KNOWLEDGE AND SELF-EFFICACY REGARDING CARDIOPULMONARY RESUSCITATION AMONG CAREGIVERS IN HOSPITAL PAKAR UNIVERSITI SAINS MALAYSIA

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by

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Dissertation submitted in partial fulfilment of the requirements
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CERTIFICATE

This is to certify that the dissertation entitled "KNOWLEDGE AND SELF-EFFICACY REGARDING CARDIOPULMONARY RESUSCITATION AMONG CAREGIVERS IN HOSPITAL PAKAR UNIVERSITI SAINS MALAYSIA" is the bona fide record of research work done by Mr ALLYN CHARLIE during the period from October 2024 to August 2025 under my supervision. I have read this dissertation and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfilment for the degree of Bachelor of Nursing (Honours).

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research and promotional purposes.

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LIST OF ABBREVIATIONS

KAP	-	Knowledge, Attitude, Practice
HPUSM	-	Hospital Pakar Universiti Sains Malaysia
CPR	-	Cardiopulmonary resuscitation
ADL	-	Activity Daily Living
IHCA	-	In Hospital Cardiac Arrest
OHCA	-	Out of Hospital Cardiac Arrest
MOH	-	Ministry of Health Malaysia
ERS	-	Emergency Response System
ILCOR	-	International Liaison Committee on Resuscitation
AED	-	Automated External Defibrillator
EMS	-	Emergency Medical Services
ALS	-	Advanced Life Support
HOCPR	-	Hand Only Cardiopulmonary resuscitation
HBM	-	Health Belief Model
CVI	-	Content Validity Index
NCORT	-	National Committee on Resuscitation Training
PPSK	-	Pusat Pengajian Sains Kesihatan
BLS	-	Basic Life Support
USM	-	Universiti Sains Malaysia
HREC	-	Human Research Ethics Committee
SPSS	-	Statistical Package for Social Science Software

LIST OF APPENDICES

PENGETAHUAN DAN EFIKASI KENDIRI BERKENAAN RESUSITASI KARDIOPULMONARI DALAM KALANGAN PENJAGA DI HOSPITAL PAKAR UNIVERSITI SAINS MALAYSIA

ABSTRAK

Resusitasi kardiopulmonari (CPR) ialah kemahiran penting yang boleh menyelamatkan nyawa dan meningkatkan peluang seseorang untuk terus hidup selepas mengalami serangan jantung. Dalam persekitaran hospital, penjaga sering menjadi antara individu pertama yang bertindak, menjadikan tahap kesediaan mereka dalam melaksanakan CPR sangat penting. Kajian ini dijalankan untuk melihat sejauh mana pengetahuan penjaga di Hospital Pakar Universiti Sains Malaysia (HPUSM) mengenai CPR dan sejauh mana keyakinan mereka untuk melakukannya. Kajian ini juga menilai sama ada umur, jantina, dan tahap pendidikan mempengaruhi tahap keyakinan mereka.

Kajian ini melibatkan 173 orang penjaga dari lima wad HPUSM. Soal selidik ini telah disahkan kesahihan dan kebolehpercayaannya yang diadaptasi daripada Gao et al. (2024), Kementerian Kesihatan Malaysia (2016) dan Kementerian Kesihatan Malaysia (2019) digunakan untuk menilai pengetahuan dan efikasi kendiri berkaitan CPR. Soal selidik ini merangkumi 12 soalan berkaitan pengetahuan dan 11 soalan mengenai efikasi kendiri, dengan setiap soalan menggunakan skala Likert lima mata. Analisis data dilakukan menggunakan statistik deskriptif, korelasi Pearson, dan regresi linear berganda melalui perisian SPSS Versi 28.0.

Keputusan kajian menunjukkan bahawa penjaga mempunyai tahap pengetahuan dan keyakinan yang sederhana. Kebanyakan mereka berasa yakin untuk mengenal pasti serangan jantung dan mengambil tindakan awal seperti memanggil bantuan, tetapi ramai yang masih kurang pasti tentang aspek teknikal seperti kadar dan

kedalaman tekanan dada yang betul. Terdapat hubungan positif yang kuat antara pengetahuan dan efikasi kendiri ($r = 0.851$, $p < 0.001$), menunjukkan bahawa semakin tinggi pengetahuan seseorang, semakin tinggi tahap keyakinannya. Umur juga memberi kesan yang signifikan terhadap keyakinan ($p = 0.001$), di mana penjaga yang lebih berumur cenderung berasa kurang yakin. Namun, jantina dan tahap pendidikan tidak menunjukkan sebarang hubungan yang ketara.

Secara keseluruhannya, kajian ini menekankan kepentingan latihan CPR yang menyeluruh, terutama dalam meningkatkan pengetahuan dan keyakinan penjaga. Latihan yang disasarkan terutamanya kepada penjaga yang lebih berumur boleh membantu mengatasi kekurangan yang ada dan meningkatkan keupayaan mereka untuk bertindak dengan lebih berkesan dalam situasi kecemasan sebenar.

KNOWLEDGE AND SELF-EFFICACY REGARDING CARDIOPULMONARY RESUSCITATION AMONG CAREGIVERS IN HOSPITAL PAKAR UNIVERSITI SAINS MALAYSIA

ABSTRACT

Cardiopulmonary resuscitation (CPR) is a vital life-saving skill that can significantly increase a person's chances of survival after a cardiac arrest. In hospital settings, caregivers are often among the first to respond in such emergencies, making their readiness to perform CPR especially important. This study aimed to explore how much caregivers at Hospital Pakar Universiti Sains Malaysia (HPUSM) know about CPR and how confident they feel in performing it. It also looked at how age, gender, and education level might influence their confidence.

A cross-sectional study was conducted involving 173 caregivers from five hospital wards. A validated questionnaire adapted from Gao et al. (2024), the Ministry of Health Malaysia (2016) and Ministry of Health Malaysia (2019) was used to assess both CPR knowledge and self-efficacy. The survey included 12 questions on CPR knowledge and 11 on self-efficacy, each rated on a five-point Likert scale. Data were analysed using descriptive statistics, Pearson correlation and multiple linear regression with SPSS Version 28.0.

The results showed that caregivers had a moderate level of knowledge and confidence. Most felt comfortable recognizing cardiac arrest and taking initial steps like calling for help, but many were unsure about more technical aspects such as the correct chest compression rate or depth. A strong positive relationship was found between knowledge and self-efficacy ($r = 0.851$, $p < 0.001$), meaning that the more knowledgeable caregivers were, the more confident they felt. Age also had a

significant impact on confidence ($p = 0.001$), with older caregivers generally feeling less assured. However, gender and education level did not show any significant effects.

In summary, this study highlights the importance of CPR training, especially in improving both knowledge and confidence among caregivers. Targeted training particularly for older caregivers could help fill existing gaps and improve their ability to respond effectively in real-life emergencies.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This research proposal aims to assess caregiver's knowledge and self-efficacy regarding cardiopulmonary resuscitation (CPR) in Hospital Pakar Universiti Sains Malaysia (HPUSM). In this chapter, it will start with background of study, problem statement, research questions, objective and hypothesis, conceptual and operational definition and lastly significance of study.

1.2 Background of Study

CPR is an emergency lifesaving procedure used when a person's heartbeat or breathing or both have stopped. It is one of the crucial skills that was taught during medical school and highly used in emergency settings. An immediate CPR can double or triple the victim's chance of survival from cardiac arrest (Ibrahim, 2007). Regardless of its importance, the level of knowledge and self-efficacy regarding CPR among caregivers and other healthcare providers might differ which will eventually affect the quality and effectiveness of emergency responses.

Caregivers can be either family members or friends and will often serve as the first responders to critical situations in healthcare facilities. They play an important role in taking care of the individual recovering from the cardiac arrest, followed by continued care and rehabilitation after hospital discharge (Graham et al., 2015). Malaysia's healthcare systems are always changing to provide better care for patients, but not much is known about how competent caregivers are in CPR, especially in hospital settings like HPUSM. Emergency interventions may be less successful or

delayed because of inadequate CPR knowledge and unfavourable attitudes toward doing the procedure.

According to CodeBlue, (2024), there are about 20322 deaths in 2022 in Malaysia due to ischemic heart disease (heart attack) which was the leading death during that year. Approximately 64.7% occur in individuals aged 60 years and above. In the United Kingdom (UK), around 49000 people under the age of 75 die from heart and circulatory diseases each year (Health Intelligence Team, 2024). HPUSM, a key institution in providing healthcare services and training in the region, relies heavily on its caregiving staff to ensure patient safety and high-quality care. Therefore, understanding the current state of CPR knowledge and self-efficacy among caregivers in this hospital is essential for identifying areas where training may be enhanced and for developing strategies to improve preparedness in life-threatening situations.

This study seeks to fill the gap in the literature by assessing the current levels of CPR knowledge and self-efficacy among caregivers at HPUSM. By identifying the specific needs and challenges faced by this group, the research aims to inform future training programs and policies that can enhance the overall quality of emergency response within the hospital setting.

1.3 Problem Statement

Since CPR is very important skills that needed to be learnt by everyone, there is still gap in knowledge and self-efficacy. The researcher does not know when will a person will get sudden cardiac arrest either in hospital cardiac arrest (IHCA) or out of hospital cardiac arrest (OHCA). If a person is having a cardiac arrest inside hospital, then the researcher does not need to fear because there is nurses, doctor and

other healthcare providers that can perform CPR immediately. The researcher main concern right now is when a person is outside of hospital.

It is very important for caregivers to be taught regarding CPR. A study done by Yasin et al. (2021) in Melaka shows a result of very low prevalence regarding performing CPR by community bystander for OHCA cases. It shows that lack of knowledge and self-efficacy plays a significant role in performing CPR among caregivers in this context.

Studies indicate that early and high-quality CPR can double or triple the likelihood of survival for OHCA victims (Chen et al., 2019; Stiell et al., 2003). While CPR is crucial for saving lives during emergencies, many caregivers, particularly in hospital settings, struggle with limited knowledge and confidence in performing it effectively. This highlights the urgent need for focused training and education to enhance their skills and improve patient outcomes.

It is necessary to assess the existing levels of CPR knowledge and self-efficacy concerning caregivers who is in HPUSM as this will determine the efficiency of emergency service within or outside the hospital. This study seeks to address this need by studying current CPR knowledge and self-efficacy among caregivers.

1.4 Research Questions

1. What is the level of knowledge regarding CPR among caregivers in HPUSM?
2. What is the level of self-efficacy regarding CPR among caregivers in HPUSM?
3. Is there any relationship between the level of knowledge and the level of self-efficacy regarding CPR among caregivers in HPUSM?

4. Is there any relationship between sociodemographic characteristics (age, gender and level of education) and the level of self-efficacy regarding CPR among caregivers in HPUSM?

1.5 Research Objectives

1.5.1 General Objective

To determine the level of knowledge and self-efficacy regarding CPR among caregivers in HPUSM.

1.5.2 Specific Objectives

1. To determine the level of knowledge regarding CPR among caregivers in HPUSM.
2. To determine the level of self-efficacy regarding CPR among caregivers in HPUSM.
3. To determine the relationship between the level of knowledge and the level of self-efficacy regarding CPR among caregivers in HPUSM.
4. To determine the relationship between sociodemographic characteristics (age, gender and level of education) and the level of self-efficacy regarding CPR among caregivers in HPUSM.

1.6 Research Hypothesis

1. Null Hypothesis, H_0: There is no relationship between the level of knowledge and the level of self-efficacy regarding CPR among caregivers in HPUSM.
2. Alternative Hypothesis, H_A: There is relationship between the level of knowledge and the level of self-efficacy regarding CPR among caregivers in HPUSM.

3. Null Hypothesis, H_0: There is no relationship between sociodemographic characteristics (age, gender and level of education) and the level of self-efficacy regarding CPR among caregivers in HPUSM.
4. Alternative Hypothesis, H_A: There is relationship between sociodemographic characteristics (age, gender and level of education) and the level of self-efficacy regarding CPR among caregivers in HPUSM.

1.7 Significance of study

The current study is important because it sought to determine the knowledge and self-efficacy regarding CPR among caregivers in HPUSM, who usually act as the first line of contact in times of emergencies. Caregivers are very instrumental during cardiac arrest, since they are the first to administer emergency care, and their level of preparedness may determine the survival rate of their patients (Perkins et al., 2015). Identification of the gaps in knowledge and self-efficacy on CPR contributions will add valuable insight into the areas which may need additional training or improvement (Cheng et al., 2020). This information shall be of essence to the hospital administrators and policymakers in designing effective training interventions aimed at ensuring the caregivers are properly equipped for any emergency.

The findings of this study can provide empirical data regarding policy and program formulation that could effectively achieve not only the improvement of the quality of emergency care provided by the caregivers but also highlight the awareness about the need for regular training in CPR especially OHCA cases. In conclusion, the result of this study can come up with strategy to improve knowledge and self-efficacy among caregivers.

1.8 Definitions of Operational Terms

Table 1.1: Conceptual and operational definitions

Keywords	Conceptual Definition	Operational Definitions
Knowledge	Knowledge is the familiarity, awareness, or understanding of somebody or something, such as a fact, information, description, or skill, that is acquired through experience or education by perceiving, discovering, or learning (Ghulam Gilanie, 2022).	Knowledge in this study is to assess whether or not the caregivers know what is CPR and how to perform it and will be assessed by using a self-administered questionnaire adapted from Gao et al. (2024).
Self-efficacy	An individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments (Bandura, 1977, 1986, 1997). Self-efficacy reflects a person's confidence in their ability to control their motivations, behaviours, and social environment.	Self-efficacy in this study is the level of confidence in the ability to effectively perform CPR during an emergency situation and will be assessed by using a self-administered questionnaire adapted from Gao et al. (2024).
Cardiopulmonary resuscitation	Cardiopulmonary resuscitation is a series of lifesaving actions that improves the chances of survival, following cardiac arrest (Kwangha, 2012).	Patients who do not have a detectable pulse.
Caregivers	The person who delivers physical and psychological care to a needy individual. Like most caregivers, they typically consist of family members and rarely does one get paid (Sullivan & Miller, 2015).	Caregivers that are responsible for supporting patient's daily needs such as personal care which is activity daily livings (ADL's) and providing emotional support.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will cover the current literature related to knowledge and self-efficacy regarding CPR, relationship between the level of knowledge and the level of self-efficacy regarding CPR and relationship between sociodemographic characteristics (age, gender and level of education) and the level of self-efficacy regarding CPR. Lastly, this chapter will end with a detailed description regarding the theoretical and conceptual framework of the study.

2.2 Conceptual of Cardiopulmonary Resuscitation

Cardiac arrest can happen anytime and anywhere. Therefore, CPR should be performed to prevent death from happening. CPR is an emergency procedure to establish and maintain breathing and circulation to a person who has stopped breathing and/or whose heart has stopped (Cheskes et al., 2016; Naser & Hadziomerovic, 2019). CPR can be done by anyone regardless of medical training, as basic CPR techniques can be learned through formal training programs.

An important concept in emergency care that outlines the key steps needed to improve the chances of survival for someone experiencing cardiac arrest is called the Chain of Survival. It highlights the action that needs to be taken to help victims that experience cardiac emergencies (Lavonas et al., 2020). The adapted version of the Chain of Survival has been practiced in Malaysia to improve response times and outcomes for cardiac emergencies (Ministry of Health Malaysia (MOH), 2017).

The first component in Chain of Survival early recognition and call for help. Recognizing chest pain as a potential symptom of myocardial ischemia (reduced blood

flow to the heart) is essential, as cardiac arrest can occur in up to a third of these cases within the first hour of chest pain onset. Understanding that chest pain may have a cardiac origin and quickly calling emergency services before a person collapse allows for a faster response and activation of the Emergency Response System (ERS). In cases where cardiac arrest has already occurred, early recognition and immediate ERS activation are crucial. Signs of cardiac arrest include unresponsiveness and abnormal breathing. By knowing the signs, bystanders can immediately call emergency services such as 999 right away so that emergency dispatchers can help by focusing on these signs, which ensures faster initiation of bystander CPR and can improve survival rates.

The second component is early bystander CPR. Performing CPR immediately is crucial, as the chances of survival drop with every minute that passes without intervention. By delivering effective chest compressions, bystanders can help maintain blood circulation to the brain and heart until medical help arrives. According to International Liaison Committee on Resuscitation (ILCOR) (2015), high quality of CPR includes compression rate 100-120 compressions per minute, depth to perform CPR is 5 cm to 6 cm, minimal interruption in chest compression should be less than 10 seconds and allow spontaneous recoil of the chest wall in between compressions.

The third component is early defibrillation. Defibrillation within 3 to 5 minutes of a cardiac arrest can result in survival rates as high as 50 to 70%. However, for every minute defibrillation is delayed, the chances of survival decrease by 10 to 12%. When bystander CPR is administered immediately, it slows down the decline in survival rates, reducing the loss to about 3 to 4% per minute until defibrillation is applied. An Automated External Defibrillator (AED) is crucial in restoring a normal heart rhythm during specific types of cardiac arrest, giving the patient the best chance of survival. It

is important for bystanders to be trained in using AEDs, and for AEDs to be easily accessible in public spaces to improve response times and outcomes.

The fourth component is early advanced life support and post-resuscitation care. Once emergency medical services (EMS) arrive, they initiate advanced life support (ALS), including medication administration and airway management, both of which are crucial for stabilizing the patient and transferring them safely to the hospital. Effective coordination between EMS personnel and healthcare providers is critical for optimal patient management. Early initiation of advanced life support and post-resuscitation care will improve the survival of the victims. In the final phase, post-cardiac arrest care, patients are monitored for complications and may receive treatments such as therapeutic hypothermia, which can further improve survival outcomes. High-quality post-resuscitation care is vital for long-term recovery and significantly enhances survival rates after cardiac arrest.

2.3 Knowledge on Cardiopulmonary Resuscitation

Cardiac emergencies can occur anytime and understanding CPR is important in rendering quick and effective help in such cases. CPR training is considered a basic yet significant skill that every medical personnel must acquire because it can save the life of an individual in cardiac arrest remarkably. It is because caregivers play an essential part in providing care to patients, it is important that they be properly trained and made ready with the skill of CPR so that they can use it when the situation calls for it.

Research done in Global areas such Canada, of the 400 participants, 93.5% had previously heard of CPR, and 37.6% were able to identify the steps of airway, breathing, and circulation, or a variation of this sequence, when asked to list the steps

involved in performing CPR (Cheskes et al., 2016). Research done in Asia such as China and Jazan region, Saudi Arabia, both show a significant difference regarding knowledge for CPR. Research in China shows a positive knowledge with 78.1% of the population knowing why CPR should be performed as soon as possible when a person's breathing and heartbeat suddenly stop (Gao et al., 2024). In the Jazan region, Saudi Arabia shows a low knowledge with 62.50% of the population not knowing how to give chest compressions in case of cardiac and respiratory arrest, emphasising the need for continuous training and studies regarding CPR (Dobbie et al., 2018; Sayed et al., 2024).

When it comes to cardiac emergencies, knowing CPR can make a big difference among the caregivers. The presence of CPR trained caregivers will influence how fast and accurately a response is offered which will in turn result in successful resuscitation. Whereas, in absence of such knowledge, the caregivers may hesitate or may use wrong techniques which causes time wasting and endangers the life of such individuals. That is why caregivers must be equipped with CPR skills to ensure that they are ready to do what needs to be done without hesitation in such situations.

2.4 Self-efficacy on Cardiopulmonary Resuscitation

Self-efficacy refers to an individual's belief in their ability to perform specific tasks successfully (Flammer, 2015), and it plays a critical role in healthcare, particularly in life-saving procedures like CPR. According to Bandura (1986) social cognitive theory, self-efficacy influences both the initiation and persistence of actions, which, in the case of CPR, can determine how well caregivers respond in cardiac emergencies. Individuals with high self-efficacy are more likely to engage in CPR effectively, maintain the correct technique, and feel confident in their ability to manage stressful situations, while those with low self-efficacy may hesitate or perform poorly.

Knowledge regarding CPR plays a huge impact toward self-efficacy. A study done by Junwon et al. (2023), show a significant increase in self-efficacy after a 5-minute hands only CPR (HOCPR) training among college students. Before the participants was exposed with the 5-minute HOPCR training, the proportion was 69% which shows a low self-efficacy. After they were exposed, the proportion was 10% indicating an increase in self-efficacy. Other studies such as Ko et al. (2023) shows an increase in self-efficacy after CPR education among elementary school students. The mean before CPR education is 3.22 and after CPR education is 3.43. Both studies show a significant increase of self-efficacy regarding CPR.

In summary, self-efficacy is demonstrably an important factor for caregivers' actions while performing CPR. The evidence presented supports the notion that self-efficacy can be increased substantially as a result of specific training such as, hands only CPR classes among individuals including college students to even elementary school students. Both studies provided evidence that short rush interventions can significantly advance the level of confidence thus the odds of performing CPR successfully in real crisis situations also increases. These findings emphasize the need for including CPR training during the course study and to be part of continuing professional education for health and non-health workers.

2.5 Relationship between the Level of Knowledge and the Level of Self-efficacy regarding Cardiopulmonary Resuscitation

When performing CPR on someone, that individual should have the confident in their own knowledge. Lack of knowledge can lead to low self-efficacy and will eventually not performing the CPR and become panic. Self-efficacy refers to the individual's belief in their capacity to perform specific task, in this context refers to

CPR. There is several study indicating that we need to have adequate knowledge in order to have good self-efficacy when performing CPR to those in need.

Knowledge plays a foundational role in shaping self-efficacy because a solid understanding of CPR steps, techniques, and the science behind it often gives individuals greater confidence in their ability to perform it. Studies like those by Bandura (1986) indicate that knowing "what to do" reinforces one's belief in their capability to execute tasks, even under stress. A study done by Ko et al. (2023), shows that there is an increase in self-efficacy after CPR education among elementary school students. This shows that adequate knowledge can influence other's self-efficacy.

In CPR related contexts, knowledge and self-efficacy form a dynamic relationship where each element reinforces the other. Regular, updated knowledge, a supportive attitude, and consistent practice enhance caregivers' confidence and preparedness, directly influencing their performance. Therefore, training programs aimed at improving knowledge could be key in developing self-efficacy among caregivers, ultimately contributing to more effective CPR delivery and better patient outcomes.

2.6 Relationship between Sociodemographic Characteristics (age, gender and level of education) and the Level of Self-efficacy regarding Cardiopulmonary Resuscitation

Self-efficacy, or the confidence in one's capability to perform a task successfully, is critical in high-stakes situations like CPR. Among caregivers, higher self-efficacy can contribute significantly to effective CPR administration, impacting patient outcomes. Understanding the relationship between these factors and self-

efficacy can help tailor training programs to enhance CPR proficiency across diverse caregiver demographics.

Studies consistently reveal that age is associated with varying levels of self-efficacy in CPR. Younger individuals, particularly in educational settings, generally display higher self-efficacy than older adults, possibly due to better physical ability and recent exposure to training. For instance, research among university students has shown that younger individuals are often more confident in performing CPR due to recent training and comfort with high-intensity activities. However, older adults may benefit from tailored training approaches to boost self-efficacy and confidence, ultimately enhancing overall readiness in emergency settings (Seyedi-Andi et al., 2019)

Gender differences in self-efficacy are also well-documented, with studies often finding that males report higher self-efficacy in physically demanding skills, such as CPR, compared to females. This may be influenced by social expectations and physical performance factors, as well as prior training exposure. However, targeted, inclusive training has shown to reduce this gap, with both men and women exhibiting improved CPR confidence after hands-on, simulation-based practice. Practical training mediates this difference effectively, especially when CPR manikin use is involved, increasing self-efficacy across genders (Yoon et al., 2019).

Education level is a strong predictor of CPR self-efficacy, as those with higher educational attainment are generally more confident in performing complex tasks, including CPR. Higher education levels correlate with greater exposure to health literacy and structured learning environments, which support knowledge retention and practical skill application. For instance, students and graduates in healthcare fields show particularly high self-efficacy, underpinned by a comprehensive understanding of CPR's importance and the technicalities involved. Programs emphasizing both

theoretical and hands-on CPR training can bridge self-efficacy gaps among different educational levels, supporting a broader base of capable bystanders (Seyedi-Andi et al., 2019; Yoon et al., 2019).

In conclusion, age, gender, and education level are important factors that shape CPR self-efficacy. By recognizing these influences, training programs can become more responsive to the specific needs of diverse groups. Ensuring that CPR training includes components that address these demographic variables such as using practical, hands-on sessions and confidence-building exercises can enhance self-efficacy across the board. Improving CPR training through a tailored approach ultimately promotes a well-prepared public, capable of life-saving intervention during cardiac emergencies.

2.7 Theoretical and conceptual framework of the study

According to Alyafei & Easton-Carr (2024), the Health Belief Model (HBM) is a foundational framework in health behaviour research and was developed in the 1950s by a group of social psychologist's name Irwin Rosenstock, Mayhew Derryberry, and Barbara Carriger (Green et al., 2020). The model, which has been well proven to explain following health advice (Green et al., 2020; Moreno San Pedro & Gil Roales-Nieto, 2003), has recently attracted renewed interest (Zewdie et al., 2022). This model's main goal is to illustrate why people frequently oppose taking preventative action (Moreno San Pedro & Gil Roales-Nieto, 2003). Its foundation is the idea that people's behaviours

are influenced by their personal health beliefs. (Champion & Skinner, 2008; Janz & Becker, 1984).

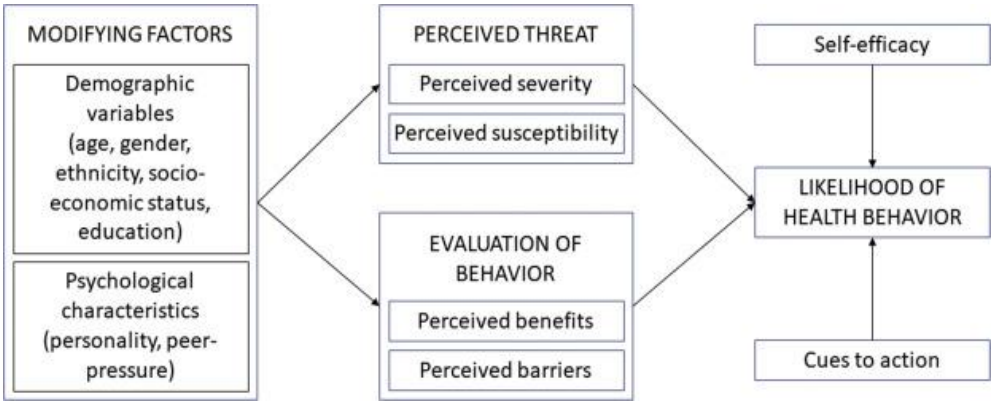


Figure 2.1: The adopted HBM from Irwin Rosenstock, Mayhew Derryberry, and Barbara Carriger

The HBM explains how caregivers' knowledge and confidence in their ability to perform CPR, also known as self-efficacy, influence their actions during cardiac emergencies. Caregivers who understand the risks of cardiac arrest in patients are more likely to see the importance of learning CPR. When they recognize how serious and life-threatening cardiac arrest can be, they feel motivated to act quickly.

The model also focuses on the balance between benefits and barriers. Caregivers who view CPR as a way to save lives are more likely to perform it, but fears like making mistakes or feeling unsure might discourage them. Self-efficacy plays a critical role here. When caregivers trust in their ability to perform CPR effectively, they are more likely to respond, even under pressure. Experiences like CPR training or witnessing emergencies can further motivate caregivers to be better prepared. The HBM highlights how knowledge and self-efficacy work together to empower caregivers to take confident, life-saving action.

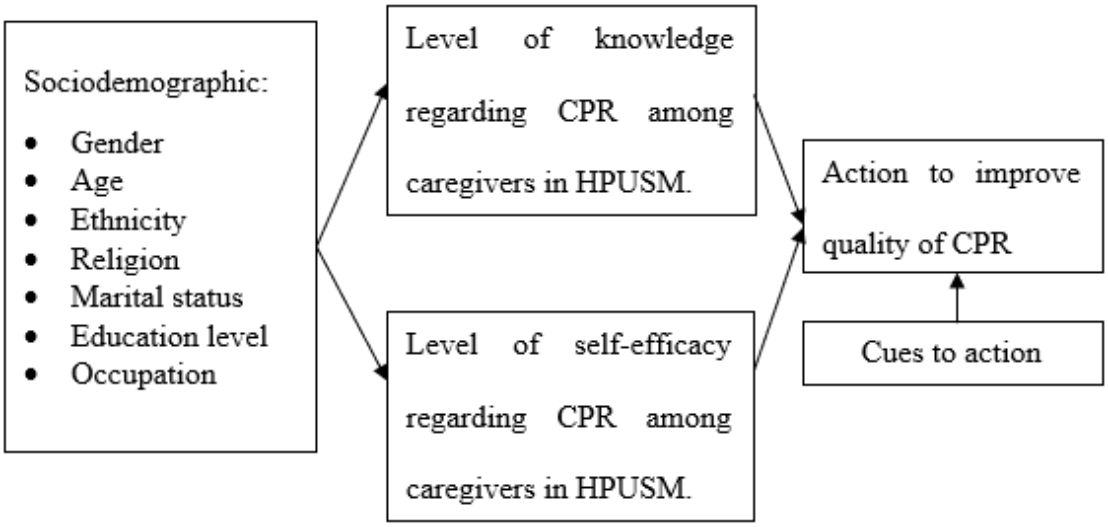


Figure 2.2: The adapted HBM from Irwin Rosenstock, Mayhew Derryberry, and Barbara Carriger

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter outlines the approach and reasoning behind the selected research methodology, emphasizing the importance of choosing a suitable research design to meet the study's objectives. It starts by describing the cross-sectional design and provides a rationale for its selection. Following this, details about the study's setting, population, participant selection criteria, sampling strategy, and instruments are provided, along with an overview of ethical considerations and data collection methods. Additionally, the chapter includes a section discussing the proposed statistical analyses for the quantitative data.

3.2 Research Design

The research design for this study was a cross-sectional study using a questionnaire. This approach helped assess the level of knowledge and self-efficacy regarding CPR among caregivers in HPUSM. This method was chosen due to its advantages. According to Wang & Cheng (2020), these advantages included being relatively quick and inexpensive to conduct, involving no ethical difficulties, requiring data collection at only one time point, allowing multiple outcomes and exposures to be studied, being useful for generating hypotheses, and providing findings that could inform more in-depth research studies.

3.3 Research Location

The main goal of this study was to determine the level of knowledge and self-efficacy regarding CPR among caregivers in HPUSM. Therefore, this research was

conducted among caregivers inside ward 7 Selatan, 7 Utara, 3 Utara, 2 Intan and 1 Selatan at HPUSM.

The main reason for choosing these wards was that they were surgical and medical unit. Studies have shown that IHCA occurs regularly in both surgical and medical units. A study involving patients with cardiovascular disease found that nearly half of the cardiac arrest cases occurred in non-surgical units, with similar occurrences in surgical departments (Zhang et al., 2024). Factors such as co-morbidities and surgical procedures contributed to these incidents, emphasizing the need for CPR knowledge and preparedness in both settings (Kazaure et al., 2013).

3.4 Research Duration

The data collection was conducted from October 2024 until August 2025.

3.5 Research Population

The main goal of this study was to determine the level of knowledge and self-efficacy regarding CPR among caregivers. Therefore, the research was conducted in the wards where the caregivers were actively providing care to patients, specifically wards 7 Selatan, 7 Utara, 3 Utara, 2 Intan and 1 Selatan.

Each ward had 36 beds. Accordingly, each patient admitted to wards 7 Selatan, 7 Utara, 3 Utara, 2 Intan, and 1 Selatan was accompanied by one caregiver per bed throughout the patient's stay until discharge from the ward.

Table 3.1: Population of Caregivers in HPUSM

Ward	Total caregiver per beds
7 Selatan	36
7 Utara	36
3 Utara	36
2 Intan	36
1 Selatan	36
TOTAL	**180**

3.6 Subject Criteria

3.6.1 Inclusion Criteria

a) Caregivers currently providing care within the hospital ward.

b) Caregivers waiting outside the ward.

3.6.2 Exclusion Criteria

a) Caregivers that have medical background.

b) Healthcare professional who provides medical treatment.

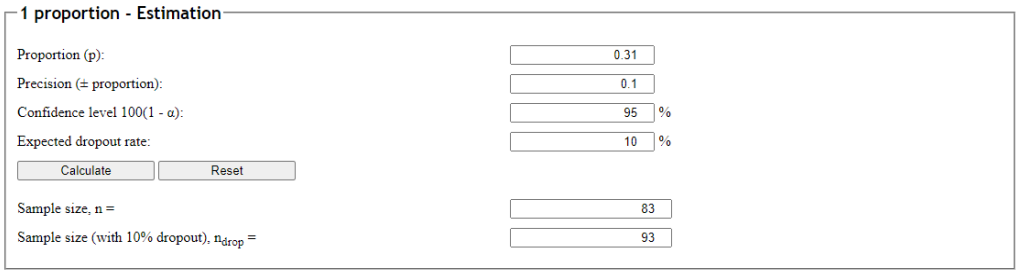
Caregivers with a medical background were excluded to ensure that the study focused on individuals without formal training in medical or clinical procedures. This exclusion minimized potential bias, as those with medical knowledge are likely to have had a higher baseline understanding and skills related to the subject matter, which could skew the results and not accurately reflected the general caregiver population's knowledge and self-efficacy regarding CPR.

3.7 Sampling Plan

3.7.1 Sample Size Estimation

Objective 1: To determine the level of knowledge regarding CPR among caregivers in HPUSM.

For objective one, the sample size estimation was calculated using a web tool from https://wnarifin.github.io/ssc_web.html (Arifin, 2024) which was single proportion. In this estimation, the sample size was determined by the proportion, p obtained from (Chair et al., 2014) with the p value 31% (0.31). Thus, the p value formula was applied along with precision value 0.10 and confidence level (α) 95%. The total sample size estimation result for this objective was 83 participants.



Considering that 10% drop out of the participants from the calculated sample size of the study, hence the minimum sample size required was:

$$n = 83 + 10\%\ drop\ out$$

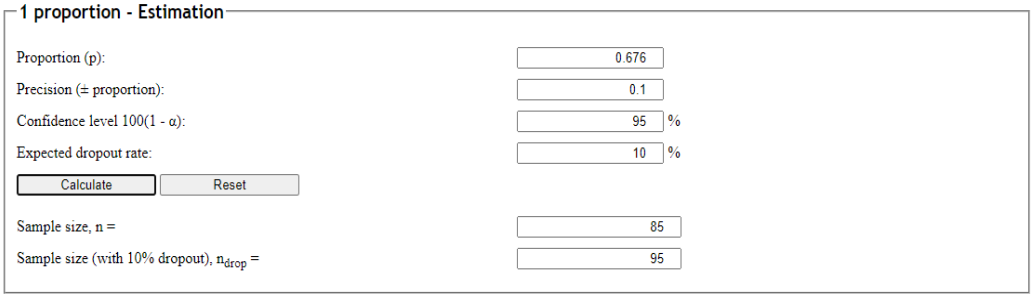
$$= 83 + 10$$

$$= 93$$

Therefore, out of 180 the total participants, a sample size of 83 participants was chosen. Considering 10% drop out, the total sample size needed were 93 participants.

Objective 2: To determine the level of self-efficacy regarding CPR among caregivers in HPUSM.

For objective two, the sample size estimation was calculated using a web tool from https://wnarifin.github.io/ssc_web.html (Arifin, 2024) which was single proportion. In this estimation, the sample size was determined by the proportion, p obtained from (Gao et al., 2024) with the p value 67.6% (0.676). Thus, the p value formula was applied along with precision value 0.10 and confidence level (α) 95%. The total sample size estimation result for this objective was 85 participants.



Considering that 10% drop out of the participants from the calculated sample size of the study, hence the minimum sample size required was:

$$n = 85 + 10\%\ drop\ out$$

$$= 85 + 10$$

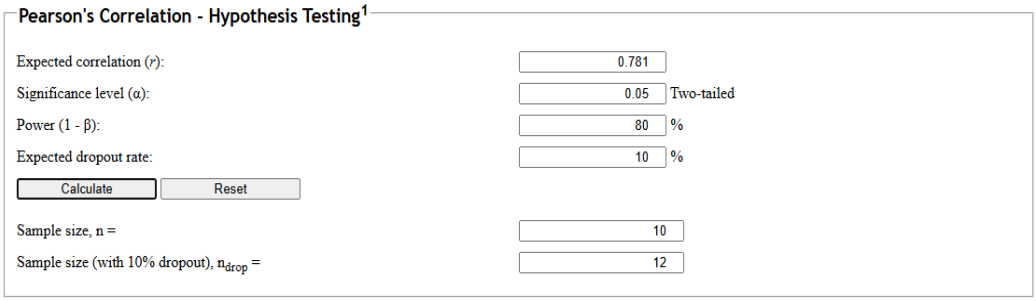
$$= 95$$

Therefore, out of 180 the total participants, a sample size of 85 participants was chosen. Considering 10% drop out, the total sample size needed were 95 participants.

Objective 3: To determine the relationship between the level of knowledge and the level of self-efficacy regarding CPR among caregivers in HPUSM.

For objective three, the sample size estimation was calculated using a web tool from https://wnarifin.github.io/ssc_web.html (Arifin, 2024). In this estimation, the r value of 0.781 (between knowledge and self-efficacy score) was taken from (Gao et al., 2024),

with α set at 0.05 and power 0.8. The total sample size estimation result for this objective was 10 participants.



Considering that 10% drop out of the participants from the calculated sample size of the study, hence the minimum sample size required was:

$$n = 10 + 10\%\ drop\ out$$

$$= 10 + 2$$

$$= 12$$

Therefore, out of 180 the total participants, a sample size of 10 participants was chosen. Considering 10% drop out, the total sample size needed were 12 participants.

Objective 4: To determine the relationship between sociodemographic characteristics (age, gender and level of education) and self-efficacy regarding CPR among caregivers in HPUSM.

For objective four, the sample size estimation was calculated using multiple linear regressions formula.

$$y\_i = \beta\_0 + \beta\_1\, x\_1 + \beta\_2\, x\_2 + \cdots \beta\_p\, x\_p + \varepsilon$$

where, for i=n observations:

y_i= dependent variable

x_1 = explanatory variables (male = 1)

x_2 = explanatory variables (female = 2)

β_0= y-intercept (constant term) (constant value, 74.767 (Gao et al., 2024))

β_1 = slope coefficients for each explanatory variable (the coefficient for gender, 2.401 (Gao et al., 2024))

β_2 = slope coefficients for each explanatory variable (the coefficient for gender, 2.401 (Gao et al., 2024))

ε = the model's error term (also known as the residuals)

Calculation,

For male:

$$y\_i = 74.767 + 2.401(1) + \varepsilon$$

$$= 74.767 + 2.401$$

$$= 77.168$$

$$\approx 77\ male$$

For female:

$$y\_i = 74.767 + 2.401(2) + \varepsilon$$

$$= 74.767 + 4.802$$

$$= 79.569$$

$$\approx 80\ female$$

Considering that 10% drop out of the participants from the calculated sample size of the study, hence the minimum sample size required was:

$$n = 77 + 80 + 10\%\ drop\ out$$

$$= 157 + 15.7$$

$$= 172.7$$

$$\approx 173$$

Therefore, out of 180 the total participants, a sample size of 157 participants was chosen. Considering 10% drop out, the total sample size needed were 173 participants.

3.7.2 Sampling Methods

Convenience sampling was used in this study for data collection among caregivers. Convenience sampling is a non-probability sampling technique used to select participants from the target population based on ease of access (Golzar & Tajik, 2022). The reason for choosing this sampling was that it allowed for easy and quick access to caregivers who were directly available in the hospital setting. This approach was practical given the time constraints and the need to gather insights from individuals actively involved in patient care.

3.8 Instrumentation

3.8.1 Instrument

The questionnaire was adapted from Gao et al. (2024), Kementerian Kesihatan Malaysia (2019) and Ministry of Health Malaysia (2016). This questionnaire used a five-point Likert rating scale except for the sociodemographic data.

Section A: Sociodemographic Data.

This section consisted of 8 questions which included gender, age, ethnicity, religion, marital status, education level, occupation and experience in Basic Life Support (BLS).

Section B: Knowledge regarding CPR

This section consisted of 12 questions regarding knowledge on CPR with each answer option ranging from “very unclear” to “very clear”. Each of the answer scored from 1 to 5 points, resulting with a total score of 60 points. The higher the score, the greater level of knowledge.

Section C: Self-efficacy regarding CPR