nepal, Journal of Healthcare Engineering Volume 2023, Article ID 9936114, 6 pages
5. Vignesh Kamath, Swapna B V, Smitha Sammith Shetty, Priya Mukherjee, Anoop Mayya, Liang Kai Yuan. Knowledge and Attitude towards Basic Life Support (BLS) among Dental students of Dental colleges in South India. Research Journal of Pharmacy and Technology. 2021; 14(6):2957-1.
6. Handley AJ, Koster R, Monsieurs K, Perkins GD, Davies S, Bossaert L. European Resuscitation Council guidelines for resuscitation 2005. Section 2. Adult basic life support and use of automated external defibrillators. Resuscitation 2005; 67 (Suppl 1): S7–23.

7. Chew KS, Yazid MNA. The willingness of final year medical and dental students to perform bystander cardiopulmonary resuscitation in an Asian community. Int J Emerg Med 2008;1(4): 301-09.
8. Larsen MP, Eisenberg MS, Cummins RO, Hallstrom AP. Predicting survival from out-of-hospital cardiac arrest: a graphic model. Ann Emerg Med 1993; 22: 1652-58.
9. Nabil A. Alhakamy, Ahmad M. Zamzami , Fuad A. Bukhari , Faisal A. Bukhari , Omar A. Almash , Mohammed A. Madkhali , Abdullah A. Manni , Mohammed A. Alrezqi, Knowledge and attitude about basic life support and emergency medical services among pharmacy students at King Abdulaziz University, Jeddah, Saudi Arabia, Saudi Journal of Emergency Medicine, 2020;1(2):070–074
10. S. Sachdeva, "A study to assess knowledge and practice of basic life support among nurses working in tertiary care hospital, New Delhi, India," Nursing & Care Open Access Journal, vol. 7, no. 2, pp. 48–52, 2020.
11. Kalyani Sah,Juhi Malla,Nikita Das,Sabina Chaudhary,Indrajeet Chaudhary, and Jitendra Pandey , Knowledge regarding Basic Life Support among Health Care Workers of the Hospital of Nepal, Volume 2023, Article ID 9936114.
12. Zia, I., Cheema, S. S., Sheikh, N. S., & Ashraf, H. (2022). Hand hygiene knowledge, attitudes, and self-reported practices among medical and nursing staff of a tertiary-care military hospital: a cross-sectional study. International Journal of Infection Control, 18.
13. M. Sabir, "Identify knowledge of basic cardiac life support among nursing student," International Journal of Scientific and Research Publications, vol. 7, no. 6, pp. 733–738, 2017.
14. K. Karki, G. Chaudhary, R. Khadka et al., "Impact of COVID-19 pandemic on learning status of student in Nepal," Journal of Education and Health Promotion, vol. 11, no. 1, pp. 314–318, 2022.
15. Chandran KV, Abraham SV. Basic Life Support: Need of the Hour-A Study on the Knowledge of Basic Life Support among Young Doctors in India. Indian J Crit Care Med. 2020 May;24(5):332-335.
16. Singh M, Kumar D.A review on caring of surgical wound after surgical procedure.Int J Res Med Sci 2024;12:345-8.
17. Cummins RO, Ornato JP, Thies WH, Pepe PE. Improving survival from sudden cardiac arrest: the "chain of survival" concept. A statement for health professionals from the Advanced Cardiac Life Support Subcommittee and the Emergency Cardiac Care Committee, American Heart Association. Circulation. 1991 May;83(5):1832-47.
18. Singh G, Kumar D, Kumar M, Chunkhare M. Understanding among dialysis therapist /technologist about prevention protocols of COVID-19 in north west zone of India: a questionnaire-based survey. Int J Community Med Public Health 2024;11:177-81.

Annexure-
Questionnaire

S. no	Socio Demographic
	Your age group: A. 17-25 B. 26-35 C.36- 45 D. More than 45.
	Your gender A. Male B. Female
	Your work experience: A. 0-5 years B. 6- 10 years C. 11- 15 years D. More than 15 years
	Your working sector; A. Clinical B. Educator C. Research. D. Biomedical
	Your qualification A. Diploma B. Graduate C. Post graduate. D. Doctorate.
	BLS Knowledge
	The ideal CPR pace for an adult is breaths per chest compression. A. 5: 2 B. 10: 2 C. 15: 2 D. 30: 2.
	Take a pulse check for no longer than. A. 10 seconds B. 5 seconds C. 15 seconds D. 20 seconds
	Which method can be applied to clear the air way? A. Sweep finger in mouth B. head tilt-chin lift C. chin tilt-head lift. D. None of them
	If there is not a pulse, the next appropriate step is to A. Begin chest compressions B. Ask for help C. Administer to breaths.
	If pulse is present, the next suitable action is to- A. Administer rescue breaths B. Begin compressions C. No intervention required.
	What will be your first step? When you find an adult person unresponsive on the road? (Note: If you are alone at that place) A. Maintain airway B. Start chest compression C. Ask for help D. Start giving breathings
	What is an adult's depth of compression when performing CPR? A. At least 2 inches B. 2½ – 3 inches C. Less than 2 inch D. According to your comfortable level.
	In adults, where should chest compression be applied? A. Right side of the chest B. Left side of the chest C. Centre of the chest on breastbone D. anywhere on chest region
	The chest compression rate in adult during CPR? A. At least 100 / min B. At least 90 / min C. At least 80 / min D. At least 70 / min
	Abbreviation AED stands for? A. Automated External Defibrillator B. Automated Electrical Defibrillator C. Advanced Electrical Defibrillator D. Advanced External Defibrillator