

Original Article

Knowledge and Perception of Cardiopulmonary Resuscitation Among Kudumbashree Workers of a District in India

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ABSTRACT

Introduction: Life-threatening emergencies like sudden cardiac arrest require immediate CPR to improve survival chances. Kudumbashree's wide grassroots network in Kerala presents a valuable opportunity to boost community CPR awareness and skills.

Objectives: Our study aimed to evaluate the knowledge and perceptions of CPR among Kudumbashree workers in Malappuram, Kerala, and identify factors influencing their understanding of this critical life-saving technique.

Methods: The descriptive cross-sectional study included 300 Kudumbashree participants (Females, ≥ 18 years) selected via simple random sampling. A pre-tested validated questionnaire collected socio-demographic data, knowledge of CPR, perceptions and influencing factors. Data were analyzed using SPSS 26, with chi-square tests for bivariate analysis ($p \leq 0.05$).

Results: Our study found that 34% of Kudumbashree workers had good CPR knowledge. Media exposure, personal experience with cardiac events, and BLS session attendance significantly improved knowledge, with 65%, 37.6%, and 75.2% showing good knowledge, respectively. Despite misconceptions, 52.33% thought only healthcare workers should provide CPR, and 52% were reluctant to help strangers. However, 72.67% were willing to promote BLS training, and 68% supported its inclusion in school curricula.

Conclusion and recommendation: The study found that CPR knowledge among Kudumbashree workers was

generally low, with experience and exposure, rather than demographic factors, being key to better understanding. Despite fears and misconceptions about performing CPR, many workers recognized the value of BLS training and were open to promoting it in their communities, highlighting the need for targeted education initiatives.

Keywords: CPR, Cardio-pulmonary resuscitation, Emergency care, Emergency medical service, Public health practices

INTRODUCTION

Critical emergencies can occur anytime and anywhere. Sudden cardiac death (SCD) is defined as an unexpected cardiac arrest that follows a sudden loss of heart function within the same hour of onset of acute symptoms¹. More than 3 million patients around the world die of SCD annually. Hence, it represents around (15%) of the global mortality in individuals with pre-existing cardiovascular diseases². Immediate cardiopulmonary resuscitation (CPR) after collapse can triple survival rates. In contrast, if CPR is delayed survival chances decrease by 7-10% for every minute passing by. CPR, the initial step in the sequence of life-saving actions is most effective when initiated promptly after a person's collapse to prevent lasting brain damage. When the cardiac activity halts, the absence of oxygenated blood can cause irreversible brain damage within a few minutes³. The insufficient training and incompetence to deal with these emergencies can have

tragic consequences. According to several literatures, it was found that basic resuscitation skills, including prompt and effective CPR, increase the survival rate following cardiopulmonary arrest⁴.

Basic life support (BLS) is a critical component of emergency care that preserves lives during instances of sudden cardiac arrest, myocardial infarction, stroke, and airway obstruction by maintaining adequate breathing and circulation⁵. BLS is the rapid identification of signs of cardiac arrest, stroke, and airway obstruction due to foreign body, and starting basic steps to maintain circulation and breathing⁶. It can be given by health care providers as well as bystanders. Timely recognition of cardiac arrest and the prompt initiation of CPR prove effective in reducing both morbidity and mortality^{6,7}. The survival of out-of-hospital cardiac arrest (CA) is determined by immediate CPR provided by a bystander if it's given in the right way well in time. Challenges in administering bystander CPR in developed nations stemmed from insufficient knowledge or instruction, lack of skills, low confidence, and concerns about legal repercussions⁸. To provide proper care, the community needs an adequate amount of knowledge and insight on BLS by training either in person or online⁹.

The Kerala Government's State Poverty Eradication Mission (SPEM) runs the 'Kudumbashree' program, aimed at poverty eradication and women's empowerment. The name "Kudumbashree" means "prosperity of the family" in Malayalam and represents both the Kudumbashree Mission and the Kudumbashree Community Network. Established in 1997 following a State government-appointed Task Force's recommendations, Kudumbashree is a vast network of female members focused on grassroots community development. It is organized into three levels: Neighbourhood Groups (NHGs), Area Development Societies (ADS), and Community Development Societies (CDS) at the local government level. As of September 15, 2021, the network included 2,94,436 NHGs, 19,489 ADSs, and 1,064 CDSs, encompassing 45,85,677 women. Kudumbashree membership is open to all adult women, limited to one membership per family¹⁰. In Kerala, there are only a few studies that assess the awareness regarding 'cardiopulmonary resuscitation' among the general population. This study is the first of its kind in Kerala to assess CPR awareness among Kudumbashree members, highlighting their potential role in significantly promoting public health through community engagement.

By doing this study, a trend in knowledge and perceptions regarding CPR can be obtained. If it is found that people are lacking in knowledge, intervention approaches can be

implemented to raise awareness and improve their skills. Kudumbashree workers are key community messengers in Kerala, closely connected with the common women population. They are widely utilized for health promotion and training the public in various health skills. Assessing their CPR awareness helps identify gaps and enables the government to enhance their knowledge. Once trained, they can effectively spread CPR awareness among the wider population, maximizing the program's impact. Additionally, such activities will encourage a large number of people to attain knowledge on the topic, thereby achieving the objective of comprehensive CPR knowledge across the entire population in the state of Kerala. The wide and strong network of 'Kudumbashree' can be utilized to increase the community's awareness of CPR. In this context, our study sought to evaluate the level of knowledge and perception towards CPR among Kudumbashree workers in Malappuram district, as well as to identify the factors associated with CPR knowledge among these workers.

METHODS

The descriptive cross-sectional study was carried out in Malappuram, among Kudumbashree workers of Malappuram district, Kerala, India. Data were collected from July 2023 to December 2023, over six months. Kudumbashree workers aged 18 and above, residing in the Malappuram district, who were willing to participate, were included in the study. Those who could not comprehend or did not give consent were excluded from the study.

Based on a study conducted by Ashwani Jogade et al., the sample size was calculated using the formula $4pq/d^2$, where p is prevalence and d is precision, the target confidence level was 95% and the absolute precision was 5%¹¹. In the suggested study, good knowledge of CPR was reported by 84% of study participants. The formula yielded a minimal sample size of 215. Considering a 40% non-response rate for the online survey, the total sample size was adjusted to 300.

Simple random sampling was used to select the participants. The list of Kudumbashree members in Malappuram district was obtained from the District Programme Officer. From this list, 300 participants were randomly selected using computer-generated random numbers. The mobile phone numbers of the selected Kudumbashree volunteers were taken from the sample frame provided by the District Programme Office, Malappuram. The investigator personally contacted each participant. After confirming their willingness to participate, online forms, including informed consent, were sent to the

participants via WhatsApp or email, according to their preference. Guidelines for completing the forms were provided over the telephone.

A pretested (to ensure validity of the questionnaire) semi-structured questionnaire was used to assess knowledge, perceptions regarding CPR, and factors affecting knowledge. A pilot study was conducted with 10% of the participants to ensure the validity of the data collection tool and to determine the cut-off score. Knowledge of CPR was assessed using 10 questions derived from various validated questionnaires from previous studies, adjusted for geographic and cultural context following a pilot study ^{1,3,7,11-15}. The questions covered topics such as eligibility to perform CPR, compression rate, steps involved, and breathing monitoring, all presented in simple language. Knowledge was assessed based on a scoring system, with a cut-off score of 6 or above considered as good knowledge, and a score below 6 considered as poor knowledge. Each question on perception was assessed separately, and a percentage analysis was conducted for each.

The collected data were broken down into percentages and cross-tabulated for several variables. Version 26 of the SPSS software was used for the analysis. Where applicable, Fisher

exact and chi-square values were generated for bivariate analysis, and a p-value less than 0.05 was regarded as statistically significant.

Initially, permission was obtained from the District Programme Officer for the participation of Kudumbashree workers. Before participating, all study participants were assured of confidentiality and anonymity, and their involvement was voluntary. Written informed consent was obtained from each participant. Institutional ethics clearance was secured from the IEC of MES Medical College, Kerala, with reference number IEC/MES/F6/2024, before the initiation of the study.

RESULTS

3.1. Sociodemographic features of Kudumbashree workers (n=300)

Our study achieved a 100% response rate, ensuring comprehensive participation. The mean age of the study participants was 42.09 ± 9.667 years, with ages ranging from 17 to 70 years. The majority of participants had studied up to high school (57.3%) or higher secondary (18%). Most of them were homemakers (84.67%). Additionally, 96% of the participants were married. (Figure 1, 2, 3)

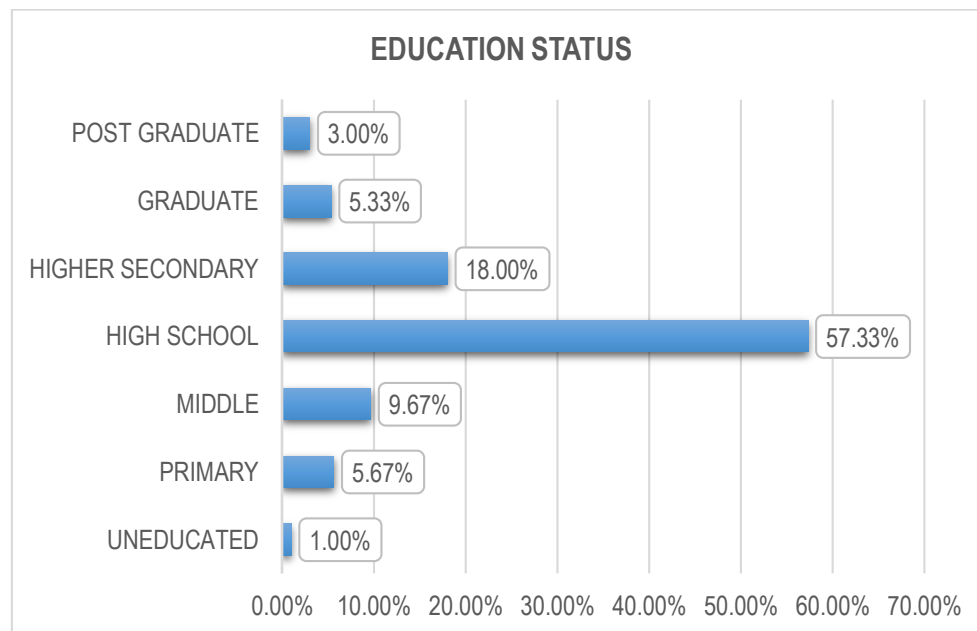


Figure 1: Education details of Kudumbashree workers

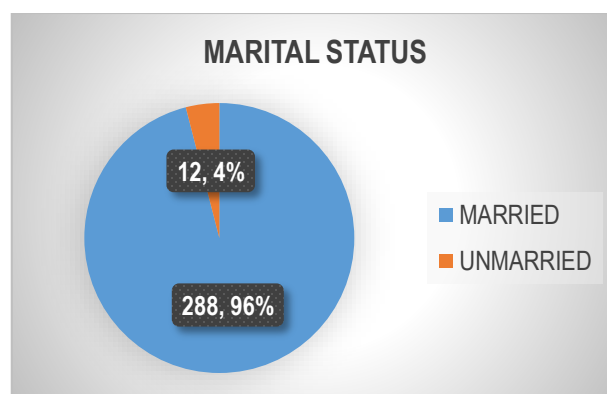
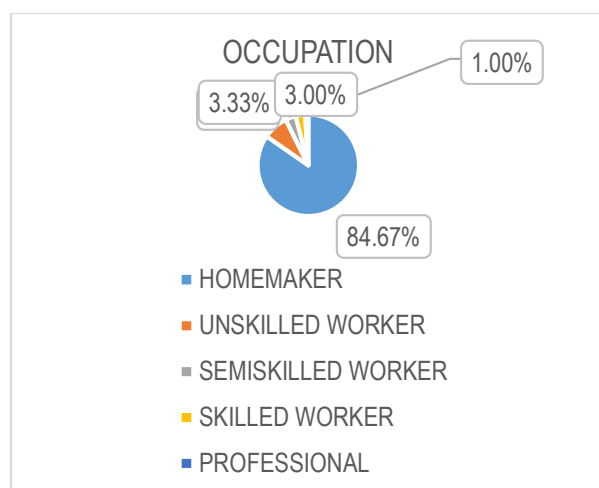


Figure 2 : Occupation and Marital status of Kudumbashree workers

3.2. The Knowledge of Kudumbashree workers on CPR (n=300)

Our study indicated that out of 300 participants, 102 (34.0%) had good knowledge of cardiopulmonary resuscitation, whereas 198 (66.0%) had poor knowledge. This demonstrated that a majority of the participants lacked sufficient knowledge about CPR. (Figure - 4)

3.3. Factors influencing knowledge of Kudumbashree workers on CPR (n=300)

In our study, significant differences in CPR knowledge were observed with media influence ($p = 0.001$), where 65.0% of

participants with media exposure had good knowledge compared to 22.7% without such exposure. Similarly, those who had experienced a cardiac event in their close family showed a higher proportion of good knowledge (37.6%) versus those without such an experience (20.6%), with a p -value of 0.012. Attending BLS sessions also significantly impacted knowledge, with 75.2% of those who attended having good knowledge compared to only 11.8% among those who did not, evidenced by a p -value of 0.001. In contrast, variables such as age, education status, occupation, and marital status did not show significant differences in CPR knowledge, with p -values >0.05 . (Table-1)

Table 1: Factors influencing knowledge of Kudumbashree workers on CPR

Variables			Knowledge		Total	p-value
			Good	Poor		
Sociodemographic variables	Age	<40	41 (32.8%)	84 (67.2%)	125 (100.0%)	0.711
		>40	61 (34.9%)	114 (65.1%)	175 (100.0%)	
	Education status	Below high school	74 (33.5%)	147 (66.5%)	221 (100%)	0.186
		Above high school	33 (41.8%)	46 (58.2%)	79 (100%)	
	Occupation	Upto skilled labour	98 (34.0%)	190 (66.0%)	288 (100.0%)	0.516
		Below skilled labour	3 (25.0%)	9 (75.0%)	12 (100.0%)	
	Marital status	Married	94 (32.6%)	194 (67.4%)	288 (100.0%)	0.064

Pervious Exposure/Interaction	Media influence	Unmarried	7 (58.3%)	5 (41.7%)	12 (100.0%)	0.001
		yes	52 (65.0%)	28 (35.0%)	80 (100.0%)	
		no	50 (22.7%)	170 (77.3%)	220 (100.0%)	
	Any event in close family	yes	89 (37.6%)	148 (62.4%)	237 (100.0%)	0.012
		no	13 (20.6%)	50 (79.4%)	63 (100.0%)	
	Attended BLS sessions	yes	79 (75.2%)	26 (24.8%)	105 (100.0%)	0.001
		no	23 (11.8%)	172 (88.2%)	195 (100.0%)	
		Total		102 (34.0%)	198 (66.0%)	

3.4. The perception of Kudumbashree workers on CPR (n=300)

In current study on assessing the perceptions of Kudumbashree workers regarding CPR, When faced with someone in danger, 28.7% would splash water in the face, while 24.3% would call an ambulance, 23.7% would start resuscitation, and 23.3% would run away in terror. The main reasons for not providing basic resuscitation were fear of diseases (36.3%) and fear of injuring the lungs (22.7%). Over half of the participants (52.33%) believed that CPR should be performed only by healthcare workers, and 52%

indicated that they would not perform basic resuscitation on a stranger due to fear. Despite this, 62.33% felt that CPR classes would positively impact life-saving in society, and 72.67% expressed willingness to share the significance of CPR training with others. Additionally, 68% believed that school curricula should include CPR training, while 45.71% of those with prior CPR training found such classes to be troublesome and a waste of time. Concerns about infection from training dummies were noted by 53%, yet 70.67% believed they would be more inclined to administer basic resuscitation if a close relative were in danger. (Table- 2)

Table 2: Perceptions of Kudumbashree workers on CPR

		Perceptions on CPR	Frequency	Percent
1	Reaction when you see someone in danger	Will run away in terror	70	23.3%
		Call ambulance	73	24.3%
		Start the resucitation	71	23.7%
		Splash water in face	86	28.7%
2	Reason for not providing basic resuscitation	Fear of injuring lungs	68	22.7%
		Legal problems	61	20.3%
		Fear of getting diseases	109	36.3%
		Lack of awareness	62	20.7%
3	Basic resuscitation should be performed by healthcare workers only		157	52.33%
4	You won't do basic resuscitation even if a stranger is necessary due to fear		156	52.00%
5	I feel that basic resuscitation CPR classes will bring a change in society in terms of life-saving		187	62.33%
6	I am willing to share the significance of CPR training with others and will encourage them to learn it		218	72.67%
7	I feel that the school curriculum should impart awareness about CPR training		204	68.00%

8*	I think that classes I heard about CPR training seem to be troublesome and a waste of time (<i>only 105 had prior CPR training</i>)	48	45.71%
9	I think that dummies used in CPR training are likely to cause infections	159	53.00%
10	I am more likely to give basic resuscitation even if i am afraid when my close relative is in danger	212	70.67%

* Only 105 had prior BLS training, so the percentage was calculated out of 105 for the 8th question

DISCUSSION

Understanding CPR is vital for equipping people to respond quickly in critical situations, which can save lives by delivering prompt aid before expert assistance arrives. In our study, 34% of participants exhibited good CPR knowledge, with media exposure, personal experiences with cardiac events, and participation in BLS sessions positively correlating with improved understanding. A study conducted by Ashwani Jogade et al. in India found that 84% of participants had good knowledge of CPR, which was significantly higher than in our study¹¹. Meanwhile, Muthupriya et al. reported that among staff nurses, 13.3% had inadequate knowledge, 76.6% had moderately adequate knowledge, and 10% had very good knowledge of CPR. Although our study categorized knowledge into only two groups, the higher knowledge levels in their study might be attributed to the inclusion of healthcare workers, unlike ours¹².

In contrast, a study by Jarrah et al. among the general public found that 37% had good knowledge of CPR, particularly chest compressions, which was consistent with our results. The variability across these studies could be explained by differences in study populations, with healthcare professionals likely contributing to higher knowledge levels¹³. Comparatively, Andrell et al. found that 57% had good knowledge, particularly regarding the 30:2 compression rate, indicating higher awareness than in our study¹⁴. In contrast, a study by P Men et al reported a mean knowledge score of 3.22 out of 9, with only 10-15% of participants possessing adequate knowledge, a result similar to ours¹⁵. Further, Klosevickz et al. also reported 35.09% with good CPR knowledge, closely aligning with our findings¹⁶. Similarly, Ozbilgin et al. found that 41.5% had appropriate knowledge of CPR and chest compressions, comparable to our study. The differences in these study results may be attributed to variations in the tools used to assess CPR knowledge, differing questionnaires, methodologies, demographics, and geographical factors¹⁷.

In our study, individuals exposed to various forms of media, such as social media, newspapers, and television,

demonstrated better knowledge of CPR compared to those who had not encountered such information. This finding aligns with the results of a study by Ravindra et al., which reported that 59% of individuals influenced by social media had higher CPR knowledge and awareness, in contrast to 27% among those without such exposure. Media platforms can serve as powerful tools for disseminating critical information widely¹⁸. The American Heart Association(AHA) also highlighted in its 2016 scientific statement the potential of media in enhancing public education and engagement in emergency cardiovascular and cerebrovascular care. Our study's outcomes are consistent with these findings¹⁹. Similarly, a quasi-experimental study by Ziabari et al highlighted the effectiveness of modern communication networks in enhancing knowledge about basic life support²⁰. Plunien et al's research further supported this by showing that chest compression depth and total compression work were notably higher among those influenced by media²¹. Additionally, Nava et al found a significant correlation between the accuracy of CPR knowledge and exposure to educational television programs ($p = 0.039$), reflecting outcomes similar to our study²². The uniform results in these studies indicate that exposure to media significantly enhances understanding and execution of CPR, likely due to its broad reach and ability to deliver targeted educational content effectively.

In our study, a statistically proven association was observed between prior attendance at BLS training and CPR knowledge. Similarly, Gao et al found that aspects like previous CPR instruction, awareness of defibrillators, previous CPR experience, and familiarity with CPR were associated with higher knowledge scores²³. Meanwhile, Oteir et al also demonstrated that participants who had attended BLS/CPR sessions in the past had significantly higher mean scores compared to those who were untrained (4.6 ± 1.6 vs 3.8 ± 1.6 , $p < 0.001$)²⁴. In Pakistan, Abbas et al reported that those who had previously taken a CPR training course had greater knowledge than those who had not²⁵. Likewise, Aroor et al found a significant association between prior CPR training and knowledge levels²⁶. These findings suggest that attending CPR training sessions significantly enhances CPR knowledge, emphasizing the importance of

regular training to maintain and improve proficiency. In our study, the presence of any cardiac life event within the family positively influenced CPR knowledge. Similarly, Syed et al. observed that in cases of a family member's cardiac arrest, over 90% of individuals reported they would perform CPR, and those with family or friends who experienced a cardiac event demonstrated better CPR knowledge compared to those without such experiences²⁷. Nevertheless, Teng et al. reported differing results, indicating that participants with family members affected by heart disease had notably lower training experience and CPR knowledge compared to those without such relatives, with a p-value less than 0.001. While those individuals displayed a positive attitude, their CPR knowledge was notably lower, unlike in our study²⁸. This discrepancy may be due to differences in the study populations' sociodemographic characteristics and variations in the methodology, tools, and study design. Meanwhile, Cartledge et al. found that both cardiac patients and their spouses had a heightened need to learn CPR after an acute cardiac event, which aligned with the findings of our research²⁹. Differences between studies probably illustrate how situational factors affect the learning and understanding of CPR.

In a study by Huang et al., 86.7% of participants expressed readiness to administer CPR to unfamiliar individuals, compared to only 48% in our study. Huang et al. identified barriers to CPR, including concern about legal repercussions (44%), worry about causing injury to patients (36.5%), and infection risk (28.2%), which aligned partially with our findings of infection fear (36.3%), legal concerns (20.3%), and fear of lung injury (22.7%)³⁰. Meanwhile, Khan et al. reported that 74.7% of participants were prepared to administer CPR to unfamiliar individuals if they knew the steps, contrasting with our 48%. In their study, reluctance was mainly due to fear of harming patients (48.8%), legal issues (10%), and infection risk (4%)³¹. Additionally, 62.3% of our participants believed that CPR classes would create societal change, which was similar to the 62% in Huang et al.'s study and higher than the 22% reported in Khan et al.'s study^{30, 31}. In a study by Jarghon et al., 90.7% of participants supported making CPR training mandatory and part of the educational curriculum, similar to the 68% agreement in our study. However, only 26% in their study believed CPR should be exclusive to healthcare workers, whereas this perception was higher in our study at 52.3%³². A study by Oteir et al. highlighted obstacles to CPR education such as lack of knowledge about training locations (33.0%), time constraints (32.1%), cost (14.1%), lack of interest (12.3%),

and limited availability (8.4%)²³. In our research, 71% showed readiness to administer CPR on a close relative despite fear, aligning with Khan et al. and Park et al., who found that most bystanders would perform CPR on relatives if they knew the steps^{31, 33}. These disparities across studies might be due to differences in cultural context, awareness levels, perceived barriers, and demographic variations.

The major strength of our study was its large, representative sample of Kudumbashree workers, which provided comprehensive insights into CPR knowledge and perceptions across a significant community network. Additionally, the study effectively highlighted the impact of media exposure, personal experiences, and BLS training on improving CPR knowledge, informing targeted educational interventions. The major limitations of this study include its reliance on self-reported data, which could introduce bias due to social-desirability or inaccurate recall among participants. The use of an online survey may have excluded individuals with limited access to digital platforms or low digital literacy, potentially affecting the generalizability of the results. Additionally, the cross-sectional design of the study limited the ability to establish causality between the identified factors and CPR knowledge. Finally, the sample was restricted to Kudumbashree workers in a specific district, which may not represent the knowledge and perceptions of the broader population in other regions.

5. CONCLUSION AND RECOMMENDATIONS

The study revealed that knowledge of CPR among Kudumbashree workers was generally moderate, with a significant portion lacking sufficient understanding of the procedure. Factors such as media exposure, personal experiences with cardiac events, and participation in BLS sessions were positively associated with better CPR knowledge, highlighting the need for focused training and awareness programs. Conversely, variables like age, education, occupation, and marital status showed no significant impact on CPR knowledge, suggesting that the gaps in awareness are more related to experience and exposure rather than demographic factors. The workers' perceptions highlighted considerable apprehensions, including fear of disease transmission, legal consequences, and concerns about potential harm, which limited their readiness to provide CPR to unknown persons. Despite these barriers, there was a strong belief in the potential of BLS classes to improve life-saving measures in society, and many were willing to promote BLS training within their

communities. This indicates a critical need for structured and community-based training programs to address misconceptions, build confidence, and enhance CPR preparedness among local populations. Local self-government bodies could engage Kudumbashree workers in CPR training sessions and empower them as trainers to raise awareness about the importance of CPR within the wider community. Given their familiarity and rapport with the community, these workers can effectively communicate and enhance public attitudes and perceptions toward CPR.

REFERENCES

1. Abbas HA, Khudari SY, Almalki RH, Abed RT, Sait SA, Sulaiman AA. Public knowledge and attitude toward basic life support in Jeddah, Saudi Arabia. *Int J Community Med Public Health*. 2021 Mar; 8:1082-90.
2. Bogle BM, Ning H, Mehrotra S, Goldberger JJ, Lloyd-Jones DM. Lifetime risk for sudden cardiac death in the community. *Journal of the American Heart Association*. 2016 Jun 29;5(7): e002398.
3. Ghrayeb FA, Amro NR, Rahseed O, Yagi H, Amro R, Amro B. Knowledge and attitude of basic life support (BLS) among school teachers in Hebron, Palestine. *Int J Res Med Sci*. 2017 Jun;5(6):2477-82.
4. Subki AH, Mortada HH, Alsallum MS, Alattas AT, Almalki MA, Hindi MM, Subki SH, Alhejily WA. Basic life support knowledge among a nonmedical population in Jeddah, Saudi Arabia: cross-sectional study. *Interactive journal of medical research*. 2018 Nov 28;7(2): e10428.
5. Alotaibi O, Alamri F, Almufleh L, Alsougi W. Basic life support: Knowledge and attitude among dental students and Staff in the College of Dentistry, King Saud University. *The Saudi Journal for Dental Research*. 2016 Jan 1;7(1):51-6.
6. Fernandes JM, Leite AL, Auto BD, Lima JE, Rivera IR, Mendonça MA. Teaching basic life support to students of public and private high schools. *ArquivosBrasileiros de Cardiologia*. 2014 Jun 6; 102:593-601.
7. Rajapakse R, Noč M, Kersnik J. Public knowledge of cardiopulmonary resuscitation in Republic of Slovenia. *Wiener KlinischeWochenschrift*. 2010 Dec;122(23):667-72.
8. Mori S, Whitaker IY, Marin HD. Avaliação do website educacionalPrimeirosSocorros. *Revista da Escola de Enfermagem da USP*. 2013; 47:950-7.
9. Arbon P, Hayes J, Woodman R. First aid and harm minimization for victims of road trauma: a population study. *Prehospital and disaster medicine*. 2011 Aug;26(4):276-82.
10. Kudumbashree. Kudumbashree [Internet]. Kudumbashree.org. [cited 2023 Feb 1]. Available from: <https://www.kudumbashree.org/>
11. Jogade A, Patkar D. Study of Awareness of Basic Life Support among General Population in Mumbai: A Cross-Sectional Survey. *Global Journal of Management and Business Research*. 2020 May 16.
12. Muthu Priya M. Study to assess the knowledge regarding cardiopulmonary resuscitation for staff nurses at SLG hospitals, Hyderabad-90 [Internet]. Sbvjournals.com. [cited 2024 Aug 26]. Available from: <https://pjin.sbvjournals.com/abstractArticleContentBrowse/PJN/34931/JPJ/fullText>
13. Jarrah S, Judeh M, AbuRuz ME. Evaluation of public awareness, knowledge and attitudes towards basic life support: a cross-sectional study. *BMC Emerg Med*. 2018 Oct 29;18(1):37. doi: 10.1186/s12873-018-0190-5. PMID: 30373529; PMCID: PMC6206630.
14. Andréll C, Christensson C, Rehn L, Friberg H, Dankiewicz J. Knowledge and attitudes to cardiopulmonary resuscitation (CPR)- a cross-sectional population survey in Sweden. *Resusc Plus*. 2021 Jan 29;5:100071. doi: 10.1016/j.resplu.2020.100071. PMID: 34223339; PMCID: PMC8244385.
15. Cheung BMY, Ho C, Kou KO, Kuong EEYL, Lai KW, Leow PL, et al. Knowledge of cardiopulmonary resuscitation among the public in Hong Kong: telephone questionnaire survey. *Hong Kong Med J*. 2003;9(5):323-8.
16. Kłosiewicz, T., Śmigasiewicz, S., Cholerzyńska, H. et al. Knowledge and attitudes towards performing resuscitation among seniors - a population-based study. *Arch Public Health* 82, 67 (2024). <https://doi.org/10.1186/s13690-024-01301-9>
17. Özbilgin Ş, Akan M, Hancı V, Aygün C, Kuvaki B. Evaluation of Public Awareness, Knowledge and Attitudes about Cardiopulmonary Resuscitation: Report of İzmir. *Türk J Anaesthesiol Reanim*. 2015 Dec;43(6):396-405. doi: 10.5152/TJAR.2015.61587. Epub 2015 Dec 1. PMID: 27366536; PMCID: PMC4894183.
18. Ravindra P, Shubha HS, Kumar Nagesh S, Bhat R, Kumar Sahu A, Chugh S, et al. #CPR challenge: Impact of a social media campaign on cardiopulmonary resuscitation awareness and skills among young adults – A quasi experimental study. *Resusc Plus* [Internet]. 2024;19(100711):100711. Available from: <http://dx.doi.org/10.1016/j.resplu.2024.100711>
19. Rumsfeld JS, Brooks SC, Aufderheide TP, Leary M, Bradley SM, Nkonde-Price C, et al. Use of mobile devices, social media, and crowdsourcing as digital strategies to improve emergency cardiovascular care: A scientific statement from the American heart association. *Circulation* [Internet]. 2016;134(8). Available from: <http://dx.doi.org/10.1161/cir.0000000000000428>

20. S.M. Zia Ziabari, V. Monsef Kasmaei, L. Khoshgozaran, M. Shakiba Continuous education of basic life support (BLS) through social media; a quasi-experimental study Arch Acad Emerg Med, 7 (2019), p. e4
21. Plunien R, Eberhard C, Dinse-Lambracht A, Struck MF, Muth C-M, Winkler BE. Effects of a media campaign on resuscitation performance of bystanders: a manikin study: A manikin study. Eur J Emerg Med [Internet]. 2017;24(2):101–7. Available from: <http://dx.doi.org/10.1097/MEJ.0000000000000305>
22. Nava S, Santoro C, Grassi M, Hill N. The influence of the media on COPD patients' knowledge regarding cardiopulmonary resuscitation. Int J Chron Obstruct Pulmon Dis. 2008;3(2):295–300. doi: 10.2147/copd.s1805. PMID: 18686738; PMCID: PMC2629960.
23. Oteir AO, Almhdawi KA, Kanaan SF, Alwidyan MT, Williams B. Cardiopulmonary resuscitation level of knowledge among allied health university students in Jordan: a cross-sectional study. BMJ Open. 2019 Nov 19;9(11):e031725. doi: 10.1136/bmjopen-2019-031725. PMID: 31748305; PMCID: PMC6887078.
24. Gao H, Liu X, Jiang Z, Huang S, Pan X, Long J, et al. Knowledge, attitudes, practices, and self-efficacy of the Chinese public regarding cardiopulmonary resuscitation: an online cross-sectional survey. Front Public Health [Internet]. 2024;12:1341851. Available from: <http://dx.doi.org/10.3389/fpubh.2024.1341851>
25. Abbas A, Bukhari SI, Ahmad F. Knowledge of first aid and basic life support amongst medical students: a comparison between trained and un-trained students. J Pak Med Assoc 2011;61:613–6.
26. Aroor A, Saya R, Attar N, et al.. Awareness about basic life support and emergency medical services and its associated factors among students in a tertiary care hospital in South India. J Emerg Trauma Shock 2014;7:166–9. 10.4103/0974-2700.136857
27. Sayed, Ahmed I.; Mobarki, Sarah J.1; Hakami, Abdulaziz Ahmed1; Saabi, Somaya M.1; Oraibi, Manaf M.1; Darraj, Bushra H.1; Alshamakhi, Atheer H.1; Abuhadi, Hamzah M.1; Abdulwali, Hany M.1; Hakami, Abdulrahman M.. Awareness, Knowledge, and Attitudes Regarding Cardiopulmonary Resuscitation in Case of Cardiac Arrest among the Population in the Jazan Region, Saudi Arabia. Annals of African Medicine 23(2):p 118-124, Apr–Jun 2024. | DOI: 10.4103/aam.aam_25_23
28. Teng Y, Li Y, Xu L, Chen F, Chen H, Jin L, Chen J, Huang J, Xu G. Awareness, knowledge and attitudes towards cardiopulmonary resuscitation among people with and without heart disease relatives in South China: a cross-sectional survey. BMJ Open. 2020 Dec 24;10(12):e041245. doi: 10.1136/bmjopen-2020-041245. PMID: 33361079; PMCID: PMC7768962.
29. Cartledge S, Feldman S, Bray JE, et al.. Understanding patients and spouses experiences of patient education following a cardiac event and eliciting attitudes and preferences towards incorporating cardiopulmonary resuscitation training: a qualitative study. J Adv Nurs 2018;74:1157–69. 10.1111/jan.13522
30. Pei-Chuan Huang E, Chiang W-C, Hsieh M-J, Wang H-C, Yang C-W, Lu T-C, et al. Public knowledge, attitudes and willingness regarding bystander cardiopulmonary resuscitation: A nationwide survey in Taiwan. J Formos Med Assoc [Internet]. 2019;118(2):572–81. Available from: <http://dx.doi.org/10.1016/j.jfma.2018.07.018>
31. Uzair Ali Khan, Ayaan Ali Khan, Zoya Ali Khan et al.. Public Perception and Willingness Towards Bystander Cardiopulmonary Resuscitation (CPR) Training and Performance in Pakistan. Scr Med 2023 Dec;54(4):371-8.
32. Jarghon S, Molokoane K, Laher AE, Motara F. Knowledge, Attitudes, and Perceptions Regarding CPR Among Non-medical Staff at a Medical School in South Africa. Cureus. 2023 Jan 8;15(1):e33506. doi: 10.7759/cureus.33506. PMID: 36756028; PMCID: PMC9904421.
33. Park YM, Shin SD, Lee YJ, Song KJ, Ro YS, Ahn KO. Cardiopulmonary resuscitation by trained responders versus lay persons and outcomes of out-of-hospital cardiac arrest: a community observational study. Resuscitation 2017;118:55-62.