

Nurses' Self-Efficacy Regarding Cardiopulmonary Resuscitation: A Literature Review

Ayman Ateq Alamri¹ & Omar Ghazi Baker²

¹ Ph.D. Candidate in Nursing, College of Nursing, King Saud University, Riyadh, Kingdom of Saudi Arabia

² Professor, College of Nursing, King Saud University, Riyadh, Kingdom of Saudi Arabia

Correspondence: Ayman Ateq Alamri, Ph.D. Candidate in Nursing, College of Nursing, King Saud University, Riyadh, Kingdom of Saudi Arabia. E-mail: 441106527@student.ksu.edu.sa, AYMAX2005@hotmail.com

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Abstract

Early detection and effective resuscitation response are critical to the survival of cardiac arrest patients. Nursing staff are frequently the initial responders to cardiac arrest patients. The level of self-efficacy lessens the anxiety of new nursing graduates and enhances their ability to do cardiopulmonary resuscitation (CPR). This paper aimed to investigate the relationship between self-efficacy and nurses' abilities regarding CPR. Self-efficacy refers to "beliefs in one's capacity to arrange and execute the courses of action required to achieve specific attainments". Two main categories discussed in this study include self-efficacy of nurses about CPR and factors affecting their self-efficacy. As a result, nurses must have the essential knowledge and attitude, and trust in their self-efficacy to provide adequate nursing care to cardiac patients. Furthermore, nurses need to be prepared regarding CPR's knowledge and self-efficacy before delivering it, since these are crucial aspects that affect CPR delivery.

1. Introduction

The term "self-efficacy" relates to one's belief in one's ability to plan and carry out the steps necessary to achieve specific goals (Bandura, 1997). Self-efficacy is a positive measure of an individual's performance that can influence a person's task selection, effort level, and willingness to engage in strenuous activities (Bandura, 1982). Self-efficacy beliefs identify how individuals are motivated, feel, and think and thus influence their behavior. People with a strong feeling of efficacy have high confidence in their abilities. They do not consider challenging activities as hurdles to be avoided but rather as opportunities to improve their abilities. They create challenging goals for themselves and commit to them, and if they fail at a task, they rapidly regain their sense of efficacy. As a result, tension and anxiety levels are lowered, and personal successes are increased (Bandura, 1997). In nursing, self-efficacy is the active role that nurses play in their performance, attitude, and job satisfaction. Thus, nurses with high self-confidence are more likely to accomplish a task (Bandura, 1977).

Globally, the most significant cause of death is sudden cardiac arrest (Bray, Smith, Case, Cartledge, Straney, & Finn, 2017). Roughly, most of the (70%) out-of-hospital cardiac arrests (OHCAs) happen at home, with about 50% going unnoticed. Prognosis of OHCA is dismal, with lower rate of survival-to-discharge. Emergency medical services (EMS) only revive 11% of adults suffering from non-traumatic cardiac arrest (Kleinman et al., 2015; CARES, 2017). There is improvement in prognosis of in-hospital cardiac arrest (IHCA), with rate of survival-to-discharge ranging between 22.3 and 25.5% among the adults (Mozaffarian et al., 2015).

Nurses are often the first responders to a patient's cardiac arrest and thus play a critical role in saving lives. When administering cardiopulmonary resuscitation (CPR), nurses must be knowledgeable skillful, with high self-efficacy. A person's self-efficacy is essential to achieve positive CPR outcomes. According to Ornato and Peberdy (2007), self-efficacy, along with the necessary knowledge and attitudes, is an essential predictor of cardiopulmonary resuscitation performance, indicating how confident health professionals are in dealing with such situations. Turner, Lukkassen, Bakker, Draaisma, and Ten Cate (2009) stated that knowledge, skills, and attitude are insufficient for effective handling of cardiac arrest patients. As a result, nurses should improve their self-efficacy to cope with such hurdles and achieve optimal CPR performance.

Recently, new teaching strategies, such as simulation, have increased popularity in CPR instruction for improving abilities of nursing students and promote information retention (Everett-Thomas, Turnbull-Horton, Valdes, Valdes,

Rosen, & Birnbach, 2016; Tastan et al., 2017). These novel teaching methods have aided in developing students' self-efficacy (Roh & Issenberg, 2014). Nursing students participating in simulation program may administer CPR successfully and with more self-confidence on a live patient (Kiernan, 2018). McCoy et al. (2019) discovered that high-fidelity CPR model training is more useful as compared to low-fidelity CPR model training to provide appropriate chest compression depth and compression fraction in a CPR training trial with fourth-year medical students. Another research revealed no significant differences in performance between students undergoing CPR education using low-fidelity and high-fidelity simulation. However, more effective CPR skills were demonstrated by the high-fidelity simulation group. High-fidelity models provide excellent response fidelity with life-size digital models with realistic anatomical components. Whereas, low-fidelity models are static or task trainers mainly made of rubber body components used to be used in clinical practice like urine catheterization and essential life support.

There is significant improvement in self-efficacy and satisfaction of nurses due to CPR education as it increases nurses' self-efficacy and satisfaction. Moreover, there is high level of satisfaction among the nurses with simulation (Everett-Thomas et al., 2016). Therefore, the present study aims to investigate the relationship between self-efficacy and nurses' abilities regarding CPR.

2. Methodology

This study has used secondary data to gather results, which mainly includes published articles. The data collection tool in this literature review study involved identifying, recording, understanding, and transmitting information. Certainly, the literature review process was actualized through data collection, wherein information is gathered in a comprehensive way.

3. Sources of Self Efficacy

The theory of self-efficacy was developed by Bandura (1997), which indicates that self-efficacy expectations are based on four contributing sources: (1) mastery experience, (2) vicarious experience, (3) persuasion, and (4) physiological arousal. These four concepts are regarded as essential in developing self-efficacy in general and in the context of performing. The first source, mastery experience, is developed when the individual performs a task or skill successfully that will increase confidence and thus influence the self-efficacy development (Bandura, 1977). The second source is vicarious experience in which a person observes another person effectively performing tasks (Bandura, 1982). According to Bandura's theory, individuals can increase their self-efficacy and behave appropriately by observing the influence of others' performance (Bandura, 1977). The third source is verbal persuasion, in which individuals receive positive feedback, encouragement, and suggestions from others (Bandura, 1977). Verbal persuasion might promote the person's self-efficacy to perform the task successfully (Bandura, 1982). The fourth source is physiological arousal, which refers to an effective response to anger or anxiety (Bandura, 1977; Bandura, 1982). This physiological arousal influences self-efficacy because it reflects the individual's ability to cope with difficult and stressful situations (Bandura, 1993).

4. Nurses' Self-Efficacy Regarding CPR

Cardiopulmonary resuscitation (CPR) is an emergency medical procedure requiring a nurse to perform chest compressions alongside artificial respirations to manually preserve intact brain function until advanced procedures are initiated to restore spontaneous blood flow and breathing in a patient in cardiac arrest (Slabe & Oven, 2020). Nurses are usually the first responders when a patient experiences cardiac arrest and thus have a vital role in saving lives. Nurses must be skilled and self-efficient when administering CPR (Aranzabal-Alegria et al., 2017). Providing top-notch CPR in one or two minutes will offer better survival chances for clients in cardiac arrest. Before nurses begin the life-saving procedure, they are influenced by several elements. Some of these factors may include their awareness, self-efficacy, attitudes, and knowledge (Desiani, Nuraeni, & Priambodo, 2017). Nurses' knowledge and self-efficacy are the most integral influencing components in CPR administration (Alaryani, Alhofaian, & Elhady, 2021). Moon and Hyun (2019) pointed out that knowledge of CPR blended with the standard of care enhances CPR procedure performance. If a nurse is knowledgeable about the CPR procedure, self-efficacy will be likewise positive. Slabe and Oven (2020) also backed this perspective by stating that handling cardiac arrest requires knowledge enhanced by the nurses' confidence in their ability or self-efficacy to execute CPR procedures effectively and successfully. Desiani et al. (2017) affirmed these statements expressing that nurses with positive attitudes, knowledge, and awareness may experience failure in successfully performing CPR, without confidence in their abilities and skills. Alaryani et al. (2021) also upheld that self-efficacy entails the dominant variable in the performance of CPR. Nurses who have high self-efficacy often have positive attitudes and skills to support patients who are in cardiac arrest. Therefore, it can be inferred that nurses' self-efficacy is primarily determined by factors (such as awareness, attitudes, and knowledge) that influence CPR performance. Self-efficacy is a vital factor for the successful delivery of CPR, and it is the best measure of a nurse's ability to

perform CPR effectively (Alaryani et al., 2021). Therefore, nurses must have the knowledge and self-efficacy to ensure increased success rates of CPR performance.

In their study, Desiani et al. (2017) indicated that 49 respondents, 64.5% of the participants, possessed moderate knowledge, while 73 (96.1%) had heightened self-efficacy. The knowledge domain comprises factual, procedural, and conceptual forms of knowledge. On the other hand, the self-efficacy was subdivided into detailing, debriefing-recording, and responding-rescuing. According to Slabe and Oven (2020), a nurse undergoes four thinking cycles before deciding on clinical practice such as to review, validate, consider, and rationalize. The process of rationalization is important for justifying a caregiver's contemplations besides actions, and it is also fundamental when it comes to making decisions and solving problems. Rationalization incorporates identifying reasons and objectives and making conclusions to derive measures (Slabe & Oven, 2020).

According to Desiani et al. (2017), nurses expressed that debriefing was still very uncommon. Even while training, most nurses do not partake in debriefing sessions regularly. Debriefing permits nurses to render verbal persuasion to one another for restoring self-efficacy. Debriefing practice is done during training, but it is still restricted to one technique of verbal debriefing and a coordinated approach. Many debriefing strategies can be utilized to improve CPR's knowledge and effective performance, including oral-debriefing, verbal-debriefing, having an instructor, amongst others. Desiani et al. (2017) demonstrated that utilizing an instructor during debriefing entails a practical approach, and it can improve the self-efficacy levels of a nurse in CPR.

Nonetheless, conceptual knowledge was the lowest division in the knowledge domain. In contrast, the lowest subdivisions in self-efficacy were noted to be reporting and debriefing – recording. As such, the study demonstrated that it is crucial to enhance information regarding conceptual knowledge and at the same time enhance training in the self-efficacy domain subdivisions of reporting, debriefing as well as recording.

Moreover, Moon and Hyun (2019) determined whether a blended form of CPR education that integrated both e-learning and the face-to-face type of education was effective in enhancing the participants' knowledge, their attitude, and the extent of self-efficacy. The study assumed as a randomized-controlled form of design. A total of 120 participants had been randomly included in the intervention and control group (60 participants in each group). From the study, it was also clear that nurses' self-efficacy is primarily reflected in the level of nurses' awareness, attitudes, and knowledge regarding CPR performance.

Table 1. Summary of research on nurses' self-efficacy in CPR

Author(s)	Study	Country	Participants	Method	Conclusion
Desiani et al. (2017)	How do knowledge and self-efficacy of internship nursing students in performing cardiopulmonary resuscitation?	Indonesia	76 internship nursing students	Cross-sectional approach	It is critical to expanding information on conceptual understanding while also improving training on self-efficacy domains such as reporting, recording, and debriefing.
Moon and Hyun (2019)	Nursing students' knowledge, attitude, self-efficacy in blended learning of cardiopulmonary resuscitation: a randomized controlled trial	South Korea	120 nursing students	Randomized controlled design	A CPR approach that included videos and face-to-face instruction that was beneficial to enhance knowledge and attitude of nursing students toward CPR.
Alaryani et al. (2021)	The relationship between knowledge and self-efficacy of nurses regarding early initiation of cardiopulmonary resuscitation and automated defibrillation in Saudi Arabia	Saudi Arabia	287 registered nurses	Correlational survey	Increased level of self-efficacy simultaneous to increased level of knowledge.

Afzalimoghaddam et al. (2014)	Evaluation of the effectiveness of basic life support training on the knowledge and skills	Iran	90 medical students	Cross-sectional study	CPR workshops and manikins for CPR training can improve medical students' abilities and should be regarded as a required element of medical school training.
Forouzi, Heidarzadeh, Kazemi, Jahani, & Afeshari (2016)	Comparison of the Combined based with the mannequin based simulation models in self-efficacy, performance, and satisfaction of nursing students on Cardiopulmonary	Iran	62 nursing students	Randomized field trial	Considering the circumstances and facilities, educational institutions should implement this method in their teaching programs to better educate students to assist patients.
Siew Eng and Sok Ching, (2018)	Nurses' perceptions of self-efficacy in cardiopulmonary resuscitation at a private hospital in Selangor	Malaysia	112 registered nurses	Cross-sectional study	Nurses' self-efficacy in resuscitation and team teamwork is strengthened in this private hospital through recurrent CPR certification training.
Roel and Bjørk (2020)	Comparing nursing student competence in CPR before and after a pedagogical intervention	Norway	145 nursing students	Comparative study	The revised curriculum provided more hands-on CPR practice, but it was insufficient to enhance students' performance to meet the standards established by national and international criteria.
Slabe and Oven (2020)	Evaluation of Slovenian occupational therapists' theoretical knowledge and stress levels with providing cardiopulmonary resuscitation.	Slovenia	273 occupational therapists	Survey	Regular CPR training is advised for this group of health professionals to increase knowledge and confidence.
Turner et al. (2009)	The effect of the APLS-course on self-efficacy and its relationship to behavioral decisions in pediatrics resuscitation	The Netherlands	56 health professionals	Correlational study	Self-efficacy predicts specific behaviors during a simulated resuscitation but does not match resuscitation skill performance.
Hermanto, Barlianto, & Suryanto (2021)	Analysis of Factors Affecting Self-Efficacy of Fresh Nursing Graduates in Performing Cardiopulmonary Resuscitation on Cardiac Arrest Patients in Malang City, Indonesia	Indonesia	154 fresh nursing graduates	observational analysis with a cross-sectional approach	The most dominant factor affecting self-efficacy is verbal persuasion.

Wati, Wihastuti, & Nasution (2021)	Application of the Theory of Planned Behavior to Identify Nursing Student's Intention to be a Bystander Cardiopulmonary Resuscitation	Malang	108 undergraduate nursing student	quantitative cross-sectional approach	There was a strong association between attitude, subjective norm, and self-efficacy and intention. The subjective norm was the most dominating component connected with nursing students' intention to perform bystander CPR.
Alzawaidah, Al-Amer, Alkafri, Al-Hussami, & Alhurani (2022)	Emergency Room Nurses' Attitudes toward Family Presence during Resuscitation: A Cross-Sectional Study	Jordan	222 registered nurses who have worked in emergency departments	cross-sectional descriptive correlation research	Increasing nurses' confidence via evidence-based practice would prepare them to deal with family presence during resuscitation.
Demirtas, Aslan, Basak, & 2021	Effectiveness of simulation-based cardiopulmonary resuscitation training programs on fourth-year nursing students		89 fourth-year nursing students	mixed-method design	Nursing students' knowledge and abilities increased due to simulation-based CPR instruction.

5. Factors Affecting Self-Efficacy

Studies depicted that self-efficacy in CPR was influenced by various factors such as personal characteristics, work experience, CPR training, and environment. Moon and Hyun's (2019) study indicated that nurses cognitively have a developed mature mind in early adulthood and are better positioned to receive and comprehend information quickly. Slabe and Oven (2020) strengthened these claims stating that nurses in the early adulthood stage are still in the learning process and are more motivated to gain much information and self-efficacy to perform CPR procedures throughout their careers effectively.

Furthermore, Alaryani et al. (2021) conducted a quantitative correlation study to determine the relationship between nurses' knowledge and self-efficacy regarding CPR performance. The findings indicated that participants with high-level self-efficacy had more than ten years of experience and participated in CPR performance previously. Further, in their study, Siew Eng and Sok Ching (2018) aimed to investigate the extent of nurses' perceived self-efficacy in respect to CPR within a private hospital situated in Kuala Lumpur. While there entailed high self-efficacy amongst the nurses, differences in such self-efficacy were shown amongst the respondents' age groups, real experiences in CPR, the working-experience years (Siew Eng & Sok Ching, 2018). This study comprehensively depicted how their age shapes nurses' self-efficacy in CPR, the length of working experience, the kind of CPR training they have received before, and the real experiences they have been a part of (Siew Eng & Sok Ching, 2018).

Training entails an integral component in influencing nurses' self-efficacy. Slabe and Oven (2020), in their study, uncovered that CPR-based training poses a substantial impact on knowledge, although the ability diminished drastically within four months post-training. This showed that novice nurses' knowledge tended to reduce significantly, suggesting that training evaluation should be done consistently to improve self-efficacy. Riggs, Franklin, and Saylany (2019) also investigated whether previous training history, including the amount of training or duration that elapsed since the last training, were linked to CPR psychomotor skills. It emerged from this study that training was related to enhancing CPR self-efficacy compared to the absence of training. In contrast, previous training was associated with enhanced skills, in comparison to having no prior training.

Ongoing training programs are also integral in nurses' CPR self-efficacy. At the same time, it is crucial to have prior knowledge and training on CPR performance. This does not mean that nurses should not engage in periodic activity to enhance their efficacy. Moon and Hyun (2019) further articulated that for nurses to efficiently and promptly respond to cardiac arrest circumstances, they need to be skilled, highly prepared, and constantly updated about the life-saving procedures, all of which may necessitate constant CPR training. Roel and Bjørk (2020) contended that there is a deficiency in the nurses' skills extent in CPR, hence demonstrating a need for continued

and better education programs on CPR. This need goes for nursing schools and healthcare organizations as CPR skills amongst nurses keep on deteriorating if training is not frequently offered (Roel & Bjørk, 2020).

6. Conclusions

The present study used literature review approach to investigate the relationship between self-efficacy and nurses' abilities regarding CPR. This review highlights the significance of nurses to have adequate knowledge, attitude, and trust in their self-efficacy to provide satisfactory nursing care to the cardiac patients. The role of self-efficacy in cardiopulmonary resuscitation CPR is vital for desired performance. In addition, nurses need to be prepared in terms of knowledge and self-efficacy about CPR before performing because they are regarded as key elements that determine CPR delivery. However, factors that may influence the nurses' self-efficacy should be considered to achieve positive outcomes. For example, work-related differences such as CPR training, work experience, and previous participation in cardiac arrest situations might affect nurses' self-efficacy.

However, in future empirical studies should be conducted to understand the relationship between self-efficacy and nurses' abilities regarding CPR because only few studies have examined the relationship between self-efficacy and nurses' performance of cardiopulmonary resuscitation (CPR). However, dimensions related to CPR performance such as training, environment, and collaborative skills are essential when investigating CPR self-efficacy.

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Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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