doi:10.22100/ijhs.v11i3.1304
Original Article

SJMS 2025;11(3):1-7
sjms.shmu.ac.ir

SJMS
Shahroud Journal of Medical Sciences

Formation of Cardiopulmonary Resuscitation Teams: A Qualitative Content Analysis

Yadolah Shirvani[1,2], Mohammad Ali Cheraghi[3], Nazila Javadi-Pashaki[4], Abdolhossein Emami-Sigaroudi[2,5*]

[1] Candidate in PhD nursing, Department of Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.
[2] Department of Cardiology, Cardiovascular Diseases Research Center, Heshmat Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran.
[3] Department of Nursing Management, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran.
[4] Social Determinants of Health Research Center, Guilan University of Medical Sciences, Rasht, Iran.
[5] Department of Community Health Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.

Received: 20 July 2025
Accepted: 2 August 2025

Abstract

Background: *Cardiac arrest is a life-threatening condition where the outcome depends critically on immediate interventions through basic and advanced cardiopulmonary resuscitation. The quality of these interventions depends on the CPR team's performance, which itself is determined by how the team forms. Therefore, this study was conducted to understand cardiopulmonary CPR team members' experiences of team formation and its influencing factors.*

Methods: *This qualitative study used conventional content analysis in Iran over a 14-month period (December 2023 to January 2025). The study population included all members of cardiopulmonary CPR teams at Guilan University of Medical Sciences-affiliated hospitals. We used purposive sampling and continued recruitment until data saturation was achieved after 18 interviews with 18 participants. Semi-structured interviews were conducted, and data were analyzed using MAXQDA 20.*

Results: *Data analysis led to the identification 2 main categories — with 6 subcategories, including the membership method (mandatory membership, voluntary membership, incidental membership) and selection criteria (ability criteria, contractual criteria, no specific criteria).*

Conclusions: *The composition of CPR teams ranges from volunteers and motivated individuals to those with mandatory membership, so that if the "membership method" of the members is voluntary and noncoercive and the selection of members is based on specific competency criteria, the team's performance is more likely to be effective.*

Keywords: Cardiopulmonary resuscitation, Teamwork, Cardiac arrest, Qualitative study.
***Corresponding to:** A Emami-Sigaroudi, **Email:** emamisig@gmail.com

Please cite this paper as: Shirvani Y, Cheraghi MA, Javadi-Pashaki N, Emami-Sigaroudi A. Formation of Cardiopulmonary Resuscitation Teams: A Qualitative Content Analysis. Shahroud Journal of Medical Sciences 2025;11(3):1-7.

Introduction

Sudden cardiac arrest is a leading cause of death in many parts of the world, and as of 2016, heart disease remained the leading cause of death in the United States. Each year, 350,000 to 450,000 people in the United States and 700,000 in Europe suffer from cardiac arrest.[1,2]

In Iran, 80% of deaths are due to cardiovascular disease.[3] Regardless of the cause, the outcome and consequences of cardiac arrest depend heavily on the provision of immediate and effective interventions called basic and advanced cardiac life support measures; one of the main components of heart life support measures is cardiopulmonary resuscitation.[4]

Despite ongoing scientific revisions to the CPR guidelines, only 6–9% of patients survive cardiac arrest.[5] Statistics from Iran show that the mortality rate in cardiopulmonary resuscitation is greater than 90%, and the hospital discharge rate is less than 7%; advances in recent years have increased the chances of survival after CPR, but survival rates remain low.[6-8]

Improving outcomes for patients undergoing CPR — in other words, improving its quality — is particularly important in care guidelines. Because the quality of CPR affects the chances of its success in preserving patient survival, strategies to improve the quality of CPR are essential, as are improving survival after cardiac arrest; survival from cardiac arrest requires the coordinated efforts of multiple individuals as a team, with different skill sets, who may have little prior experience working together.[4]

The World Health Organization emphasizes that team structure, dynamics, and leadership significantly impact performance.[9] Specifically, structural diversity (in terms of size and psychological composition), team processes and dynamics (concerning issues arising during teamwork), and leadership style prove particularly influential. In healthcare systems where professionals from diverse disciplines collaborate, even minor errors in team performance can substantially impact individual and community health outcomes, underscoring the critical importance of teamwork.[10] Effective teamwork is essential for patient safety, particularly when team members clearly understand their responsibilities, as this reduces medical errors. Traditionally, physicians, nurses, and other healthcare professionals have worked in isolation. Despite recognizing teamwork's importance, most clinical units continue to operate as collections of separate professions. In practice, team members seldom train together, originate from distinct disciplines with differing educational backgrounds, and frequently lack foundational teamwork skills.[11]

In-hospital cardiac arrest (IHCA) constitutes a complex clinical process where in CPR team members often lack prior collaborative relationships. In such emergencies, success hinges not on individual performance but on the coordinated interactions of multiple team members within the system.[12]

During CPR, multidisciplinary healthcare professionals must collaborate seamlessly: physicians assume leadership, guide resuscitation efforts, and formulate treatment plans; nurses perform cardiac compressions, administer medications, and operate defibrillators; while anesthesia technicians manage airway control and ventilation.[13] CPR represents a critical scenario demanding effective physician-nurse teamwork to execute multiple coordinated interventions rapidly for patient survival. [14] The American Nurses Association identifies interprofessional collaboration among all care team members as an essential competency for clinical effectiveness.[15]

Poor teamwork during resuscitation jeopardizes patient safety and leads to suboptimal team performance and outcomes. Studies have shown that higher teamwork scores are associated with faster defibrillation, and approximately 50% of errors during trauma resuscitation are directly linked to teamwork failures and leadership breakdowns.[16]

In today's healthcare environment, teams have become an indispensable part of the workforce, enabling organizations to achieve more. While extensive research has been conducted to enhance team effectiveness, most studies overlook the dynamic and inherent aspects of real-time team performance. In reality, healthcare teams—such as CPR teams—are highly fluid, with members continuously joining and departing.[17]

The quality of cardiopulmonary resuscitation directly depends on the performance of CPR team members and how the team is formed. Therefore, this study aimed to understand the team formation phase from the perspective of CPR team members.

Materials and Methods

This qualitative study, employing conventional content analysis, was conducted over a 14-month period from December 2023 to January 2025 in government hospitals affiliated with Guilan University of Medical Sciences. The research settings included three general hospitals and one specialized cardiac center. To ensure maximum variation, we collected samples from different departments across all four centers and used the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to ensure quality. Content analysis was selected as the methodological approach for interpreting context-based data. Specifically, we employed the Elo and Kyngäs method, which is particularly suitable for studying phenomena with limited available information. In this study, the Lincoln and Guba's criteria were used to address trustworthiness.[18] The researcher made an attempt to increase the credibility of data by conducting in-depth interviews, making adequate interaction and cooperation with the participants, collecting credible data, and asking the participants to confirm the data. To increase the dependability of data in this study, an attempt was made to explain all study procedures so that the readers would make a correct judgment. To elevate the confirmability of the data, the researcher submitted the transcriptions, codes, categories, and subcategories to the other research members to confirm the coding process. To enhance the transferability of the research findings, an effort was made to make it possible for others to follow the research trend and characteristics of the study population by providing precise explanations about the research process and activities performed during the study.

The participants comprised all members of the CPR team, including physicians, nurses, anesthesia experts, and residents. We selected eligible participants who met the inclusion criteria from various departments to ensure maximum diversity in clinical experience, gender representation, and professional roles within CPR teams. The inclusion criteria required participants to: (1) be members of CPR teams at government hospitals affiliated with Guilan University of Medical Sciences, (2) have clinical experience in cardiac arrest management, (3) be actively involved in CPR operations, (4) demonstrate willingness to communicate effectively, (5) possess ability to articulate their experiences and perspectives, and (6) voluntarily participate in the study.

We employed purposive sampling, continuing recruitment until reaching data saturation - the point at which no new or relevant data emerged from additional interviews[19]. In qualitative research, saturation represents the primary determinant of sample size. This study achieved saturation after conducting 18 face-to-face, semi-structured interviews.

All interviews were conducted by a nursing PhD candidate with specialized qualitative research training and 20 years of practical experience in hospital CPR teams. Interviews took place in private, quiet settings at times and locations selected by participants to maximize comfort and confidentiality. We obtained written informed consent prior to each interview, emphasizing participants' rights to pause or withdraw at any time. Following each interview, we conducted preliminary analysis before proceeding with subsequent sessions to progressively deepen our understanding of participants' experiences. Using a semi-structured interview guide informed by Tuckman's stages of teamwork (1965), we focused specifically on the 'Forming' stage to explore team establishment dynamics. Core open-ended questions included: "Could you describe how you joined the CPR team?" (addressing initial member integration) and "How does your work typically begin when team members assemble?" (examining early team interactions). Throughout the interviews, we incorporated exploratory follow-up questions to further examine participants' beliefs and experiences.

As soon as each interview was completed, we transcribed the audio recordings verbatim using Microsoft Word, and then analyzed the transcripts using MAXQDA 20 software. The analysis started with several reviews of the interview transcripts. Data analysis was performed in the following steps: open coding, indexing, grouping, categorizing and abstracting. Accordingly, through the analysis process, the analysis units, which can be analyzed and coded, were selected from the interviews, and were categorized into smaller units, including the meaning units, the codes (which include the title of coding for the meaning units), the categories (which include a group of content with meaning and conceptual commonality), and the main category.

Results

Eighteen participants (10 females and 8 males) aged 25 to 55 years were enrolled in the study. Their work experience ranged from a minimum of 2 years to a maximum of 26 years (Table 1).

Table 1. Characteristics of the participants

Participant	Age (years)	Gender	Occupation	Experience (years)	Interview Duration (minutes)
Cod 1	50	M	Nurse, Clinical Instructor	25	55
Cod 2	52	F	ICU Nurse	26	47
Cod 3	36	F	Cardiac Nurse	17	35
Cod 4	53	F	Anesthesia expert	17	42
Cod 5	25	M	Emergency Nurse	2	45
Cod 6	38	F	Clinical Supervisor	19	35
Cod 7	39	M	Cardiac Resident	5	56
Cod 8	38	M	Anesthesia expert	18	55
Cod 9	45	M	Clinical Supervisor	20	45
Cod 10	55	M	General physician	20	30
Cod 11	28	F	Emergency nurse	5	40
Cod 12	53	M	physician Emergency	23	42
Cod 13	44	M	Clinical Supervisor	24	33
Cod 14	30	F	Surgical department nurse	13	40
Cod 15	48	F	physician Emergency	12	33
Cod 16	43	F	Critical Care Unit Head Nurse	10	35
Cod 17	31	F	Cardiac Resident	2	38
Cod 18	51	F	Emergency Department Head Nurse	17	30

Data saturation was achieved after 18 interviews, with no new codes emerging. The interviews lasted between 30 and 56 minutes. The stage of teamwork formation, as perceived by the cardiopulmonary CPR team members, were categorized into three main categories and nine subcategories (Table 2).

Table 2. Categories and subcategories of how the CPR team is formed

Main categories	Subcategories
Membership method	Mandatory membership
	Voluntary membership
	Incidental membership
Selection criteria	Ability criteria
	Contractual criteria
	No specific criteria

1. Membership method

One of the main categories of how teamwork is formed in cardiopulmonary CPR teams is the "membership method" of CPR team members; the dimensions and characteristics of the concept of the "membership method" are "mandatory membership", "incidental membership", and "voluntary membership". The membership method of CPR team members varies on the spectrum of team member formation, from selection in the form of mandatory membership to voluntary membership of team members.

1.1 Mandatory membership

In the experiences of some participants, their entry into the CPR team was mandatory, and they did not have any involvement or opinions about it; thus, Participant Number 3, who is a nurse in the internal cardiac department, did not ask about the desire to join the CPR team and the mandatory selection of members without considering their physical problems by the nursing office, pointed out and said**:**

"…the supervisor identifies the team members at the beginning of the shift, and they do not ask our willingness for this purpose. For example, the nursing office told someone in our department that 'you are a code'. That person said, 'I am not a code; I have a physical problem. Why do they say my name at all?"

Participant 4, an anesthesia expert, stated: "Anesthesia technicians were assigned to the CPR team based on hospital needs, but no one inquired about our willingness to join this team."

1.2 Voluntary membership

In the experiences of some participants, "voluntary membership" is one of the concepts of how to become a member of cardiopulmonary teams; in some centers, before a person's name is written as a member of the hospital's resuscitation code, they consult with him/her on this matter, and this issue itself can be effective in motivating the person to update themselves scientifically and, as a result, have better performance in teamwork**.**

Participant No. 1, a nurse member of the CPR team and a clinical instructor of cardiopulmonary resuscitation, noted the

consultative choice and the absence of compulsion to become a member of the CPR team and said**:**

“For example, today, when I am a nurse in the internal cardiac department, I may also be a member of the resuscitation code team, but usually there is coordination, and it is not the case that members are chosen by force.”

1.3 Incidental Membership

The concept of “incidental membership” in the team is one of the dimensions of the "membership method" of CPR team members, meaning that we may encounter incidental members of the CPR team during resuscitation for various reasons, such as the participation of all shift personnel in resuscitation cases. Participant No. 4 noted the lack of complete identification of the members of the CPR team and the possibility of changes in the monthly resuscitation plan and the participation of all nurses present in that shift in resuscitation**:**

“Now, it is formally clear who is on the CPR team on each shift, but if needed, others will come and help. I only know the personnel in the emergency room; I do not know the other personnel. However, the nurses on the shift all participate in that resuscitation**.**”

Participant No. 5, a cardiac emergency nurse, said regarding this: “When CPR is performed in our department, I also participate in it. "Participant number 3, regarding “incidental membership” in the CPR team, noted the variability of team members and the lack of sufficient knowledge of each other and said, “... we do not know about the colleagues who are in that code; because the hospital is large, the number of colleagues is large, and the number of people in this hospital is diverse.”

2. Selection criteria

One of the main categories of how teamwork is formed in cardiopulmonary CPR teams is the concept of "selection criteria" for members, whose dimensions and characteristics include "ability criteria", "contractual criteria", and "no specific criteria". The criteria for selecting members of the cardiopulmonary CPR team are in the form of a spectrum, with one end of the spectrum considering the "ability criteria" of members, where the ability of members includes physical ability (strength and endurance for effective cardiac compressions), scientific and technical ability (knowledge and skills for proper CPR execution), and personal attributes (composure under pressure, responsibility, and dedication), and at the other end of the spectrum, there is the concept of "no specific criteria", where owing to structural limitations, no specific criteria are considered for selecting members of the cardiopulmonary CPR team.

2.1 Ability criteria

The concept of "ability criteria" refers to the evaluation of functional and physical abilities, personality, experience, and work history when selecting CPR team members. When these characteristics are considered, the resulting team demonstrates efficient performance and successful teamwork, leading to satisfactory resuscitation outcomes regardless of success or failure.

2.1.1 Physical Ability:

Participant No. 1 stated:

"The reason I was selected was because the hospital conducted performance reviews. Given my proactive attitude and sufficient motivation, I joined the CPR team. We don't evaluate members' ability to perform cardiac massage in terms of compression depth and rate."

Participant No. 12, the physician and team leader, stated:

"We do not assess members' quality at all for their ability to perform cardiac massage in terms of pushing hard and fast, because the majority of our hospital staff are women. We must ensure there are two people in each shift with adequate physical strength for effective compressions."

Participant No. 3 added:

"The CPR team members are not evaluated for physical or scientific fitness. I once witnessed a case where a woman came to perform massage despite lacking the physical ability. I had to say, 'Madam, please change your position.' Unfortunately, they only focus on completing the resuscitation roster."

2.1.2 Scientific and Technical Ability:

Participant No. 6 emphasized the importance of practical experience:

"Here, I would pair a less experienced nurse (with 4-5 years of experience) with a more experienced nurse. However, this experience level remains insufficient as they've witnessed few actual resuscitations."

Participant No. 15 noted:

"Personnel graduating now lack essential knowledge. Societal motivation has significantly declined. For example, consider this scenario: CPR team members are selected based solely on experience without scientific or physical evaluation. The system should encourage voluntary participation in resuscitation training."

2.1.3 Personal Attributes and Psychological Ability:

Participant No. 1 further noted:

"The second requirement is maintaining composure during practice. A CPR team member must possess specific qualities in appearance, knowledge, and personality."

Participant No. 11 emphasized:

"Maintaining composure during resuscitation is essential. A CPR team member must demonstrate exceptional qualities in appearance, knowledge, and personality. There were instances when clinic physicians would entrust us with entire CPR procedures due to their confidence in our abilities. This responsibility motivated us to perform beyond expectations—not simply following orders, but working with genuine dedication. The passion for this work is absolutely vital."

Participant No. 16 stated:

"In our special department where families aren't present, our conscience must guide us to treat patients like family. Some staff who've lost parents say, 'Let me stay – maybe resuscitation will succeed.' We have diverse colleagues: some

differ in scientific knowledge, others in emotional capacity, and others in religious beliefs and conscience."

Participant No. 4 noted:

"Many lack patient responsibility. For example, when a colleague is too hasty in applying the AMBU, they actually hyperventilate the patient by doing so."

Participant No. 5 stated:

"... I get very confused during resuscitation, and this confusion has always been less, but in general, I am bothered by tense atmospheres, and perhaps this is because I am a very emotional and sensitive person."

2.2 Contractual criteria

The concept of contractual criteria is one of the dimensions of the concept of criteria for selecting members of the CPR team, meaning that, on the basis of university guidelines and the needs of the hospital, the members and their types of duties are determined. Therefore, on the basis of university guidelines, the members of the team massage group are selected from special departments.

Participant No. 2, an ICU nurse who referred to the existence of university guidelines in this regard, described the selection of ICU personnel as the cardiac massage group:

"Since the ICU is part of the resuscitation group, we are part of the hospital's compression or resuscitation group. It is part of the university guidelines that personnel from special departments must be part of the resuscitation group."

Participant No. 8, an anesthesia expert with 18 years of experience in the emergency department, explained the selection based on hospital needs:

"According to the needs of the hospital, the anesthesia experts were part of the resuscitation group, and since it suited my shifts, they assigned me to the resuscitation group."

2.3 No specific criteria

The concept of "no specific criteria" is one of the dimensions of the concept of criteria for selecting CPR team members, meaning that the selection of CPR team members may be without specific criteria. Here, owing to structural constraints, no specific criteria are considered for selecting CPR team members. In this case, the CPR team may be composed of people who lack the ability to work as a team, and as a result, the CPR teamwork will likely fail.

Participant No. 18 pointed out the structural constraints for considering specific criteria in selecting CPR team members and said that the goal is more to fill the monthly schedule:

"The selection of CPR team members depends on the hospital's structural space. For example, in Razi Hospital, you cannot select more than two people from a department because the performance of that department itself will be affected. But as far as I know, not much attention is given to the selection of members and the following points, and they pay more attention to filling the schedule."

Discussion

Unlike existing studies that primarily focus on the challenges of cardiopulmonary resuscitation,[20] this research adopted a qualitative and exploratory approach to examine CPR team members' experiences regarding the team formation phase in academic medical centers.

Teamwork is traditionally described based on classical systems theory, which identifies three key components: team inputs, team processes, and team outputs. Specifically, team inputs consist of (1) the characteristics of tasks to be performed, (2) the contextual elements of the work environment, and (3) team members' attitudes in team situations.[21] In this study, “membership method” and “selection criteria” represent key team inputs. When these inputs are properly established, the team can effectively navigate team processes to achieve optimal outputs - specifically, successful outcomes in cardiopulmonary resuscitation.

The “membership method” for CPR teams varies from “mandatory membership” to “voluntary membership.” Notably, most participants in this study reported that administrators did not consult them about their willingness to join the CPR team, indicating their selection was not based on personal interest or motivation. This practice may significantly impact team members' work engagement and performance. According to Baker et al., effective team performance requires members' willingness to collaborate toward a shared goal, such as improving patient well-being in a safe and error-free environment [22]. Leaders play a crucial role in ensuring that team members are motivated and cooperative to achieve organizational goals [23]. Therefore, if team membership and participation in the CPR team are voluntary and enthusiastic, the team will demonstrate optimal performance in cardiopulmonary resuscitation. Based on participants' experiences, some centers consult with individuals before listing them as hospital CPR team members, asking about their willingness to join. This approach can enhance the individual's motivation for personal development and lead to better teamwork performance**.**

The concept of “incidental members” emerges as a subcategory of the “membership method.” These are team members who incidentally join resuscitation efforts, such as all shift personnel participating in an emergency. This lack of predefined membership can lead to poor outcomes due to unfamiliarity among members and weak team interactions. Mulangi et al. emphasized the negative effects of inadequate prior knowledge among CPR team members on team dynamics.[24] Additionally, Hoegel reported that larger team sizes complicate communication and reduce individual efforts, negatively impacting teamwork.[25] Therefore, members of the cardiopulmonary CPR team must be predetermined. In cases where the team size increases, proper coordination, management, and leadership should be implemented to prevent disorganization and poor teamwork**.**

The "selection criteria" emerged as a fundamental category in understanding CPR team formation, with "ability criteria" representing its most critical subcategory. Our findings demonstrate that effective team composition requires careful consideration of three interconnected dimensions of ability: physical, technical/scientific, and personal/psychological competencies.

Physical ability stood out as a non-negotiable requirement, particularly for cardiac compressions. Participants' accounts of struggling with physically unprepared team members align with Case et al.'s documentation of physical weakness as a barrier to effective resuscitation.[26] This challenge appears particularly acute in contexts where, as our participants noted, most staff are women and systematic physical assessments are lacking. The gender dimension mentioned by Jannat al-Makan et al. regarding physical strength requirements thus takes on practical significance in our findings.[27]

Regarding technical/scientific ability, our results reveal troubling gaps in both baseline knowledge and ongoing training. The participants' observations about new graduates' insufficient preparation resonate strongly with Rogers-Varan et al.'s emphasis on the critical need for professional knowledge in resuscitation effectiveness [28]. Particularly concerning are reports of team members being selected without scientific evaluation, contradicting established evidence that, as Manzero et al. demonstrated, continuous education significantly improves CPR outcomes. [29] The disconnect between research evidence and actual practice in this domain warrants particular attention.

The personal/psychological attributes dimension proved equally vital but was frequently overlooked. Our participants' emphasis on composure under pressure provides concrete examples. Paris et al. highlighted the need to consider team members' individual characteristics (e.g., knowledge, skills, attitudes, competence, learning ability, risk-taking, stress tolerance, etc.) to facilitate team interactions and performance.[30] The stress responses described - including confusion, anxiety, and decision-making paralysis - offer empirical support for previous findings about CPR's psychological demands.[31] Notably, Jannat al-Makan et al.'s identification of stress and anxiety as failure factors manifested clearly in our participants' narratives about tense resuscitation atmospheres.[27]

The contractual selection approach, while sometimes necessary for staffing specialized departments, introduces significant variability in team capabilities. This finding extends Nalamato et al.'s work on required cognitive skills by showing how structural constraints can override competency considerations. Similarly, the "no specific criteria" scenario highlights a concerning gap between research evidence and actual selection practices in some settings.

These findings collectively suggest that while the components of effective CPR teamwork are well-established in literature, their systematic application in practice remains inconsistent. The tension between ideal team composition and practical staffing realities emerges as a key challenge requiring innovative solutions that accommodate structural constraints without compromising competency standards.

This study presents certain limitations to consider. The results lack generalizability due to the study methodology and sample size. The findings of this study are based on the experiences of CPR team members in government educational and medical centers. Further research in private centers is recommended to validate these results**.**

In the present study, the experiences of cardiopulmonary resuscitation team members revealed that the formation of the CPR team is affected by the concepts of 'membership method' and 'selection criteria' of the team members. The composition of CPR teams ranges from volunteers and motivated individuals to those with mandatory membership. When the 'membership method' is voluntary and non-coercive and member selection is based on specific competency criteria, the team's performance is more likely to be effective.

According to the results of the present study, if nursing managers pay attention to these elements when writing a cardiopulmonary resuscitation plan and selecting members, the team will achieve appropriate outcomes through team processes, resulting in satisfactory cardiopulmonary resuscitation.

Ethical Considerations

This study is part of a doctoral thesis in nursing. It has an ethics code, IR.GUMS.REC.1402.445, from the Ethics Committee at Guilan University of Medical Sciences. The consent form said participation was voluntary. Participants got information both verbally and in writing about the study. They could also leave at any time. The researchers gave participants numbers like 1, 2, and 3. They kept the list for pseudonymization apart from the transcribed material.

Acknowledgment

This study is approved by Guilan University of Medical Sciences. The research team would like to thank and appreciate all the participants for sharing their valuable experiences and all the people who somehow helped us in this study.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding

The study was not funded and supported.

References

1. Giacoppo DJEHJ. Impact of bystander-initiated cardiopulmonary resuscitation for out-of-hospital cardiac arrest: where would you be happy to have a cardiac arrest? 2019;40(3):319-321. doi: 10.1093/eurheartj/ehy911

2. Panchal AR, Bartos JA, Cabañas JG, et al. Part 3: adult basic and advanced life support: 2020 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. 2020;142(16_Suppl_2):S366-S468. doi: 10.1161/CIR.0000000000000918

3. Abdollahi H, Tayebeh P, Mazlum R, et al. Effect of capnography feedback during cpr on return of spontaneous circulation. 2018;61(1):816-824.

4. Clarke S, Apesoa-Varano EC, Barton JJBo. Code Blue: methodology for a qualitative study of teamwork during simulated cardiac arrest. 2016;6(1). doi: 10.1136/bmjopen-2015-009259

5. Nishiyama C, Kiguchi T, Okubo M, et al. Three-year trends in out-of-hospital cardiac arrest across the world: Second report from the International Liaison Committee on Resuscitation (ILCOR). 2023;186:109757. doi: 10.1016/j.resuscitation.2023.109757

6. Goodarzi A, Jalali A, Almasi A, et al. Study of survival rate after cardiopulmonary resuscitation (CPR) in hospitals of Kermanshah in 2013. 2014;7(1):52. doi: 10.5539/gjhs.v7n1p52

7. Chopra A, Wong N, Ziegler C, et al. Systematic review and meta-analysis of hemodynamic-directed feedback during cardiopulmonary resuscitation in cardiac arrest. 2016;101:102-107. doi: 10.1016/j.resuscitation.2016.01.025

8. Neumar RW, Shuster M, Callaway CW, et al. Part 1: executive summary: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. 2015;132(18_suppl_2):S315-S367.

9. Walton M, Woodward H, Van Staalduinen S, et al. The WHO patient safety curriculum guide for medical schools. 2010;19(6):542-546. doi: 10.1136/qshc.2009.036970

10. Gafa M, Fenech A, Scerri C, et al. Teamwork in healthcare organisations. 2005;5(2) doi: 10.1080/15602210500174474

11. Weaver SJ, Dy SM, Rosen MAJBq, et al. Team-training in healthcare: a narrative synthesis of the literature. 2014;23(5):359-372. doi: 10.1136/bmjqs-2013-001848

12. Chan PS, Nallamothu BKJJ. Improving outcomes following in-hospital cardiac arrest: life after death. 2012;307(18):1917-1918. doi: 10.1001/jama.2012.3504

13. Johnson SL, Haerling KA, Yuwen W, et al. Incivility and clinical performance, teamwork, and emotions: a randomized controlled trial. 2020;35(1):70-76. doi: 10.1097/NCQ.0000000000000407

14. Lauridsen KG, Watanabe I, Løfgren B, et al. Standardising communication to improve in-hospital cardiopulmonary resuscitation. 2020;147:73-80. doi: 10.1016/j.resuscitation.2019.12.013

15. Vetter MJ, Zavotsky KE. Advancing Evidence-Based Practice in Nursing and Healthcare. Elsevier Health Sciences; 2024.

16. Rosenman ED, Bullard MJ, Jones KA, et al. Development and empirical testing of a novel team leadership assessment measure: a pilot study using simulated and live patient encounters. 2019;3(2):163-171. doi: 10.1002/aet2.10321

17. Verhoeven D. Team familiarity and task interdependence: a new perspective on dynamic team composition. 2019;

18. Elo S, Kyngäs HJJoan. The qualitative content analysis process. 2008;62(1):107-115. doi: 10.1111/j.1365-2648.2007.04569.x

19. Polit DF, Beck CT. Essentials of nursing research: Appraising evidence for nursing practice. Lippincott Williams & Wilkins; 2010.

20. Ornato JP, Peberdy MA, Reid RD, et al. Impact of resuscitation system errors on survival from in-hospital cardiac arrest. 2012;83(1):63-69. doi: 10.1016/j.resuscitation.2011.09.009

21. McGrath JE, Arrow H, Berdahl JL. The study of groups: Past, present, and future. Personality and Social Psychology at the Interface. Psychology Press; 2014:95-105. doi: 10.4324/9780203764923-7

22. Baker DJAp. Medical teamwork and patient safety: the evidence-based relation. 2005;

23. Riisla K, Wendt H, Babalola MT, et al. Building cohesive teams-the role of leaders' bottom-line mentality and behavior. 2021;13(14):8047. doi: 10.3390/su13148047

24. Mullangi S, Bhandari R, Thanaporn P, et al. Perceptions of resuscitation care among in-hospital cardiac arrest responders: a qualitative analysis. 2020;20:1-7. doi: 10.1186/s12913-020-4990-4

25. Hoegl MJBH. Smaller teams-better teamwork: How to keep project teams small. 2005;48(3):209-214. doi: 10.1016/j.bushor.2004.10.013

26. Case R, Cartledge S, Siedenburg J, et al. Identifying barriers to the provision of bystander cardiopulmonary resuscitation (CPR) in high-risk regions: A qualitative review of emergency calls. 2018;129:43-47. doi: 10.1016/j.resuscitation.2018.06.001

27. Janatolmakan M, Nouri R, Soroush A, et al. Barriers to the success of cardiopulmonary resuscitation from the perspective of Iranian nurses: A qualitative content analysis. 2021;54:100954. doi: 10.1016/j.ienj.2020.100954

28. Rajeswaran L, Cox M, Moeng S, et al. Assessment of nurses' cardiopulmonary resuscitation knowledge and skills within three district hospitals in Botswana. 2018;10(1):1-6. doi: 10.4102/phcfm.v10i1.1633

29. Munezero JBT, Atuhaire C, Groves S, et al. Assessment of nurses knowledge and skills following cardiopulmonary resuscitation training at Mbarara Regional Referral Hospital, Uganda. 2018;30(1). doi: 10.11604/pamj.2018.30.108.15398

30. Paris CR, Salas E, Cannon-Bowers JAJE. Teamwork in multi-person systems: a review and analysis. 2000;43(8):1052-1075. doi: 10.1080/00140130050084879

31. Sjöberg F, Schönning E, Salzmann-Erikson MJJocn. Nurses' experiences of performing cardiopulmonary resuscitation in intensive care units: a qualitative study. 2015;24(17-18):2522-2528. doi: 10.1111/jocn.12844