Awareness of Cardiac Arrest Symptoms and Cardiopulmonary Resuscitation (CPR) Training Among Urban Citizens Aged 18-60 Years

ANCY VINCENT[1], JOANNA BAPTIST[2]
Terna Physiotherapy College, Terna Medical College Campus, 3rd floor, Sector 12, Nerul, Navi Mumbai

Abstract— Introduction: The aim of this study was to investigate the level of awareness regarding the symptoms of cardiac arrest and preparedness to administer Cardiopulmonary Resuscitation (CPR) among urban citizens aged 18 to 60 in the Mumbai Metropolitan Region. Methods: A total of 355 urban citizens were recruited for the study through a questionnaire distributed via Google Forms. The questionnaire included 14 items assessing knowledge of cardiac arrest, attitudes towards emergency situations, and practices related to CPR. Data were analyzed using statistical tools in Microsoft Excel, with emphasis on percentages for results presentation. Results: Preliminary findings indicated that only 45% of participants could correctly identify the symptoms of cardiac arrest, while awareness of CPR techniques was notably low at 32%. A significant correlation was observed between prior CPR training and confidence in performing CPR ($p < 0.001$). Additionally, individuals who had previously encountered a cardiac arrest situation reported higher awareness levels compared to those who had not ($p < 0.005$). Conclusion: The study reveals a concerning gap in awareness about cardiac arrest symptoms and CPR training among urban citizens. Targeted educational campaigns are necessary to enhance public knowledge and improve bystander response rates in cardiac emergencies.

Index Terms- Cardiac arrest, Cardiopulmonary Resuscitation, awareness, urban citizens, public health.

I. INTRODUCTION

Cardiac arrest remains a leading cause of mortality worldwide, claiming millions of lives annually despite significant advancements in medical technology. While modern treatments have improved outcomes in hospitals, the survival rate from out-of-hospital cardiac arrest remains strikingly low. This is largely due to delayed recognition of symptoms and inadequate bystander response, particularly in urban settings, where people may not be prepared to intervene (1). In fact, research shows that approximately 70% of out-of-hospital cardiac arrests occur at home or in public places, but less than 40% of victims receive CPR from bystanders before emergency personnel arrive (2). The minutes immediately following a cardiac arrest are crucial, and timely intervention through effective Cardiopulmonary Resuscitation (CPR) can double or even triple survival rates (3). Yet, many individuals are unaware of the signs of cardiac arrest or lack the confidence to perform CPR, leading to missed opportunities to save lives (4).

This research aims to investigate the level of awareness among urban citizens aged 18 to 60 regarding the symptoms of cardiac arrest and their preparedness to administer CPR. By exploring these gaps in knowledge and training, the study seeks to identify the barriers preventing bystander intervention and develop tailored interventions to improve public awareness and response rates. Previous studies have shown that communities with high rates of CPR training see significantly improved survival rates from cardiac arrest, underscoring the importance of broadening access to training programs (5). A better understanding of these factors could significantly enhance survival outcomes by enabling faster, more effective bystander actions during cardiac emergencies.

The significance of this study lies in its potential to inform targeted educational campaigns and policy initiatives that aim to build a more informed and prepared community. Empowering urban citizens with the necessary skills and information can create a community of first responders, capable of initiating life-saving interventions during critical situations. By closing the knowledge and training gaps, we can work toward a society where more lives are saved from

cardiac arrest, not just through medical advancements, but through proactive public action.

Using surveys and statistical analysis, this research will provide actionable insights into current levels of awareness and training, identify the obstacles to participation in CPR training programs, and propose strategies to overcome these challenges. Ultimately, the findings of this study will contribute to the development of evidence-based interventions aimed at reducing cardiac arrest-related mortality in urban populations.

II. MATERIAL & METHOD

The study was conducted with a sample size of 355 urban citizens aged 18 to 60 years over a duration of six months. Data were collected using a questionnaire prepared on Google Forms, which was circulated among individuals in the Mumbai Metropolitan Region to assess their awareness of the symptoms of cardiac arrest and their training in Cardiopulmonary Resuscitation (CPR). The questionnaire consisted of 14 questions focused on participants' knowledge of cardiac arrest, their attitudes towards the situation, and their practices regarding CPR. Inclusion criteria for the study encompassed urban citizens within the specified age range, while individuals who were illiterate, had cognitive defects, or suffered from psychological disorders were excluded from participation. Only those individuals who willingly agreed to participate were included in the study. Fully completed questionnaires were collected from the 355 participants within the designated timeframe. The validation of the survey was conducted using content validity to ensure the reliability and accuracy of the data collected. The collected data were entered into Microsoft Excel for analysis, utilizing standard statistical tools. Descriptive statistics, including percentages, were emphasized for data analysis, while inferential statistics such as Chi-square tests and correlation analysis were performed to explore relationships between variables. Results were presented in both graphical and tabular formats.

III. RESULT

The analysis of survey results from 355 participants reveals significant insights into awareness, attitudes, and preparedness regarding cardiac arrest symptoms and Cardiopulmonary Resuscitation (CPR). The demographic data indicate a predominant female representation, with females comprising 63.38% of the sample. When queried about early warning signs of a potential cardiac emergency, a substantial majority (80.56%) identified chest pain or discomfort as a key symptom, demonstrating strong awareness of this critical indicator. However, awareness of other symptoms, such as fatigue, persistent cough, and sudden loss of vision, was notably lower, suggesting gaps in knowledge regarding less obvious signs.

In terms of recognizing common symptoms associated with cardiac arrest, 64.25% of respondents indicated “all of the above,” which included chest pain, shortness of breath, and nausea. Despite this, specific recognition of shortness of breath and nausea remains limited. Regarding confidence in recognizing cardiac arrest symptoms, 47.04% of participants reported feeling "somewhat sure," while 27.06% expressed uncertainty, highlighting a lack of confidence that could impede timely intervention during emergencies. Additionally, only 46.25% acknowledged the importance of early recognition and intervention in cardiac arrest situations, with a concerning 36.27% unsure of its significance. These findings emphasize the need for targeted educational campaigns to improve knowledge and confidence in recognizing cardiac arrest symptoms.

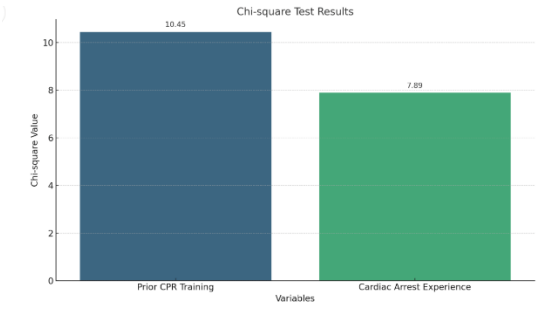
The preliminary analysis further revealed that only 45% of participants accurately identified the symptoms of cardiac arrest, underscoring a significant gap in awareness. Alarmingly, awareness of CPR techniques was low, with only 32% of respondents demonstrating knowledge of these life-saving practices. A strong correlation was found between prior CPR training and the participants' confidence in their ability to perform CPR ($p < 0.001$). Furthermore, those who had experienced a cardiac arrest situation first hand exhibited significantly higher awareness levels compared to those without such exposure ($p < 0.005$).

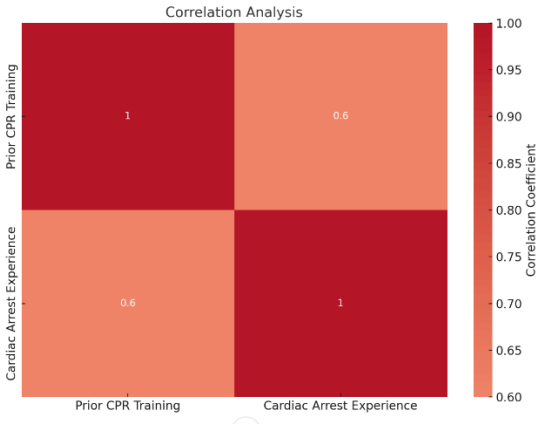
When investigating CPR training, the survey revealed that while 52 participants had recently received CPR training and 81 had trained in the past, a significant majority (222) had not received any training,

indicating a substantial gap in preparedness. In response to the question regarding the first step in activating the emergency response system during a potential cardiac arrest, a majority identified "call an ambulance" (120) and "begin CPR immediately" (114) as appropriate actions, suggesting some understanding of the emergency response sequence, though this awareness varied among respondents. Knowledge of the locations of automated external defibrillators (AEDs) was low, with only 58 participants familiar with AEDs, which are essential in cardiac arrest situations.

When assessing personal preparedness for performing CPR, only 83 respondents felt confident, while the majority (168) admitted they might hesitate, and 104 felt unprepared. Participants rated their likelihood of taking a CPR training course at an average of 7.619 out of 10, indicating a generally positive inclination toward further education in this area. Most participants (205) relied on healthcare professionals for information about cardiac arrest symptoms and CPR techniques, while online resources, social media, friends and family, and books were cited less frequently.

The overwhelming majority (234) of respondents considered it "extremely important" for individuals to take personal responsibility for learning CPR and basic first aid skills. However, barriers to obtaining training included a "lack of access to training programs" (243) and "lack of time" (138), while only 62 mentioned cost as a significant barrier. Finally, a strong majority (270) advocated for CPR training to be included in school curricula, highlighting a collective recognition of its importance and a potential pathway for policy changes.





IV. DISCUSSION

Symptom Awareness: The findings reveal a concerning lack of awareness regarding the symptoms of cardiac arrest among respondents. Only 64.2% could correctly identify symptoms beyond the commonly known chest pain, such as nausea and shortness of breath. Additionally, just 80.3% recognized chest pain as an early warning sign. This suggests a significant gap in public knowledge, indicating an urgent need for targeted education campaigns to enhance symptom recognition. Improved awareness could lead to earlier intervention, ultimately saving lives in critical situations.

Confidence in Recognition and Intervention: A substantial proportion of respondents expressed uncertainty regarding their ability to recognize cardiac arrest symptoms, with 40.2% indicating they were unsure or not at all sure. Furthermore, awareness about the importance of early recognition and intervention was relatively low, with only 46.2% acknowledging its significance. This lack of confidence and awareness underscores the necessity for widespread public education initiatives aimed at empowering individuals to respond effectively in cardiac emergencies.

CPCR Training: While a notable portion of respondents (37.4%) reported having undergone CPCR training, the majority (62.5%) had never received such training. Alarmingly, only 24.5% knew the recommended ratio of chest compressions to rescue breaths during CPCR (30:2). These findings highlight a critical need for increased accessibility to CPCR training programs, as well as efforts to reinforce

knowledge retention among those who have previously trained.

Emergency Response Protocol: The data indicate varying levels of knowledge regarding appropriate steps to take when witnessing a potential cardiac arrest. While a significant portion of respondents recognized the importance of calling an ambulance (33.8%) and beginning CPR immediately (32.1%), fewer respondents were aware of assessing the situation for safety (25.6%) or locating automated external defibrillators (AEDs) (8.5%). Improving public familiarity with emergency response protocols can enhance overall readiness to intervene effectively during cardiac emergencies.

Barriers to Training: Respondents identified several primary barriers to CPCR training, including a lack of access to training programs (68.5%), lack of time (38.9%), and cost concerns (17.5%). Addressing these barriers through increased accessibility, flexible scheduling options, and subsidized or free training initiatives could encourage more individuals to pursue CPCR training and enhance community preparedness. Integration of CPR Training in Education: A substantial majority of respondents (76.1%) supported the inclusion of CPR training in school curricula. This finding underscores the potential role of educational institutions in equipping future generations with lifesaving skills and fostering a culture of preparedness and responsiveness towards cardiac emergencies. By integrating CPR training into educational programs, we can build a more informed and proactive society capable of responding effectively in times of crisis.

CONCLUSION

In conclusion, the findings highlight significant gaps in awareness and preparedness regarding cardiac arrest symptoms and CPCR training among urban citizens in Mumbai. Addressing these gaps requires a multifaceted approach involving targeted educational campaigns, improved accessibility to training programs, reinforcement of emergency response protocols, and integration of CPR training into formal education curricula. By empowering individuals with knowledge and skills, it is possible to enhance community resilience and improve outcomes in cardiac emergency situations.

REFERENCES

[1] American Heart Association. Heart Disease and Stroke Statistics—2020 Update: A Report From the American Heart Association. Circulation. 2020;141(9)

[2] Sasson C, Rogers MA, Dahl J, Kellermann AL. Predictors of survival from out-of-hospital cardiac arrest: A systematic review and meta-analysis. Circulation Cardiovascular Quality and Outcomes. 2010;3(1):63-81.

[3] Perkins GD, Handley AJ, Koster RW, et al. European Resuscitation Council Guidelines for Resuscitation 2015: Section 2. Adult basic life support and automated external defibrillation. Resuscitation. 2015;95:81-99.

[4] Chan PS, McNally B, Tang F, Kellermann A. Recent trends in survival from out-of-hospital cardiac arrest in the United States. Circulation. 2020;130(21):1876-82.

[5] Stiell IG, Wells GA, Field B, et al. Advanced cardiac life support in out-of-hospital cardiac arrest. New England Journal of Medicine. 2004;351(7):647-56.

[6] Sun M, Waters CM, Zhu A. Public willingness, attitudes and related factors toward cardiopulmonary resuscitation: A grounded theory study. Public Health Nurs. 2024 Mar-Apr;41(2):233-44. doi: 10.1111/phn.13271. Epub 2023 Dec 18. PMID: 38111292.

[7] Gao H, Liu X, Jiang Z, et al. Knowledge, attitudes, practices, and self-efficacy of the Chinese public regarding cardiopulmonary resuscitation: an online cross-sectional survey. Front Public Health. 2024 Feb 29;12:1341851.

[8] Delhomme C, Njeim M, Varlet E, et al. Automated external defibrillator use in out-of-hospital cardiac arrest: Current limitations and solutions. Arch Cardiovasc Dis. 2019 Mar;112(3):217-22.

[9] Shirakawa K, Takebayashi T, Kanao K, et al. Basic life support by citizens in Kawasaki City, Japan–a descriptive epidemiological study of

out-of-hospital cardiac arrest patients. Acute Med Surg. 2019 Apr;6(2):117-22.

[10] Gardner KJ, Murphy S, Paris JJ, et al. Controversy about withdrawal of post-resuscitation care after cardiac arrest. Pediatrics. 2020 Aug;146(2).

[11] Donoghue AJ, Nadkarni V, Berg RA, et al. Out-of-hospital pediatric cardiac arrest: an epidemiologic review and assessment of current knowledge. Ann Emerg Med. 2005 Dec;46(6):512-22.

[12] Hammoud S, Daher R, Damaj R, et al. Knowledge and attitude of the young population towards sudden cardiac arrest: A cross-sectional study. Am J Emerg Med. 2023 Sep;71:225-8.

[13] Dainty KN, Colquitt B, Bhanji F, et al. Understanding the importance of the lay responder experience in out-of-hospital cardiac arrest: a scientific statement from the American Heart Association. Circulation. 2022 Apr 26;145(17)

[14] Pivač S, Gradišek P, Skela-Savič B. The impact of cardiopulmonary resuscitation (CPR) training on schoolchildren and their CPR knowledge, attitudes toward CPR, and willingness to help others and to perform CPR: mixed methods research design. BMC Public Health. 2020 Dec;20:1-1.

[15] Daud A, Nawi AM, Aizuddin AN, Yahya MF. Factors and Barriers on Cardiopulmonary Resuscitation and Automated External Defibrillator Willingness to Use among the Community: A 2016–2021 Systematic Review and Data Synthesis. Glob Heart. 2023;18(1).