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Exploring the Experience of Nursing Students in Performing Cardiopulmonary Resuscitation (CPR) in Manambai Hospital: A Qualitative Study

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ABSTRACT

In hospital cardiac arrest (IHCA) is a worldwide issue due to its low survival rate with survival rate decreases by 10% every minute in the absence of cardiopulmonary resuscitation (CPR). All medical staff who are providing care to patients, including nursing students, must immediately begin CPR and call for an activated advanced medical team. With less experience, nursing students find it challenging and demanding to perform high-quality CPR. This study aims to explore the nursing student experience in providing CPR to the patient at the hospital. This study was a qualitative design with a phenomenological approach. An in-depth interview with a semi-structural approach was conducted among 10 nursing students at the Manambai hospital. The data analysis used Colaizzi's (1978) seven-step method. The result shows that three themes were identified,regarding nursing stedent experience in performing CPR including : nursing students' feelings (fear, worry, satisfaction, fearfulness, pride, and stress), challenges (difficulty recognising the difference between real patients and CPR training manikin, and difficulty following certain medical personnel's CPR performance), and the need for feedback from senior medical staff and clinical instructors. The conclusion is nursing students need more practice and opportunities to perform CPR under the supervision of lecturers and clinical instructors in order to provide excellent and safe patient care. Clinical instructors (CI) should provide additional opportunities for CPR under CI supervision. Moreover, in order to improve nursing students' CPR abilities and knowledge, lecturers should improve high-fidelity simulation.

Keywords: Cardiac Arrest, Nursing, Student, CPR, Experience

ABSTRAK

Henti jantung di rumah sakit (IHCA) merupakan masalah di seluruh dunia karena tingkat kelangsungan hidup yang rendah dengan tingkat kelangsungan hidup menurun 10% setiap menit tanpa adanya resusitasi jantung paru (RJP). Semua staf medis yang memberikan perawatan kepada pasien, termasuk mahasiswa keperawatan, harus segera memulai CPR dan memanggil tim medis lanjutan. Dengan pengalaman yang kurang, mahasiswa keperawatan merasa tertantang dan dituntut untuk melakukan CPR yang berkualitas tinggi. Penelitian ini bertujuan untuk mengeksplorasi pengalaman mahasiswa keperawatan dalam memberikan CPR kepada pasien di rumah sakit. Penelitian ini merupakan penelitian kualitatif dengan pendekatan fenomenologi. Wawancara mendalam dengan pendekatan semi struktural dilakukan terhadap 10 mahasiswa keperawatan di rumah sakit Manambai. Analisis data menggunakan metode tujuh langkah Colaizzi (1978). Hasil penelitian menunjukkan bahwa ada tiga tema yang diidentifikasi, mengenai pengalaman mahasiswa keperawatan dalam melakukan CPR termasuk: perasaan mahasiswa keperawatan (takut, khawatir, kepuasan, ketakutan, kebanggaan, dan stres), tantangan (kesulitan mengenali perbedaan antara pasien yang sebenarnya dan manikin pelatihan CPR, dan kesulitan mengikuti kinerja CPR tenaga medis tertentu), dan perlunya umpan balik dari staf medis senior dan instruktur klinis. Kesimpulannya adalah mahasiswa keperawatan membutuhkan lebih banyak latihan dan kesempatan untuk melakukan CPR di bawah pengawasan dosen dan instruktur klinis untuk memberikan perawatan pasien yang sangat baik dan aman. Instruktur klinis (CI) harus memberikan kesempatan tambahan untuk CPR di bawah pengawasan CI. Selain itu, untuk meningkatkan kemampuan dan pengetahuan CPR mahasiswa keperawatan, dosen harus meningkatkan simulasi dengan ketepatan tinggi.

Kata Kunci: Henti Jantung, Keperawatan, Mahasiswa, CPR, Pengalaman

INTRODUCTION

Cardiac arrest is a worldwide issue due to its low survival rate. The number of in-hospital cardiac arrests (IHCA) is about 300.000 patients in the United States (Holmberg et al., 2019), with only 20% to 25% of patients surviving to hospital discharge (Holmberg et al., 2019; Nishiyama et al., 2017). There is no clear number of in hospital cardiac arrests in Indonesia, however, the number of cardiovascular diseases was estimated at about 7% of the total population, with 98% of these cases having the potential to progress into cardiac arrest (Ministry of Health of Indonesia, 2018; Tsao et al., 2023). According to global mortality due to cardiovascular diseases, about 651.448 deaths occur annually in Indonesia, making this disease the second largest cause of mortality in Indonesia (Tsao et al., 2023). Cardiac arrest is a medical condition when the heart stops pumping, leading to insufficient blood supply to vital organs, particularly the brain, which results in organ failure and ultimate death (Tsao et al., 2023). Cardiac arrest is a critical issue; the survival rate of patients suffering cardiac arrest decreases by 10% every minute in the absence of cardiopulmonary resuscitation (CPR) and defibrillation (Merchant et al., 2020; Tsao et al., 2023). Therefore, according to Indonesian Minister of Health Regulation No. 47 (2018), the medical staff is required to provide immediate medical support in an emergency to prevent disability and save lives. One of the emergency conditions in hospitals is cardiac arrest. Additionally, according to Indonesian Minister of Health Regulation No 12 in (2020) about hospital accreditation, all medical staff who are providing care to patients must immediately begin CPR and call for an activated advanced medical team. Once activated, the advanced medical team, also known as the "code blue team," will arrive within five minutes. Consequently, all medical personnel, including fellowship nursing students, are required to provide high-quality CPR while they are awaiting the arrival of the advanced medical team. Moreover, the hospital's regulations mandate that all new staff, students, or fellow students who are employed, studying, or clinically practicing at the hospital must acquire CPR skills. This skill enables them to perform CPR under the supervision of a clinical instructor when they find a patient having a cardiac arrest in the hospital.

The objective of nursing education is to develop a future generation of nurses who have excellent skills, comprehensive knowledge, a positive attitude, and self-confidence in providing excellent patient care (PPNI, 2018). Clinical practice aims to gain Clinical experience in healthcare facilities as well as providing valuable opportunities to gain hands-on experience and use their theoretical knowledge in patient care (Baghi, Abolghasemi, Zakerimoghadam, Rezaiezadeh, & Asl, 2024). However, students frequently experience anxiety and frustration when confronted with field clinical practice, which can have a detrimental impact on their performance. Several studies indicate that medical students have inadequate proficiency in performing CPR and identifying cases of cardiac arrest, despite it being part of their curriculum (Bülow et al., 2021). CPR is a demanding and stressful task, even for trained medical personnel (Sjöberg, Schönning, & Salzmann-Erikson, 2015)

According to a preliminary study, it is known that nursing students who participate in clinical practice in the emergency room (ER) and intensive care unit (ICU) at Manambai Hospital have the opportunity to perform CPR on patients suffering cardiac arrest for the first time under the supervision of a clinical instructor or senior medical team. Three of the students reported that CPR was challenging and demanding, which differed from the skills they had learned and practiced in college, thereby affecting their performance in CPR. There has been limited number of research related to students' experiences in performing CPR in the real patients for the first time. Many previous studies have examined the knowledge and perceptions of students related to CPR, but only on simulation cases (Amoako-Mensah, Achempim-Ansong, Gbordzoe, Adofo, & Sarfo, 2023). Therefore, this research is essential because it can provide a strategic approach to enhance the proficiency of nursing students in provide safe and effective care to all patients at the hospital. Moreover, investigating the experiences of students who are conducting CPR aims to investigate their experience and preparing them to become professional nurses in the future. Moreover, this research contributes to new insight and knowledge regarding nursing education especially in performing CPR

RESEARCH METHODS

This study has a qualitative design. The descriptive phenomenological approach used to investigate the respondent's experiences more clearly involves exploring the individual point of view and their experiences through discernment that is articulated through the emergence of themes. This study implemented purposive sampling. This study involved ten nursing students who were undergoing clinical exposure in Manambai Hospital's emergency and critical rooms, as well as two clinical instructors. All particpants were recruited personally after completing clinical exposure. Ten students met the inclusion and exclusion criteria: they were nursing students, had clinical experience in the ICU or emergency room, had performed CPR on a cardiac arrest patient, and were willing to participate as respondents. The study objective, procedure, and the right of participants to continue or withdraw at any point during data collection have been communicated to all participants through written informed consent. All information relating to the respondent's identity will be kept confidential and will only be known to the researcher. The research results will be published without involving the respondent's identity

Collected data through in-depth interviews that followed a semi-structured format. All respondents were asked to share about their experiences related to CPR during clinical exposure, their feelings when performing CPR , their willingness to explore the differences between real patients and CPR manikin and their experience of the clinical instructor's feedback.

The data were analyzed using Colaizzi's phenomenological analytics, which involved several steps: (1) capturing the ideas, feelings, and thoughts of participants, (2) identifying the most significant statements, (3) interpreting the data, (4) transforming the data into themes, (5) integrating the themes into the overall phenomenon, (6) generating new themes and phenomena based on the analysis, and (7) validating the themes with the participants.

Data collection was conducted until data saturation was reached, indicating that all participants had received identical information, and no further data would be obtained by continuing the collecting process. We also implemented triangulation to ensure the reliability of the data, conducting interviews with clinical instructors and medical personnel in the emergency room and intensive care unit. Following that, the researcher analyses the findings and verifies that the theme aligns with the participants' perspectives.

RESULTS

The respondent's experience in performing CPR in the hospital was illustrated through the identification of themes, including the nursing student's feelings, challenges, and feedback.

1. Nursing student's feelings

Based on the data collected, nursing students experience a range of emotions when performing CPR, including enthusiasm, fear, worry, satisfaction, fearfulness, pride, and stress.

Here are some of the respondents' statements regarding enthusiasm:

> *"I really want to try CPR, I have seen it several times, and as soon as I was given the opportunity, I immediately performed it" (P1)*
> *"I observed the medical staff (CPR) several times, and I really wanted to do it, but I hadn't been asked to, so I was simply looking, and when I had the opportunity to help due to a lack of medical staff, I was extremely enthusiastic." (p4)*
>
> *" I asked my clinical instructor many times whether I could conduct CPR, and when the patient had a cardiac arrest, the senior nurse asked me to perform CPR, so I performed." (p8)*
>
> *"After I did CPR once, the nurse requested me to do it again on another patient, and I was enthusiastic since I had been trusted." (p10)*

Here are some statements from nursing students expressing their worries and fears.

"At first (CPR), I had in conflict feelings, more like worry and fear; frightened that I would make a mistake, yet afraid that something bad would happen to the patient.," (P3)

"There is clearly a feeling of anxiety and fear, fearful that it will break (the patient's rib)"(p2)

"I am more nervous about making a mistake, especially the first time on a real patient, but I will still try." (p7)

" I am worried that what I'm doing is wrong, because I'm performing CPR around senior nurses and other medical professionals." (p10)

" I was frightened of making a mistake because I was not confident the first time, especially with the patient's family and other nurses.."(p6)

Here are some statements from nursing students expressing feelings of pride and satisfaction.

" I am happy because I have succeeded in performing my first CPR, even though I am a little worried." (p9)

" I was satisfied because finally I had performed CPR on a real patient." (p8)

"After I was participating in CPR, and the patient returned (Return Of Spontaneous Circulation), I felt really satisfied, happy, and proud of myself, because I had contributed to that patient's treatment. " (p5)

The clinical instructor also confirmed the respondent's statement. Here are a few statements made by the clinical instructor:

" I *observed students performing CPR; at first they were nervous and worried, but after I finished, I saw they were happy, delighted, and it was reasonable because it was their first time (performing CPR)." (CI 1)*

" They were quite enthusiastic about performing CPR, so I gave them the opportunity, with supervision from me and other teams." (CI 2)

2. Nursing Student's Challenge

Some of the challenges that participants faced included recognizing the difference between real patients and CPR training manikin. Moreover, some respondents experienced difficulty following some of the medical personnel due to their failure to comply with the CPR algorithm.

Here are some of the respondents' statements regarding the distinctions between a real patient and a CPR training manikin:

"When I first attempted CPR on a patient, it was a bit different from CPR on a manikin; in real patients, it was softer and not as hard as the manikin." (p2)

" it was quite different from CPR manikin, especially the depth of compression." (p4)

"Well, when performing CPR on CPR manikin, it tells you whether you're doing it right or wrong? However, for the real patient, there was no sign or feedback. At first, I thought it was very different." (p7)

"I wasn't sure of myself at first because it felt different from the CPR manikin." (p10)

The clinical instructor confirmed regarding the CPR in real patients and CPR manikin

"The depth of compression in CPR in adults is 5–6 cm, but sometimes in the clinical context, we need to adapt according to the patient's weight and appearance . Students may not have many years of experience performing CPR for many types of patients, so they presume that real patients are different from the CPR manikin." (CI1)

" the CPR manikin used for simulation is a bit hard , we used an old CPR manikin, so the existing components may no longer be good. but basically, the depth of the CPR manikin with the patient should actually be 5–6 cm in adults" (CI2).

Here are some of the respondents' statements regarding some of the medical staff failure to comply to the CPR algorithm

"First, what I learned in college and what I see aren't always the same. Especially when it comes to the algortima of CPR , which is not always used in the hospital; " (p4)

"It saw that some of the nurses there are performing CPR too quickly; if I'm not mistaken, the rate should be 100–120 times per minute. However, I observed that some of the nurses were performing CPR more frequently than the recommended rate. (p8)

" I noticed some of the nurses put their hands not in the middle of the chest, sometimes a little to the left or down, in my opinion, it was not in accordance with what was taught at the college.

The clinical instructor also verified that certain nurses have insufficient CPR skills.

" There are some nurses in this hospital who may have inadequate skills of CPR. I advised the nursing students to avoid imitating the less skilled nurses. (CI1)

"Several students told me about different algorithms they had studied and what medical staff did, but the ones we use are based on guidelines from the American Heart Association, so I think it is s the same. It is possible that students have not learned about the theory and practice of advanced life support, which includes more than just compressions and airways. It also includes medication and defibrillation." (CI2)

3. Feedback from Senior medical staff and Clinical Instructor

Several respondents express the desire for acknowledgment and feedback through debriefing following the completion of CPR.

Here are some of the respondent's statements.

"After doing CPR, The nurse responded, "That is good; improve it..." (P2)
"When it was finished, several nurses said that my CPR was good, but it needed more practice, " (p3)

Sometimes, senior nurse does not provide any feedback following the procedure; therefore I asked about my performance during CPR, and he said, it was good (p6)

"Several nurses gave me feedback on what I have done, and I thought it was beneficial to improve my skills regarding CPR" (p7)
"When I did CPR and the nurses and doctors said that what I have done was good, I felt happy and satisfied with the actions I took" (p9)

“ It makes me happy when the patient is ROSC. The doctor and nurse then said, "Thanks, bro." I'm happy with and proud of myself." (p10)

“ I think the nurse or clinical instructor needs to evaluate what I've done, but some of the nurses or medical team did not say anything, so sometimes I did not know whether I was doing it right or not." (p8)

The clinical instructor also verified that they provided such feedback to the nursing student following their performance of CPR.

"I always give my evaluation to students who performed CPR to determine whether it was correct or needed improvement." (CI1)

“I told all medical personnel to provide feedback to the students after they have completed CPR, as this can enhance their confidence and skills.” (CI2)

DISCUSSION

Based on the data collected, nursing students experience a range of emotions when performing CPR, including, fear, worry, satisfaction, fearfulness, pride, stress, and enthusiasm. This result aligns with several studies that indicate that cardiac arrest situations might lead to feelings such as anxiety, uncertainty, anxiety, and a fear of making mistakes (Silverplats, Strömsöe, Äng, & Södersved Källestedt, 2022; Sjöberg et al., 2015). Moreover, it was revealed that CPR can induce both physical and psychological stress, even among experienced nurses who have regularly performed CPR for more than five years (Amoako-Mensah et al., 2023; Sjöberg et al., 2015). The respondents expressed anxiety about possibly causing harm to the patient and fear about making mistakes in the presence of medical professionals and senior nurses. Stress, anxiety, and nervousness can adversely affect the competence of healthcare professionals when performing CPR. According to Vincent et al. (2021) found that stress, anxiety, and extreme fear have a detrimental effect on cognitive function, attention, memory, and decision-making. These negative impacts on teamwork and the management of cardiac arrest, only one third of their respondents can perform CPR properly when experiencing stress.

Nevertheless, some respondents expressed enthusiasm, satisfaction, and happiness in performing CPR due to their first experience and the opportunity to apply the knowledge that they have learned in college. This is in accordance with research conducted by Kavitha et al. (2022) that students were confident and satisfied in performing CPR after training and simulations. In addition, previous research conducted by Sok et al. (2020) found that simulated CPR training effectively increased students' CPR knowledge and skills, while also reducing their stress levels. According to the students background, all of respondents have been provided with a CPR curriculum in college and attended in-house training in hospitals related to CPR, thereby increasing their confidence and enthusiasm in performing CPR. In addition, respondents expressed satisfaction when patients experienced ROSC. This is in accordance with the results of research conducted by Amoako-Mensah et al., (2023) which state that nurses experience positive emotions when patients undergo ROSC.

Some of the challenges that participants faced included recognizing the difference between real patients and CPR training manikin especially in the depth of compression during CPR . It can be caused by the low-fidelity devices that are used during the simulation process during in house training in the hospital. According to the clinical instructor (CI), the CPR manikin used during simulation was an outdated model. The fidelity of CPR simulation can have an impact on CPR skills. According to Mather and McCarthy (2021), levels of fidelity of CPR simulation influence the performance of CPR among students. High fidelity of CPR simulation (using sophisticated technology such as augmented or virtual reality) is better than low fidelity (role play using CPR manikin) (Mather & McCarthy, 2021) In addition, Zeng et al. (2023) state that high fidelity enhances the knowledge and skill of CPR among ALS trainers.

Respondents also reported difficulty following certain medical personnel's CPR performance because they did not follow the CPR algorithm, particularly when it came to providing high-quality CPR. This is in accordance with previous research conducted by Purwadi

and Harmili (2023) which found that several nurses at Manambai Hospital have inadequate knowledge and skills related to CPR. Several studies also show that nurses' errors in performing CPR depend on the team leader. Leaders play important roles in correcting mistakes from other team members, providing direction and tasks to each team member, and avoiding unpleasant feelings in chaotic situations (Koželj et al., 2021)

Several respondents express the desire for acknowledgment and feedback through debriefing following the completion of CPR. Debriefing enables the entire team to express their experiences during the restoration process. In addition, post resuscitation debriefing provides participants with immediate feedback on a resuscitation, enabling the identification and resolution of problems during the CPR process (Malik et al., 2020). Implementing team debriefing as a method of training in CPR led to significant improvements in the knowledge and skills of the nursing staff (Malik et al., 2020; Peyrovi, Mohsenabadi, Haghani, & Alipasandi, 2020). Moreover, practicing debriefing and providing constructive feedback after an IHCA event has been proposed as a potential way to improve IHCA survival (Malik et al., 2020). Debriefing must be carried out after resuscitation by focusing on staff experiences and emotions after performing CPR rather than a way to find out fault (Sjöberg et al., 2015). Hence, self-criticism is essential for personal growth, enabling individuals to successfully cope with stress and demonstrate professional and composed team management skills (Koželj et al., 2021)

The limitation of this study is related to the technique of purposive sampling, which does not represent all nursing students who are doing clinical studies in Manambai Hospital. In addition, the study only explored the experience of nursing students performing CPR in Manambai Hospital, which may not be representative of all hospitals in Indonesia.

CONCLUSION

Three themes were identified,regarding nursing stedent experience in performing CPR including : nursing students' feelings (fear, worry, satisfaction, fearfulness, pride, and stress), challenges (difficulty recognising the difference between real patients and CPR training manikin, and difficulty following certain medical personnel's CPR performance), and the need for feedback from senior medical staff and clinical instructors. As a future generation of nurses, they need more practice and opportunity in clinical teaching in order to develop skills, comprehensive knowledge, a positive attitude, and self-confidence in providing excellent patient care. Therefore, to enhance the nursing student experience, clinical instructors should provide additional opportunities for CPR under CI supervision. Moreover, in order to improve nursing students' CPR abilities and knowledge, lecturers should do more high-fidelity simulation.

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