

# Cardiopulmonary Resuscitation Performed by Bystanders: A Systematic Review

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## ABSTRACT

Cardiopulmonary resuscitation (CPR) is the most popular treatment for unexpected cardiac arrest. In order to enhance the survival and neurological prognosis of out of hospital cardiac arrest patients, both healthcare practitioners and lay rescuers must learn this technique. Millions of people die each year as a result of sudden cardiac arrest across the world due to ineffective CPR performed by bystander. The aim of this review is to identify the existing literature on knowledge, attitude and practice of the community at the out of hospital cardiac arrest level. Guided by the PRISMA Statement review checklist, a systematic review of the Scopus and Web of Science database and Science Direct has identified 332 related studies. The articles were assessed and analysed after evaluation using The Critical Appraisal Skills Programme Qualitative checklist. Total article accepted were n=11. We reviewed 1150 articles and selected 332 for complete evaluation. We included 11 of the 332 papers in this review that was published since 2018. We classified 11 recommendations; those with the highest scores were 1) Knowledge assisted CPR among bystander CPR remain poor, 2) CPR challenge on stranger, 3) CPR challenge on barrier, 4) The impact on quality CPR on survival rate and 5) Conventional CPR with mouth to mouth vs chest-compression only - CPR. CPR at out-of-hospital cardiac arrest, with several factors that influences such as knowledge, attitude, practice of community bystander CPR. While, the willingness (self-efficacy), the barriers and reluctant of bystander CPR still not clear. The targeted group for CPR training and tailored of training CPR for the bystander CPR give the effect and quality of CPR performance. Furthermore, the motivating factors to begin CPR at the out-of-hospital cardiac arrest level that emerged from a study of these publications. Recommendations not supported by evidence include mass training events, pulse taking prior to CPR by community and CPR using chest compressions alone. We evaluated and classified the potential impact of interventions that have been proposed to improve bystander CPR rates. Our results may help communities design interventions to improve their bystander CPR rates.

**Keywords:** Out-of-hospital cardiac arrest; Cardiopulmonary resuscitation (CPR); Bystander CPR

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## INTRODUCTION

Cardiac arrest is a complicated condition, it causes, structural or functional cardiac to inhibit the heart from operating and maintaining physiological circulation (1). The blood flow to the brain and other key organs stops if this happens. Cardiac arrest is defined as the cessation of cardiac mechanical activity, as confirmed by the absence of signs of circulation (2). If cardiac arrest is not treated within minutes, it typically results in death. The signs and symptoms of cardiac arrest include: irregular or absent breathing, and no heartbeat and is unresponsive and will be missing as well (3). Cardiovascular diseases were the major cause of death among non-communicable disease and in this region, China has the greatest rate of cardiovascular diseases followed by neighbouring countries such as Japan, India, Bangladesh, Brunei Darussalam, Singapore, Thailand, Indonesia, and Malaysia (4).

CPR is widely acknowledged as one of the most important procedures for saving a cardiac patient's life (5). Thus, Basic Life Support training for community setting in out-of-hospital cardiac arrest is becoming more widely recognised as an essential public health strategy for disseminating knowledge about life-saving skills like CPR. In out-of-hospital cardiac arrest situation, it was the golden hour, whereby each resuscitation demanded prompt action from the bystander CPR who is on with the scene. Early resuscitation in out-of-hospital cardiac arrest of a cardiac arrest sufferer is most critical and depends on community bystander CPR engagement and reaction. Resuscitation CPR treatments could be employed in the dots. CPR performed by lay rescuers increases survival from cardiac arrest by two to three times (6). The review's objectives were to determine the reason for this dearth of bystander CPR and whether there was any available action to assist cardiac arrest victims at out-of-hospital cardiac arrest and fit for all. The benefit of performing CPR on someone in cardiac arrest has been demonstrated to have a minimal risk of damage on victim.

The study at global rates of bystander CPR have generally concentrated on certain geographic areas. In a study released in 2020, bystander CPR rates were shown to be greater in Australia

for cardiac arrests in Victoria, Australia compared to cardiac arrests in Singapore. Another study from 2015 found that rates of bystander CPR varied from 10.5% in Dubai to 40.2% in Japan and 40.9% in South Korea. This study used data from the Pan Asian Resuscitation Outcomes Study (PAROS) to report rates of bystander CPR across 7 Asian localities (Japan, Singapore, South Korea, Malaysia, Taiwan, Thailand, and Dubai). These studies demonstrate the stark disparities in bystander CPR rates among various nations (7). It is important to boost bystander CPR rates since it can improve outcomes for cardiac arrests that occur outside of hospitals. By starting CPR early, after the initiation of a cardiac arrest event, bystanders can play a crucial part in the care of an out-of-hospital cardiac arrest. There is now a large gap between current understanding of bystander CPR and its best application, which results in avoidable deaths owing to cardiac arrest. Besides that, another crucial factor is the willingness of onlookers to provide CPR.

## METHOD

The reviewers used the method called PRISMA, which includes resources (Scopus and Web of Science) to run the systematic review, eligibility and exclusion criteria, steps of the review process (identification, screening, and eligibility), and data abstraction and analysis.

### Systematic Review Process

#### *Identification*

The four parts of the systematic review approach were finished in October 2020. The terms that will be used in the search were defined in the first step. Based on previous research and a thesaurus, keywords related to knowledge, attitude and practice, communities and household were used (Table 1.0). Following a thorough screening, two duplicate items were removed at this stage, and five articles were excluded due to the study's scope for health-care employees. At this stage, after careful screening, two duplicated articles were removed.

#### *Screening*

To begin, a number of qualifications and exclusion criteria must be satisfied. Only

articles from journals with empirical data are considered, while review articles, book series, books, book chapters, and conference proceedings are excluded. Second, to remove any ambiguity or difficulty in translation, the search efforts focused entirely on English-language information. Finally, a 12-year timeframe (between 2010 and 2021) was chosen

as an appropriate timeframe for tracking the development of research and related publications. Since the evaluation procedure focused on the public's community in terms of knowledge, attitude and practice of CPR, articles in health science-based and were picked. Finally, the article was search and related to this study are shows in (Figure 1).

**Table 1:** The criteria and searching strategy.

| Criteria        | Eligibility                 | Exclusion  | Keywords and searching information strategy  |
|-----------------|-----------------------------|--|--|
| Literature type | Journal (research articles) | Journals (systematic review), book series, book, chapter in book, conference proceedings | ALL ( "knowledge, attitude, practice" AND "understanding, behaviour, skills" ) AND ( "cardiopulmonary resuscitation" OR "basic life support" ) AND ( "community" or "households" ) |
| Language        | English                     | Non-English  |  |
| Timeline        | Between 2010 and 2021       | Before 2010  |  |
| Countries       | Worldwide                   | Non  |  |

**Data abstraction and analysis**

The remaining articles were assessed and analysed by using the Critical Appraisal Skills Programme. Critical Appraisal Skills Programme is an international research organisation established for Health and Medical Sciences and for Professional. Critical Appraisal Skills Programme creates and distributes innovative evidence-based information, software, education, and training to help healthcare professionals improve their practise and results. Critical Appraisal Skills Programme is a recognised global pioneer in evidence-based healthcare, with over 70 collaborating entities serving over 90 countries. Efforts were focused on conducting research that addressed the issues that had been raised. A process of critique or assessment of the research evidence is included in all systematic reviews. The goal of this evaluation is to identify how well a study's methodological quality is and how well it has handled the risk of bias in its design, conduct, and analysis. The data was extracted by reading the abstracts first, then the complete articles (in-depth) to select relevant material from the full articles,

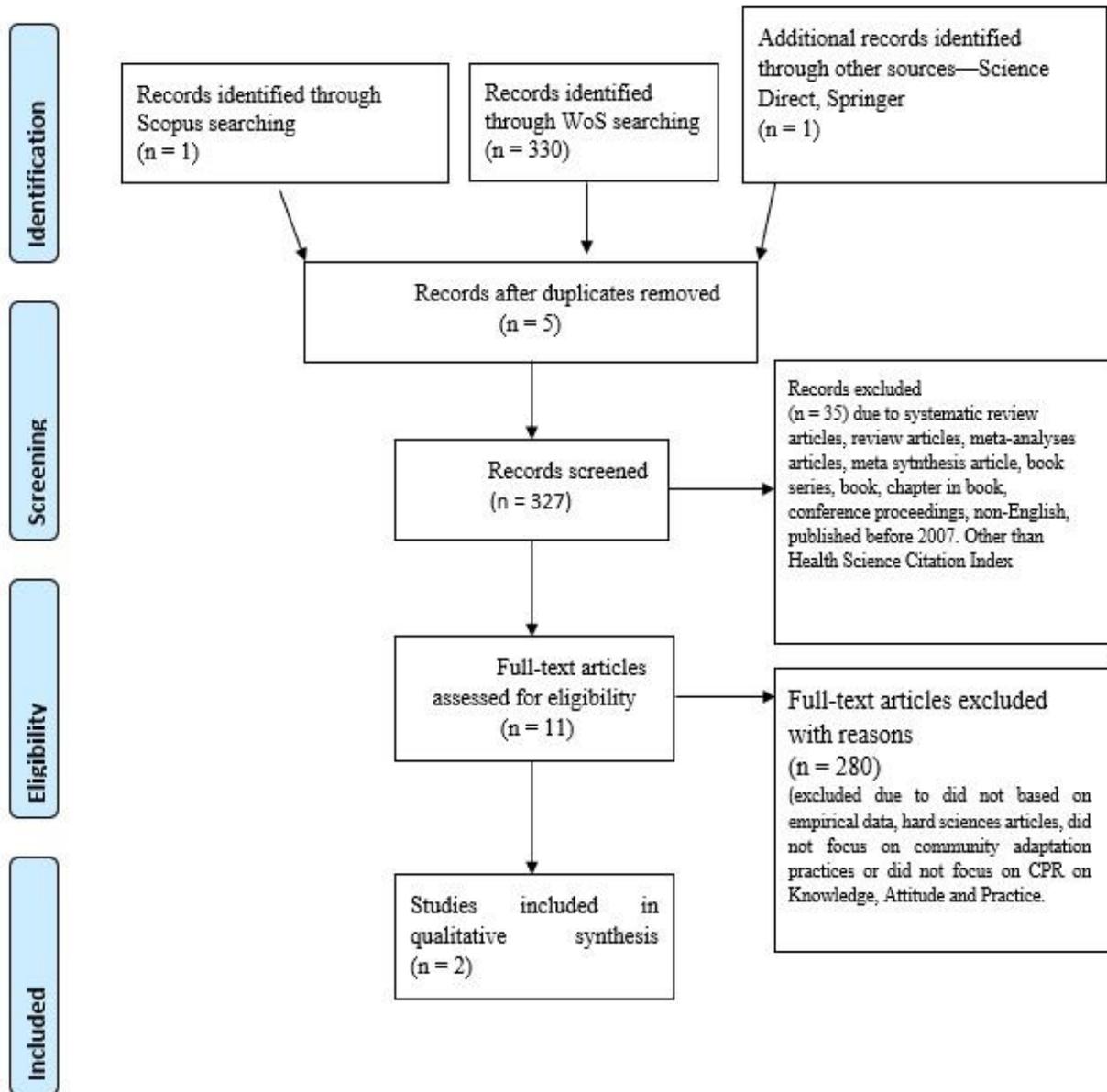
which the author would organise by the topology listed below (Table 2).

**RESULT**

The review resulted in five main themes related to focusing on knowledge, looking at the attitude and the practice of CPR, performance of CPR and the challenges and barriers among community bystander CPR at out-of-hospital cardiac arrest.

A total of three studies were focused on the Malaysia (8-10) concentrated on performance, practice and retention of knowledge among community at out-of-hospital cardiac arrest. regarding CPR. One study each concentrated on reluctant to perform CPR in China (11), knowledge, attitude of public on CPR and barriers to perform CPR in Saudi (5,12). Another studies conducted in Australia and USA (13-15), focused on knowledge and attitude. In addition, a study by Krammel et al. (16) in Austria, focused on tailored CPR knowledge of the participants. Furthermore, one study applied the qualitative approach, while another study employed a mixed method (qualitative + quantitative) approach.

Figure 1: Literature Review Flow Diagram



Regarding the years published, one article was published in 2019 and 2021 on barrier for community as a bystander CPR and perspectives, experiences, and practices of international experts in community first response at out of hospital cardiac arrest. **Table 3** depicted the findings of systematic review.

The main findings are the implementation among bystander CPR remains poor, CPR challenges, cause of cardiac arrest at out-of-hospital cardiac arrest, the impact of CPR factors to survival of victims at out-of-hospital cardiac arrest. and conventional CPR vs chest compression only.

**Table 2:** An Overview of the Included Studies

| Author                  | Country       | Study Design   | Setting                                    | Number of Participants (n) |
|-------------------------|---------------|--|--|----------------------------|
| Wan Jusoh et al., 2019  | Malaysia      | Quantitative study Survey - Single experiment study July 2016-2017           | 58 medical group and 67 non-medical group. | Total 125 students         |
| Karuthan et al., 2019   | Malaysia      | Quantitative study - online survey   | Online questionnaire                       | 393 participants           |
| Jiang et al., 2020      | China         | Quantitative study Survey.   | Online questionnaire with Video            | 888 students               |
| Fariduddin & Siau, 2021 | Malaysia      | A cross-sectional Quantitative study survey design.                          | Online survey - google form.               | 256 student teachers       |
| Qara et al., 2019       | Saudi Arabia  | A cross-sectional survey Quantitative survey design                          | Jeddah City community                      | 600 participants           |
| Andréll et al., 2021    | Sweden        | Quantitative Observational - cross-sectional                                 | Web survey                                 | 1060 eligible answers      |
| Rankin et al., 2020     | Australia     | Quantitative Observational - cross-sectional study                           | web survey                                 | 178 participants           |
| Blewer et al., 2017     | United Stated | administered a <b>cross-sectional</b>  | <b>telephone survey</b>                    | 9022 adults                |
| Cartledge et al., 2020  | Australia     | Quantitative - A retrospective analysis of a national cross-sectional survey | 1076 respondents survey                    | 1076 participants          |
| Krammel et al., 2018    | Austria       | Quantitative - prospective cross-sectional study,                            | <b>telephone survey</b>                    | 501 participants           |
| Yoon et al., 2019       | Korea         | Quantitative cross-sectional data from the Korea Community Health Survey     | The survey questionnaire                   | 25,082 participants        |

**Table 3:** Findings of systematic review

| Studies                 | Findings  |
|-------------------------|---|
| Wan Jusoh et al., 2019  | Knowledge, Attitude and Performance             |
| Karuthan et al., 2019   | Knowledge and willingness in CPR                |
| Jiang et al., 2020      | Attitude and barrier in CPR                     |
| Fariduddin & Siau, 2021 | Perception, retention of knowledge and Barriers |
| Qara et al., 2019       | Knowledge                                       |
| Andréll et al., 2021    | Knowledge, Attitude and Barriers                |
| Rankin et al., 2020     | Knowledge and Barriers                          |
| Blewer et al., 2017     | Knowledge, target group and Barriers            |
| Cartledge et al., 2020  | Knowledge and Barriers                          |
| Krammel et al., 2018    | Knowledge and target group                      |
| Yoon et al., 2019       | Knowledge, Self-efficacy and Performance        |

**DISCUSSION**

The discussion is focused on CPR knowledge, attitude, practise, performance, and barriers based on numerous topics that have been found. The discussion will be carried out on knowledge and practice, attitude, the challenge and barrier and the performance bystander CPR.

**Knowledge and Practice**

*The knowledge of Cardiac Arrest*

A cardiac arrest can be caused by a variety of medical disorders, some of which are listed in **Table 4**. Over half of all resuscitated out of hospital cardiac arrest patients was estimated to suffered from substantial coronary heart disease Furthermore, the reasons of out of hospital cardiac arrest occurrence change with age. According to a Swedish data from 2018, cardiac reasons accounted for 69% of deaths among people aged 65 and over, but just 10% among those aged 16 to 40 (17).

There are many different medical conditions that can lead to heart disease and cardiac arrest.

You can have this heart attack problem at any age. All resuscitated out-of-hospital cardiac arrest patients will have significant coronary heart disease more than half of them. At the ages of 40 to 69, heart disease and cardiac arrest are most prevalent. Heart attacks are mostly brought on by factors including stress, work stress, lifestyle, obesity, lack of exercise, smoking, and chronic conditions (18), which are more common as people become older. Cardiovascular disease caused 69 % of fatalities among those 65 and older in Sweden in 2018, but just 10% of deaths among people in the 16 to 40 age group (17). The individual's lifestyle is therefore the most crucial factor that can still be managed. There has been an increase in the incidence of out-of-hospital cardiac arrest in Asia-Pacific and Singapore, which is largely due to lifestyle disorders and an ageing population (19). For instance, regular exercise and proper diet should be planned and carried out in a systematic fashion to lower the risk of heart disease.

*The CPR Training - CPR Knowledge*

One study by Fariduddin & Jaafar (20) mentioned that despite more than half of the community respondents having previously received CPR training, they lacked CPR knowledge prior to the intervention. After the intervention programme, the scores had greatly improved. This situation clearly illustrates that a CPR programme comprises of that lectures, presentations, and part-task training were enough to offer appropriate theoretical knowledge (19). This excellent example shows how training can provide community members with CPR knowledge and practice, benefiting society.

In the out-of-hospital cardiac arrest situation, (19) reported the comparison of bystander chest compression only CPR with both compression and rescue breaths revealed no difference in survival between the two groups. Moreover, (20) stated that, CPR training has a multi-staged strategy, of standard versus hybrid CPR training and standard versus online CPR training. A kiosk group, an interactive computer training group with an instructor-led training group, and a video learning group followed by hands-on CPR instruction were part of the hybrid CPR training (20). Ali et al., (21) stated, that, mean scores were higher in

the interactive-computer training group plus with instructor-led practise group than in the normal instructor-led group just for all outcome measures. Furthermore, video self-instruction, interactive computerised module with video, mobile phone video clips, a

computer-based course with Voice Advisory Mannequin, and virtual reality CPR training were all part of the online CPR training technique (20) **Figure 2** below shows the comparison of the mode of delivery of different CPR training methodologies.

**Table 4:** Causes of cardiac arrest at OHCA

| Medical  |                              |                          |
|--|------------------------------|--------------------------|
| Primary Cardiac                                    | Primary Non -Cardiac         | Non-Medical              |
| <b>Ischaemic heart disease</b>                     | a) Pulmonary embolism        | Trauma                   |
| a) Chronic ischaemic cardiomyopathy                | b) Lung disease (hypoxaemia) | Drowning                 |
| b) Acute myocardial infarction                     | c) COPD                      | Drug overdose            |
| c) Non-arteriosclerotic coronary                   | d) Pneumonia                 | Electrocution            |
|  | e) Hypovolaemia (bleeding)   | Asphyxia                 |
|  | f) Intracerebral bleeding    | Hypothermia Intoxication |
|  | g) Electrolyte disturbances  |                          |
|  | h) Hypoglycaemia             |                          |
| <b>Cardiomyopathies</b>                            |                              |                          |
| a) Acute on chronic heart failure                  |                              |                          |
| b) Dilated cardiomyopathy                          |                              |                          |
| c) Hypertrophic cardiomyopathy                     |                              |                          |
| d) Arrhythmogenic right ventricular cardiomyopathy |                              |                          |

Moreover, because technology to properly monitor chest compression depth remotely is not commonly accessible, (8). It was suggested that instructor-led groups still perform better in terms of CPR quality, particularly chest compression adequacy. Moreover, (20) found that the instructor-led training group had superior quality CPR compressions (location, rate, depth, and release) than the computer-based training group in terms of CPR quality. Furthermore, when comparing the instructor-led group to the group educated utilising short films, the chest compression depth was superior in the instructor-led group (20). Therefore, it should be planned for individualised or small group CPR training to fulfil the goal of ensuring that the community bystander CPR has strong knowledge, attitude and practice abilities in CPR. That can be achieved in the half-day hands-on CPR course

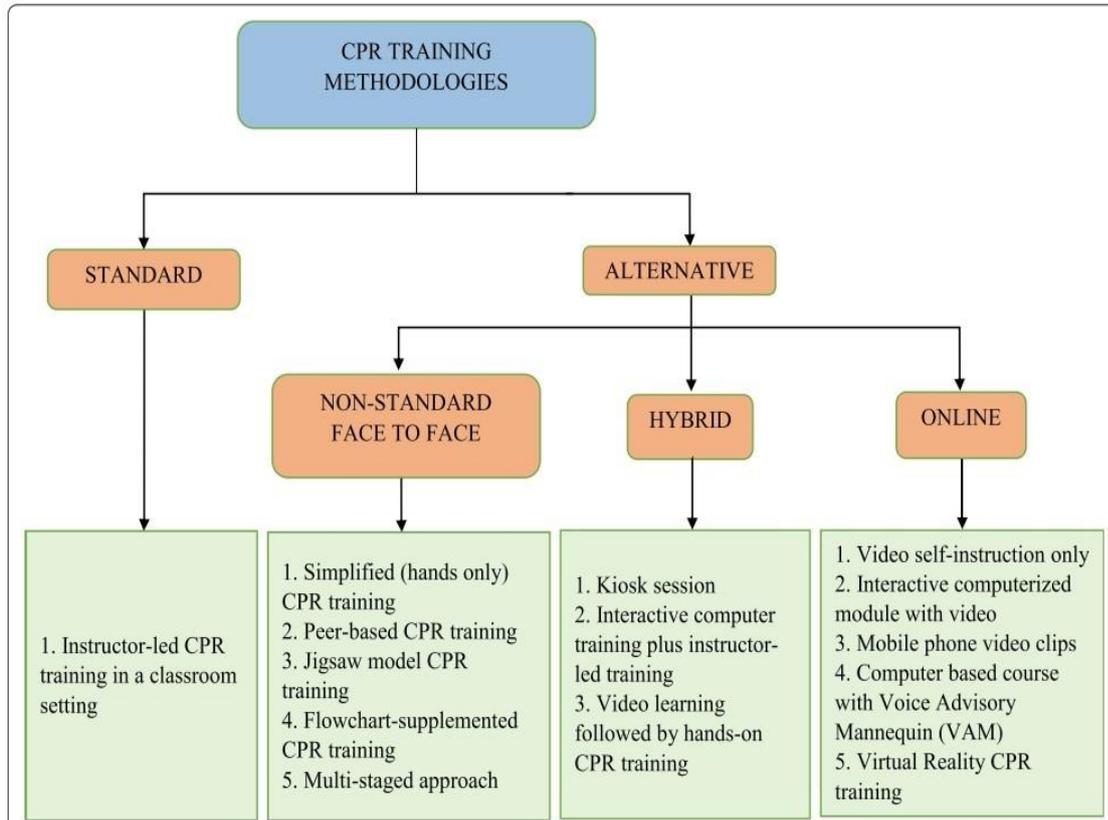
including lectures, presentations, and part-task training is enough to offer necessary theoretical knowledge and support with video self-instruction CPR to get the retention of knowledge and skills long lasting time.

Furthermore, (10) mentioned, the bystander CPR shall have a proper application of the chain of survival would boost the chances of an out-of-hospital cardiac arrest victim surviving. The first three chains, which comprise early diagnosis of cardiac arrest and activation of the emergency response system, excellent quality CPR, and early defibrillation, should be thoroughly digested and mastered by the bystander CPR who comes across a victim with sudden cardiac arrest (10). To optimise the rate of return of spontaneous circulation following out-of-hospital cardiac arrest, it is critical to focus on improving the quality of CPR among

bystander CPR. The previous approach to CPR training overlooked the target audience, the training environment, and the manner in which the instruction was provided. Until now, no

one CPR module has been complete, and an ideal community approach would bring all of these modules together (10).

**Figure 2:** The Comparison of the mode of delivery of different CPR training (sourced from (20))



**Conventional CPR vs Chest Compression Only CPR - Knowledge and Practice**

Despite several initiatives throughout the years, bystander CPR rates in most areas remain low. Understanding the attitudes and anxieties that underpin CPR training and performance can assist educators and trainers better target teaching and training to increase bystander CPR rates and, as a result, victim survival rates. One study in Singapore reported, a total of 7909 people were handed survey questionnaires to fill out at a single-day mass CPR instruction programme. At the completion of the training session, 6473 participants submitted completed forms. The overall degree of difficulty of CPR, the difficulty levels of individual skills, attitudes toward refresher training, attitudes toward performing CPR, and anxieties when doing so were some of the topics examined. The result

from the study where CPR was evaluated as 3.98 on a scale of 1-10, with those who had already received CPR instruction ranking it as simpler (21). Performing mouth-to-mouth breathing and chest compressions were considered as the most challenging skills, while identifying non-responsiveness was rated as the easiest (21). According to the survey results, a majority of respondents (69.7%) believed that refresher training should be conducted every two years, while 88.7% thought that everyone should be certified in CPR. Merely 20.7% would choose to conduct only chest compressions for a member of the public in cardiac arrest, whereas 71.6% would administer complete CPR (21).

Worries of illness or an aversion to mouth-to-mouth breathing were not mentioned as frequently as fears of poor confidence (21,22). However, a study mentioned, mouth to mouth

breathing and chest compression were recognised as the most difficult skills in practical (21,22). The oldest age group found mouth to mouth to be more challenging. Chest compression was also more difficult at the extremes of age, most likely because to muscle bulk and health issues (21).

The most prevalent reason for not doing CRR was a perception of lack technical abilities, therefore, CPR training should emphasise on these practical features and enhance hands-on time to boost confidence in the skills (21,22), particularly when dealing with vulnerable age groups and need to refresh CPR training. Furthermore, fear of disease transmission was the most common reason given by persons who were hesitant to do rescue breathing. This was considerably greater than research from Japan, the United States, and Australia had shown (22). However, the most prevalent cause for bystander CPR refusal was a perception of poor technical abilities and a lack of confident (21,22). Nonetheless such of populations, show a willingness to learn CPR and good theoretical knowledge (22) and they are often among the least trained in CPR. Furthermore, several studies mentioned the community bystander CPR still low in knowledge (5,8,14). Additionally, some study suggested and highlights possible areas of improvement in CPR training, which might improve out of hospital cardiac arrest identification and facilitate knowledge retention (12).

According to Fariduddin and Jaafar's (20) study comparing bystander chest compression only-CPR with standard -CPR with rescue breaths in the out-of-hospital cardiac arrest scenario, there was no difference in survival between the two groups. The bystander CPR would have the choice of chest compression only-CPR and standard-CPR to help at the out-of-hospital cardiac arrest scene. The bystander CPR technique used by chest compression only-CPR is friendlier and uses simple, easy to remember stages and sequences. The great majority of respondents stated that they felt positively and were prepared to do CPR. Many individuals continue to be wary, particularly when it comes to standard-CPR. Furthermore, obstacles to performing CPR often stem from a lack of confidence, which can be greatly improved through CPR training. Therefore, we should concentrate on disseminating CPR knowledge,

paying special attention to people who are less likely to perform CPR, and helping them get beyond their obstacles through training. The results of CPR are heavily influenced by both techniques.

Additionally, the American Heart Association encourages bystander CPR to help cardiac arrest patients by doing chest compression only-CPR. For adult cardiac arrest patients, bystander CPR will make it simpler to execute chest compression only-CPR with or without dispatcher assistance. Chest compressions should be given to cardiac arrest victims by all bystander CPR rescuers, at the very least. Additionally, the trained lay rescuer should add rescue breaths in the ratio of 30 compressions to 2 breaths if they can do so. Chest compression only-CPR should be performed by the bystander CPR rescuer until an Emergency Medical Services team arrives. The chest compression only-CPR training approach has been certified and used in nations like Japan, where the resuscitation guidelines advise chest compression only-CPR because it is simpler to teach and learn in a shorter community-focused training course and even the American Heart Association encourage bystander CPR using chest compression only-CPR techniques on lay rescuers. To better comprehend the steps and sequence of CPR, all bystander CPR rescuers should also get introductory and focused basic training in it. How effectively a person got CPR may be judged by looking at examples of compression rate and compression depth. Both of these variables have been linked to better cardiac arrest outcomes (23). Furthermore, as alternative to standard-CPR with rescue breathing is the idea of chest compression only-CPR. Chest compression only-CPR has the potential to increase the rate of CPR application and the patient's overall survival since it is simpler and hence easier to teach and practise (24).

Additionally, it is essential to make sure that bystander CPR learn and retain these abilities as well as possible because CPR is claimed to double or even quadruple survival after cardiac arrest. With the recent addition of immersive virtual reality training, technology has significantly contributed to current advances in education, where simulation plays a vital part by creating a distinctive safe environment.

Furthermore, the online CPR training techniques included video self-instruction, interactive computerised modules with videos, mobile phone video clips, computer-based courses with voice advisory mannequins, and virtual reality CPR training. (20,25). The training is sufficient to provide the required theoretical knowledge and support for video self-instruction CPR in virtual reality training to ensure long-term retention of information and abilities. What could be anticipated is that the bystander CPR condition, the main causes of reluctance to conduct CPR would have been addressed. Anywhere and under all circumstances, bystander CPR may actively anticipate in an out of hospital cardiac arrest situation.

Although mass media campaigns as a stand-alone project or as part of a bystander CPR training programme intervention increased bystander CPR rates, the data on survival is mixed. Interestingly, despite the fact that mass media such as television, radio, newspapers, and magazines are often considered the most obvious means of disseminating information and promoting behaviour change, our search yielded only a few published studies analysing their effectiveness. Furthermore, social media has played a significant role in shaping community perspectives, attitudes, and practises in CPR at out-of-hospital cardiac arrest. To achieve targeted improvement, the techniques must be applied in many parts of rural public spaces, and they should be regarded an essential aspect of bystander CPR at out-of-hospital cardiac arrest. The use of social media as a tool for communication for public campaigns might provide valuable information (26). On the other hand, further research to investigate and emphasise the impact of community activities in CPR on the general public's, regarding willingness to perform CPR at out of hospital cardiac arrest needs also to clarify.

In Malaysia setting the guideline manual on Basic Life Support, explained, the CPR were part in Basic Life Support with priority to; airway, breathing, circulation, Automated External Defibrillator, and management of choking or foreign body airway obstruction. Highlighted in 2015 International Liaison Committee on Resuscitation guidelines which stated the critical importance of the interactions

between the emergency medical dispatcher, the bystander who perform CPR and the use of automated external defibrillator and to emphasis on importance of early recognition of cardiac arrest via Malaysian Emergency Response System (3). Furthermore, to provide high quality CPR, these steps must be followed; compression rate 100-120 compressions per minute, depth of 5cm to 6cm for adult victims, minimal interruption in chest compression (< 10 seconds) and allow spontaneous recoil of the chest wall in between compressions. Awareness that seizures can be a sign of cardiac arrest and real time CPR feedback should be used to ensure high quality CPR and implementation of public access automated external defibrillator (3).

### **The Implementation of CPR Among Bystander remains poor - Attitude**

CPR includes early recognition of cardiac arrest victims, calling the local emergency service, performing CPR, i.e., chest compressions with or without rescue ventilations, and retrieval and use of an automated external defibrillator in out-of-hospital cardiac arrest. These CPR therapies provide the best likelihood of out of hospital cardiac arrest survival and favourable neurological outcomes when they are implemented quickly (26).

Out of hospital cardiac arrest is a worldwide problem. In Europe, 40.6 per 100,000 person-years of out-of-hospital cardiac arrest were treated by emergency medical services, 47.3 in North America, 45.9 in Asia, and 51.1 in Australia. Patient outcomes following out of hospital cardiac arrest vary significantly by area, but they are often poor, indicating need for improvement (27).

The bystander CPR with proper application of the chain of survival would boost the chances of a victim surviving out-of-hospital cardiac arrest. Bystanders who come across a victim with sudden cardiac arrest should thoroughly understand and master the first three chains of survival recommended by the American Heart Association in 2020 for out-of-hospital cardiac arrest, which include early activation of emergency response, performing high-quality CPR, and using defibrillation. To optimise the rate of return of spontaneous circulation following out-of-hospital cardiac arrest, it is

critical to focus on improving the quality of CPR among lay rescuers.

The approach of CPR training overlooked the target audience, the training set, and the manner in which the instruction was given (10). Until now, no one CPR module has been complete, and an ideal community approach would bring all of these modules together (10), however, the knowledge among community still poor (28). On this topic, more than ten article research was discussed. When doing CPR in an open setting at out-of-hospital cardiac arrest, the most recurrent theme was poor self-confidence and attitude. Some writers have emphasised the negative consequences of performing CPR incorrectly, and there is still apprehension, particularly towards standard-CPR and a lack of confidence (11).

The importance of the CPR training in raising community understanding of CPR cannot be overstated. The programme is critical in equipping a person with the necessary information, skills, and drive to cope with a life-threatening emergency. Conducting the programme, particularly in the community, is an important step in encouraging early cardiac arrest intervention among the younger generation and contributing to an overall improvement in the prognosis of sudden cardiac arrest (10). However, there was no significant difference in mean knowledge scores based on the type of CPR training received, according to Karuthan et al., (9) in the study. The biggest cause of refusal to do CPR, according to community members' assessments, is a lack of understanding, awareness, (9) and a sense of urgency about CPR education and practise. A similar study conducted among college students in Hong Kong also showed poor knowledge on CPR (29).

Furthermore, younger people are more inclined to do CPR because they are more approachable, eager, and capable of acquiring new skills. Furthermore, community training may result in a greater distribution of CPR knowledge within the target group. Additionally, Wan Jusoh et al., (10) suggest that community groups may accomplish high-quality CPR provided their knowledge and attitude are also considerably improved. It may be proven by thorough training, confidence in CPR, information

retention, and practise, as well as actual performance in real-life cardiac arrest scenarios. The main thing is that we will have to communicate and act in the same way, which will make it easier to continue and transfer care. It can also help to clear up misconceptions about CPR among community (10).

Out-of-hospital cardiac arrest rates are greater in impoverished areas. Although bystander CPR can quadruple a person's chances of life, it is less common in these neighbourhoods than in more wealthy ones. People who live in poor neighbourhoods are thus twice as vulnerable, with a little evidence to explain why bystander CPR rates are lower.

The challenges of delivering CPR in poor communities are examined in this qualitative work (30) To summarise the perceived hurdles to providing bystander CPR in disadvantaged communities, two important themes linked to confidence and environmental issues were highlighted. Self-efficacy, knowledge and understanding of how and when to deliver CPR, and fear of retaliation from the authorities, disease transmission were all barriers to confidence (30).

Early and rapidly application of CPR in out-of-hospital cardiac arrest was a critical in rescuing individuals at out-of-hospital cardiac arrest and increasing their chances of survival. However, the global rate of bystander CPR is less than 50% on average, and it is less than 6% in China (11). Besides that, Journal of American Heart Association (2020), reported the fact that up to 70% of out of hospital cardiac arrest are seen by family members, friends, and other bystander CPR emphasises the relevance of this. As a result, bystander CPR was the better targeted group that may usually effectively bridge the potentially fatal gap in time until emergency medical care personnel arrive at the patient. Thus, effective CPR shall be a module training that are simple to learn, objectively able to be performed and easily to be applied by a community at out-of-hospital cardiac arrest and is unlikely to do harm. Bystander CPR raises the patient's odds of life by three times, making it a straightforward way to improve survival and neurological outcomes after an out-of-hospital cardiac arrest. Despite this, bystander CPR rates in many countries are about 20% (31). Bystander CPR is widely

regarded to have the ability to transform the condition of difficulties experienced; for example, if the community participates in a CPR intervention programme to assist the situation at out-of-hospital cardiac arrest, the scenario of sudden cardiac arrest at out of hospital cardiac arrest can be managed successfully.

Cardiac arrest that happened in the unmonitored areas is usually very sudden and unpredicted. Early recognition of cardiac arrest victims, calling the local emergency services, CPR, which entails chest compressions with or without rescue ventilations, and retrieving and using an automated external defibrillator in out-of-hospital cardiac arrest are all part of cardiopulmonary resuscitation. Therefore, providing early CPR is crucial and the role of bystander CPR is crucial for the enhancement of neurological and survival outcomes. However, it is true that some claim that if bystander CPR could apply the chain of survival, the likelihood of an out-of-hospital cardiac arrest victim surviving would increase.

Several industrialised nations like Japan and England that embarked on community CPR instruction and telephone-assisted CPR programmes, starting in schools, and expanding to include fire departments and driving licencing CPR programmes. This seeks to increase bystander CPR in their neighbourhood (24,32-38). Nevertheless, a 2018 report from Korea revealed that there are three primary lines of bystander CPR confidence in conducting CPR. Public CPR awareness in the areas where out-of-hospital cardiac arrest occurred was linked to bystander CPR, dispatcher-provided CPR instructions, and detection of arrest during an emergency call.

Nevertheless, there are still some areas, such as England, with high out-of-hospital cardiac arrest rates and low bystander CPR at 60%. It is also affected by rural areas, a higher percentage of foreign-born citizens, a higher level of deprivation, as well as the high-risk out-of-hospital cardiac arrest areas found in the North-East, Yorkshire, South-East, and Birmingham (39). Therefore, based on the results of previous studies, neighbourhoods that have been identified as high-risk areas with a high incidence of out of hospital cardiac

arrest and a low rate of bystander resuscitation could be the focus of programmes to train people in CPR and establish a bystander CPR team in the area.

The socio-economic and cultural circumstances of the nation, as well as the various perspectives and levels of acceptability, may be the cause of the inequalities in the situation. When CPR is administered by one person, coupled with a low degree of confidence, the condition is still terrible. This is made worse by the fact that bystander CPR only take CPR training once every three years, because there was no constant flow of CPR applications throughout that time. CPR training and information shall be to perform re-training and to get re-certification for bystander CPR valid to perform of CPR. Frequency of re-training must be based on a balance between the need to maintain skills and the practicality of mandating refresher courses at frequent intervals.

However, the dropping scores and poor retention rate revealed that the optimum refresher course of two years was not seen as ideal (19). Also, there were suggested to prevent a rapid decline in CPR knowledge and abilities, all bystander CPR must undergo routine, periodic refresher training with the incorporation of simulated exercise as an alternate teaching approach (19,40) CPR needs to be practised frequently to develop a high degree of confidence when it comes time to execute it in the actual out-of-hospital cardiac arrest location. Addition CPR training were suggested and recommended by doing 1 to 5 hours each year, CPR and refresher training should be completed within should not be more than seven months, these findings imply that, in order to minimise the impacts of skill decay (21). It is a recommendation by 2 and 8 months after recertification (41), the CPR skill performance utilising a skill and to training delivered by a qualified instructor (42,43).

The lack of memory recall is a result of this disorder and lack of confident among bystander CPR. At the same time, the prevalence of cardiac arrest patients in public and open settings, the results of low self-efficacy, and feelings of insecurity make bystander CPR reluctant to help administer CPR. Furthermore, because the victim is an

unidentified stranger and there are worries about the victim's health and the spread of illness, CPR fails, and the scenario grows more and more problematic (5,9,11). To prevent an instant loss of CPR knowledge and willingness, the intervention program needs to be suitable and ensure retention of information. Bystander CPR should enrol in thorough CPR training and frequently apply the knowledge and skills with standard structured program recommended by the American Heart Association, which is a full-day course (19).

### **CPR Challenges and barriers**

The bystander CPR with effective application of the survival chain will improve the odds of an out-of-hospital cardiac arrest victim, and it should be properly digested and understood by the community who comes across a victim with sudden cardiac arrest (10) and as a part in social responsibility to society. The target audience, tailor module training, the training location, and the way in which the instruction was presented should all be considered while providing CPR training (10) and also the competent trainer. There hasn't been a full CPR module until now, and an ideal community approach would put all of these components together (10).

A total of 7 out of 15 studies were discussed on barrier and reluctant with CPR among bystander CPR. The most common experience is the bystander CPR expressed the scared, not confident (7 studies), while 4 studies have found that community experience experienced problems while memorised their sequences in CPR. The summaries of community reluctant to perform CPR at out-of-hospital cardiac arrest were depicted on Table 5 below.

The findings demonstrate that this is the primary reason why bystander CPR is limited and frequently fails. The key impediments include the demand for mouth-to-mouth contact, fear of inflicting injury, litigation, and the difficulty of performing CPR. In light of this, the basic life support routine has been streamlined, and regular rescuers are encouraged to do chest compression only-CPR (9). However, the predominant reason for unwillingness to perform chest compression only-CPR in all five cases was a lack of procedural expertise (9).

In additional, lack of confidence (26.7%), fear of injuring the sufferer (23.4%), and causing legal issues (20.7%) were the top three hurdles to do chest compression only-CPR, whereas fear of disease transmission (22.9%) rated second in standard-CPR (11). The vast majority of responders expressed favourable feelings and readiness to do CPR. Some people are still hesitant, especially when it comes to standard-CPR. Obstacles emerge mostly due to a lack of confidence in giving CPR may be significantly improved with online CPR training. As a result, we should concentrate on sharing CPR information, focusing on individuals who are less likely to practise CPR and assisting them in overcoming their barriers through online training (11,44).

Moreover, several studies revealed an alarming trend of poor scores in CPR general knowledge among community despite receiving instruction from many sources for example; the instructors had limited knowledge and experience, lack of expertise addressing medical crises, faulty beliefs, and also a lack of practises from community are all key factors undermining their confidence and, as a result, producing a fear of CPR malpractice (8,9). Additionally, while bystander CPR understanding of CPR is limited besides of good attitude about in attend training was important. The effect was clearly shows when as the primary reason for refusal to conduct and perform CPR at out-of-hospital cardiac arrest.

Thus, an educational programmes was developed to take individual involvement into consideration for maximising the impact and effective practice-based CPR training in order to increase bystander CPR performance and willingness to deliver CPR at out-of-hospital cardiac arrest (45).

Furthermore, fear of making a mistake was cited as a reason for not doing CPR, which might be explained by the community's lack of understanding (5). According to the findings of this study, the most prevalent reason for not doing CPR is the fear of making a mistake (71.0%). Another study in Japan discovered that the fear of disease transmission was the most prevalent reason (28%) (5).

A study from UK reported that bystander CPR is becoming more common, however, the

mortality from out-of-hospital cardiac arrest is still significant (12). According to the similar study, community's level of awareness about CPR is restricted and relatively shallow when compared to that of other neighbouring nations. Furthermore, there are certain misconceptions regarding CPR. As a result, several ideas were suggested to boost CPR understanding, such as increasing CPR awareness and knowledge, conducting yearly

CPR training, and making it mandatory. Finally, to remind the bystander CPR that assessing CPR and the quality of CPR administered is critical to resuscitation success. Which, this will certainly, giving the impact in the community for social responsibility who will provide CPR on the out-of-hospital cardiac arrest, improving outcomes for patients who have gone into out-of-hospital cardiac arrest.

**Table 5:** Challenge in performing CPR

| Author                             | Lack of Knowledge | Lack of confident | Missing in sequence of CPR step - Practical | Reluctant to Mouth to Mouth procedure | Lawsuit | Community scared & fear disease transmission |
|------------------------------------|-------------------|-------------------|---|---------------------------------------|---------|--|
| Wan Jusoh et al., 2019             | Yes               | Yes               | Yes   | -                                     | -       | -  |
| Karuthan et al., 2019              | Yes               | Yes               | Yes   | Yes                                   | Yes     | Yes  |
| Jiang et al., 2020                 | Yes               | Yes               | Yes   | Yes                                   | Yes     | Yes  |
| Fariduddin& Siau,2021              | Yes               | Yes               | Yes   | -                                     | Yes     | Yes  |
| Qara et al., 2019                  | Yes               | Yes               | Yes   | Yes                                   | -       | Yes  |
| Andréll et al., 2021               | Yes               | Yes               | Yes   | -                                     | -       | -  |
| Rankin et al., 2020                | Yes               | Yes               | Yes   | Yes                                   | -       | Yes  |
| Blewer et al., 2017                | Yes               | Yes               | -   | -                                     | -       | -  |
| Cartledge et al., 2020             | Yes               | Yes               | -   | -                                     | -       | -  |
| Krammel et al., 2018               | Yes               | Yes               | -   | -                                     | -       | -  |
| Mekonnen & Muhye 2020              | Yes               | Yes               | -   | -                                     | -       | -  |
| I Uny et al.,2022                  | Yes               | Yes               | -   | Yes                                   | Yes     | Yes  |
| Riva & Hollenberg, 2021            | Yes               | -                 | -   | -                                     | -       | Yes  |
| Roy Chowdhury & Anantharaman, 2021 | Yes               | Yes               | Yes   | -                                     | -       | Yes  |
| Kanstad et al.,2011                | -                 | Yes               | Yes   | Yes                                   | -       | Yes  |

Furthermore, a community-specific CPR training module, such as compression only-CPR, might prove to increase the number of people willing to administer CPR on a family member or stranger, boost confidence in their competence to conduct CPR, and minimise fears of a poor outcome. With apply technique on chest compression only-CPR, but effectiveness. Encouraging a technique that is easier to do and more acceptable to the

bystander CPR may have helped boosted the CPR rate (46). Chest compression only-CPR has been promoted to assist in overcome worries of infection linked with mouth-to-mouth contact (13). In addition, , a Japanese study by Kiyohara et al. (25) found that bystanders are increasingly performing chest compression only-CPR for out-of-hospital cardiac arrest in Japan, and that it can be used for the majority of adult and non-traumatic out-of-hospital

cardiac arrest of cardiac origin with a ventricle fibrillation rhythm, and that the outcomes after out-of-hospital cardiac arrest were similar for patients receiving chest compression only-CPR and standard-CPR (24).

However, Krammel et al., (16) reported in their study that the general public has poor understanding of CPR and the usage of automated external defibrillators. Females' respondents also expressed the least readiness to conduct CPR and utilise an automated external defibrillator in the event of an out-of-hospital cardiac arrest. Given these findings, future educational efforts should involve individually targeted programmes to raise awareness among both communities (47).

Finally, out-of-hospital cardiac arrest survival statistics are still dismal and haven't improved much in recent decades. The use of bystander CPR is one of the most important variables impacting survival rates. Various obstacles typically hinder people from administering bystander CPR, regardless of their CPR training. Some of these hurdles include a fear of being sued if you do CPR on a stranger (11,13,48), especially if the victim appears dishevelled or under the influence of drugs or alcohol, or a concern of administering CPR incorrectly and causing more harm than good. To do good CPR, knowledge must be complemented by the appropriate attitude and practise. Knowing CPR did not predict willingness to conduct bystander CPR, according to local research (10).

The chances of an out-of-hospital cardiac arrest victim improving with good CPR application and the goal of chain survival, which should be fully grasped by the bystander CPR when they encounter a victim of sudden cardiac arrest (10) and as a part of their social obligation to society. When providing CPR training, consider the target audience, customized training modules, venue, delivery method, and qualified trainer. Up until now, there hasn't been a complete CPR module, and the ideal community strategy would combine all of these elements (10). Due to this circumstance, non-medical bystander CPR had to undergo the same training process as the medical line group. Due to this circumstance, bystander CPR is reluctant to perform CPR in out-of-hospital cardiac arrest, which creates a barrier. This issue makes it

more difficult for bystander CPR to remember their CPR procedures. The bystander CPR frequently expresses being terrified rather than confident. The suggested solution to close the difficulty gap in conducting CPR is to create a specific bystander CPR module that will help people remember things for a long time.

The barrier that prevents bystander CPR from delivering CPR effectively and regularly will spoils the efforts to provide CPR to out-of-hospital cardiac arrest victims (49). Among these include the need for traditional CPR with mouth-to-mouth contact, worry about spreading illness and hurting people, legal issues, and the challenge of administering CPR. Therefore, bystander CPR should be instructed in additional alternate techniques for doing CPR on cardiac arrest patients, such as employing rescuer breathing apparatus to prevent contact mouth to mouth CPR and allay concerns of disease transmission. The public can be informed about any CPR-related issues to address misunderstandings. Also, chest compression-only CPR can be beneficial for cardiac arrest patients. In addition, despite receiving instruction from numerous and various sources, the instructors' limited knowledge and experience, lack of familiarity with dealing with medical emergencies, flawed assumptions, and also a lack of community practises are all significant factors undermining their confidence and, as a result, causing a fear of CPR malpractice (9,19). Additionally, the CPR will be applied to the victims also will be giving not effectively, because of the misunderstanding. While of misperception of CPR is various among bystander CPR, it is still crucial to attend training with a positive attitude. Expert trainers can clarify misunderstandings related to administering CPR and help alleviate ambiguity. The low rate of bystander CPR at out of hospital cardiac arrest was evidently as the main factor of unwillingness to conduct CPR.

### **The Performance of CPR - Factors to Survival of Victims**

Out-of-hospital cardiac arrest are a significant cause of mortality and a serious public health concern across the world. Every year, an estimated 700,000 people in Europe and North America are diagnosed with out-of-hospital cardiac arrest, with just around 10% surviving

victims (18,50). Furthermore, out-of-hospital cardiac arrest has been identified as a major local public health problem (51). There has been an increase in the incidence of out-of-hospital cardiac arrest in Asia-Pacific region which is largely due to lifestyle disorders and an ageing population (18). The relevance of early defibrillation and early resuscitation in the chain of survival is highlighted by the time-sensitive nature of out of hospital cardiac arrest and the importance of early defibrillation and early resuscitation among others in the chain of survival (18).

CPR is one of the most often used resuscitation techniques for patients of sudden cardiac arrest across the world. CPR is a significant element in deciding outcomes, according to the American Heart Association. Compression rate and compression depth are indicators used to evaluate the quality of CPR provided to a victim. Both of these markers have been linked to better cardiac arrest outcomes (23).

Prompt CPR beginning is one of the greatest indicators related with enhanced chances of survival in out-of-hospital cardiac arrest. Overall, CPR initiated prior to the arrival of emergency medical services has been linked to survival rates that are 2- to 3-fold greater than when no CPR is initiated (16). Bystander CPR rates vary widely, ranging from 86% in Denmark to 42% in Japan and 47% in various parts of the United States. This might be due to variations in culture, education, and legislation (16).

However, providing high-quality CPR has been proven to be insufficient in a variety of contexts, particularly among community members. This is concerning since CPR is intrinsically inefficient, producing just a third of normal cardiac blood flow and cerebral blood flow when performed according to standards (52). Qualified rescuers must perform high-quality CPR to improve the chances of restoring spontaneous circulation.

In Malaysia setting the guideline manual on Basic Life Support, explained, the CPR were part in Basic Life Support with priority to provide; airway, breathing, circulation, Automated External Defibrillator and management of choking or foreign body airway obstruction. Highlighted in 2015

International Liaison Committee on Resuscitation guidelines which the critical importance of the interactions between the emergency medical dispatcher, the bystander who perform CPR and the use of automated external defibrillator and to emphasis on importance of early recognition of cardiac arrest (3). Furthermore, to emphasis on high quality CPR, which followed; compression rate 100-120 compressions per minute, the depth is 5cm to 6 cm for adult victims, minimal interruption in chest compression (< 10 seconds) and allow spontaneous recoil of the chest wall in between compressions. Awareness that seizures can be a sign of cardiac arrest and real time CPR feedback should be used to ensure high quality CPR and implementation of public access automated external defibrillator (3).

Low-quality CPR delivery has been identified as one of the causes linked to shorter survival and CPR effectiveness depends on high-quality chest compressions, and inadequate application might jeopardise the emergency situation's result (53), for example, and might play a similar causal role in the Malaysian environment, which likewise has poor CPR survival rates.

CPR techniques have been devised to overcome a gap in bystander CPR delivery at out of hospital cardiac arrest and poor retention of CPR skills despite obtaining CPR training within two years. However, a hybrid and hands-on CPR training curriculum with video self- instruction CPR intervention is part of the quality improvement initiative. The objective behind hybrid CPR training is that the performer gets a refresher on the learning material or skill needed to complete the task. This might be a cost-effective and efficient approach to deliver ongoing CPR instruction in difficult situations, such as the current COVID-19 outbreak.

Out-of-hospital cardiac arrest is a common and life-threatening event that is often experienced by first responders, such as police, fire, and emergency medical services, as well as by family members and the general public. However, there is a continuing knowledge deficit when it comes to methodologies to lead quality improvement efforts in out-of-hospital cardiac arrest treatment and, by extension,

surviving (54). How may these deficiencies be filled and cardiac arrest results at out-of-hospital cardiac arrest managed to improve?

However, because of lack knowledge, confident and competent, Bystander CPR at out of hospital cardiac arrest has been identified as a hindrance to community individuals not providing CPR. Panic or lack of confidence, CPR skill limitations, fear of being sued, failure to identify cardiac arrest, and concern of disease transmission via mouth-to-mouth ventilation are all factors to consider when performing CPR (51). Bystander CPR may be afraid of hurting the victim, especially if he or she is not in cardiac arrest. The American Heart Association 2020 Guidelines for CPR recommended that CPR must be started as soon as possible because the benefit justifies the danger (51).

Early intervention (the initial links in the survival chain) has been proven to enhance survival and neurological outcomes in individuals suffering from out of hospital cardiac arrest. Many strategies have been tried to enhance community participation in rapid Basic Life Support and CPR, particularly among lay community who are not required to react (26). A greater understanding of the most effective interventions might aid in improving survival and health-care system efficiency.

Bystander CPR rate (94.7%) was the most often reported outcome for out-of-hospital cardiac arrest, followed by survival to hospital discharge (36.8%), proportion of persons trained (31.6%), survival to hospital release with satisfactory neurological result (21%) and Return of Spontaneous Circulation (10.5%) (27). In most of the trials considered, community with packaged training CPR intervention programmes and increased bystander CPR. Furthermore, the systematic review and meta-analysis of nine(9) studies involving 21 266 out-of-hospital cardiac arrest discovered that community interventions were associated with better out of hospital cardiac arrest survival and Bystander CPR rates; the difference between the two outcomes was approximately 1 to 3-fold with community interventions vs. without community interventions (55). The findings of this study imply that community activities are linked to higher rates of bystander CPR and patient survival following cardiac

arrest outside of the hospital (55). The application of chains of survival from local community were faster and the ability the victims save was high. The local community has a golden time to save life of victims.

Worldwide, out-of-hospital cardiac arrest are a substantial cause of death and a major public health issue. According to estimates, just 10% of those who are diagnosed with out-of-hospital cardiac arrest in Europe and North America each year survive (18,50). Furthermore, the time-sensitive nature of out-of-hospital cardiac arrest and the significance in the chain of survival underscore the value of early resuscitation in the chain of life (18). According to the article's findings, 90% of out-of-hospital cardiac arrest incidents take place in residential and private areas. Due to this, the situation became extremely urgent for the emergency medical services to be on the site in such a short amount of time.

Additionally, because out-of-hospital cardiac arrest is a frequent, in life-threatening situation, it is the bystander CPR obligation to ensure that other than emergency medical services are regularly trained in CPR. But there remains a knowledge gap when it comes to leading quality improvement initiatives in out-of-hospital cardiac arrest situations (54). The lack of understanding and skills among bystanders significantly impacts CPR, leading to situations where CPR may not be performed during out-of-hospital cardiac arrest. The more quickly the bystander CPR can respond to a victim of cardiac arrest, the more valuable the person's capacity to be saved, the more quickly hospital follow-up can be completed, and the higher the chance of survival. Following from the result, effects brought on by out-of-hospital cardiac arrest if bystander CPR with lack of information, lack of confidence, and lack of competence as a barrier to community members failing to perform CPR on cardiac arrest patients. Additionally, when administering CPR, one must take into account issues such as panic and inability to recognise cardiac arrest condition, CPR skill limits, worry about legal repercussions, and worry about disease transmission during mouth-to-mouth breathing (51). Early intervention has been shown to improve neurological and survival outcomes in people with out of hospital cardiac arrest (the first links in the survival chain).

Numerous methods have been explored to increase community involvement in CPR, especially among laypeople who are not compelled to respond (26). Improved survival of out-of-hospital cardiac arrest victims and health-care system effectiveness could result from a better knowledge of the most efficient in training intervention programmed for bystander CPR. This study suggests that participation local bystander CPR is in a prime position to save the victims' lives. In community activities is associated with better rates of bystander CPR and patient survival after out-of-hospital cardiac arrest. The capacity of bystander CPR to save the victims was great, and local community was the main chains of survival were applied more quickly.

### **Future direction**

The research suggested that executing chest compressions-only CPR as the required standard procedure for community bystander CPR could make CPR activities more obvious to them. However, training must be done frequently to improve community bystander engagement in CPR intervention programs

An Assistant Medical Officer or other healthcare worker will be responsible for overseeing continuous CPR training and acting as a mentor for the network of bystander CPR providers. Additionally, video-based self-instruction CPR, which can be easily understood and can enhance instant memory, can assist in educating the community on CPR. Therefore, interventions that can improve the community's knowledge, attitudes, and practice of chest compression-only CPR are believed to be effective (56). The community undoubtedly has the potential to develop a high level of confidence in performing CPR during out-of-hospital cardiac arrest.

### **Limitation**

The limitations of this article were based on the researcher's readings and the studies that were carried out. Despite the fact that there is a study that claims bystanders who perform CPR have high knowledge and training, the study was not exhaustive and only focused on one region. A more comprehensive community study is required, including a comparison of the knowledge, attitude, and practice trial within the community regarding bystander CPR.

### **CONCLUSION**

Based on the findings of this study, bystander CPR is connected with enhanced post- out-of-hospital cardiac arrest survival rates. Bystander CPR appears and need to be improved further in community health initiatives that combine both community components.

Bystander CPR can be considered as capable of assisting the community in the out of hospital cardiac arrest crisis. Bystander CPR should be given CPR training to lessen the impact of inadequate CPR implementation and the impact of out-of-hospital cardiac arrest hurdles. The emphasis on bystander CPR will emphasise good exemplary practise and enhance bystander CPR performance and confidence in acting in tough situations and assisting victims.

The situation will improve, but more research on CPR practise in the out-of-hospital cardiac arrest is needed at the national, regional, or local levels to address the current difficulties. Information reporting must be managed with a system to strengthen the out-of-hospital cardiac arrest scenario and make it easier to increase bystander CPR competitiveness and training application. The data collected from communities can be analysed in the study and used to advance the work and research.

### **CONFLICT OF INTEREST**

The authors declare no conflict of interest.

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**SY:** participated in the review of pertinent literature and drafted the manuscript  
**SAAB:** worked on the manuscript's finalisation and peer review before publication.  
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**SAA:** worked on the manuscript finalisation and review before publication

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