

Knowledge of and attitudes toward bystander CPR among Thais in Auckland

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Abstract

Introduction: Bystander cardiopulmonary resuscitation (CPR) is a key factor in improving survival from out-of-hospital cardiac arrest. Yet many studies show that minority ethnicities exhibit lower rates of bystander CPR compared to majority groups because of language socioeconomic, and cultural barriers. Thai are one such distinct minority ethnic group within New Zealand, due to increasing immigration from Thailand, particularly into Auckland city. A study in Thailand showed a lower rate of bystander CPR compared to New Zealand; the bystander CPR rate among Thais in Auckland is unknown. This study aims to examine the knowledge of and attitudes toward bystander CPR among Thais in Auckland, to understand the barriers and facilitators to performing bystander CPR within this population, and to uncover ways of increasing the rate of bystander CPR among minority ethnic groups.

Method: The paradigm of pragmatism underpinned this research project. A questionnaire collected both qualitative and quantitative data: this was a mixed-methods study. The questionnaire was deployed in identical paper-based and online forms. It included both closed and open-ended questions, to collect quantitative and qualitative data respectively. The two types of data were analysed separately, then integrated where possible. Frequency, percentage and logistic regression were applied to the quantitative data; content analysis was utilised to condense the qualitative data into themes. Integration of the two types of data informed the interpretation process.

Results: There were 110 respondents to the questionnaire from Thais who lived in Auckland. Twenty-seven percent had previous CPR training, but most of these had only trained once and more than five years ago. The major reasons that prevented Thais in Auckland from attending CPR training courses were that they did not know how to join and did not have time. The CPR trained participants had limited recall of CPR knowledge. Lack of CPR knowledge, low confidence, and fear of doing further harm to a victim were the major barriers to performing bystander CPR. Even though our participants were concerned about those barriers, Thais in Auckland exhibited a high willingness (nearly 80 percent) to perform CPR. This willingness was grounded in the notion of ‘helping’ – a key value in both Thai cultural and Buddhist teaching.

Conclusions: In order to overcome poor CPR knowledge and to increase confidence, CPR training and refresher courses should be more accessible, especially for minority ethnic groups. They could be shortened, and knowledge made easier to retain if hands-only CPR was taught. CPR training in schools should be encouraged. Our study showed that cultural and religious values among Thais in Auckland over-rode their lack of knowledge, low confidence and fears, motivating their willingness to intervene and provide bystander CPR. Such values should be utilised in CPR training courses; training should be done in culturally appropriate ways. Concepts such as ‘helping’ could be used to support and encourage bystander CPR and training among Thais in Auckland. Training could take place at Thai Buddhist

temples, with the support of the Abbot. The deep-rooted cultural values that underpin attitudes towards bystanders intervening to provide CPR are deserving of future investigation, in all ethnicities within the New Zealand population.

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Attestation of authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed _____

Date 18/02/2001

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Chapter 1: Introduction

Sudden cardiac arrest is a leading cause of death around the world. In the past, most sudden cardiac arrest victims did not survive. However, over the past decade, survival rates have been increasing. There are several factors related to increased survival, and one of the key factors is cardiopulmonary resuscitation or CPR. Survival increases when a victim receives immediate CPR, correctly performed. Historically, CPR was practised mainly in the hospital. However, a cardiac arrest victim outside the hospital can also benefit from CPR even if it is performed by a non-medical bystander. When a bystander offers CPR before the arrival of emergency medical services (EMS), it doubles or triples the chance of survival compared with no CPR (Hasselqvist-Ax et al., 2015). CPR not only increased the rate of survival, but victims who received bystander CPR also had a higher quality of life and a better neurological outcome when compared to victims who did not receive bystander CPR (Iwami et al., 2007).

Despite the clear benefits of bystander CPR, the rate of bystander CPR over the world remains low, especially in minority populations and immigrant communities. Thai peoples are one of the minor ethnic groups in New Zealand although the Thai population continues to increase, particularly in Auckland. A study conducted in Thailand showed a lower rate of bystander CPR in comparison to New Zealand. Moreover, some aspects of Thai cultural practice - such as the concept of a 'good death' - may not be supportive of bystander CPR. This masters' project aims to examine knowledge of and attitudes toward bystander CPR among Thais in Auckland in order to understand factors related to performance of bystander CPR.

This introduction chapter will provide an overview of sudden cardiac arrest to understand the incidence, the causes, and the survival factors of a sudden cardiac arrest. The challenges to improving survival of cardiac arrest patients will be explored through the concept of the 'chain of survival' of which bystander CPR is a key component. This chapter will further describe the current situation of bystander CPR, CPR training and problems of bystander CPR. Knowledge gaps and the rationale for this study will be presented. In the last part of this chapter, we outline the research questions, the position of the researcher and the structure of this thesis.

To be precise, this master's thesis aims to investigate: The knowledge of and attitudes toward bystander CPR among Thais who live in Auckland, and factors that influence their decision whether or not to intervene as bystanders providing CPR. Based on the findings we will make recommendations concerning the teaching and practice of CPR to the public, in the hope of increasing the number of bystanders willing to perform bystander CPR.

1.1 Sudden cardiac arrest and out-of-hospital cardiac arrest

Sudden cardiac arrest is defined by an absence of signs of circulation due to the heart no longer beating or functioning in maintaining circulation (Yow et al., 2020). When a sudden cardiac arrest happens outside a hospital, it is called out-of-hospital cardiac arrest (OHCA). OHCA commonly occurs at home and without a warning sign (Weisfeldt et al., 2011). In the United States (US), the annual incidence of OHCA is around 350,000 cases (Benjamin et al., 2018). In New Zealand, St John, who provides ambulance services to almost 90% of New Zealand's population, reported around 4,000 people suffered from OHCA each year (Dicker et al., 2020). Over 90% of OHCA victims do not survive (Yow et al., 2020). Globally, the incidence of death from OHCA is between 20-100 cases per 100,000 people (Wong et al., 2019). In New Zealand, the incidence of OHCA was around 120 cases per 100,000 people and only 14% of those receiving a resuscitation attempt survived to 30 days (St John New Zealand, 2020).

Over 80% of OHCA cases are caused by coronary heart disease (Deo & Albert, 2012). However, in younger victims who are less than 35 years old, cardiac arrhythmia is the most common cause of OHCA (Yow et al., 2020). Heart conditions are not the only cause of OHCA. The underlying causes of sudden cardiac arrest are classified into the mnemonic Hs&Ts. These include hyperkalaemia, hypokalaemia, hypotension, hydrogen ion (acidosis), hypothermia, hypoxia, trauma, tension pneumothorax, thrombosis (pulmonary embolism and coronary heart disease), and toxin (Jordan et al., 2020). All these conditions can lead to heart rhythm failure and cardiac arrest.

Survival from OHCA is reported using four main categories of outcomes: Event survival, which includes victims with return of spontaneous circulation (ROSC) sustained from the scene of the arrest until arrival at the hospital; any period of ROSC (typically longer than 30 seconds) during the resuscitation attempt; 30-day survival or survival to hospital discharge; and, neurological outcome at hospital discharge (Perkins et al., 2015). Despite a report of high survival in some areas of the world, such as King County in the US and the Netherlands where survival to discharge rates were over 50% of OHCA cases (Boyce et al., 2015; Division of Emergency Medical Services, Seattle and King county, 2019), overall survival from OHCA is poor (Yan et al., 2020). Globally only one of ten sudden cardiac arrest victims survives to hospital discharge (Yan et al., 2020). In New Zealand, the 30-day survival rate following OHCA was 14% in 2018-2019 (St John New Zealand, 2020), whereas in Thailand survival to hospital discharge of OHCA was reported to be between 4.2-11% (Buranasakda et al., 2019; Ong et al., 2015; Sittichanbuncha et al., 2013; Vattanavanit et al., 2013; Yeeheng, 2011). The challenges faced in increasing rates of survival from OHCA are further explained by the concept known as the 'chain of survival'.

1.2 The chain of survival

Many studies have focused on the factors related to improving survival. The chain of survival was introduced by Newman (1989) to emphasise the key factors that lead to a successful outcome for a sudden cardiac arrest victim. The chain of survival focuses on the recognition and activation of the emergency response system, immediate high-quality CPR, rapid defibrillation, basic and advanced emergency medical services, and advanced life support and post-arrest care (Kronick et al., 2015).

Although every step in the chain of survival is important, Deakin (2018) pointed out that the first two steps (the recognition and activation of emergency response system, and immediate high-quality CPR typically performed by a bystander) were especially crucial because they can provide the greatest chance of survival. Activation of an emergency response system by calling for medical assistance is the first priority step; however, it takes time before arrival of ambulance and team. If a victim does not receive chest compressions while waiting for an emergency response team, the chance of survival can decrease. It is known that CPR particularly affects survival in a patient who has a cardiac arrest with shockable rhythms (Granfeldt et al., 2016). This procedure increases survival rates by allowing a time window to keep blood flow to the vital organs and preventing organ damage, especially damage to the heart and brain. This provides time for a defibrillator to arrive; defibrillation could potentially reverse the heart arrhythmia to normal rhythm (Rajan et al., 2016). A study calculated the chance of survival of a cardiac arrest victim at each stage (Deakin, 2018). The study highlighted the importance of an Automated External Defibrillator (AED) in being able to reverse a shockable arrhythmia back to the organised rhythm, but without CPR the incidence of shockable arrhythmias becomes less as more time progresses (Deakin, 2018). The chance of survival will be much smaller if the victim does not receive help from a bystander before the arrival of the emergency medical care team (Deakin, 2018). Interventions that encourage people who witness cardiac arrest to initiate CPR, and CPR training for the general public, are the keys to improving survival from OHCA.

1.3 Definition of Bystander CPR

When a victim suffers a sudden cardiac arrest, the circulation of the body will collapse. Then, the victim will become unconscious and stop breathing. Before the invention of CPR, at this point a person would be declared dead. CPR is the procedure which provides temporary circulation by using hands compressing directly on the victim's chest wall. This procedure can keep the heart pumping and maintain blood flow to vital organs. In the beginning stages of research on chest compressions, the first studies examined cats and found that the external compression of the heart was enough to deliver blood flow to the vital organs (Boehm, 1877). Following this, the success of chest compressions in two men was reported by Dr Friedrich Maass (1892). In 1960, the combination of mouth-to-mouth ventilation and chest compression was properly called CPR, and that was when the practise of CPR started to become well known to the public (Eisenberg, 2011).

Since the first application of CPR to resuscitate people experiencing sudden cardiac arrest, the chances of survival have been increasing gradually (Wong et al., 2019). However, for out-of-hospital cardiac arrest, the survival rate is much lower than in-hospital cardiac arrest (Go et al., 2013). Due to the in-hospital cardiac arrest setting, there are higher numbers of witnesses to the arrest and bystander CPR by hospital staff (Buanes & Heltne, 2014; Cavallotto et al., 2015). These settings allow patients to be detected earlier than in the out-of-hospital cardiac arrest setting. As a result, cardiac arrest patients can receive immediate CPR and earlier defibrillation, which leads to a higher survival rate compared to out-of-hospital cardiac arrest, where witnessed arrest and bystander CPR are much lower (Cavallotto et al., 2015).

When a cardiac arrest victim has received CPR before the arrival of EMS, it is commonly termed bystander-initiated CPR. Bystander or lay rescuer can be defined as “an individual having provided CPR with no professional obligations in the incident” (Mathiesen, Bjørshol, Braut, & Søreide, 2016, p2). However, the definition of bystander CPR has been used differently. Utstein style is a standard resuscitation reporting template which provides guidelines for reporting cardiac arrest data. It was designed in collaboration with Resuscitation Councils from many countries, including the Australian and New Zealand Resuscitation Councils. According to Utstein style guidelines, bystander CPR is the set of CPR procedures provided by a person who is not in the team of an emergency response system (Jacobs et al., 2004). By this definition, it could include a health professional, who is not in the care team. Globally, this term has been used differently especially when it focuses on health personnel, for example, police and firefighters who may or may not be in the emergency response team (Maurer et al., 2019). In New Zealand, firefighters are included as a care team, while police are accounted as bystanders.

In 2010, the American Heart Association released the hands-only CPR guideline which allowed a layperson to perform chest compression without rescue breathing (Travers et al., 2010). Several studies showed marked increases in numbers of bystanders willing to perform hands-only CPR, which allowed further studies to confirm that bystander CPR significantly increased the rate of survival (Riva et al., 2019; Song et al., 2018).

1.4 Importance of bystander CPR

With bystander CPR, the victim has a much higher chance of survival and a better neurological outcome compared to no bystander CPR. This view is supported by studies in Denmark and Japan which have shown how bystander CPR was associated with a more favourable neurological result and survival (Iwami et al., 2007; Wissenberg et al., 2013). By doubling the number of bystander CPR events, the number of survivals on hospital arrival and survival at one-year tripled (Wissenberg et al., 2013). Similarly, in Sweden, Hirlekar et al. (2020) studied 11, 955 OHCA victims. They came

to similar findings, that bystander CPR can lower comorbidity and increase the number of survivals at 30 days.

Even though CPR was put forward to the general population in 1960 as something any trained person could perform, some people still believe that CPR is a procedure only for medical staff or an experienced person, and therefore training the public in CPR is unnecessary. However, there are several reasons why the general public should be able to initiate CPR. Firstly, most sudden cardiac arrest events happen at home (Graham et al., 2015; O'Rourke, 2005). The literature on the arrival time of an ambulance shows that the survival of OHCA patients decreases as ambulance response time increases (Bürger et al., 2018; O'Keeffe et al., 2011; Pell et al., 2001). When those present enact bystander interventions such as CPR or defibrillation, they can prolong and increase survival particularly in the patient who has a cardiac arrest with shockable rhythms (Goto et al., 2018). The prompt providing of chest compressions can mimic physiologic heart pumping and maintain blood circulation. In the case of a victim with a shockable rhythm, without any resuscitation, the heart rhythm will deteriorate to a non-shockable rhythm, which has a poorer prognosis of survival (Larsen et al., 1993). Bystander CPR can prolong the viability of a shockable rhythm and increase a chance of successful reversal of an unorganised heart rhythm to normal (Rajan et al., 2016). With every minute of delaying CPR in patients who had a ventricular fibrillation (VF) rhythm, the chance of survival decreased by 10% (Larsen et al., 1993).

The second reason why people should initiate CPR is because the golden time in order to save brain function is four minutes (Welbourn & Efstathiou, 2018; Yang et al., 2013). The average ambulance response time in the United States is seven minutes (Mell et al., 2017). In New Zealand, the average ambulance response time to an OHCA patient was 8 minutes in urban communities and 13 minutes in rural and remote communities (St John and Wellington Free Ambulance, 2018). If the bystander waits for help from emergency medical personnel without performing CPR, a surviving OHCA victim can develop brain damage. This is a problem, particularly in rural areas where the ambulance takes even longer to arrive at the scene of cardiac arrest (Mell et al., 2017; St John and Wellington Free Ambulance, 2018).

Lastly, the time between the start of the cardiac event to CPR is the best predictive factor for survival in OHCA. Larsen et al. (1993) put forward an equation for predicting survival outcomes, based on a multiple logistic regression. The formula is shown below. "Survival rate = 67% at collapse - 2.3% per minute to CPR - 1.1% per minutes to defibrillation - 2.1% per minute to ACLS" (pp.1656)

From the equation, we can see that the time delay before CPR has the biggest effect on survival. For instance, if a bystander delays CPR for 10 minutes, survival reduces to 44%. On the other hand, survival only drops to 56% if bystander performs CPR but delays delivering a shock. CPR even has a higher impact on survival over the arrival of the medical team. This confirms that in order to increase the

number of survivors of OHCA the general population needs to be able to initiate CPR before the arrival of a medical team.

1.5 Current situation of bystander CPR

1.5.1 Rate of bystander CPR

Despite clear evidence of the benefits of bystander CPR, less than half of OHCA victims were treated by a bystander (Chen et al., 2017). Some areas in the US showed a high rate of survival related to a high rate of bystander CPR (Graham et al., 2015). However, a study which included 132 counties showed the global rate of bystander CPR was only 34.4% (Girotra et al., 2016). In China, bystander CPR rates were between 4.2-11.4%, where Beijing showed the highest rate among other cities (Xu et al., 2017). In the United Kingdom, bystander CPR rates were similar to those in Japan where it was between 40-50% of cases. (Perkins et al., 2016; Shirakawa et al., 2019). New Zealand has a bystander rate of 76%. This is a high rate of bystander CPR, even among some Western countries such as Sweden and the Netherlands which reported high rates of bystander CPR of over 60% (Visser et al., 2019; Riva et al., 2017). The rate of bystander CPR among Thais in New Zealand is unknown. While in Thailand itself, the rates of bystander CPR were reported to be between 15.8-37.9% (Buranasakda et al., 2019; Ong et al., 2015; Sittichanbuncha et al., 2013; Yeeheng & Rawiworrakul, 2018). From here, it can be seen that bystander rates over the world are low. The rates of bystander CPR were reported to have been influenced by CPR training. The current situation of CPR training will be discussed next.

1.5.2 CPR training

Areas with low uptake of CPR training are associated with a lower survival of OHCA (Anderson et al., 2014). Rates of CPR training vary globally. In China, the rates of training were reported between 1-14.6% (Huang et al., 2016; Xu et al., 2017). In Sweden, the rate of CPR training was 55%. In the US, overall CPR training rate was reported as low as 2.39% per year (Anderson et al., 2014). However, in some areas with high rates of survival of OHCA such as King County, United States, the rate of CPR training was reported as high as 79% (Sipsma et al., 2011). In Thailand, there was no report on the numbers associated with CPR training. New Zealand has a high rate of CPR training compared globally. The most up to date figures for New Zealand in 2004 showed that 74% of a study population had attended a CPR training, however, more than half of them had received their training over five years ago (Larsen et al., 2004).

CPR training is mandatory in schools in many states in the US and countries in Europe. For instance, the legislation mandating CPR training in schools in Denmark was implemented in 2015 for middle schools (Malta et al., 2017). The European Patient Safety Foundation (EuPSF), the European Resuscitation Council (ERC), the International Liaison Committee on Resuscitation (ILCOR) and the World Federation of Societies of Anaesthesiologists (WFSA) have agreed to support the concept of

teaching CPR in schools under the slogan “Kids save lives” (Böttiger & Van Aken, 2015). This is based on the idea that children younger than 12 years old are more open to learning CPR than adolescents or adults, who were reported to be more afraid of doing it wrong (Bohn et al., 2015; Böttiger & Van Aken, 2015). It is believed that to train CPR in school 2 hours per year should be enough for children to retain the training in long term memory (Böttiger & Van Aken, 2015).

CPR training in New Zealand is optional for a layperson (Parnell et al., 2006). There are many services that can provide CPR courses such as St. John and Red Cross and private organisations. Over 80% of secondary schools and 37.5% of primary schools in New Zealand teach CPR skills (Lafferty et al., 2003). Even though CPR training is included in the school curriculum and there is evidence of a high number of CPR classes offered in secondary schools, the training remains optional, not compulsory (Parnell et al., 2006). Other people are trained in CPR as a requirement of the law. For instance, every school in New Zealand must have a staff member who have been trained in first aid. Regarding the Health and Safety at Work Regulations (2015), many workplaces need to have first aiders, that is, workers who have been trained in first aid (WorkSafe, New Zealand, 2020). This first aid course includes CPR training, which is recommended by the Australian and New Zealand Committee on Resuscitation (ANZCOR) to be refreshed at least once a year (ANZCOR, 2016c).

In Thailand, in accordance with the Emergency Medical Act (2008), the National Institute for Emergency Medicine (NIEMS) was established to support the Emergency Medical Service. NIEMS is responsible for encouraging Thais to know how to perform CPR (Thai Emergency Medicine Act, 2008). There are also other organisations who provide CPR training such as the Thai Resuscitation Council (Thai CPR), Thai Red Cross and private organisations. Currently, there is no report on the number of Thais who have been trained in CPR in Thailand. CPR training is not in the national curriculum, nor is it mandated by law for CPR training to take place in a workplace or school. On the other hand, NIEMS implemented CPR training through Village Health Volunteers (VHVs) who are villagers and are volunteers to promote health and deliver health information to people in their own communities (The Thai National Institute for Emergency Medicine, n.d.; Vatcharavongvan & Kummabutr, 2017)

Since 1960, every village of Thailand has VHVs. One VHV is responsible for around 10 households in their area (Chaleepad et al., 2020). VHVs are trained in the health curriculum which is set by the Thai Primary Health Care Division (PHC) and the Ministry of Public Health (Thai PHC, 2017). In 2019, there were around 1,040,000 VHVs in Thailand (Thai Ministry of Health, 2020). In the past, VHVs only worked on primary health care with a focus on disease prevention such as a project of eliminating mosquito and larvae in communities to prevent dengue outbreak (Chuengsatiansup & Suksut, 2007). Basic first aid and knowledge of CPR were later included in a new VHVs curriculum called VHVs 4 (Thai PHC, 2017). Knowledge of CPR is only learned through mobile phone application, which includes infographics and videos of how to perform CPR (Thai PHC, 2017). Many areas that work with local hospitals and include VHVs in their CPR training classes are able to include practice with a manikin (Chaleepad et al., 2020).

1.6 Context and rationale for the study

Early bystander CPR is key to improving survival and neurological outcomes following OHCA. There has been an increase in cases of bystander CPR around the world, but it varies from nation to nation (Dicker et al., 2020; Lai et al., 2015; Wissenberg et al., 2013). In New Zealand, bystander CPR rates are considered high, with 76% of out-of-hospital cardiac arrest victims receiving bystander CPR before the arrival of emergency medical service in 2018-2019 (St John New Zealand, 2020). By contrast, in many other nations such as China, England, and the US, bystander CPR rates are less than half of all out-of-hospital cardiac arrest events (Benjamin et al., 2018; Chen et al., 2017; Perkins et al., 2016). Even though New Zealand has shown a high rate of bystander CPR, the numbers appear to have plateaued. Annual reports give the following figures: 75% in 2013/14, 74% in 2014/15 and 72% in 2016/2017, respectively (Dicker et al., 2017).

1.6.1 Thai people in the New Zealand context

Auckland is the largest city in New Zealand, it had the highest proportion of cardiac arrests (Dicker et al., 2017). The Thai community is a small ethnic population in New Zealand. It is estimated that over 8,000 Thais live in New Zealand (Statistics New Zealand, 2013). Though this accounts for less than one percent of New Zealand population, the number has doubled over the last two decades (Statistics New Zealand, 2013). The majority of Thais live in Auckland, and over 80% of them were born overseas (Statistics New Zealand, 2013). The rate of bystander CPR among Thais in New Zealand is unknown while in Thailand, literature has shown the rates of bystander CPR are less than 40% (Buranasakda et al., 2019; Ong et al., 2015; Sittichanbuncha, Prachanukool, & Sawanyawisuth, 2013; Yeeheng & Rawiworrakul, 2018).

There have been reports of ethnic disparities in resuscitation in New Zealand, such as Māori and Pacific Peoples who had lower survival following OHCA events (Todd et al., 2019). While it is important to study Māori populations through Treaty obligations, other ethnicities are also worthy of research. Specifically, bystander CPR in Thais who live in New Zealand has not yet been studied. It is possible that an ethnic disparity exists within the Thai population, but that is currently unknown. The numbers of immigrants in New Zealand have increased significantly from 2018 to 2020, and Asian ethnics were the major immigrants arriving in New Zealand (Statistics New Zealand, 2020). Thai immigration to New Zealand has shown a rapid increase compared to the last two decades (Statistics New Zealand, 2020; New Zealand Foreign Affairs and Trade, 2016). Thais in New Zealand have a unique culture, many are immigrants and non-native English speakers, and their unique perspectives may add value to what is known about decisions to undertake bystander CPR.

There are many articles from the US medical literature explaining that ethnic disparities in survival from out-of-hospital cardiac arrest relate to low bystander CPR within neighbourhoods (Galea et al., 2007; Rivera et al., 2016). Sasson et al. (2013) noted that some African-American,

Latino and poor neighbourhoods in Ohio experienced fewer incidences of bystander CPR when compared to other neighbourhoods. Bradley et al. (2011) also found that populations with limited English proficiency in the US were less likely to perform bystander CPR, and patients with lower English proficiency had a lower chance of surviving in cardiac arrest events compared to native English speakers. This could be explained because the dispatchers took longer to recognise cardiac arrest and to encourage the bystander with lower English proficiency to initiate CPR (Bradley et al., 2011). Meischke et al. (2012) showed that language barriers limited populations with lower English proficiency in accessing emergency care. Moreover, fear of disclosure of their immigration status was also a barrier to calling emergency medical services for non-native English speakers (Ong et al., 2012; Watts et al., 2011).

Poor knowledge of bystander CPR is known to be one of the barriers to performing bystander CPR. It was clear that after attending CPR training, trainees felt more confident and willing to perform bystander CPR compared to before training (Sipsma et al., 2011; Wingen et al., 2018). Disparities in rates of CPR training were also reported, particularly in immigrant populations. Language was also reported as a barrier to CPR and CPR training in immigrant communities. Most of the knowledge resources are in English (Sasson et al., 2013). A lower rate of CPR training among Asian immigrants and Asian ethnicities was found in the US. A study in Seattle showed that 87% of Chinese immigrants had never had any CPR training (Yip et al., 2011). A study across all states in the US reported the following rates of CPR training: 89.1% in white people, 3.3% in Hispanic people, but only 0.5% in Asian people (Anderson et al., 2014). The rate of CPR training of Asians or Thais in New Zealand has never been studied.

In New Zealand, St John is a charitable organisation heavily involved in CPR training and prehospital services (St John New Zealand, n.d.). As New Zealand is a multi-cultural country with an increase in the number of migrants each year, strategies to increase the rate of bystander CPR have been reported, such as promoting mandatory CPR training in schools and community initiatives (Dicker et al., 2017). A study in 2004 showed that a high percentage of the New Zealand population (74%) had attended a CPR training (Larsen et al., 2004). However, the knowledge of bystander CPR in Thais who live in New Zealand is unknown, and understanding this could be beneficial in increasing cases of bystander CPR.

Barriers to bystander CPR are not only the public's knowledge but also attitudes toward the procedure, as attitudes could influence the decision to intervene in a real cardiac arrest situation. Despite the implementation of good education campaigns to improve bystander CPR rates through schools and community initiatives, the bystander CPR rates in New Zealand have not increased over the past seven years (Dicker et al., 2017). Axelsson, Herlitz and Fridlund (2000) pointed out that not everyone well trained in CPR is capable of performing CPR in a real cardiac arrest situation, while

some bystanders who had performed CPR had never had any experience or practice of CPR before. The study showed that some bystanders suffered from emotional distress after a CPR attempt (Axelsson et al., 2000; Mathiesen et al., 2016). Some of the bystanders reported a feeling of guilt and self-blaming if victims had died or survived in a vegetative stage (Mathiesen et al., 2016). Personal morality was also a concern for some of the bystanders. Some felt confused and unsure that their actions were morally right or wrong and were concerned whether the patient would have wished them to intervene and perform bystander CPR (Axelsson et al., 2000).

1.6.2 The cultural context

Many studies show that culture influences the decision to resuscitate and may limit the decision to provide CPR. This is certainly true in the case of assisted ventilation during CPR, as a study about attitudes to CPR in Japan showed that fewer than 30% of Japanese people were willing to perform CPR with mouth-to-mouth ventilation, as the majority of them doubted they could perform the techniques effectively, and some of them were afraid of disease transmission (Taniguchi et al., 2007). Similarly, in Sweden, when hands-only CPR was implemented in Swedish CPR guidelines, the number of cases of bystander CPR increased to nearly double that of before (Riva et al., 2019).

The rising number of Asians in New Zealand allows some other religions such as Buddhism, Hinduism, Islam and Sikhism to be part of New Zealand's cultural diversity (Statistics New Zealand, 2020). This could influence some aspects of health practice such as the concept of death and the resuscitation decision. For instance, a study in a Muslim country revealed that Muslim people commonly felt reluctant to remove their clothes or expose their body during a physical examination (Attum et al., 2019). Gender of the provider was also important for the Muslim patients, they would feel more comfortable with a same gender provider (Attum et al., 2019). This issue has been a concern particularly in the situation of a female victim suffering with a cardiac arrest, as the male rescuer may feel reluctant to remove the victim's clothing and make physical contact, as is necessary in bystander CPR or attaching an AED (Wood, 2012).

Another cultural barrier which could prevent a lay person from performing bystander CPR is the concept of death. In some religions such as Buddhism, people are taught that the acceptance of death is one of the keys to attaining the highest good (Karetzky et al., 1996). The literature suggests that Thai older people are more likely to let go than to prolong their life in cases where the chance to survive is small (Srinonprasert, 2014). The characteristics of a good death may also affect the decision to initiate CPR. According to Chinese and Thai culture, to die at home is a characteristic of a good death (Broad et al., 2013; Stonington, 2012). In China, 80% of people died at home compared to 35% in New Zealand (Broad et al., 2013). At a hospital in the North of Thailand, Stonington (2012) found that it is common for family members to take near-death patients back home, and to withdraw life support. It could be hypothesised that the concept of a good death in some Asian cultures may not

support prolonging life procedures, such as bystander CPR. These cultural factors influencing bystander CPR need to be studied and understood in order to tackle a full understanding of the barriers to bystander CPR.

1.7 Research questions

Even though New Zealand has a high rate of bystander CPR (Dicker et al., 2017), the understanding of barriers to performing bystander CPR in minority cultures is limited. This study aims to understand knowledge of and attitudes toward bystander CPR among Thais who live in Auckland. The results could explain factors which influence their decision to intervene in real cardiac arrest events. It could also inform future practice on how to support cultural competence and increase the number of bystanders willing to perform CPR. Our research questions are:

1. What knowledge do Thais living in Auckland have of bystander CPR?
2. What are the attitudes of Thais who live in Auckland towards bystander CPR?
3. What factors are related to decisions to undertake bystander CPR, by Thais who live in Auckland?

1.8 Potential benefits of the study

This study may provide benefit to Thai participants as it may promote a better understanding of bystander CPR and raise awareness of cardiac arrest for participants or someone in their family. It also may encourage participants to reflect on and increase understanding of their personal beliefs. The study could also benefit Thai society as a whole as the outcome of the study may help to understand knowledge and training of CPR and how bystander CPR could be enhanced in Thai culture. Lastly, this study will benefit the researcher herself in her role as a resuscitation expert and emergency physician seeking to understand to what extent Thai culture and attitudes are the keys for Thais deciding to intervene in a cardiac arrest event or not. It is also undertaken as a part of a qualification, which will benefit the researcher through earning a master's degree in health science.

1.9 Researcher's position

The researcher is an emergency medicine physician in Thailand. She is interested in strategies to improve survival and support human dignity in a cardiac arrest patient. She works with statistics on cardiac arrest survival in her hospital and has developed strategies related to survival of cardiac arrest patients such as an OHCA registry and Pit Crew CPR. As an emergency physician, the researcher has experienced clinical situations where cardiac arrest patients have received bystander CPR before arrival of the medical team. In addition, she has noticed many cases where a patient initially survived a cardiac arrest, but their family asked to take patients home rather than having the patient remain in hospital until they had recovered. The researcher has questioned whether the barriers to bystander CPR and resuscitation may be related to Thai concepts or beliefs about death. For

instance, the concept of a good death, or the Buddhism belief that the way to achieve the state of Nirvana is acceptance of death in the face of critical illness. This study will be conducted in New Zealand: potentially it will provide the researcher with a deeper understanding of the barriers to bystander CPR, of some aspects of Thai culture, and of any culture shifts related to resuscitation decisions of Thais who now live in Auckland.

1.10 Overview of the thesis

This chapter has outlined the problems and rationale for developing this research. The background of survival from OHCA, the introduction of and the importance of bystander CPR have been described in order to understand the current issues surrounding bystander CPR.

Chapter two will review the literature related to barriers to bystander CPR; these have been divided into knowledge barriers and attitudinal barriers. Chapter two also covers the literature on strategies to improve the rates of bystander CPR. The third chapter is the methodology chapter. This chapter explains the research paradigm of pragmatism that frames this study. The justification for using mixed methods study and a questionnaire, and the detail of research design will also be explained within chapter three. The fourth chapter is the results chapter. It presents the qualitative and quantitative data resulting from the study questionnaire. The last chapter provides discussion. The researcher discusses the findings of this study and the processes of combining, comparing and contrasting the qualitative and quantitative data. This leads to the conclusions of the study, where the strengths and limitations of the study are presented with recommendations to improve bystander CPR for Thais who live in Auckland.

Note that this thesis uses the word “Thais” referring to people from Thailand. This is not an inappropriate colloquial term, nor is it ‘slang’. It is the term that Thai people use to describe themselves. The term is used quite broadly, to refer to Thai people living in Thailand, to people from Thailand living in Auckland who participated in this study, and for people from Thailand living in New Zealand as a whole.

Chapter 2: Literature review

2.1 Introduction

This masters' project investigates the performance of bystander CPR among Thai people in Auckland. To set this investigation in context, this literature review will examine current research about the clinical value of bystander CPR, and about facilitators and barriers of bystander CPR. Facilitators are conditions that promote or enable bystander CPR to take place, whereas barriers are those conditions that discourage, or block bystander CPR being performed.

A great deal of research demonstrates the importance of bystander CPR (Iwami et al., 2007; Rajan et al., 2016; Wissenberg et al., 2013). There is a greater chance of survival for the patient in cardiac arrest if CPR is started early (Goto et al., 2018; Larsen et al., 1993). This means CPR started by bystanders before the arrival of ambulance crews or other healthcare professionals with their specialist training and equipment to take over the management of the cardiac arrest patient.

What are the facilitators of bystander CPR? Many studies claim that knowledge is the strongest factor related to the ability to perform CPR (Case et al., 2018; Dobbie et al., 2020). This chapter will explain the link between knowledge of CPR and the ability and willingness to perform CPR. Knowledge of CPR comes through training, so the role of CPR training courses will also be investigated. These two aspects – knowledge of CPR and training – can also act as barriers to bystanders performing CPR, particularly if individuals deem themselves deficient. Lack of knowledge can cause people to lack confidence, and these people can be reluctant to perform CPR.

Though knowledge of CPR has been shown to increase bystander CPR rates (Bray et al., 2017; Meischke et al., 2012; Sasson et al., 2013) in a real cardiac arrest situation, some CPR trained people could not initiate CPR, while some who initiated CPR had never had CPR training (Axelsson et al., 2000). Thus, knowledge of CPR is not the only factor related to the decision to perform CPR. Some researchers have suggested that attitudes, underlying culture and religious beliefs might be key influences in the decision to intervene (Axelsson et al., 2000). Therefore, in addition to knowledge, this literature review will explore some of the attitudinal aspects of the bystander's decision whether or not to begin CPR. These include various fears (usually seen as barriers), cultural norms towards strangers versus family members, and towards gender: social obligation, personal values and altruism.

The researcher searched for examples behaviour theories that can explain bystanders' willingness to intervene in a cardiac arrest event. Literature highlighted that poor knowledge of and attitudes towards bystander CPR were the two main factors affecting a decision to perform CPR. The Knowledge-Attitudes-Practice (KAP) model is a behaviour theory that is commonly used to assess health behaviour. The theory explains that knowledge and attitudes can affect practice; it seeks out what people know, what people think, and how people behave regarding a particular behaviour (Wan

et al., 2016). KAP theory has been used in many studies exploring barriers to health behaviour change with origins in the 1950s exploring family planning practices (Launiala, 2009). We questioned whether the theory could also be applied to explain the barriers or facilitators that related to willingness to perform bystander CPR or not. Some factors related to willingness, such as altruism, cultural beliefs and ethical values could not clearly be defined as attitudinal factors. Therefore, the additional Theory of Planned Behaviour was identified and applied for a more comprehensive exploration of the factors affecting bystander decisions to act.

Ajzen (1985) proposed the Theory of Planned Behaviour and pointed out that attitudes, subjective norms, and perceived behaviour control contributed to shaping people's intention. People's intention is the key influence over their actual behaviour. The Theory of Planned Behaviour is different to other behaviour theories. It is believed that people are more likely to act in a particular way when they believe that they can be successful. While attitudes are used by other theories to determine action, the Theory of Planned Behaviour focuses more on perceived behaviour control and subject norms that can link the people's intention to the actual action. It was applied to study various health problems such as tobacco or condom use. Recent studies also applied the Theory of Planned Behaviour to understand barriers to bystander CPR (Magid et al., 2019).

This masters project is about a particular behaviour - bystander CPR, and the reasons whether or not it is performed by Thai people in Auckland. From the literature, the reasons to perform bystander CPR cannot only be explained simply by reasons such as knowledge level or positive and negative attitudes toward CPR. The decision to initiate CPR is complex and underpinned by multiple factors. This literature review will explore the extent to which the facilitators and barriers of bystander CPR, as revealed in the published literature, be meaningfully interpreted in terms of attitudes, subjective norms and perceived behaviour control. Cultural beliefs and ethical values such as humanitarian values are identified as social norms that influence the decision to perform CPR. Another factor related to the decision to initiate CPR is a self-perception of ability performing CPR. This can connect to perceived behaviour control in the Theory of Planned Behaviour. A justification for using this particular theory was that all the reviewed barriers can fit within the three components of the theory.

The Theory of Planned Behaviour defines the three components of the theory as follows: 'Attitude' measures how people respond favourably or unfavourably about an object (Ajzen, 2005). When people have a positive attitude toward one particular action, they are more likely to perform that action. On the other hand, people who have a negative attitude would more likely refrain from doing that action. 'Subjective norm' is explained as a perception of an expected belief or response, what an important person or peers would expect of a particular topic (Kan & Fabrigar, 2017). This includes actions that people normally do or the perception of how others believe we should behave

(Ham et al., 2015). ‘Perceived behaviour control’ is described as a self-perception of one’s ability to do or control a particular action (Kan & Fabrigar, 2017). For instance, how do people perceive their own ability to perform CPR? One who thinks of himself or herself as able to perform CPR is probably more likely to perform CPR.

Not all three components were reported relating to every behaviour. For instance, in a study predicting cigarette smoking, it was found that only attitude and perceived behaviour control related to tobacco smoking among water-pipe smokers (Alanazi et al., 2017). A study by Magid et al. (2019) showed that all three components related to intention to perform CPR, however among college students, it was attitude that was the strongest predictor of performing CPR. The usefulness of the Theory of Planned Behaviour in the current study will be evaluated in the discussion chapter.

2.2 Knowledge of bystander CPR

Knowledge of CPR can improve survival in a cardiac arrest victim in two aspects. Firstly, it increases bystanders’ willingness to perform CPR (Birkun & Kosova, 2018; Huang et al, 2019). Secondly, when people know how to perform CPR correctly, it improves the rate of survival and neurological outcomes for a victim (Hoeyweghen et al., 1993). The first part of this section will expand the benefit of knowledge of CPR and present supporting literature. It will further reveal barriers related to knowledge of bystander CPR. This includes explanations of how bystanders feeling a lack of knowledge can prevent them initiating CPR. The complexity of guidelines and frequent changes to guidelines were also expressed as a barrier to learn and memorise steps of CPR. The second part of this section will demonstrate barriers related to CPR training and consider reasons that prevented people from attending CPR training.

2.2.1 Background to knowledge of bystander CPR

Knowledge of CPR was introduced to the general public in 1960 (Eisenberg, 2011). The current evidence showed that lack of knowledge was the strongest barrier to bystander CPR (Birkun & Kosova, 2018; Ong et al., 2012). It is believed that when people know how to do CPR, it can increase the likelihood of a person intervening in a cardiac arrest event. A study in Taiwan by Huang et al. (2019) showed that the majority of participants who expressed willingness to perform CPR were those who knew how to perform CPR. This can also be supported by a study in Crimea which showed that the willingness to initiate CPR was related to previous CPR training and self-perceived level of knowledge of CPR (Birkun & Kosova, 2018). Willingness to intervene can be affected by a lack of certainty that the victim needs CPR or not (Dobbie et al., 2018). In some instances, bystanders in the US have indicated that they did not know how and when to do CPR (Sasson et al., 2013). This is supported by many studies that showed that some Chinese rescuers felt reluctant to provide help to a victim because they didn’t know how (Chen et al., 2017; Huang et al., 2016). When people know how to perform CPR,

their confidence improves meaning they will be more likely to intervene in a cardiac arrest event (Andrews et al., 2018; Dobbie et al., 2018).

Several studies found that knowledge of CPR has an effect on CPR performance, such as the correctness of rate of chest compression or position of hands placement (Brown et al., 2006; Burkhardt et al., 2014). An animal study presented that poor quality of CPR decreased survival of induced cardiac arrest in pigs (Li et al., 2013). In human cardiac arrest, a prospective observational study revealed that poor quality of CPR compromised survival (Gallagher et al., 1995). Another study by Hoeyweghen et al (1993) compared outcomes for OHCA victims where bystanders performed CPR correctly, incorrectly or with no bystander CPR. For OHCA victims who were provided correct CPR, the survival rate was the highest; but when bystanders performed incorrect CPR intervention, OHCA victims had poorer survival outcome than in the no bystander CPR group (Hoeyweghen et al., 1993).

In general, cardiac arrest victims received suboptimal CPR performance, even it was delivered by health care professionals (Wik et al., 2005). Adherence to CPR guidelines helps to memorise knowledge of CPR and improves quality of CPR performance (Brown et al., 2006; Burkhardt et al., 2014). However, CPR guidelines are different from country to country. According to the Australian and New Zealand Committee on Resuscitation (ANZCOR, 2016a), the guidelines for lay rescuers include seven steps.

First, a lay rescuer checks if there are any dangers that could harm a rescuer while supporting a cardiac arrest victim (ANZCOR, 2016a). Then a rescuer assesses whether a victim is conscious or not by verbally addressing or touching a victim; in the case where a victim is unconscious, a rescuer calls an ambulance for help (ANZCOR, 2016a). While the rescuer is waiting for an ambulance, the rescuer opens the victim's airway and checks whether the victim has normal breathing or not; if not, the rescuer should immediately start chest compressions combined with rescue breathing (ANZCOR, 2016a). The final step is to attach an automated external defibrillator (AED); this can be done as soon as it is available (ANZCOR, 2016a). For victims with a shockable rhythm, the electrical shock delivered by the AED can reverse their heartbeat from a disorganised to an organised rhythm (Rajan et al., 2016).

Despite an attempt to make the CPR guidelines easy and practical for bystanders, people have complained that the guidelines frequently changed and were complicated (Benjamin et al., 2008; Sasson et al., 2013). The American Heart Association and the European Resuscitation Council have launched changed CPR guidelines every five years. Although there has been an increase to the number of survivals and bystander CPR rates resulting from a change of CPR guidelines in 2010, the change of the sequence of CPR from resuscitating airway first (ABC) to chest compression first (CAB) led some people to feel reluctant to initiate CPR (Sasson et al., 2013). The complexity of the guidelines were also reported as a barrier for bystanders to initiate CPR since trainees failed to learn CPR or recall the guidelines (Benjamin et al., 2008). One study reported that in previous real cardiac arrest events,

bystanders were too afraid to perform CPR because they were afraid of doing it wrong (Swor et al., 2006). The assessment of knowledge of CPR showed that in the long term many people could not remember the details of CPR. A study in New Zealand demonstrated that only four percent of New Zealanders who lived in urban communities knew the correct rate of chest compression, and nine percent knew the ratio of chest compression to ventilation (Larsen et al., 2004).

To make CPR easier and shorten the time needed to initiate CPR, hands-only CPR was introduced internationally in 2010 (Berg et al., 2010). It has become an option for bystanders who may feel it is difficult to assist with breathing or for those who have never trained in CPR before. The rationale for implementing hands-only CPR was informed by animal studies which showed that the survival of cardiac arrest victims with ventricular fibrillation was not different between groups receiving pulmonary resuscitation or no pulmonary resuscitation (Ewy et al., 2008; Kern et al., 2002). In adult human studies of hands-only CPR and conventional CPR, result varied. One relevant study showed that conventional CPR was superior to hands-only CPR (Hoeyweghen et al., 1993). However, more evidence supported the finding that hands-only CPR was superior or non-inferior than conventional CPR in adults especially for those witnessing cardiac arrest (Bohm et al., 2007; Cabrini et al., 2010; Kitamura et al., 2018; SOS-Kanto Study Group, 2007). Many countries have applied hands-only CPR guidelines for the general public. For instance, in Thailand, the Thai Resuscitation Council has supported hands-only CPR for bystanders who are untrained or unable to provide breath rescue, while the conventional method of CPR which includes assisted breathing is taught to health care providers (NIEMS, 2016).

There have been questions about whether breathing resuscitation is still essential as a step of CPR. The question focuses in cases of asphyxia arrest which in animal studies showed that the respiratory resuscitation significantly influenced the survival in asphyxia-induced cardiac arrest animals (Ewy et al., 2008; Berg et al., 1997). Literature of survival in paediatric cardiac arrest in Japan also supported the role of rescue breathing. Studies showed that conventional CPR (include ventilation resuscitation) benefits pediatric OHCA rather than hands-only CPR (Fukada et al., 2016; Kitamura et al., 2010; Zhang et al., 2019). Beside the pediatric OHCA, in adults, conventional CPR is recommended for non-cardiac origin cardiac arrest and unwitnessed cardiac arrest where the victim might suffer prolonged cardiac arrest. For example, over half of OHCA occurred at home and most of the victims were non-witnessed cardiac arrest (Herlitz et al., 2002).

There have been concerns whether hands-only CPR or conventional CPR should be taught for the general population. Hands-only CPR can reduce time to start CPR which reduces no flow time. It provides the best benefit to adult witnessed and cardiac-cause cardiac arrest. On the other hand, conventional CPR may benefit children, unwitnessed, prolonged and non-cardiac origin cardiac arrest which accounts for the majority of OHCA cases. The New Zealand Resuscitation Council has argued

that conventional CPR can provide the best benefit over hands-only CPR in many situations such as drowning, prolonged cardiac arrest and in children (New Zealand Resuscitation Council, 2017). Therefore, the New Zealand Resuscitation Council encourages conventional CPR in bystander and first aid training. It can be seen that the CPR guidelines are different in each country depending on the rationale that the national resuscitation council has provided.

Sasson et al. (2013) purposed that a lack of knowledge and confusion around changing CPR guidelines could lead to a fear of providing CPR. Fear to provide CPR involves many aspects such as a fear of further harm or being sued. Some research explained that knowledge of CPR can lead people to understand and overcome those fears (Bouland et al., 2017). Those factors can be viewed as part of knowledge barriers or attitudinal barriers. The researcher placed these barriers within the section of attitudinal barriers in this literature review chapter because some people who had formal CPR training or knew how to perform CPR could not overcome these barriers. This follows the precedent by some recent literature that has grouped these fears with attitudinal barriers (Chen et al., 2017; Dobbie et al., 2018). Thus, a more detailed examination of fear to provide CPR will be provided in the attitudinal barrier section. The next section will present the benefits of CPR training and barriers which obstructed people from attend CPR training.

2.2.2 Relevance of CPR training

The evidence showed that the rate of bystander CPR relates to the prevalence of CPR training (Bray et al., 2017; Sasson et al., 2013). Australian literature, where logistic regression was performed on factors related to bystanders' decision to administer CPR, found that CPR training was one significant factor (Johnston et al., 2003). The given evidence previously presented in our literature review supports that CPR training improves correctness of CPR performance and confidence to initiate CPR which leads to an increased willingness to intervene in an event (Abelsson et al., 2020; Liaw et al., 2020). Adult participants who attended CPR class showed their improvement in confidence to identify a cardiac arrest victim and initiate chest compressions and ventilation (Abelsson et al., 2020; Liaw et al., 2020). CPR training also affects the effectiveness of chest compressions. A study has shown that a person trained in CPR can provide a better force of chest compression, which is more effective than in an untrained person; 60% of trained CPR people can provide a proper force of chest compression, while only 37% of the untrained group could produce high-quality chest compressions (Geddes et al., 2007). These studies are evidence supporting the idea that CPR training is necessary.

Several reasons are limiting the number of people attending CPR training course. A study in Taiwan showed that 62% of people of those who do not want to learn CPR gave the reason of being too busy (Huang et al., 2016). Similarly, lack of time was also reported as a top reason that university students in Jordan did not attend CPR training (Oteir et al., 2019). Generally, CPR training requires at

least four hours (Batcheller et al., 2000). Some voiced a concern of taking time off work or taking care of children (Sasson et al., 2013). Another reason for not attending CPR training is a belief that training for CPR is not necessary. This was supported by some Taiwanese people who thought that this was something they did not need to learn (Huang et al., 2019). Although this notion was not the most common concern by the participants in Taiwan, this view was found to be the main reason that people do not train for CPR in Crimea. Despite a report showing that lack of knowledge is the strongest barrier in Crimea, over half of the participants in the study did not think that CPR training was needed (Birkun & Kosova, 2018).

Survival outcome of OHCA, rate of bystander CPR and CPR training all clearly relate to the socioeconomic status of the community. Sasson et al. (2013) studied poor neighbourhoods where a low rate of survival outcomes was reported. The results showed that the biggest barrier that prevented participants from learning CPR was cost to attend a CPR course. One of the participants in Sasson's study claimed, *"Because I want to save a life you're going to charge me. You should give us that type of knowledge for free"* (p.553). In Scotland, Dobbie et al. (2018) found an association between a higher socioeconomic status and higher percentages of previous CPR training. A similar finding was discovered by Abdulhay et al (2019), with those in the population with a below median household income less likely to receive CPR training compared to those who had higher incomes.

Even though the number of bystander CPR globally has been increasing, the rate of bystander CPR remains low, and the majority of trained rescuers have attended the CPR course more than 5 years ago (Wang et al., 2015). In long-term observation, it has been found that trained rescuers have lost CPR knowledge (Saramma et al., 2016). One example can be seen in a case of health professionals' lack of knowledge of basic CPR when they did not receive periodic training of CPR (Roshana et al., 2012). CPR training within 5 years was found to be a significant factor related to the performance of CPR in a real cardiac arrest event (Swor et al., 2006). Along the same lines, a study in Japan showed that the group of participants who had their last training over 6 years ago felt less confident; their rate of confidence was similar to the group of untrained participants (Sasaki et al., 2015). A CPR refresher course is considered to be associated with how a bystander can overcome a fear of cardiac arrest event and feel more confident to perform CPR (Xu et al., 2017). Repeating CPR training has been shown to increase confidence and willingness to perform bystander CPR (Suárez et al., 2019).

To summarise, for the barriers that related to knowledge of CPR and CPR training, knowing how to perform CPR can increase bystander's willingness to perform CPR, improve CPR performance and lead to better survival of a cardiac arrest victim. Lack of CPR knowledge leads people to feel fear of a cardiac arrest event and struggle to begin CPR. Knowledge of CPR can enhance bystander's confidence to initiate CPR. However, the complexity and frequent change of CPR guidelines has resulted in confusion and a fear of doing it wrong. Providing CPR training may improve in

understanding and lead people to overcome those barriers. CPR training improves bystander's confidence, willingness to intervene in the event, and correctness of CPR steps. Barriers to attending CPR training include lack of time, the notion of CPR training not being necessary and a lower socioeconomic status. Even for people attending CPR training, CPR knowledge deteriorates over time. CPR refresher courses should be encouraged for a CPR trained person.

2.3 Barriers that related to attitudes toward bystander CPR

Attitude has been used to explain human behaviour; it has also been studied in many areas of health behaviour to understand how people think of a health problem. Axelsson (2001) pointed out that knowledge of CPR and CPR training cannot increase bystander CPR unless bystanders have a will to help. Regarding bystander CPR, many aspects relating to attitudes have been studied. Emotions experienced during a real situation and a fear to confront a cardiac arrest situation were reported to be barriers that many bystanders could not overcome. Fear of confronting a cardiac arrest event can also prevent people from performing CPR. Fear of confronting a cardiac arrest event involved three aspects that bystanders experience. First, they were afraid of further harm to a victim. Second, they were afraid of disease transmission. Last, when a victim cannot survive from an event, rescuers were afraid of being sued by the victim's family. Another factor is whether the victim is familiar or a stranger. Many studies report that some people are willing to perform CPR only on their family members but not a stranger. This notion will be expanded in the section below.

2.3.1 Emotional barriers

Through CPR training bystander stress toward a cardiac arrest event could be reduced (Alismail et al., 2018). Some bystanders, including CPR trained persons, could not perform CPR in a real cardiac arrest situation. Many reported that their emotion at the time of confronting an event limited their ability to perform CPR. A study by Case et al. (2018) reported that some people are panicked, frightened, or too scared to touch a victim or perform CPR. One participant of a study by Sasson et al. (2013) stated that her uncle froze when a cardiac arrest event happened to his mother, though he was advance cardiac life support certified. Mausz et al. (2018) presented a similar situation:

And I went to him and I saw him and I saw his face and his body and I just [crying], thought for a second 'What do I do?' and I just ran so fast, and I didn't even know how to call – I touch my phone all the time and I didn't remember my password – and I just ran to the [office] door and I hit the door so hard and I screamed so loud and I said 'Kristina! Kristina! Call 911 now!' (p.5)

Some emotional consequences were reported after bystanders intervened in a cardiac arrest event. Some distress and psychological symptoms had happened after they intervened to rescue a victim:

I'm still messed up. I don't sleep. I can't see the color blue, like certain blues just freak me out right now. Umm, like sometimes you're having a conversation, you don't feel like you're even in the room. It's weird, I can't even explain it ... I can't go in the room [where the incident occurred], I can't even look at that door because my anxiety goes through the roof. (Mausz et al., 2018, p.6)

Mathiesen et al. (2016) also studied the reactions and the consequences of bystanders who confronted a cardiac arrest victim. The study found that some rescuers can develop persistent mental disturbance, and some even needed medical attention for these emotional effects. Feelings of guilt when a victim did not survive were reported. A study in Japan of a group with about half of participants already trained in CPR reported that nearly 90% of respondents would feel emotional distress if a victim did not survive (Sasaki et al., 2015). However, while a number of studies showed that bystanders could suffer from emotional disturbance from the event, some studies reported that people who had real experience of CPR, especially with a successful resuscitation, may be more likely to perform CPR in the future (Chew et al., 2019).

2.3.2 A fear of further harm

Participants reported that among their barriers to performing CPR was a fear of hurting a victim. A study by Becker et al. (2019) revealed that a fear of further harm was the most prevalent concern, something that over 60% of participants indicated as a worry. This was especially true when a victim is an elderly person. Some reported that this fear may relate to knowledge of CPR as they do not know how to perform CPR correctly (Bouland et al., 2017). Many studies showed that knowing how to do CPR can dispel a fear that a rescuer would further harm a victim (Bouland et al., 2017; Moon et al., 2019). However, a study in Taiwan showed that after CPR training, a fear of hurting a victim was still the most significant barrier reported by trained participants.

Krischer et al. (1987) observed complications that happen after patients received CPR. Their study showed that rib fracture occurred in one in three patients who received CPR. A forensic study in Greece revealed that rib fracture only happened in 20% of all cases autopsied (Deliliga et al., 2019). Another study of complications of CPR by Moriwaki et al. (2012), showed that of 26 cases who suffered from cardiac arrest and received CPR by laypersons, only three patients had complications from being administered CPR. Other complications such as sternum fracture and haemorrhage in anterior mediastinum were also reported, but less frequently (Krischer et al., 1987). Life threatening complications happened in fewer than five percent of total cases (Krischer et al., 1987). From the past literature, it can be seen that the complication of CPR is low and treatable. Interestingly, complications were more common in victims who received CPR by medical personnel rather than bystanders (Deliliga et al., 2019). This should be reasonable evidence to support the case that the general public should not worry about further harm to a victim when performing CPR.

2.3.3 A fear of physical contact

When faced a real cardiac arrest event, some people did not intervene because they were afraid of physical contact with the cardiac arrest victim. In detail, bystanders reported that they were afraid of physical contact with the victim's body secretions (such as saliva or vomit) or were afraid of disease transmission (Dobbie et al., 2018). Performing mouth-to-mouth ventilation was a particular barrier that made bystanders feel reluctant to intervene and perform CPR. In addition, in some cultures, physically contacting a victim could be inappropriate (Attum et al., 2019) – for example, a male performing CPR on a woman, or vice versa. The next section will investigate those barriers related to physical contact with body secretions and disease transmission. However, the fear of inappropriate physical contact as a cultural phenomenon is covered later in this chapter in Section 2.4 Barriers related to subjective norms. Subjective norms are social or cultural expectations of behaviour, distinct from clinical concerns like disease transmission.

2.3.3.1 A fear of contacting body secretion and disease transmission

Fear of contacting body secretions was explained to be one barrier to bystander CPR. McCormack et al. (1989) prospectively studied cardiac arrest victims, and the results showed that 33% of victims presented with vomit before or during CPR, 39% wore dentures and 11% presented with blood or had a smell of alcohol. Despite this, a study found that 42 bystanders who provided CPR to these patients did not feel that those presentations prevented them from starting CPR. A study by Dobbie et al. (2018) demonstrated that 19% of participants would not perform CPR if there was a presence of blood or vomit; and even among the group of participants who had undergone CPR training, still 15% of them would deny CPR.

Disease transmission was also reported to prevent people from performing bystander CPR. The risk of disease transmission during intervening in a cardiac arrest situation is possible especially in droplet and airborne diseases. For instance, disease transmission occurred in one health care provider who developed Middle East Respiratory Syndrome infection after resuscitation of a pandemic case in South Korea (Nam et al., 2017). Fear of contracting HIV is the biggest fear that people faced when presented with performing resuscitation. Bouland (2017) explained that this fear can be mitigated by providing knowledge of CPR because the chance of contact transmission of disease during CPR is low. A report from 1965 to 1998 found that only 15 cases were reported of the rescuer obtaining infection during CPR or CPR training (Mejicano & Maki, 1998). Most of the reported diseases were bacterial infections such as *Neisseria meningitidis* (Mejicano & Maki, 1998). Even though the evidence showed that the rate of infection is low, a number of studies reported that contacting body secretion caused people to hesitate to initiate CPR. This can be seen in the situation of COVID-19 in Italy as the number of bystander CPR experienced a sudden drop from 25% to 18% during this pandemic (Paoli et al., 2020).

2.3.3.2 Mouth-to-mouth ventilation

Mouth-to-mouth ventilation was revealed to be one of the main barriers preventing people from performing bystander CPR. The procedure is to provide artificial respiration, introducing air into a cardiac arrest victim's lungs by the rescuer (Baker, 1971). The procedure can generate oxygen and ventilation during resuscitation (Becker et al., 1997). Mouth-to-mouth breathing was the first manoeuvre in CPR procedure founded in the 18th century and has subsequently been included as a step of CPR for many years (Aitchison et al., 2013; Trubuhovich, 2006). According to the current ANZCOR guidelines, during CPR, mouth-to-mouth ventilation (MMV) is used in combination with chest compression at the ratio of 30:2 (ANZCOR, 2016b). CPR guidelines include MMV procedure as a CPR step, but in the last decade, the necessity of performing MMV in the CPR steps has changed to being optional. Therefore, CPR that includes MMV or respiratory resuscitation during CPR is called conventional or traditional CPR, while the chest compression without MMV is called hands-only CPR or compressional-only CPR.

When a person suffers from cardiac arrest, he/she will become unconscious and stop breathing. The tongue is the most common cause of airway obstruction in the unconscious persons (Linscott & Horton, 1979). The step of tilting a patient's head backwards and lifting the chin in CPR serves to open the airway and secure the tongue position while a victim is unconscious. When a cardiac arrest victim experiences apnea (temporary cessation of breathing), MMV can provide some amount of tidal volume to mimic normal respiration. Inflation of air into a victim's lungs which makes the chest wall expand and the elastic recoil of the lung itself induces chest movement that can also wash out carbon dioxide (CO₂) (Sanoop et al., 2012). However, benefits of mouth-to-mouth ventilation have been debated as the effect of an increase in intrathoracic pressure from rescue breathing may compromise cardiac output and chest compression. Excessive pressure from MMV can also increase the risk of gastric insufflation, which can lead to an increase in intrathoracic pressure and decrease cardiac output (Becker et al., 1997; Savary et al., 2020). It requires around 700-1,000 ml of tidal volume of MMV to maintain oxygenation for a cardiac arrest victim (Stallinger et al., 2001; Wenzel et al., 2001). The gas exhaled from a rescuer contains low oxygen, around 17% of oxygen and 5% of CO₂ (Stallinger et al., 2001). Therefore, the volume of air from the rescuer needs to be adequate to produce a large enough amount of tidal volume to avoid hypoxia. One other major issue for respiratory support during CPR is that this process can delay time to start chest compressions potentially affecting a successful resuscitation (Travers et al., 2010).

Apart from potential adverse effects of MMV on a cardiac arrest victim, a rescuer's willingness to perform MMV is a major obstacle. In Japan, studies showed that most of the participants felt it was difficult to provide mouth-to-mouth ventilation, and only a small number of participants would provide mouth-to-mouth breathing to a stranger (Ornato et al., 1990; Taniguchi et al., 2007; Shibata et al., 2000). Similar findings can be found in many areas of the world. Some studies reported that reluctance to

provide MMV related to the risk of contracting a disease. A case report demonstrated that salmonella can be transmitted through MMV (Ahmad et al., 1990). Other active infections such as herpes simplex or tuberculosis also can transmit to a rescuer (Wenzel et al., 2001). Evidence showed that the risk of HIV and other disease transmissions during performing MMV is very small, and the benefit of MMV outweigh the risks. (Sun et al., 1995; Wenzel et al., 2001) However, fear of disease transmission was still reported to be an obstacle to providing bystander CPR. Several studies which included medical staff and CPR instructors demonstrated that a significant number of participants felt reluctant to provide MMV even though a victim may benefit from the procedure (Boucek et al., 2009; Brenner et al., 1994; Ornato et al., 1990).

Some animal studies demonstrated that conventional CPR did not provide benefits over hand-only CPR (Ewy et al., 2008; Kern et al., 1998; Kern et al., 2002). This gave further rationale to focus more on the benefits of hands-only CPR. A study in Japan by Iwami et al. (2007), compared 783 cardiac arrest victims who received conventional CPR and 544 victims who received hands-only CPR. The results showed that in victims who experienced arrest within 15 minutes, the hands-only CPR had provided a better survival outcome than conventional CPR and no-CPR group (Iwami et al., 2007). Whereas, in the group of patients who had a prolonged duration of cardiac arrest, conventional CPR still provided the greatest survival rate (Iwami et al., 2007).

In 2019, to prevent further spread of the pandemic of COVID-19, even in the absence of strong evidence that CPR can generate aerosols, hands-only CPR was globally recommended for use during the pandemic (Topjian et al., 2020). Hands-only CPR also suits telephone assisted CPR for the dispatcher can easily guide a witnessing bystander to initiate chest compression without spending time guiding the bystander through MMV. After the introduction of hands-only CPR for the general public, there has been more evidence to confirm that hands-only CPR can improve the number of instances of bystander CPR and subsequent survival as described earlier.

Although the current guidelines support the benefit of hands-only CPR, there is strong evidence that respiratory support can improve survival in some special groups. A cardiac arrest victim who is younger, caused by respiratory arrest or non-cardiac cause, and a person who has prolonged time of cardiac arrest showed significantly higher survival outcomes when they were resuscitated using conventional CPR compared to hands-only CPR (Iwami et al., 2007; Ogawa et al., 2011).

It can be seen that the role and benefits of MMV are clear. This is why CPR guidelines still include MMV despite only a small number of people being willing to perform this procedure in practice. Performing MMV can be a very clear example of how people's attitudes have a stronger effect on the decision to perform CPR over knowledge of CPR.

2.3.4 A fear of being sued

A concern of legal liability for laypeople has been reported in cardiac arrest situations. Many studies found that people are afraid of being sued if a victim's condition gets worse or the victim does not survive (Chen et al., 2017; Johnston et al., 2003; Sasson et al., 2013). A study by Sasson et al. (2013) showed that in people who lived in poor communities, fear of being sued was the biggest concern in preventing delivery of bystander CPR. Surprisingly, participants did not want to join a CPR class because they believed that if they had a certificate of CPR training, they could be arrested if they did not provide CPR in a real cardiac arrest case (Sasson et al., 2013). There are two cardinal aspects of bystander CPR related to litigation. First, is whether bystanders are obligated to provide help and perform CPR on a victim or not. In some countries, such as in the Northern Territory of Australia, a bystander has a duty to rescue; a bystander can be charged with a crime if a bystander does not provide rescue. In Denmark, everyone must make every effort to rescue a victim who seems to be in danger. If they fail, they can be liable to imprisonment. However, in New Zealand, bystanders and health personnel who are off duty have no obligation by law to provide care (ANZCOR, 2016b). This position is justified on the grounds that the rescuer may not be in a condition to provide help, as physical or mental barriers may prevent them from helping (ANZCOR, 2016b).

The second concern is litigation related to the protection of a good Samaritan or volunteer who rescues a victim. A good Samaritan has been defined by Garneau et al. (2016) as a person who intervenes to assist someone who is in need without any obligation or compensation. Good Samaritan laws were established to protect a layperson against a lawsuit. In New Zealand, ANZCOR (2016) points out that to date no good Samaritan has been sued for rescuing a person who requires help. A study of litigation cases related to bystander CPR in the United States, which collected all cases from 1989-2019, revealed that of 170 cases, 167 cases related to the absence of or delay to CPR, and only three cases in the past three decades were liable for performing CPR (Murphy et al., 2020). This shows that a very small number of bystander good Samaritans were sued for attempting to perform CPR. ANZCOR encourages a layperson and off-duty health care personnel to intervene in a cardiac arrest event, and under the no-fault legal scheme in New Zealand off-duty health personnel who intervene to help a cardiac arrest victim are protected from being sued (ANZCOR, 2016b; Tobin & Schoeman, 2005).

Another aspect of litigation is a fear of exposing migration status in immigrants. Watts et al. (2011) reported that Spanish-speaking parents in the USA were less likely to call an emergency service compared to other races. Besides a language barrier to communicate with emergency care service personnel, this study shows through interviews with Spanish-speaking parents that fear of exposing immigration status was one of the major concerns that prevented them from calling 911. Other barriers to bystander CPR in immigrants will be further reviewed in the discussion of ethnic disparities and language barriers.

2.3.5 Strangers

Many studies demonstrate that people were more likely to provide CPR to their family members than to a stranger. This can particularly be seen in Asia, where the number of people willing to provide bystander CPR to a stranger was much smaller than to someone in the family. Nearly 95% of 1407 Chinese students were willing to perform bystander CPR to their family members, but only 60% of students were willing to provide CPR to a stranger (Huang et al., 2016). This is a very similar outcome to a study of Taiwanese adults where 92.1% of the participants were willing to perform CPR on their co-habiting family member, but the rate of willingness dropped to 57.9% when they were asked to perform CPR on a stranger (Huang et al., 2019). Another report from Singapore found that those who expressed willingness to perform CPR on their family members was 87.6% versus 61.3 for a stranger (Ong et al., 2013). A study outside Asian countries in Arizona, USA also reported a similar finding that 80% of participants were willing to perform CPR on their family members but only 50% were willing to perform CPR on a stranger (Coons & Guy, 2009).

Participants' reason for not being willing to perform CPR on strangers were that they were afraid of litigation as a victim may not survive. Willingness to providing CPR to a stranger also relates to the procedure of CPR; the mouth-to-mouth ventilation was especially observed to be a barrier preventing people from performing CPR on a stranger (Locke et al., 1995). It seems that younger people are more willing to perform CPR on a stranger (Birkun & Kosova, 2018). CPR training may lessen the fear of providing CPR to a stranger. This can be seen from a study in the United States which showed that CPR training increased the likelihood of providing CPR to a stranger (Bouland et al., 2017). Surprisingly, a five-year study in Korea, which included around 2,000 participants, showed a contrasting finding. Participants were less likely to perform bystander CPR on a stranger after CPR training which may relate to a fear of further harm and legal liabilities. (Moon et al., 2019).

In some instances, people feel more comfortable providing CPR to a stranger than someone they have known such as friends or family (Casper et al., 2003). This knowledge is consistent with the findings of cardiac arrest at home. Victims whose cardiac arrest was witnessed by their family members were less rescued than those who suffered cardiac arrest in public (Heradstveit et al., 2012). Casper et al (2003) suggested that this could relate to the psychological effect of getting over the shock or emotion of the situation and initiating CPR.

In summary, attitudes toward bystander CPR have a strong impact on the decision to intervene in a cardiac arrest event and initiate CPR. Emotional barriers can exist even for a CPR trained person. Fear of further harm is a major concern for the bystander, as is the fear of contact body secretion and disease transmission. However, there is evidence that harm to those performing CPR is minimal. Education about the low risk of complications from the CPR procedure can help to minimize bystander concern. Similarly performing MMV has been argued as a significant barrier to bystander CPR in many

cultures. The risk of contracting diseases whilst providing CPR and MMV is low, hands-only CPR may have a role for people who fear making close contact with a cardiac arrest victim or anticipate difficulties performing mouth-to-mouth ventilation. Fear of being sued is more dominant in poor communities and with immigrants. Many people were not willing to perform CPR on a stranger especially in Asian countries because they were afraid of being sued or disease transmission from contact with the victim (Ong et al., 2013; Huang et al., 2019; Huang et al., 2016; Moon et al., 2019). Implementation of national laws to protect bystanders have been enacted in some countries in order to increase bystander numbers (Hung et al., 2019). It has also been shown that CPR training can also help to increase a bystander's willingness to perform CPR on a stranger.

2.4 Barriers related to subjective norms

The subjective norms from the Theory of Planned Behaviour are used to review the barriers to bystander CPR in this section. It includes the social norms and behaviours that a particular society may hold and could prevent people in that society from performing CPR. This includes ethnic disparities and language barriers, gender and inappropriate touching, and ethics and humanitarian values.

2.4.1 Ethnic disparities and language barriers

The evidence shows ethnic disparities in survival outcomes of cardiac arrest victims. This can be seen from studies in the United States that reveals that Black people are less likely to survive a cardiac arrest event compared to White people (Becker et al., 1993; Galea et al., 2007). In New Zealand, a study showed that Indigenous Māori and Pacific people had a higher risk of sudden cardiac arrest and a lower chance of survival compared to the European population (Dicker et al., 2019). In addition to ethnic disparities to the survival of a cardiac arrest victim, it was found that there are ethnic disparities to bystander CPR. Some evidence of ethnic disparities in CPR training and bystander CPR have been discussed in Chapter 1, and many more studies reported similar problems. For example, literature from Arizona found that a Hispanic group received less bystander CPR and had lower survival rates than other ethnicities (Moon et al., 2014). Recent literature by Naim et al. (2019) showed that Black children were less likely to receive bystander CPR compared to Hispanic children and those of other races. The underlying causes of ethnic disparities may relate to a higher prevalence of sudden cardiac arrest, socioeconomic status, low income and low education (Naim et al., 2019). The non-English speaking population in the USA was found to be the group of people to have the least amount of CPR training, limited access to emergency care and lower numbers of performing bystander CPR (Ong et al., 2012; Sasson et al., 2013). A study by Bradley et al. (2011) showed that non-English speakers had a lower rate of performing bystander CPR and spent longer before recognizing cardiac arrest than English speakers. This is also supported by Nuño et al. (2017) who revealed that when Hispanic people called a dispatcher, it took longer for the call taker to detect that the victims needed CPR. That led to more lengthy delays before starting CPR compared to those with no language barriers.

2.4.2 Gender and inappropriate touching

Gender disparities were found in many areas of the world. In resuscitation, females were reported to have a lower survival rate than males. This has been explained by the incidence of shockable rhythm, as females have a lower incidence of shockable rhythm than males (Jarman et al., 2019). Some believed that female cardiac arrest victims were on average older than males, and the cardiac arrest often happened in a private location (Jarman et al., 2019; Lindgren et al., 2015). However, a study demonstrated that females received less CPR than males even in public. The study, conducted in the United States by Blewer et al (2018) showed that when a cardiac arrest happened in public, 39% of females and 45% of males received bystander CPR. This disparity resulted in a better survival outcome in males over females (Blewer et al., 2018). When a victim had a cardiac arrest in a private location, there was no difference between the rates of bystander CPR in females and males (Blewer et al., 2018). Some studies pointed out that the survival rate in females was lower because females received less therapeutic interventions, such as percutaneous coronary intervention or therapeutic hypothermia, than males (Lindgren et al., 2015).

In the Asian country of Japan, the registry data of out-of-hospital cardiac arrests showed that when the cardiac arrest occurred in public, women were less likely to obtain CPR and AED than men (Matsuyama et al., 2019). The in-depth analysis found that females were less likely to receive CPR when they were witnessed by a non-family member (Matsuyama et al., 2019). Becker et al. (2019) studied a group in Florida and reported that some participants were afraid of inappropriately exposing a female patient especially their breast. Interestingly, some believed that intervening to help a female victim could result in being accused of violating a victim (Becker et al., 2019). A study in a Muslim country revealed that Muslim people commonly feel reluctant to remove their clothes or expose their bodies during a physical exam (Attum et al., 2019). Gender of the provider is also important for Muslim patients; they would feel more comfortable with the same gender provider (Attum et al., 2019). This issue has been a particular concern in the situation of a female victim suffering a cardiac arrest where the male rescuer may feel reluctant to remove the victim's clothes and make physical contact through bystander CPR or attaching an AED (Wood, 2012).

Perman et al (2019) developed a survey reviewing both quantitative and qualitative data for the reasons why females receive less CPR than males. They offered the explanation that the sexualisation of the female anatomy can prevent a rescuer from performing bystander CPR on women. Some believe touching a woman's chest is wrong, and the notion of females belonging to someone was also mentioned as below:

There may be patriarchal or misogynist biases preventing people from attempting to aid the collapsed woman. For example, they may feel the woman 'belongs' to someone else and so

attempting CPR on her may cause social offense. They may be nervous about touching her chest due to the sexualization of breasts. (p.1063)

Lesbian, gay, bisexual, and transgender people were also reported to experience discrimination in health care. According to a national transgender discrimination survey report on health and health care in the United States, 19% of the participants had been refused care by the health care provider because of they were transgender (Grant et al., 2010). Though no evidence confirmed that transgender people received less bystander CPR, the likelihood of discrimination can be assumed from the study of willingness to rescue gay victims. Brenner and Kauffman (1993) studied willingness to perform mouth-to-mouth ventilation by nurses and internists, and found that 45% of internist and 80% of nurses were willing to perform MMV; however, in the cardiac arrest scenario of a stranger in a gay community, only 15% of participants were willing to perform MMV. A more recent study by Lester et al. (2000) showed that the willingness of a CPR trainee after four years since training was 80%, however, the willingness was reduced to 48% if a victim was a gay man. This indicates that despite a greater societal acceptance since Brenner and Kauffman's study, discrimination was still significant.

2.4.3 Ethics and humanitarian value

Some studies showed that the motivation behind the intervention of performing CPR was related to personal ethics or a social obligation to intervene or help. A study in Sweden by Axelsson (2001) pointed out that humanitarian values are the foundation that underpinned bystander action to intervene in a cardiac arrest event. Others reported that to intervene in the situation was their obligation or responsibility; some believed that a sense of shared humanity and wish to save lives was related to participants' decision to intervene (Axelsson et al., 2000). Schwartz & David (1976) argued that the feeling of responsibility influenced witnesses' decisions of whether to intervene in emergencies or not. Lower likelihoods of helping are related to a denial of responsibility (Schwartz & David, 1976). A study by Cheskes et al. (2013) also supported this idea that participants felt that to intervene in a cardiac arrest is to take responsibility for someone's life. Most people do not want to take this responsibility; they only want to be responsible for themselves or someone close to them.

Overall, this section of barriers related to subjective norms has drawn together notions that relate to the beliefs of people which motivate decisions to intervene in a cardiac arrest event (subject norms). Ethnic disparities happen especially to Indigenous peoples, minority ethnics, groups with low socioeconomic status and immigrants. These group of people had a lower chance of survival from OHCA and a lower number of instances of bystander CPR. Gender disparities can be found particularly in female victims who received less CPR and had a lower survival rate than males. There is no evidence that those identifying as transgender receive less bystander CPR than those identifying as male or female, however, the discrimination in health care of this group of people has been reported. Some studies reported bystanders' willingness to provide CPR was lower where victims of cardiac arrest were

gay men. Ethics and humanitarian values were revealed to motivate decisions to intervene in a cardiac arrest event, specifically a social obligation to rescue a victim.

2.5 Barriers related to perceived behaviour control

Altruism and confidence to perform CPR were believed to relate to one's decision to perform CPR. They were linked with perceived behaviour control because they are related to how a person feels about him or herself and their ability to perform bystander CPR. It is believed that a person who has an altruistic personality may feel that he or she has more ability to intervene in a cardiac arrest event. On the other hand, a lack of confidence was reported in the belief that one would not be able to perform bystander CPR even when a CPR trainee. After training, some trainees still could not perform bystander CPR due to a lack of confidence. This section will further review these two notions.

2.5.1 Altruism

Altruistic behaviour was discussed as behaviour that underpinned people's action to sacrifice or put themselves at risk to help others. It is defined as a behaviour or act "with an intention of helping another" (Filkowski et al., 2016, p. 1). Some have explained altruism as an instinct (Ma, 2017). Some reported in many situations that they did not know the reason why, but they did know that they needed to intervene to help other people. In the case of bystander CPR, two of the participants in a study by Axelsson et al. (2000) believed that to intervene in a cardiac arrest was to act intuitively as one described below:

"I don't think that I thought anything at all, I just observed that it was an emergency, so I didn't really think of anything else". (p.75)

Altruism can be explained by genetics; however, it can evolve and be affected by the environment. Hu et al. (2016) hypothesised that a person who acts altruistically could experience positive feelings. A study by Barry et al. (2019) focused on the motivations of community first responder volunteers to intervene in a cardiac arrest. Some participants reported that to become involved in the cardiac arrest situation was like giving something good back to the community. Some studies also showed that people who had been helped before were more likely to behave altruistically. For instance, a study by Chew et al. (2019) showed that family members of cardiac arrest victims who had received help from bystanders or medical staff were more likely to be willing to perform CPR.

2.5.2 Lack of confidence

Lack of confidence was also one of the major complaints found in many studies of barriers to bystander CPR. A study in Tianjin, China found that lack of confidence is the top reason that people were unwilling to provide CPR. Some stated that knowledge of CPR can help a bystander to feel confident to get involved in a cardiac arrest situation (Andrews et al., 2018; Suárez et al., 2019)

However, in some people, even among those who had experienced previous CPR training, this knowledge did not increase the confidence to initiate bystander CPR, and they still could not overcome barriers to intervene in a cardiac arrest situation (Swor et al., 2006; Bouland et al., 2017). Many studies tried to explore other factors that related to confidence to perform CPR. A study in Scotland by Dobbie et al. (2018) showed that confidence related to age and social grade. Younger demographics were more likely to have more confidence than older people (Dobbie et al., 2018). Those who were unemployed, or workers in manual and unskilled careers seemed to feel less confident to perform CPR compared to professional occupations (Dobbie et al., 2018). The literature from Japan showed that males were found to be less likely to suffer emotional stress and seemed to have more confidence to initiate CPR than females (Sasaki et al., 2015). A study in German school children aged 14 to 18 found that immigrant children had less confidence to begin CPR compared to native children (Wingen et al., 2018). Some researchers pointed out that repeating a CPR course could increase the confidence to perform CPR. Also, if there is telephone assisted CPR, they might be able to initiate CPR (Lee et al., 2018).

In summary, self-perceived ability to perform CPR is one of the factors linked to the decision to intervene in a cardiac arrest event. One who perceived himself or herself as having the ability to perform CPR would be more likely to initiate CPR. Altruistic behaviour was used to explain the actions of some bystanders who had intuitively intervened in a cardiac arrest. It is thought that altruism is linked to genetics or environmental factors. However, it seems that people who have had a positive experience of bystander CPR in the past would be more likely to intervene in a cardiac arrest situation in the future. Lack of confidence was reported as the most important reason that people did not initiate CPR with CPR training helping to improve bystanders' confidence to perform CPR. However, some people, after CPR training, admitted that they did not feel confident enough to perform CPR in a real cardiac arrest event. Repeating CPR courses as well as access to telephone assisted CPR may have a role to help this group of people to be more likely to initiate CPR.

2.6 Chapter summary

This study aims to understand knowledge of and attitudes toward bystander CPR, and factors that related to decisions to perform bystander CPR in Thais who live in Auckland. This literature review chapter was presented to review all facilitators and barriers related to bystander CPR. Knowledge of CPR can increase the willingness and correctness of bystander CPR. However, not only CPR knowledge affected decisions to perform CPR. We applied the Theory of Planned Behaviour to categorise other factors besides knowledge of CPR. Findings concerning personal feelings and some personal beliefs about performing CPR were characterised as attitudes. Some cultural beliefs such as the gender of a victim and social disparities were thought of as social norms influencing the performance of bystander CPR. Last, altruism and lack of confidence were explored as perceived behaviour controls that facilitate and prevent people from performing bystander CPR. To improve the rate of bystander CPR, CPR training can help to improve confidence and overcome fear and some misunderstanding toward

bystander CPR. The review of attitudes, subjective norms and perceived behaviour control that relate to bystander CPR can help to understand the underlying reasons that determine whether or not people will intervene and perform CPR.

Chapter 3: Methodology

This chapter presents the methodology of this study. Together the sections of this chapter will comprehensively provide the methodology and methods utilised to address the study's research question: What is the knowledge of, and attitudes towards, bystander CPR held by This living in Auckland, and what are the factors that relate to their decisions to perform CPR. This chapter is divided into six sections. The research paradigm is first discussed to show how it influences research design. Next, the theoretical framework of pragmatism underpinning this study will be explained, and reasons the researcher chose this paradigm to shape the study will be provided. Then, the application of the quantitative and qualitative approach and mixed methods study will be explored. This will be followed by the research design, which will explain how the research is being conducted. Here, the use of a questionnaire as the data collecting method will be addressed. In the last part of this chapter, a discussion will be provided about culture and ethics that are related to this study.

3.1 Research paradigm

A paradigm is a set of beliefs that people hold and use to understand or interpret the world (Guba & Lincoln, 1994). In research, particularly qualitative, researchers commonly justify their paradigm. They use four assumptions to underpin the research paradigm: ontology questions the nature of reality, epistemology explains how knowledge can be acquired, methodology refers to the approach that is used to produce the knowledge and axiology is used to clarify how the research is being conducted with or without value (Chailisa & Kawulich, 2012; Mertens, 2014).

Some paradigms such as positivism believe that for ontology, there is only one reality or one correct answer (Grant & Giddings, 2002). In this paradigm, the researcher acquires knowledge (epistemology) through neutrally observing objects without researcher bias, such as emotion or perception (Mertens, 2014). Therefore, a positivist study will focus on how to minimise human bias and abstract the absolute truth to use as a universal rule (methodology and axiology) (Mertens, 2014). On the other hand, constructivists argue that reality is socially constructed (Gelo et al., 2008). It depends on the context of the people involved. Constructivism believes that multiple realities exist and no absolute truth can be attained because it is impossible to separate knowledge from human values (Mertens, 2014). Constructionism aims to obtain an in-depth knowledge of one particular problem, through understanding human values (Gelo et al., 2008). Unlike the two paradigms above, a new paradigm of pragmatism argues that reality is indeterminable because it keeps changing through human experience (Dewey, 1958). Pragmatism focuses on solving a problem and allows any kind of research paradigm or approach to be used to fulfil an understanding of the problem (Lohse, 2017).

This research project aims to understand Thai peoples' barriers to performing bystander CPR. The paradigm of pragmatism has been selected for this research project because the researcher agrees that society changes over contexts and time and finding the truth should not be limited to one method

or approach. Pragmatism allows the researcher to focus on the questions about bystander CPR and apply different techniques to understand them.

3.2 Pragmatism

Pragmatism is a paradigm that focuses on problem-solving and human experience rather than attempting to understand the nature of reality (Kaushik & Walsh, 2019). It has been applied in many mixed method studies as the preferred research method or approach (Johnson & Gray, 2010). Some researchers allege that pragmatism is not only a research method or approach; it is one of the key social research paradigms (Lohse, 2017). Pragmatism believes that the way to gain knowledge is to focus on the problem and use any practical method to find answers, which is not limited to only the mixed method study (Shaw et al., 2010). Pragmatism proclaims that people are free to believe and to choose (Lohse, 2017). Any paradigm or research approach is useful as long as they help us find a solution to a problem (James & Burkhardt, 1975). As a research paradigm, the ontology of pragmatism is based on the belief that reality is constructed by individual experiences (DeForge & Shaw, 2012). However, human experience is changing all the time, therefore, certain truth cannot be discovered to apply to all (Kaushik & Walsh, 2019). Instead, pragmatism debates that knowledge which includes everyday practice experience can address a complex problem (Doane & Varcoe, 2005). Nowell (2015) explained the ontology of pragmatism as a complex reality, stating: “In recognising diverse ways of knowing as legitimate truths, the depth and breadth of these multiple truths can lead us to a greater understanding of larger complex truths.” (p.143).

John Dewey is one of the philosophers of pragmatism. His work focused on the concept of problem-solving (Creswell, 2017). He pointed out that our beliefs influence our actions, and the consequence of actions are new beliefs that affect the next action (Dewey, 1958). By using this experience, linking belief and action, knowledge is being created as the researcher tries to find a better solution for a problem (Dewey, 1958). Dewey introduced two terms of experience, habit and inquiry (Dewey, 2002a, 2002b). The difference between the two terms is that habit is action without “self-conscious decision making” (Morgan, 2014, p.1046). Habit relates to our experiences that affect our actions without requiring critical thinking before the action (Nilsen et al., 2012). For example, some actions in our daily life, such as choosing clothes to wear, may use experience without critical thinking. On the other hand, an inquiry is different. Papadimos (2009) explained inquiry as “a set of operations used to discover conditions that will describe the problem” (p.5). Inquiry requires deliberative thinking to choose an appropriate action (Dewey, 2002a). Research is one such kind of inquiry because it relies on critical thinking to find answers for a research question (Biesta, 2010). Morgan (2014) presents the work of John Dewey and explains the process of inquiry for problem-solving in five steps. First is to clarify that there is a problem, then examine and define the problem in its many aspects, next the researcher develops a possible solution that may tackle the problem, after that the researcher critically

examines the consequences of the potential solution and chooses the action that is likely to result in problem-solving (Morgan, 2014).

In this current study, the researcher applied the steps of Dewey's Model of Inquiry to the situation of bystander CPR. The problem is a low rate of bystander CPR all around the world, and bystander CPR in New Zealand has plateaued since 2013 (Dicker et al., 2017). The researcher asked why are rates of bystander CPR low? Could it be that people do not know how to do CPR? Could it be that they lack the confidence to begin CPR? These questions could provide an understanding of how people will behave when a real cardiac arrest event happens. Applying to the current study, the researcher classified the barriers preventing bystander CPR into two parts: barriers that relate to poor knowledge of bystander CPR and barriers that relate to attitudes toward bystander CPR. The researcher explored the approach and method that could best investigate those barriers. It was decided that knowledge of bystander CPR in Thais is best assessed using a quantitative approach, while attitude toward bystander CPR can be studied using a qualitative approach. The application of both qualitative and quantitative approaches can be referred to as a mixed methods study. The rationale for using the qualitative and quantitative approaches in a mixed methods study will now be discussed.

3.3 A mixed methods study

The mixed methods study has recently emerged in the research field. It has been described as a study that mixes both qualitative and quantitative approaches in one study to see the full picture of a problem (Noyes et al., 2019). The mixed methods study claims to balance the strengths and limitations of qualitative and quantitative approaches. It offers a solution for a complex research question where one approach may not provide enough knowledge to understand or tackle a problem (Shorten & Smith, 2017). Qualitative research is an approach that explores the meaning of the phenomenon in a neutral setting (Creswell, 2017). It aims to acquire underlying reasons to provide a deeper understanding of social problems without intervening in the phenomenon (Smythe & Giddings, 2007). A qualitative approach uses inductive analysis to develop a new concept or hypothesis (Gelo et al., 2008). Knowledge in a qualitative approach is socially constructed and depends on the context. Findings can contain personal values that may limit generalizability, but they offer a variety of reasons for understanding the problem in a specific circumstance (Gelo et al., 2008).

On the other hand, quantitative research is a study that attempts to find the relationship between cause and effect by using statistical analysis (Creswell & Creswell, 2017). It aims to understand the problem in terms of frequency and distribution (Boeren, 2015). By using deductive analysis, it starts with theory and collects numeric data to confirm a hypothesis (Creswell & Creswell, 2017; Gelo et al., 2008). A quantitative approach asserts that knowledge should be separated from human perception, which will protect it from bias and result in an absolute truth so that generalizability is possible (Gelo

et al., 2008). However, knowledge from quantitative research has limitations. It limits the explanation of complex social problems from individual voices and personal values of participants.

The researcher has characterised this study as a mixed methods study because it collects and analyses both qualitative and quantitative data. A quantitative approach allows the researcher to see the extent of the problems that relate to poor knowledge. For example, a quantitative approach can provide the number of Thais who have received CPR training, and the number of Thais who have been trained in CPR before but are not willing to perform bystander CPR. By using numeric data, a quantitative approach can prove whether knowledge is the major barrier that prevents people from performing CPR. Quantitative research can also show the relationship between different variables. For instance, we expect to find some variables such as the frequency of CPR training or the duration of the last training, which could relate to a willingness to perform bystander CPR. This correlation may provide insight into the problem.

Even though quantitative research can provide a lot of information about how poor knowledge prevents people from performing bystander CPR, some literature states that poor knowledge may not be the only thing preventing people from performing bystander CPR. Attitude may also affect people (Axelsson et al., 2000). Some people who have been trained in CPR would not intervene in cardiac arrest events (Axelsson et al., 2000). Therefore, the researcher has also included a qualitative approach to understand the reasons why people make decisions in cardiac arrest events. It allows the researcher to probe more into underlying beliefs in various aspects of Thai culture that a quantitative approach may not be able to bring out.

3.4 Justifications and steps for employing a mixed methods study

A rationale for mixed methods research has been developed in the literature. Green et al. (1989) were the first to address the five schemes for employing a mixed methods study. Bryman (2016) later modified and added more rationales. This study has acknowledged three of Green's grounds, which are triangulation, complementarity and expansion. First, the research uses data from a qualitative approach to explain and integrate with data from a quantitative approach. This has justified the rationale of complementarity and expansion. This also relates to the criteria of triangulation, which states that the collaboration of two approaches will help to improve the validity of data (Bryman, 2016). Moreover, the barriers to bystander CPR cannot be understood as a whole picture by using only one of each approach. The use of both approaches can provide completeness of data collection. This also followed the criteria of completeness which was explained by Bryman (2016).

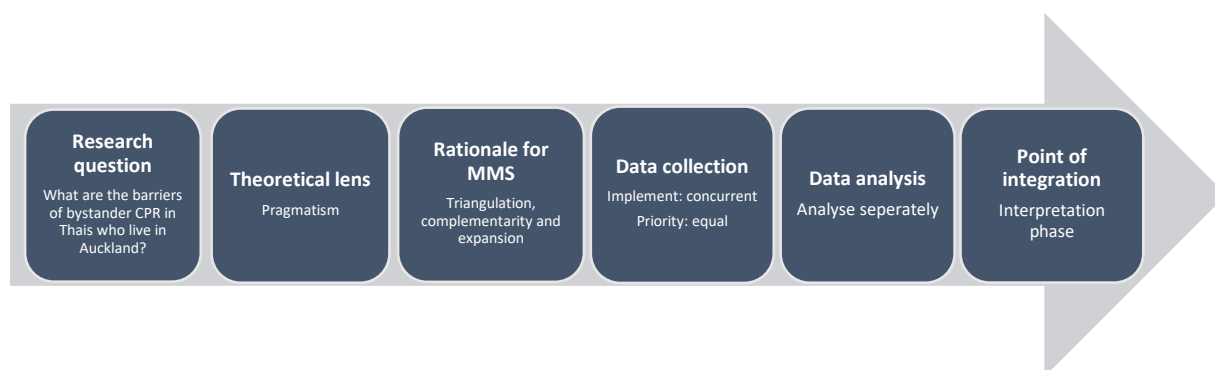
The study followed the design steps for a mixed methods study according to Hanson et al. (2005) and Morse (2003). They recommended first identifying the theoretical proposition of the study. This has been described earlier; pragmatism is the paradigm being used in this study as the theoretical lens to see the problem of bystander CPR in a real-world situation. In the next step, the type of mixed

methods study should be addressed. There are many classifications of type of a mixed methods study. Creswell (2017) classified a mixed methods study into four main types: The Embedded, the Explanatory, the Exploratory and the Triangulation design. With the embedded design, the researcher embeds one research approach to another (Kaur, 2016). For example, a researcher conducts a randomised controlled trial (a quantitative method) and insert component of the qualitative approach while collecting quantitative data such as including an interview of participants within a trial. The explanatory design collects the quantitative data first and then uses the quantitative results to design how to collect the qualitative data (Schoonenboom & Johnson, 2017). The results from a qualitative collection can explain and fulfil the quantitative findings which a quantitative approach alone cannot provide sufficient understanding (Schoonenboom & Johnson, 2017; Shorten & Smith, 2017). The exploratory design applies the qualitative approach to collect the data first (Nicolau et al., 2017). The finding from the qualitative approach can help to identify variables that relate to a problem, and then the quantitative approach will be used to test the hypothesis (Nicolau et al., 2017; Schoonenboom & Johnson, 2017).

In the current study, the researcher applied the triangulation design as the researcher collected both types of data at the same time and weighed the importance of each method equally (Creswell et al., 2004). This method allows the researcher to best understand the findings from each approach, and later mixes the outcomes during the process of interpretation, or transform one data type to another which allow two types of data to be mixed during the analysis process (Kadushin et al., 2008). The researcher chose the same participants to provide both types of data rather than using different groups of participants for the quantitative and then qualitative approaches. The researcher emphasised both kinds of data equally. Even though there are more quantitative questions in the study, the data from the qualitative questions were given as much importance as those from the quantitative approach. Analysis of the two types of data is done separately. The findings from both data sets will then be “compared, contrasted and combined” in the discussion (Tariq & Woodman, 2013, p.6). Therefore, the study can be considered as using the concurrent triangulation design, which has been described as a method that collects both types of data at the same time, analyses the data separately and integrates of data during interpretation (Hanson et al., 2005). The diagram in Figure 1 below summarises the characteristics of the mixed methods approach which has been employed in this study.

Figure 1.

The characteristics of the mixed methods approach of this study



3.5 Limitations of a mixed methods study

Despite, the researcher believing that a mixed methods approach is suitable for this study, the approach does have limitations. Clarifications for the term ‘mixed methods study’ are varied. Molina-Azorin (2016) defined mixed methods research as a study that combines and integrates the qualitative and quantitative methods within the study to make a better understanding of a problem. The current study applied a survey to collect both qualitative and quantitative data. It has been questioned whether a single method can be considered as a mixed methods study or not. Some researchers have suggested that a mixed methods study should include at least two distinct methods, such as an interview and/or a focus group as a qualitative research tool to combine with a quantitative research method (Ali, 2019; Fung, 2019). Some argue that the survey should not account for a qualitative data collection method, and it rather is a part of quantitative research (Fung, 2019).

On the other hand, some researchers supported that the term ‘mixed methods study’ is determined by the use of both qualitative and quantitative data within a survey (Wisdom & Creswell, 2013). The application of the survey with an open-ended question is claimed to be able to draw out qualitative findings as other qualitative data collection tools do. For instance, a study to understand how people felt to live with alopecia areata, an online survey had been able to bring out qualitative findings (Davey et al., 2019). Therefore, some researchers believe that using open-ended surveys can be considered as a qualitative data collection method. They gave reasons that a combination of qualitative and quantitative data from the survey can help to understand more angles of a problem and should be considered a ‘mixed methods study’ (Kaur, 2019; Morgan, 2017). The explanations of whether questionnaire can account for a qualitative tool or not, will be presented in detail in the section of the research design.

The research design did not utilise interviews or focus groups for this current study even though these collection methods can produce an in-depth explanation of a problem (Jamshed, 2014; Tausch & Menold, 2016). However, they limit the ability to collect a wide range of perceptions (Alshenqeeti, 2014). To understand the possible barriers to bystander CPR, the researcher instead chose a survey as a method to draw a variety of perceptions from a wide range of the population to collect a profound meaning of a problem. Particularly, an online survey can help to reach a population who may not frequent locations where recruitment takes place. It may be that for future research, where focus on one particular barrier is required, interviews or focus groups could be considered to understand a specific factor in greater depth.

Tariq and Woodman (2013) have discussed that mixing two paradigms or approaches can be confusing because each one has a clear and different standing point. In the current study, the theoretical underpinnings of qualitative and quantitative studies are different. However, the researcher will combine the data that can be merged and separate the data that cannot be mixed. Both approaches can help to understand the problem in their own way whether it will be in a qualitative or quantitative stance. In addition, pragmatism is the common bond spanning across both quantitative and qualitative data.

It is also claimed that a mixed methods approach can be time-consuming and requires more research skill and experience (Tariq & Woodman, 2013). The researcher has experience with the quantitative approach, while, the two supervisors have experience in both qualitative and quantitative approaches. This allows the researcher to seek advice and learn while conducting this study. The researcher chose the questionnaire as a collection tool. This method overcomes the limitation of mixed methods research as the application of the questionnaire does not consume as much time as other methods, such as interview or observation, yet encompasses quantitative and qualitative approaches. The use of a questionnaire also benefits this study in many ways. The reasons for using a questionnaire for collecting data will be reviewed next.

3.6 Research design

3.6.1 Questionnaire

Questionnaires are commonly used as a research-collecting tool. They can produce both qualitative and quantitative data by applying standardised questions for participants to answer (Lavrakas, 2008). This study uses a questionnaire because it is practical and can reach a wide number of people (Jones et al., 2013). We applied a closed-ended and an open-ended questionnaire to this study. The closed-end questionnaire collected the quantitative data. It is quick and easy for respondents to answer and provides data that is straightforward for statistical analysis (Boynton & Greenhalgh, 2004). The data, such as general demographic characteristics and other variables that relate to knowledge of bystander CPR, can be easily collected using this method. The quantitative questions were constructed based on the Australian and New Zealand Committee on Resuscitation (ANZOR) guidelines (2016) for

cardio-pulmonary resuscitation, and the American Heart Association (AHA) Guidelines for cardio-pulmonary resuscitation and emergency cardiovascular care (2015). Previous questionnaires from the literature review that assessed knowledge of bystander CPR were also used to help frame questions (AHA, 2016; Malta et al., 2017; Onyeaso & Onyeaso, 2017, 2017; Pehlivan et al., 2019; Huang et al., 2019).

While the closed-end questionnaire is easy for respondents to answer and for the researcher to manage data, the open-ended questionnaire allows respondents to provide more qualitative data (Boynton & Greenhalgh, 2004). It is common to see a study using a questionnaire for a quantitative approach, but it is not as common a method for qualitative research as an interview or focus group. According to Fung (2019) an open-ended questionnaire may limit the ability to dig further and acquire a deep knowledge of a phenomenon and thus should not be considered as a qualitative method. Eckerdal and Hagström (2017) and Morgan (2019) note that this method can provide rich qualitative data because respondents freely use their own interpretation while answering a question. The use of an open-ended questionnaire provides “a widespread of norm” (p.70), with a larger population’s view towards practical knowledge or insight into a problem (Eckerdal & Hagström, 2017; Toerien & Wilkinson, 2004). In this study, the qualitative questions have been developed based on a literature review on the attitude of people towards bystander CPR and the beliefs in Thai culture and Buddhism that may be barriers for Thais performing bystander CPR.

A self-administered questionnaire can prevent interviewer bias and keep the respondent anonymous (Bourque & Fielder, 2003; Jenn, 2006). Respondents can freely answer the questionnaire without pressure or influence from an interviewer, which can result in more valid data (Jenn, 2006). The questionnaire in this study does not include contact or identifying information, and respondents will be unidentifiable. This study provides both online and paper-based questionnaires because the researcher believes that combining two collection methods could increase the number of respondents. While paper-based questionnaires can achieve a higher response rate, the online-based questionnaire can potentially reach more respondents and may attract a wider range of respondents than paper-based questionnaires (Ebert et al., 2018; Jones et al., 2013). This method is also inexpensive, and data can be directly transferred for analysis (Jones et al., 2013). A study from Martinez-Gomez et al. (2017) compared the results of students’ satisfaction with online and paper-based questionnaires and found that both collection methods were equivalent. However, the use of more than one mode of collection or what is called a mixed mode survey could produce measurement errors, such as coverage, nonresponse and observation errors (Leeuw et al., 2018). Therefore, the current study design included Chi –square or Fisher’s exact tests to examine the difference of general characteristics between two groups of respondents.

The online questionnaire was created using a web-based program called Qualtrics. The researcher created the online questionnaire based on the paper questionnaire that was first developed. Qualtrics allowed the researcher to manage the sequence of the questionnaire and to apply logic to the questions. For instance, for respondents who selected that they have no previous CPR training, the program skipped the question about knowledge of CPR and directed them to next section of the survey. There were many ways to distribute the questionnaire through Qualtrics. The researcher chose to use the website and the QR code, which were present in the advertisement and Facebook pages (Appendix B). Through Facebook pages, participants could select the website address or scan the QR code, linking to the participant information sheet and the questionnaire. Qualtrics can transfer the data into many forms, and it can process some basic statistical analysis. The results from Qualtrics were later transferred into Excel and SPSS for analysis.

A good questionnaire design and research method can also help to reduce measurement errors between the two modes of collection (Leeuw et al., 2018). For example, the researcher applied a unified mode design for measurement equivalence. The same self-administered questionnaire was used in both paper and online-based modes to prevent any measurement errors from the interviewer. The questionnaire in paper and the online questionnaire was written in the same pattern and sequence to ensure that participants received as similar an experience as possible. This study also offered English and Thai questionnaires to respondents, the focus being on the equivalence of linguistics and culture. Potentially, there could be some measurement errors from using two different language questionnaires. A back translation was done by translating the English version questionnaire into Thai and translating it back to English using different translators. This was to ensure the equivalence of both versions of the questionnaire.

There were three parts to the questionnaire: general demographic data, knowledge of bystander CPR and attitudes toward bystander CPR (Appendices C, D, E, F). In the first part, there were three screening questions to make sure respondents met the entry criteria for the study (Are you Thai? Do you live in Auckland? Are you a health professional? The survey required two affirmative responses followed by a negative response to confirm eligibility). If respondents did not meet the study criteria, the online survey automatically directed the participant to the end of the survey while the paper-based questionnaire informed them that they did not qualify for the study and they were thanked for their time. Then, personal data such as age, gender and education level were collected.

In the second part, information about bystander CPR, including a picture of a person being resuscitated, was provided to supplement the description of CPR. The respondents who had previously been trained in CPR were asked about their knowledge of bystander CPR. Respondents who had never undertaken a CPR course before were asked about the barriers or reasons that prevented them from attending a CPR course. These questions were informed by the literature review and earlier

questionnaires (American Heart Association, 2016; Malta et al., 2017; Onyeaso & Onyeaso, 2017; Pehlivan et al., 2019; Huang et al., 2019). A blank space for each question was provided for respondents to offer any further responses and to provide their own reasons other than those options provided within the questionnaire. The following part focused on questions about attitudes and willingness to perform bystander CPR. This includes a scenario of finding someone collapsed on the floor, and whether they would be willing to perform bystander CPR. The respondent is asked about the CPR procedure and what type of assistance they could provide to a cardiac arrest victim. The next question asked about factors that may prevent respondents from performing CPR. These included the barriers that have observed in the general population and migrant populations.

The last question was an opened-end question. It asked for respondents' values and their religious beliefs that may affect their decision to intervene in cardiac arrest events. The rationale of using each question is explained in Table 1.

3.6.2 Pre-testing the questionnaire

The researcher pre-tested the survey questions with six Thais using online and paper-based questionnaires in both languages. Pre-test is essential to prove that the collection tool in this study was appropriate, valid and reliable (Boynton & Greenhalgh, 2004; Hassan et al., 2006). This process can help ensure respondents will find the questionnaire clear and understandable (Grimm, 2010; Reynolds et al., 1993). The results of the pre-testing for this current study led to editing some questions to make them clearer and less ambiguous. The findings from pre-testing the questionnaire showed that the majority of participants did not answer the last qualitative question, especially in the online survey where this question was left blank by all of the pre-testing respondents. On enquiry, the researcher learned that this related to the length of the questionnaire, and the position of this question at the end of the questionnaire. The researcher decided not to move the question to the earlier section of the questionnaire because respondents needed to understand more about CPR from earlier questions in order to answer this final question. Instead, we removed some questions that were believed to be less important and we changed the wording in the final question to be more meaningful and emphasised that this question was very important to the study. One question about knowledge of CPR was adapted to be more understandable, and some unclear answer options were removed.

3.6.3 Sampling

The sample size was estimated for the quantitative data by using the population proportion of 4,152 Thais who live in Auckland (Statistics New Zealand, 2013). Regarding the past literature, using a 95% level of confidence with a five percent statistical margin of error and the likely sample proportion of five percent (Hawkes et al., 2019; Huang et al., 2019), 73 respondents were needed to achieve the significant level.

A qualitative approach does not have a definite number for sample size. Generally, the number of subjects should be enough to reach data saturation or to the point where no new findings or new themes are identified from data collection (Stanley & Nayar, 2014). Creswell and Poth (2016) suggested a sample of 20-30 should be sufficient to reach the point of saturation for studies using grounded theory. Some studies which need a high interpretation such as phenomenology may need a smaller number because it focuses on a deep meaning of a phenomenon (Morse 1994). Mason (2010) reviewed naturalistic inquiry studies, which is closest to our study, and found that the mean of the sample of reviewed studies was 26 participants. Therefore, the crude estimate of the number of subjects needed for the qualitative part of this study would be in the range of 25 to 30 participants.

Table 1.

The purpose and analysis method of each question

- Question	Purpose	Data analysis
<ul style="list-style-type: none"> - Gender - Age - Religion - Highest education level 	To characterise the study population. These characteristics will also be included in the analysis to investigate any relationship between these factors and the willingness to perform bystander CPR.	Frequency, percentage and logistic regression
<ul style="list-style-type: none"> - Are you Thai? - Do you live in Auckland? - Are you a health professional? 	To determine eligibility and exclusion criteria to participate in this study. Participants were required to be Thai, to live in Auckland, but were not to be health professionals.	Do not include in research analysis
<ul style="list-style-type: none"> - Were you born in New Zealand? - If you were not born in New Zealand, how long have you been living in New Zealand 	The researcher assumed that people who were born in NZ or have stayed in New Zealand longer might have a higher chance to attend CPR classes than people who were born overseas or have spent a shorter time in New Zealand.	Frequency, percentage and logistic regression
<ul style="list-style-type: none"> - Have you ever heard about CPR before? 	To prepare respondents' understanding before introducing the question of bystander CPR in this study.	Frequency and percentage

- Have you ever had to perform bystander CPR on a real cardiac arrest person?	If the study involves people who have had this experience, factors encouraging or preventing them from performing bystander CPR would be helpful.	Frequency and percentage
- Have you ever attended a CPR training course before?	To assess the proportion of people who had been trained in CPR. It is also to explore the relationship between people who have trained in CPR and their willingness to perform bystander CPR.	Frequency, percentage and logistic regression
- What are the barriers or reasons that you would not attend a CPR training class?	To explore the underlying reasons for lack of CPR training, as training could increase the willingness to perform bystander CPR.	Frequency and percentage
- How many times have you attended CPR training? - When was the last time you had CPR training?	To investigate whether time and frequency of CPR training could increase the confidence in performing bystander CPR (Son et al., 2017).	Frequency, percentage and logistic regression
- The number to call for help - Position of hands for chest compressions - Depth of chest compressions - Rate of chest compressions - Purpose of AED - Location of nearby AED	To assess respondents' knowledge of bystander CPR, whether they can remember the details of CPR from their training which could associate with confidence to perform CPR. The question may also encourage them to get to know AED near them.	Frequency and percentage
- If you discover someone collapsed on the floor, would you be willing to perform CPR?	To investigate the proportion of people who are willing or not willing to perform CPR. The willingness to perform CPR is the dependent variable or outcome variable, which will be used in finding the relationship with other variables (independent variables).	Frequency, percentage and logistic regression
- When you see someone collapse, do you think you can perform some of these procedures?	To assess which positive element of CPR, people are more willing to perform. Are there any factors that prevent them from intervening in cardiac arrest events?	Frequency and percentage
- Which of these factors might prevent you from performing CPR?	To explore more barriers that may prevent them from performing bystander CPR.	Frequency, percentage and

		logistic regression
- Would you be more likely to do CPR if the emergency centre gave you instructions over the phone?	To seek evidence that telephone-assisted CPR may improve the frequency of bystander CPR in Thais in Auckland.	Frequency and percentage
- Did you know that rescuers are protected against lawsuits when performing bystander CPR in New Zealand?	To investigate whether misunderstanding of New Zealand law might be a barrier in an immigrant population such as Thais.	Frequency and percentage
- In what ways do your personal beliefs, culture or religion affect what you think about CPR and might affect your decision to perform bystander CPR?	Unlike New Zealanders, Thais are predominantly Buddhist. Does this affect the willingness to perform bystander CPR?	Frequency, percentage and logistic regression
- Please expand on how your beliefs influence your views on bystander CPR. I am particularly interested in your personal views. Thank you for taking extra time here.	This is an open question to probe deeper into underlying beliefs and personal views.	Content analysis

3.6.4 Recruitment of participants

Recruitment of participants occurred between 1 December 2019 and 29 February 2020. The recruitment of participants in this study used both online and public recruitment methods to increase the response rate. There were three places for public recruitment: Thai temples, Thai restaurants, and Thai massage shops. Online recruitment was achieved by using four Facebook pages.

3.6.4.1 Public recruitment of participants at Thai temples, Thai restaurants, and Thai massage shops

In Thailand, Temples or Wats are the centre of the Thai community. The majority of Thais (76.3%) in New Zealand are Buddhist (Statistics New Zealand, 2013). The researcher, therefore, assumed that the temple would also be the centre for many of the Thai community who live in Auckland. The researcher consulted Thai colleagues who live in the same community, about public places that the researcher could meet Thais. They agreed that temples would be a place that Thais who live in Auckland would commonly go. Sunday is a good day to go to the temple because most Thais in Auckland work from Monday to Saturday. The consulted colleagues were also on the temple committee. As the

researcher is relatively new to the Auckland community, the researcher asked to join them at the temple. The researcher is also Buddhist and often attended a temple in Thailand. At the temple, the researcher had an opportunity to talk with the Abbot. Later the researcher asked the Abbot's permission to recruit participants at the temple. The researcher also visited temples in West Auckland and South Auckland and gained permission to offer paper-based questionnaires to interested potential participants in all temples.

The first page of the questionnaire was a participant information sheet, which explained the nature of the study and how to participate. Participants who were interested in participating completed the questionnaire and returned it to a drop box which was provided at the temples. After the participant returned the questionnaire, the researcher was not able to identify the participants' information. Participants who chose not to participate could choose not to take the questionnaire or take it without returning it. The researcher made regular visits to recruit further participants and to check the drop box.

As the researcher visited the temple, it was observed that the majority of Thai people coming to the temple worked at Thai restaurants, in Thai massage, or farming and construction work. The researcher decided to also recruit participants from Thai restaurants and massage shops. The researcher searched online for Thai restaurants and Thai massage shops in Auckland. The researcher randomly chose premises, walked in and asked for permission to leave the questionnaires and the drop box for Thais who work at those premises.

3.6.4.2 Recruitment of participants via Thai and New Zealand community Facebook

For online recruitment, the researcher consulted with Thai colleagues and searched online. The researcher found six Facebook pages that relate to Thai people who live in Auckland or New Zealand. The researcher was only allowed to make a posting in four pages which were Thais in Auckland New Zealand, Thai-New Zealand Community, Thai students in Auckland, and Thais in Auckland for house renting, job finding and experience sharing. The researcher then posted an invitation letter for participating in the study onto these four Facebook pages, plus the link to the information sheet that explained the study. Participants who agreed to participate could then complete the questionnaire. Participants who did not wish to participate could leave the page or choose not to submit the questionnaire. Participants who did not meet the inclusion criteria were excluded by the online questionnaire, and they were thanked for their time. The questionnaire took about 10 minutes to complete. Respondents had the option to save and exit to complete the questionnaire later. The questionnaire was anonymous. The researcher was not able to identify the participants.

3.7 Data Analysis

The raw data from the online questionnaire was extracted into Excel (CSV file) using the Qualtrics program. Raw data from the paper-based questionnaire was manually inputted into Excel. The data from both methods was collated prior to analysis. For the quantitative data analysis, the study did

not include scaled data. The nominal and ordinal variables of participants' characteristics were presented as frequencies and percentages. The Chi-squared test was applied to determine whether there was a statistically significant difference between two categorical variables. The multivariate logistic regression analysis was employed to determine the significant factors, which may affect the decision to intervene in a cardiac arrest event. The data analysis for each question is illustrated in Table 1.

For the qualitative data, content analysis was employed, which is a common analysis method to condense the data into themes (Erlingsson & Brysiewicz, 2017). The rationale for using content analysis is because it helps keep the meaning close to the data. This proposed research aims to understand the problem in a natural state. The low interpretation during data analysis may be more suitable for avoiding researcher misinterpretation (Erlingsson & Brysiewicz, 2017). The outcome of the qualitative part of the study was a straightforward description of the summarised raw data, no theory or deep interpretation was required to make a conclusion (Sandelowski, 2000). The written data from the participants were transcribed into Microsoft Word, and then the data were read and re-read to understand the data as a whole. After that, the condensation process was used to shorten the text, yet retain its meaning (Erlingsson & Brysiewicz, 2017). The sentences were condensed to code, and then abstracted into a category and eventually into a theme (Erlingsson & Brysiewicz, 2017). This study applied the directed method of content analysis, which was explained by Hsieh and Shannon (2005). This method allows the researcher to set codes from the known theory, and the new codes can also be derived during data analysis (Hsieh & Shannon, 2005). This means the defining code process occurs before and between data analysis. The researcher had categorised some codes that had been reported from previous studies, and data which could not be coded was categorised as a new code.

3.8 Rigour

Lincoln and Guba (1985) described research trustworthiness or rigour through four criteria: credibility, transferability, dependability and confirmability. This study has been designed following these four criteria to ensure the quality of research.

Credibility is defined as the confidence that research produces knowledge that is close to the truth or reality (Forero et al., 2018). This is similar to internal validity in traditional terms. In this study, credibility can be established through the trust between researchers and participants, preparation before data collection, and verification of the accuracy of the data (Lincoln & Guba, 1985). Part of the researcher's knowledge and skills in Emergency Medicine helped to conduct the research, particularly on the knowledge of bystander CPR. Before the data collection, the researcher had several visits to the temple to introduce herself and spend time getting to know people. The advertisement on Facebook about the study and the researcher could help participants to feel more comfortable and trusting to answer the online-questionnaire and paper-based questionnaire when the researcher handed out the questionnaire at the temple, Thai restaurants or Thai massage shop. The pilot testing was done to ensure

that the questionnaire was a suitable tool to provide valid results. The use of two types of research approaches (qualitative and quantitative approach), the research methods (qualitative and quantitative questionnaire) and the collection methods (online and paper based questionnaire) can fulfil the understanding of the research question and provide proof of the accuracy of the data, which meets the credibility criteria.

Dependability is an evaluation of research processes that can provide the possibility of the results being repeatable (Forero et al., 2018). In comparison to reliability in traditional terms, Guba and Lincoln (1985) have introduced methods of stepwise replication which suggest taking two or more research members and organising them into two groups. The researcher and the supervisors analysed the data, and then the results were compared between the two groups. This approach enabled the results to be more reliable. Another strategy to enhance dependability is the code-recode technique (Anney, 2014). In this study, the researcher had coded the data and recoded data one week later. Both sets of coding were compared to see the difference between the coding.

Transferability is the assessment to ensure that knowledge can be generalised to apply in other contexts (Forero et al., 2018). For quantitative data, the researcher has ensured that the sampling number is enough to provide statistical analysis. Lincoln and Guba (1985) noted that for qualitative data, transferability might not be able to refer to the external validity in traditional terms because reality changes all the time, even in the same context but different time-periods, the reality may not present the same results. In qualitative research, in order to establish transferability, a thick description is required to provide a full understanding of the knowledge and the context of the study for one to justify the ability to transfer (Barusch et al., 2011; Lincoln & Guba, 1985). The study has ensured that the sampling number is enough to reach the point of saturation, which can provide a thick description to verify the criteria of transferability.

Confirmability can be clarified as the research process produces the knowledge which limits the bias of the researchers, and it can be confirmed by the other researchers. This refers to objectivity in traditional terms. The study has used triangulation as described above and a reflexive journal to ensure that the study limits bias. Ortlipp (2008) noted that reflexive journaling is the method that researchers use to keep consciously reflecting and remind themselves not to take their values into the results of the study. Throughout the course of this study, a supervision meeting was held every two weeks, and the researcher has recorded how decisions were made during the study. This allowed the reader to understand how the researcher constructed the results.

3.9 Cultural and ethical considerations

The study was approved by Auckland University of Technology Ethics Committee; the approval number was 19/456 (Appendix A). The study has applied the principles of the Treaty of Waitangi to consider the related cultural and ethical issues that could possibly affect the participants

during the study. The three main principles of the Treaty of Waitangi are partnership, protection and participation.

Regarding the principle protection (Hudson et al., 2010; Mandal et al., 2011), the study has ensured it provided benefits and minimised harm to participants. The study might benefit participants as it may encourage the participant to understand themselves and what they believe. It might lead them to a better understanding of bystander CPR, and it could raise awareness of cardiac arrest for themselves or someone in their family. The study might not benefit each participant; however, it could benefit society as a whole as the outcome of the study was helped to understand Thais who live in New Zealand and their perception of bystander CPR. In terms of harm to participants, some parts of the study might cause emotional or psychological distress to participants. To avoid this, the researcher had ensured that the participants were willing to participate in the study. The researcher had respected participants' autonomy. An information sheet was provided, and it was clear and in lay language which enabled participants to easily understand the study. It was explained to participants that this research was voluntary. They could choose not to answer the questionnaire or withdraw from the study. The researcher provided a period for participants to make a decision or ask for more information about the study. The recruitment method was designed to protect participants from deceit, harm and coercion. Participants were invited through Facebook advertisement and face-to-face contact. For the online questionnaire, participants could enter the URL to answer the questionnaire if they wished to. The paper-based questionnaires were handled one on one by the researcher, however, if they did not wish to participate, the participants could choose not to return the questionnaire to the drop box, rather than directly involving the researcher. The privacy of participants was protected using an anonymous survey, and all data remained unidentifiable.

In terms of participation, it focuses on the interaction between the researcher and the participants. The actual role of the participants in this study is to complete the questionnaire. The researcher has consulted with members of Thai population, including Monks to find an appropriate way to recruit the participants and collect data. The primary researcher is also Thai. The Thai community, in general, would benefit. The survey contained information about CPR, which might provide a benefit to individual participants. Through the principle of partnership, the researcher and participants had worked together to understand the barriers to intervene in bystander CPR. The findings in this study could inform the Thai community and St John on how to improve the frequency of bystander CPR and support cultural competence. The researcher and participants have also worked together to raise the Thai voice in the New Zealand community. Members of the Thai community who were representative of those eligible to participate have contributed to shaping the study by defining an appropriate questionnaire and collection method. The researcher ensured that the study was designed to respect the rights of participants; this was not only to follow the principles of the Treaty of Waitangi, but also upheld Buddhist Values and Thai culture. After the study, the potential benefits and the findings were

provided to the Thai community through Facebook posts and at the temples. The findings acknowledged the contribution that Thai participants have made to research and community to improve healthcare.

3.10 Chapter summary

This chapter presents the methodology of the study. The researcher selected the paradigm of pragmatism which focused on problem-solving to frame the study methodology. The mixed methods study was chosen to combine qualitative and quantitative data to elicit a better understanding of the barriers to performing bystander CPR facing Thai people in Auckland. We applied a closed-ended and an opened-end survey to this study to collect the quantitative and qualitative data, respectively. The researcher provided both online and paper-based questionnaires. Both types of data were collected at the same time but were analysed separately. Statistical analysis was employed for quantitative data, while qualitative data was investigated using content analysis. The integration of qualitative and quantitative findings was developed during the interpretation process. We followed the four criteria of research trustworthiness to ensure the quality of our study. The principles from the Treaty of Waitangi were applied to provide benefits, minimise harm and respect the rights of our participants.

Chapter 4: Results

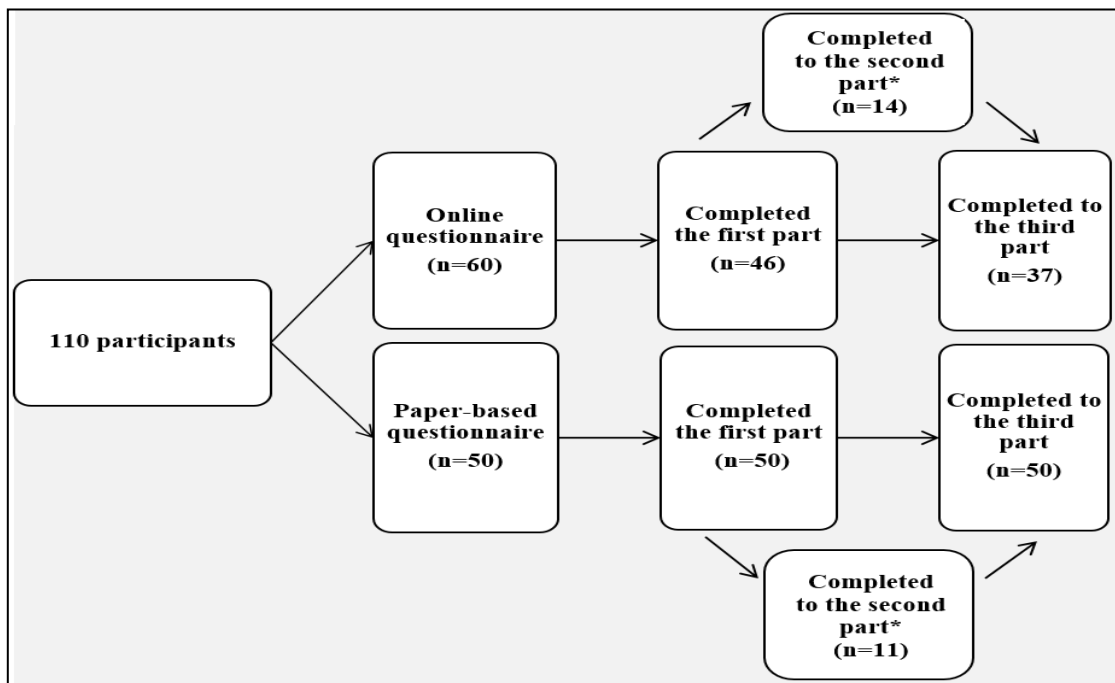
The current study aims to determine knowledge and understand attitudes of Thais who live in Auckland toward bystander CPR. Part one of this chapter will present the quantitative findings which assessed knowledge of bystander CPR in Thais who live in Auckland. Part two will present the results from the qualitative approach which explains how Auckland Thais view bystander CPR in a cultural or religious context. Together these data will be used to address the research questions.

4.1 Part 1: Quantitative results

Of the 110 participants who responded to the questionnaire, 60 of them responded through the online survey, and 50 participants answered the paper-based questionnaire. There were 28 questions, including the qualitative question. Not all participants answered all the questions. Participants who answered the paper-based questionnaire had a higher rate of completing the questionnaire than those who answered the online-questionnaire.

Figure 2.

Flow chart of participants completing each part of the questionnaire



Note: The first part: Demographic information and previous CPR training

The second part: Knowledge of bystander CPR

The third part: Attitudes related to bystander CPR

* Only participants with previous training in CPR answered this part of the questionnaire

The researcher clarified three specific data points of interest in terms of questionnaire completion. One, the first part of the questionnaire which asked about general demographic information and previous CPR training. Ninety-six participants completed this part of the questionnaire. Two, the second part of the questionnaire which assessed knowledge of CPR. There were only 25 participants who had previously trained in CPR and who completed this second part. Three, the third part of the questionnaire which investigated participants' willingness to perform bystander CPR. Eighty-seven participants continued to complete this part - see Figure 2 above. There were 32 participants who answered the qualitative question. The qualitative results will be presented in part two of this chapter.

4.1.1 General demographic data

Of 96 respondents, the majority were female, younger than 40 years old, Buddhist and born overseas. Females were 70% of all respondents. Nearly 90% of respondents were Buddhist. Fifty-four respondents, which accounted for over half of all participants, had tertiary education. Almost all respondents were born overseas, only two respondents reported that they were born in New Zealand. Half of the respondents who were born overseas had been living in New Zealand for over ten years.

Three in four respondents already knew what CPR was. However, the questionnaire itself provided an explanation of CPR which allowed all participants to understand the further questions. Only two out of 96 respondents had personally experienced performing bystander CPR. Twenty-six respondents had attended a CPR training class, about 30% of the group. The majority of trained respondents had attended a CPR course only once, and the last training was more than five years ago.

Regarding collection methods, there was a higher proportion of male participants from the public recruitment (paper-based) method compared to the online collection method, however, this difference was not statistically significant. The age of respondents who answered the paper-based questionnaire was slightly older than the online-based questionnaire. All respondents from the paper-based survey were Buddhist and had lived longer in New Zealand than participants who responded online. Respondents from the online survey had a significant higher education level than respondents from the paper survey. There was no difference in the proportion of respondents who had previously trained in CPR or the frequency of CPR training, between the collection methods. However, respondents from the paper survey had a longer time since last training compared to respondents from the online survey. See Table 2.

Table 2. General demographic data, experience of CPR, and comparing online versus paper-based responses

	All n (%)	Online n (%)	Paper n (%)	P-value
Gender (n=96)				
Male	28 (29.2)	10 (35.7)	18 (64.3)	0.13
Female	68 (70.8)	36 (52.9)	32 (47.1)	
Age (n=96)				
20-40	56 (58.3)	28 (50.0)	28 (50.0)	0.71
41-60	29 (30.2)	14 (48.3)	15 (51.7)	
61-80	11 (11.5)	4 (36.4)	7 (63.6)	
Religion (n=96)				
Buddhism	86 (89.6)	36 (41.9)	50 (58.1)	
Christian	2 (2.1)	2 (100.0)	0	
Muslim	2 (2.1)	2 (100.0)	0	
Others	6 (6.2)	6 (100.0)	0	
Education level (n=94)				
High school or less	40 (42.6)	11 (27.5)	29 (72.5)	0.001
Tertiary education	54 (57.4)	33 (61.1)	21 (38.9)	
Born overseas? (n=96)				
Yes	94 (97.9)	45 (47.9)	49 (52.1)	1*
No	2 (2.1)	1 (50.0)	1 (50.0)	
Years of living in NZ (n=94)				
≤10	46 (48.9)	32 (69.6)	14 (30.4)	< 0.001
>10	48 (51.1)	13 (27.1)	35 (72.9)	
Heard of CPR (n=93)				
Yes	72 (77.4)	37 (51.4)	35 (48.6)	0.28
No	21 (22.6)	8 (38.1)	13 (61.9)	
Experience with bystander CPR (n=95)				
Yes	2 (2.1)	2 (100.0)	0	0.22*
No	93 (97.9)	43 (46.2)	50 (53.8)	
Previous CPR training (n=96)				
Yes	26 (27.1)	15 (57.7)	11 (42.3)	0.24
No	70 (72.9)	31 (44.3)	39 (55.7)	
Number of CPR trainings (n=24)				
1 time	17 (70.8)	9 (52.9)	8 (47.1)	1*
>1 times	7 (29.2)	4 (57.1)	3 (42.9)	
Years since last training (n=24)				
≤ 5 years	8 (33.3)	7 (87.5)	1 (12.5)	0.033*
> 5 years	16 (66.7)	6 (37.5)	10 (62.5)	

* Fisher's exact test

4.1.2 Knowledge of bystander CPR

Knowledge of bystander CPR was the second quantitative part of the questionnaire and was assessed using six questions. Twenty-six respondents had attended a CPR training course and were eligible to complete these questions. However, one respondent discontinued at this point; therefore, only 25 respondents answered this part of the questionnaire – see Table 3. Over 80% of respondents knew to call the number 111 for help. Sixty percent knew that hands should be placed in the middle of the chest, whilst nearly all of respondents who answered incorrectly believed that hands should be placed on the left side of the chest wall. For knowledge about how deep chest compressions should be, only 28 per cent of respondents knew the right answer, and eight respondents did not respond to this question. This was the highest ‘no response’ rate among these CPR knowledge questions, with nearly one-third of respondents leaving this question unanswered. Concerning the rate of chest compressions, 36% of respondents answered correctly, whereas the majority of respondents believed incorrectly that the compression rate should be ‘over 50 times per minute’. Most of the people who had CPR training knew what an AED was for, but a small number of respondents misunderstood AED as meaning mechanical chest compressions. Seventy-six percent of respondents did not know the location of the nearest AED to their workplace or home.

Table 3.

Knowledge of bystander CPR

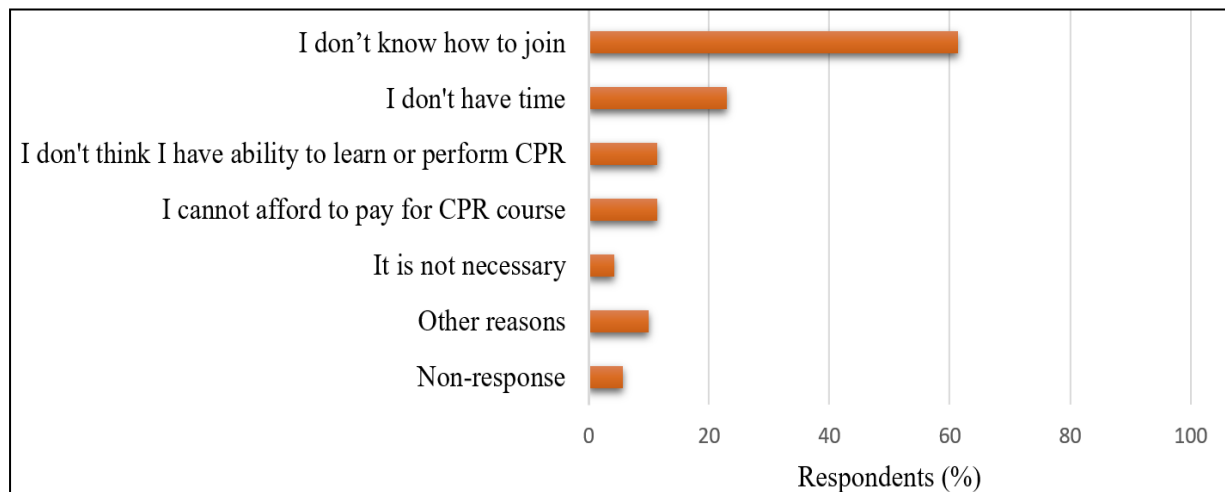
	All n	Correct n (%)	Not correct n (%)	No response n (%)
The number to call	25	21 (84.0)	4 (16.0)	0
The location to place hands	25	15 (60.0)	8 (32.0)	2 (8.0)
The depth of chest compression	25	7 (28.0)	10 (40.0)	8 (32.0)
The rate of chest compression	25	9 (36.0)	9 (36.0)	7 (28.0)
Knowing what AED is for	25	15 (60.0)	4 (16.0)	6 (24.0)
Knowing the nearest AED	25	4 (16.0)	19 (76.0)	2 (8.0)

According to the 70 respondents who had not attended CPR training, the predominant reasons were that they did not know how to join the training, or they had no time, as shown in Figure 3. Some respondents believed that they could not learn or perform CPR, or they could not afford to pay for the course. Only a small number of respondents thought that CPR training was not necessary. Four respondents did not choose any of these reasons and gave no response. Other reasons for not attending

a CPR course included one participant who wrote that she ‘cannot miss her work,’ while another stated that if there was an available course, she would attend.

Figure 3.

Reasons why participants would not attend a CPR training course (n = 70)



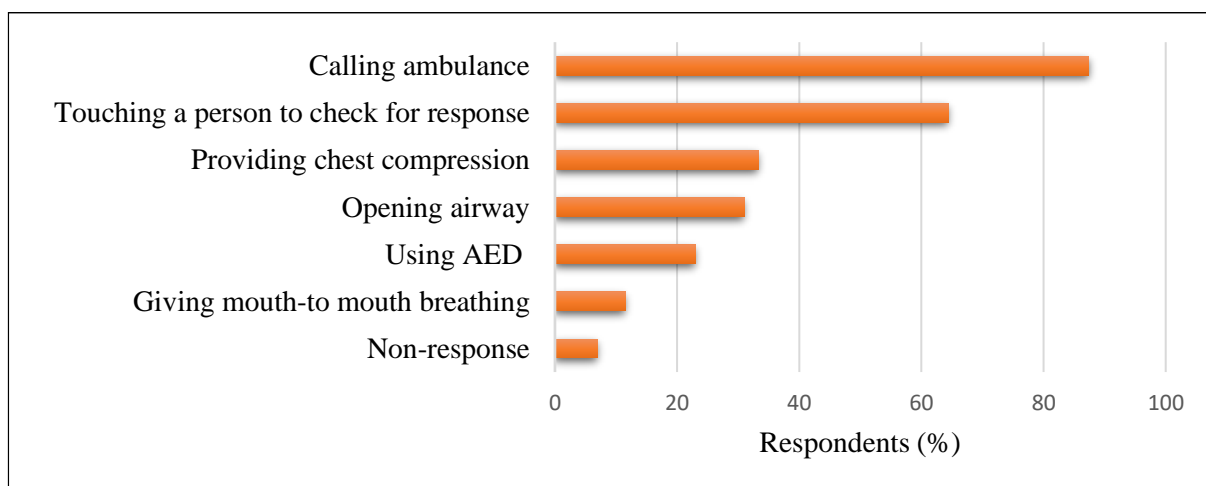
4.1.3 Attitudes and Willingness to Perform bystander CPR

Eighty-seven people, representing 90% of all respondents, responded to the third part of the questionnaire. They were asked about their attitudes and willingness to perform CPR. The respondents were given a scenario of finding someone collapsed on the floor. They were asked whether they would be willing to perform CPR. Nearly 80% of respondents were willing to perform CPR. There was no difference in the proportion of willingness between online and public recruitment groups. More than 80 per cent of respondents did not know that they would be protected against lawsuits under New Zealand law if they performed CPR on a victim who suffered a cardiac arrest. Almost 70% of respondents believed that they would be more likely to perform bystander CPR if the emergency centre gave them instructions over the phone – see Table 4.

Table 4.*Willingness to perform bystander CPR*

	All n	Yes n (%)	No n (%)	No-response n (%)
Willingness to perform bystander CPR	87	69 (79.3)	15 (17.2)	3 (3.5)
More likely to perform CPR in case of telephone assisted CPR	87	60 (69.0)	21 (24.1)	6 (6.9)
Knowing that rescuer will be protected against a lawsuit	87	11 (12.6)	74 (85.1)	2 (2.3)

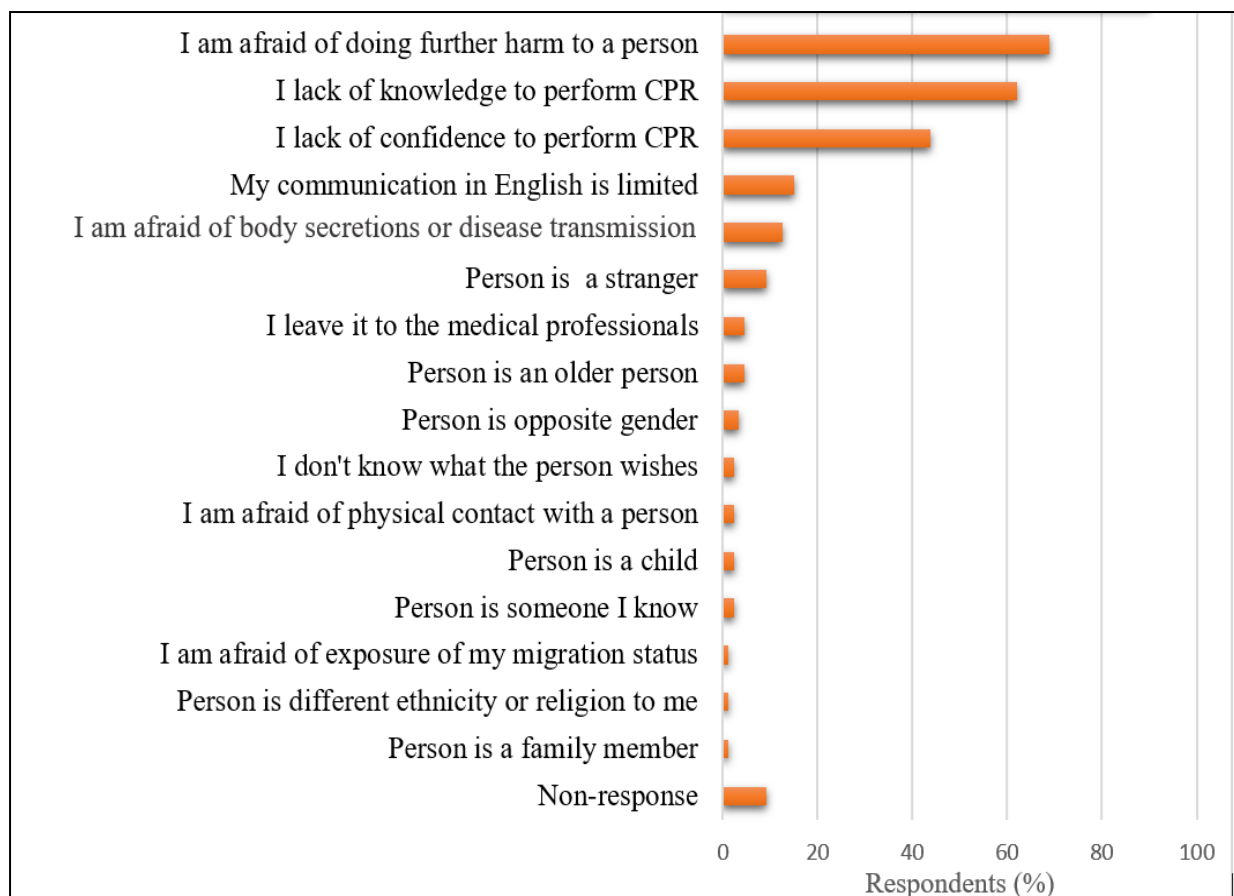
Figure 4 below displays attitudes and willingness toward various tasks and procedures of bystander CPR. Note that six out of 87 respondents did not answer any of these questions. Calling an ambulance was the most common step in practical CPR procedures that 87% of respondents believed they could perform during a cardiac arrest event. The second procedure was to check a victim's response which included touching a victim; nearly 65 per cent of respondents felt willing to do this. Thirty-three per cent of respondents believed that they could provide chest compressions to a victim. Providing mouth-to-mouth ventilation was the procedure that respondents were least willing to perform.

Figure 4.*Attitudes and willingness to perform procedures in CPR (n=87)*

Further analysis for reasons which could prevent respondents from performing bystander CPR can be seen in Figure 5. Eight out of 87 respondents did not respond to this question. It is apparent that there were three major concerns. First, many respondents were afraid of causing further harm to a victim by performing bystander CPR. This accounted for 74% of all responses. Second, respondents felt that they lacked knowledge, even the eleven respondents in the group who had previously attended CPR training. Third, thirty-eight respondents felt that they lacked the confidence to perform CPR. A minority of respondents indicated other reasons that would affect their decision to perform bystander CPR, such as their English language ability, fear of body secretions and disease transmission, or if the victim was a stranger. In the subgroup analysis of respondents who had trained in CPR, the predominant reasons given for preventing the performance of bystander CPR were similar to respondents who hadn't been trained.

Figure 5.

Reasons which could prevent Thais from performing bystander CPR. (n=87)

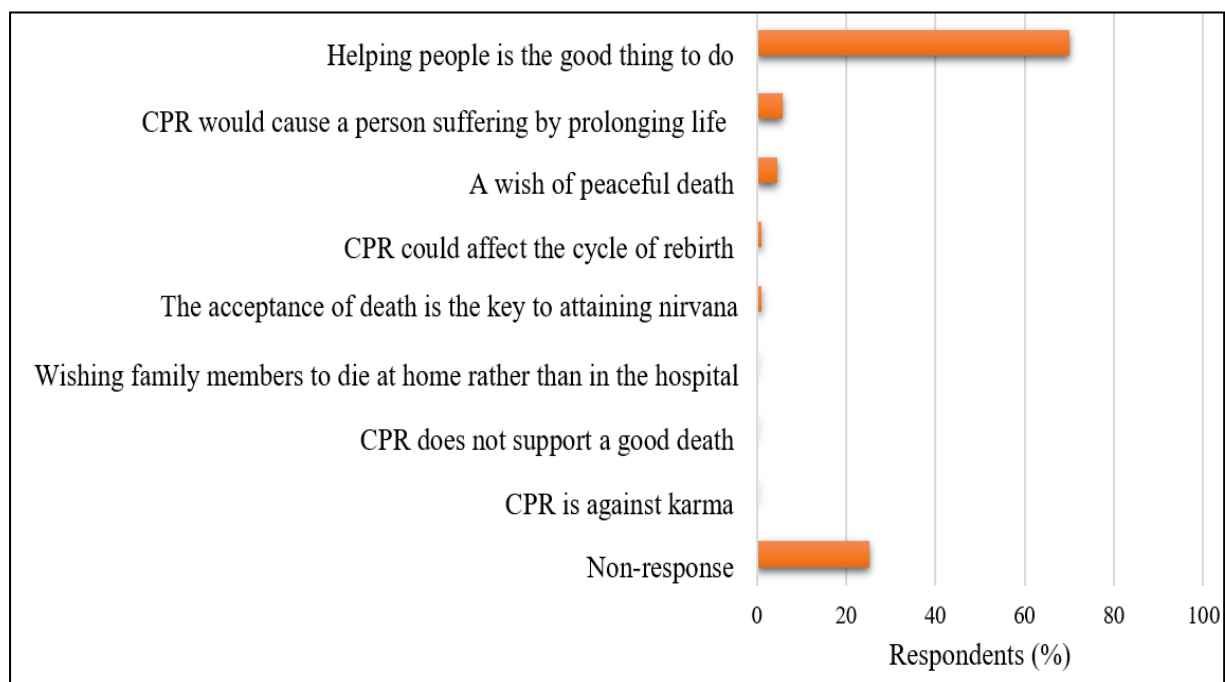


4.1.4 Willingness in relation to personal beliefs, culture and religion

The final part of the quantitative questionnaire included a question about personal beliefs, culture and religion. The majority of respondents wanted to help a cardiac arrest victim because “helping people is a good thing to do” – see Figure 6. Some people were opposed to CPR because it could prolong a victim’s life and cause a person more suffering. However, no one responded with the belief that CPR does not support a good death, that it was against Karma, or that they would like their family member to die at home rather than in the hospital. Twenty-two out of eight-seven respondents did not respond to this question

Figure 6.

Beliefs that could affect the decision to perform bystander CPR. (n=87)



4.1.5 Associations between factors and reported willingness to perform CPR.

The association between demographic characteristics of participants, the reasons that might prevent them doing CPR, and their actual willingness to perform bystander CPR are presented in Table 5, using univariate analysis. Males and respondents aged 60 and under were more likely to intervene in a cardiac arrest event, but this was not statistically significant. A higher education level, previous training in CPR and the number of CPR trainings did not increase the likelihood of performing bystander CPR on a cardiac arrest victim. The three main reasons that could prevent respondents from performing bystander CPR, (as revealed in Figure 10), increased the likelihood of withholding

bystander CPR – as seen in the univariate analysis in Table 5, but note that this was not statistically significant.

Table 5.

Factors related to a decision to perform bystander CPR (n=87)

Factors	Total	Willingness %	OR	95% CI lower	95% CI upper	P-value
Gender						
Female	61	47 (77.1)	1			
Male	26	22 (84.6)	1.87	0.48	7.32	0.37
Age						
20-40	49	40 (81.6)	2.85	0.58	14.18	
41-60	28	22 (78.6)	1.57	0.31	7.99	
61-80	10	7 (70.0)	1			0.39
Highest Education Level						
High school or less	39	32 (82.1)	1			
Tertiary education	48	37 (77.1)	0.77	0.25	2.40	0.65
Previous CPR training						
Yes	23	18 (78.3)	0.71	0.21	2.35	0.57
No	64	51 (79.7)	1			
Number of CPR training (n = 23)						
One time	17	14 (82.4)	1			
>1 time	6	4 (66.7)	0.43	0.05	3.52	0.43
Afraid of further harm	60	47 (78.3)	0.36	0.07	1.73	0.20
Lack of confidence	38	29 (76.3)	0.83	0.27	2.54	0.74
Lack of knowledge	54	41 (75.9)	0.53	0.15	1.84	0.32

4.2 Part 2: Qualitative results

This section presents the results of the qualitative data. Thirty-two respondents provided qualitative data: 18 from the online survey, and 14 from the paper-based survey. Content analysis was applied to these data, to the participants' responses to the open questions from the survey. This part of the survey addressed the question of whether respondents' underlying personal or religious beliefs influenced decisions to intervene in a cardiac arrest event.

A brief explanation of content analysis is presented, as following. Content analysis is the process to convert large number of raw data into "a highly organised and concise analysis" (Erlingsson & Brysiewicz, 2017). Content analysis involved the researcher carefully reading and re-reading the raw data, participants' views, to identify 'codes'. Codes are low levels of abstraction from participants' views. It was received by direct shortening of participants' texts into codes which close to raw data and keep the core meaning, this process is called condensation (Erlingsson & Brysiewicz, 2017). Previous codes have been described within past published literature and some of these 'pre-set codes' were identified in our raw data also. Other new codes emerged from our data. In total, 22 distinct codes were identified. Fifteen of these were pre-set codes; the other seven codes were newly emergent. The coding of the material was reviewed carefully. The previously published literature was re-read to check that the pre-set codes accurately matched our data. If not, a condensation process was applied to straightforwardly transcribe our respondents' views into new codes.

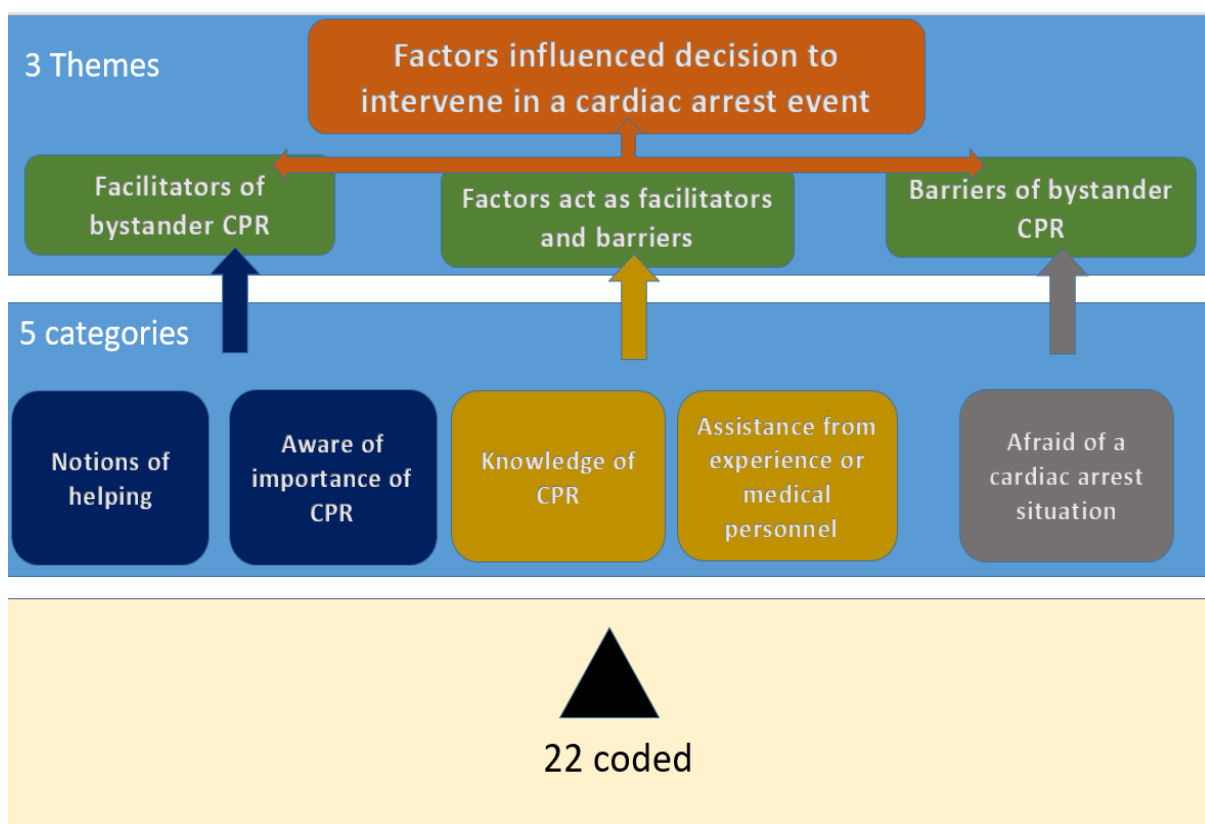
Reading and analysis of these 22 codes led to the creation of five categories. A category is the higher process of abstraction, codes which share similar content or context then group together to form categories. Categories extract manifest content which is obvious findings from data. From these five categories, three main themes were identified that could affect the decision to intervene in a cardiac arrest event. Two of these main themes were in simple opposition to each other. Theme 1 concerned personal or religious beliefs that facilitated intervention of bystanders in a cardiac arrest event, whereas Theme 3 concerned beliefs that were barriers, and which prevented bystander CPR. Interestingly, two of five categories were beliefs that could act as both facilitators and barriers of bystander CPR. The researcher has designated this as Theme 2, because it sits between Themes 1 (facilitators) and 3 (barriers). For example, the category 'Knowledge' can both facilitate intervention (ie, sufficient knowledge) but it can also be a barrier to intervention (when knowledge is insufficient). This shows that knowledge of CPR was of key importance, along with the participants' perception of whether or not their knowledge was sufficient. The hierarchy of our content analysis, from elemental codes, brought together into categories, and assembled into board themes, is illustrated in Figure 7.

The five categories were as in Table 6. Helping was most mentioned by participants that it influenced participants to involve in a cardiac arrest event. Knowledge was second explained to courage participants to perform CPR, while lack of knowledge was a barrier to perform CPR. Fears of

confronting a cardiac arrest situation were reported as a barrier to perform CPR. Assistance from experience or medical personnel has been presented as both facilitator and barriers to bystander CPR. Last, a small number of participants stated that aware of the importance of bystander CPR was a positive influence to perform bystander CPR.

Figure 7.

Content analysis of the qualitative data related to the personal decision to intervene in a cardiac arrest event.



Note: Three themes are shown in green, receiving input from five categories and from 22 codes.

Table 6. *The 22 codes and five categories identified from the qualitative data.*

Facilitators of bystander CPR		Factors acted as facilitators and barriers		Barriers of bystander CPR
Notions of helping	Aware of importance of CPR	Afraid of confronting a cardiac arrest event	Assistance from experience or medical personnel	Knowledge
<ol style="list-style-type: none"> 1. Helping is personal moral 2. Helping as a religious teaching 3. Helping as a good wish for a victim 4. Helping because the value of life 5. Helping is mandatory as universal moral 6. Helping to prevent dying early 	<ol style="list-style-type: none"> 1. CPR increases survival chance of a victim 2. CPR can improve victim's condition 	<ol style="list-style-type: none"> 1. Afraid of a cardiac arrest situation 2. Afraid of further harm 3. Afraid of doing it incorrectly 4. Afraid of contacting body fluid 5. Afraid of legal issue 	<p>Perceived as facilitators</p> <ol style="list-style-type: none"> 1. Call someone for help 2. Call for telephone assisted CPR <p>Perceived as barriers</p> <ol style="list-style-type: none"> 1. Leave this to experience or medical personnel because they can do it better 	<p>Sufficient knowledge</p> <ol style="list-style-type: none"> 1. Knowing some basic knowledge of CPR would be helpful 2. Knowledge encourages the ability, confidence and decision to CPR 3. Revision of essential knowledge of CPR <p>Insufficient knowledge</p> <ol style="list-style-type: none"> 1. Lack of knowledge makes rescuer feel not confident. 2. Lack of knowledge can further harm victim

4.2.1 First theme: facilitators of bystander CPR

4.2.1.1 Notions related to helping

Helping was related to the decision to intervene in a cardiac arrest event, explained by 20 respondents. Many respondents revealed that they decided to be involved in a cardiac arrest event because they believed that helping was a good thing to do: *“Helping people is a good thing. Do good”* (Paper 6); and *“Helping other people makes me proud of myself”* (Paper 7). Some explained that helping was their personal moral *“It is humanity, if we see someone in trouble, we must help”* (Online 20). Helping also related to religion (Buddhist teachings), *“Buddha teaches us to help other people, one who helps will receive Boon (merit)”* (Paper 3). Two respondents stated that helping was mandatory in this situation. It was wrong if a bystander did not help. *“If we see someone who suffers or is in needed of emergency help and we do not help, that means we have no mercy for others or neighbours. We should help others as we can; this is the basic moral principle that human should follow”* (Online 53).

Eight respondents expressed that they would do CPR because they wished for a cardiac arrest victim to be safe. *“I would like to help because I want him to survive”* (Paper 10). One respondent discussed that a reason to help was this procedure could prolong a victim’s life: *“It is okay to do if it can prolong a victim’s life. It is better than doing nothing.”* (Paper 35). Some respondents showed concern about a victim’s family, as they did not want a family member to be sad. *“I want to help because I don’t want that person to die prematurely, and I don’t want his/her family to be sad”* (Online 10). Some respondents decided to perform CPR because they thought that life was valuable. *“I would do it because life is precious in the eyes of Jehovah”* (Online 1). The notion of early death impacted three respondents. They wanted to save a life, especially when a victim was young. *“Everyone wants to live, no one wants to die early, that’s why we need to help”* (Online 35).

4.2.1.2 Aware of the importance of CPR

Benefits of CPR were explained by participants as a reason that they should provide CPR. CPR was compared to doing nothing. Two believed that CPR could enhance the survival chance of a victim. *“I think I should do CPR in case there is a chance to save the patient’s life in order to alleviate their symptoms before reaching the hospital. It is better than doing nothing and it is the very good thing which we should do”* (Paper 35). One stated that *“CPR may help victim not getting worse. At least, doing CPR may be help to make a victim safe before reach to the hospital”* (Online 39).

4.2.2 Second theme: factors act facilitators and barriers of bystander CPR

4.2.2.1 Knowledge

Knowledge was described as a factor affecting respondents’ decision to intervene in a cardiac arrest event. Out of 32 respondents, nine people stated that the main factor that they used to determine whether they would get involved in a cardiac arrest or not related to knowledge of CPR. Several

discussed that they would perform CPR if they knew how to do it. *“If I have sufficient knowledge on performing CPR, I will not hesitate to help the injured people I encounter”* (Online 59). Knowledge of CPR was thought to increase ability and confidence to perform CPR in a real cardiac arrest event *“If I have learned and have knowledge about performing CPR, I would be brave enough to help the others”* (Online 4). Although some participants stated above that religious teaching related to the notion of helping a cardiac arrest victim, four respondents highlighted that the decision to perform bystander CPR was not related to religious beliefs. Some added that it was more about the knowledge and skill of doing it: *“No religious beliefs related to CPR. Personally, I am afraid that I don’t know how to do it correctly”* (Online 26); and *“I am not answering this question (about the personal or religious beliefs) because I think that the decision to do CPR is a matter of knowledge/ability/skill of doing CPR”* (Online 28).

Two respondents pointed out that reviewing CPR knowledge was necessary. One respondent had once trained in CPR more than ten years ago and would not be willing to intervene in a cardiac arrest situation. *“I think that it would be good to review the CPR knowledge. I have not learnt it since high school. If I can often see it in the movie or online media, that would be good”* (Online 26). Reviewing knowledge of CPR could increase confidence to perform bystander CPR. *“I don’t feel confident to do CPR. I think if I have learned CPR seriously at least once a year, it will make me feel confident and be able to help in a real cardiac arrest event”* (Online 34).

Having some basic knowledge of CPR was believed to be helpful for a victim. *“If at that time there is no one who can help, at least if we know something about basic first aid, we can help a victim before medical personnel reaches the victim”* (Paper 33). Note that not all participants described knowledge as a facilitator to perform bystander CPR. Some mentioned a different dimension of knowledge, and they believed that that if they were not health professionals or they had never learnt how to do CPR. This might harm a victim instead of providing benefits. As supported by another respondent; *“We should have enough knowledge and understanding of how to do CPR because if we do something wrong, that is someone life”* (Paper 31); and *“I don’t have knowledge of CPR, and that would reduce a victim chance to survive”* (Online 30).

4.2.2.2 Assistance from experience or medical personnel

Some participants felt they lacked confidence to perform CPR, one stated the solution that *“I most likely call for help. I never come across the situation when I have to do CPR”* (Paper 34). Help from medical personnel, such as telephone assisted bystander CPR could enhance bystander’s confidence to start CPR. *“I would definitely ring healthline or Ambulance to guide me through the step by step to do the CPR. I am not afraid”* (Online 29). On the other hand, one responder reported that she would help a victim but to perform CPR, she would rather leave this to medical personnel. *“I don’t know how to do CPR, and that would reduce a victim chance to survive. I would ask the medical professionals who have experience do it better”* (Online 39).

4.2.3 Third theme: barriers of bystander CPR

4.2.3.1 Fear of confronting a cardiac arrest situation

Witnessing a cardiac arrest event could cause some people to feel afraid. Two respondents reported that they would be too afraid in a cardiac arrest situation, and they wouldn't be brave enough to do the CPR. One participant revealed that he would be afraid of witnessing a cardiac arrest event because he lacked confidence even though he had once trained in CPR (Paper 34). Some participants were afraid of further harm. *"From my personal view, I can't risk doing CPR because I don't have any knowledge of CPR, and that would reduce a victim chance to survive."* (Online 39). Contact with body fluid was also mentioned by respondents, such as: *"I may be afraid of contacting body secretion, but I would be willing to do the chest compression"* (Online 2).

4.3 Chapter summary

Our study aims to understand the knowledge of, and attitudes toward, bystander CPR and factors that related to decisions to perform CPR. This chapter revealed the results of our study. According to the quantitative findings, 27% of Thai had previous CPR training. Thai participants did not know how to join and did not have time were the reason that prevented them from attending CPR class. In CPR-trained participants, the majority had only trained once and training had taken place more than five years previous. Almost 80% of our participants were willing to perform bystander CPR on a cardiac arrest victim. However, there were three main reasons that could prevent them from performing CPR: fear of causing further harm, lack of knowledge and lack of confidence. The qualitative results showed that the notion of helping was a very strong facilitator that encouraged Thais to intervene in a cardiac arrest situation. Other facilitators included knowing how to perform CPR, awareness of the importance of CPR, and assistance from medical personnel. While a fear of confronting a cardiac arrest event, insufficient CPR knowledge, and a belief that CPR should only be done by medical personnel or experienced people could prevent Thais performing CPR.

5. Discussion

5.1 Introduction

The present study was designed to understand knowledge and attitudes towards bystander CPR of Thais who live in Auckland. Factors that related to decisions to perform CPR were investigated. The researcher categorised those factors into two parts: first, factors that relate to knowledge of CPR, and second, attitudinal factors towards bystander CPR. We employed a mixed methods study to frame our research. Qualitative and quantitative data were collected within a survey which was offered online and in paper copy. Initially, the qualitative and quantitative data were analysed separately. Statistical and content analysis was applied to the quantitative and qualitative data, respectively. The results are presented in Chapter Four. This chapter will first summarise the key findings that resulted from both qualitative and quantitative approaches. The interpretation process will happen here. Qualitative and quantitative data will be compared, contrasted and combined. Then, the implications of the findings will be discussed. This involves an examination of what we have found from the study and how these learnings could help us to better understand the problems with, and implications of, the current situation of bystander CPR. The application of two behaviour theories including the Theory of Planned Behaviour and KAP theory will be integrated to provide understanding of these problems. Last, the limitations of the study and recommendations for further research will be outlined.

5.2 Characteristics of study participants

The participants who enrolled within the current study were mainly female, aged younger than 40, born overseas, and Buddhist. The characteristics of the participants were consistent with the New Zealand national report of the Thai population who live in New Zealand, which showed that 64% of Thais are female, median age is 31.3, 80% were born overseas and 76.3% are Buddhist (Statistics NZ, 2013). Two demographic features were found to vary from the national report. First, as nearly 90% of the participants in our study were Buddhist, the ratio of Buddhism to other religions was higher than the national report of Thais who live in New Zealand. But this was close to the ratio of Buddhism to other religions found in Thailand. Second, the education level of the study population was higher than that of the general Thai population in New Zealand. Nearly 60% of our participants had completed some education beyond high school, but the national study showed that only 46.2% of Thais in New Zealand had completed education after high school. This could relate to the fact that over half of our participants were recruited via online. Our study showed that participants who answered the online survey had a higher level of education than participants who answered the paper-based questionnaire. This behaviour has also been found in other studies, that a willingness to respond to an online survey was linked to the educational level of participants (Park et al., 2019; Berg et al., 2011).

5.3 Main Findings

5.3.1 Knowledge of CPR

5.3.1.1 Quantitative findings

Thais who live in Auckland had a low rate of CPR training, and most of the CPR-trained participants had only trained once and training had taken place more than five years previous. The major obstacles preventing participants from attending CPR training were that participants did not know how to join and did not have time. Those who had participated in training showed limited recall regarding knowledge of CPR. Most of the CPR-trained participants could only recall the following details: the number to call an ambulance, the location to place their hands and what AED is for. However, they failed to recall the detail of an effective chest compression which included the rate and depth of compressions.

5.3.1.2 Qualitative findings

Thais believed that knowing how to perform CPR would encourage them to intervene in a cardiac arrest event, however, many Thai participants felt a lack of knowledge and confidence to provide CPR. Lack of knowledge also led these participants to feel afraid of further harming a victim. Revision of essential knowledge of CPR was mentioned by our participants as a means to improve their confidence to perform CPR. This was mentioned by both previously trained and untrained participants.

5.3.2 Attitudes toward bystander CPR

5.3.2.1 Quantitative findings

The current study showed that Thai participants had a very high willingness to intervene in a cardiac arrest event. The majority of participants agreed that they would intervene in a cardiac arrest event. This willingness related to the belief that helping people is a good thing to do. When identifying the specifics of their willingness, participants were more willing to call an ambulance and check for a victim's response rather than performing other steps of CPR such as chest compressions or using an AED. Only one third of them were willing to perform chest compressions, with only a small number of participants willing to perform mouth-to-mouth ventilation. There were three main reasons that could prevent them from performing CPR: fear of causing further harm, lack of knowledge and lack of confidence. Cultural and religious beliefs about death and good death were found to be neither prime barriers nor facilitators to performing bystander CPR in Thai participants.

5.3.2.2 Qualitative findings

The qualitative findings from our study found these three things facilitated Thais to perform CPR: knowing how to perform CPR, awareness of the importance of CPR, and assistance from medical personnel. However, it was the notion of helping that was the major factor that encouraged Thais to intervene in a cardiac arrest event. The barriers to performing CPR included a fear of confronting a

cardiac arrest event, insufficient CPR knowledge, and a belief that CPR should only be done by medical personnel or experienced people.

5.4 Interpretations and implications

This part of the chapter will further discuss the results of our study by comparing, contrasting and combining our qualitative and quantitative data. It will expand on the rationale underpinning our results using past literature to support our discussion. During this interpretation process, we have employed the two models of the Theory of Planned Behaviour and KAP to provide application and critique of the results. These models were outlined in the literature review and methodology chapters.

From the findings, Thais believed that they lacked knowledge of CPR. This might relate to a low CPR training rate among Thai participants. The reasons for never attending a CPR class will be discussed. For CPR-trained participants, the knowledge of CPR was examined in order to understand what knowledge of CPR they still had. The results show that CPR-trained participants also perceived themselves as lacking knowledge and confidence to perform CPR. We suggest that this poor retention of CPR knowledge and skill in CPR-trained participants could relate to the length of time since the last CPR training and infrequent CPR refresher training that made them feel a “lack of knowledge and confidence” to perform CPR. Besides lack of knowledge and confidence to perform CPR, we found that the major barrier to perform CPR in Thais was a fear of causing further harm. This barrier and other minor barriers will be further critically analysed. Lastly, we will explain the reasons why Thais had a high willingness to intervene in a cardiac arrest event even though they felt lacking in CPR knowledge. The notion of helping will be expanded upon, specifically on how it relates to willingness to perform CPR.

5.4.1 Poor knowledge

Thais perceived themselves as possessing “poor knowledge” within both quantitative and qualitative findings. A low rate of CPR training in this Thai community could be a reason for their feeling a lack of CPR knowledge as the quantitative data revealed that only 27.1% of participants had attended CPR training. The rate of CPR training in our study was higher than some areas such as in China, Jordan and most counties in the United States (Anderson et al., 2014; Huang et al., 2016; Oteir et al., 2019). However, in comparison to other areas such as in Japan, King County in the United States, Sweden or Taiwan, this rate of training would be acknowledged as low (Axelsson et al., 2006; Huang et al., 2019; Sasaki et al., 2015; Sipsma et al., 2011). The rates of CPR training in Thailand are unknown; however, for Auckland Thais, at 27.1%, the rate is significantly lower than the general New Zealand population where it was reported in 2004 that 74% of New Zealanders had trained in CPR (Larsen et al., 2004). Literature from Australia and the United States indicated that communities with low rates of CPR training were associated with low rates of bystander CPR and survival from OHCA (Bray et al., 2017; Sasson et al., 2013). Although we do not know the numbers or rates of survival of Thais who

suffered from a sudden cardiac arrest in New Zealand, data from St John has shown that other minority groups such as Māori or Pacific peoples were less likely to receive bystander CPR and had a significantly poorer survival rate compared to the European population (Dicker et al., 2019). We might suppose that other ethnic minority groups such as Thais in New Zealand may also have lower rates of bystander CPR and survival of OHCA than the main European-descent population.

According to existing literature, the major reasons that people do not attend a CPR class are because they are too busy and they do not think that CPR training is necessary (Birkun & Kosova, 2018; Huang et al., 2016; Oteir et al., 2019; Sipsma et al., 2011). In our study, we found a difference from the literature. The main reason participants gave for never attending a CPR class in our study was because they did not know how to join. Our study indicated that participants did not know where the CPR trainings were held, which aligned closely to similar findings from Crimea and Jordan (Birkun & Kosova, 2018; Oteir et al., 2019). Thais might not know how to access New Zealand healthcare or health education; this could relate to many factors such as cultural differences, communication or socioeconomic status.

Even though participants in our study did not list language as a barrier to CPR training, language barriers were common obstacles to seeking health care in minority ethnic groups as most state communication is conveyed in a language that may not be their primary language (Sasson et al., 2015). An encouragement to health care providers to understand the cultural and language barriers in minority ethnic groups could allow these groups of people easier access to health care or health education. Socioeconomic status may also be a barrier. Andrews et al. (2018) demonstrated that cost of and access to CPR training were the reasons that adult high school graduates had never attended CPR training. Our findings supported existing findings that communities with low incomes are less likely to receive CPR training. In 2013, the median annual income of Thais in New Zealand was \$16,000 NZD (Statistics NZ, 2013). They received less than half of the average income of the general New Zealand population, and this figure is lower than Māori and Pacific people living in New Zealand (Statistics NZ, 2013). In order to improve bystander CPR rates, expanding CPR training to minority ethnic groups, non-native English speakers, and low income communities should be considered.

The second factor limiting people's ability to attend CPR classes identified in the current study was that the participants had no time. This finding was consistent with studies from the King County in the United States (Sipsma et al., 2011), Taiwan (Huang et al., 2016), and Jordan (Oteir et al., 2019). In King County, which reported high rates of survival of OHCA, of bystander CPR, and of CPR training, the most frequently given reason people had for never attending a CPR training was because they do not have time (Sipsma et al., 2011). Over 70% of Thais in New Zealand were employed full-time (Statistics NZ, 2013). Most of the men were employed as technicians and trades workers, while women were more often employed as laborers (Statistics NZ, 2013). A study found that Thais in New Zealand

could not participate in community activities due to lack of time (Pattanarattanamolee, 2020). CPR training usually takes over 4 hours (Batcheller et al., 2000), and this time commitment could be prohibitive to people who have regular work or take care of children (Sasson et al., 2015). In some workplaces, CPR training is required by the regulation for work safety. However, not all employees are required to learn CPR. CPR training in work places or schools could be an option for people who have no time to attend a CPR course.

Shortening the CPR training duration has been discussed as a potential replacement to conventional CPR training. A number of studies have supported the idea that shortening CPR training courses and focusing on compression-only CPR was beneficial in the aspect of retention of CPR knowledge (Ko et al., 2018; Nishiyama et al., 2014; Shende et al., 2020). For instance, a randomized controlled trial study in Japan found a better long-term retention of CPR knowledge in six months and one year after participants underwent 45 minutes of training in hands-only CPR compared to 180 minutes of training in conventional CPR (Nishiyama et al., 2014). A shortened compression-only CPR training also related to better performance of CPR algorithms and continuation of chest compressions (Ko et al., 2018). Apart from improvement in long-term memory and quality of CPR, the shortened hands-only CPR training could be another choice for people who have no time to attend a conventional CPR class.

5.4.2 Lacking CPR knowledge and confidence to perform CPR in CPR-trained participants

Even if Thai participants had previous CPR training, Thais still perceived themselves as lacking CPR knowledge and confidence to perform CPR. Thais in Auckland have a low rate of CPR training, and that could be a reason they feel lacking in knowledge. However, CPR-trained participants also reported that lack of knowledge and confidence were their top barriers to initiating CPR. Our study showed that knowledge of CPR in CPR-trained participants was low. This poor retention of knowledge could be a reason for CPR-trained participants feeling they were lacking in knowledge and having poor confidence to initiate CPR. Underlying reasons for this could relate to a prolonged duration since the last CPR training and less frequent CPR refresher trainings as the majority of CPR-trained participants in our study had trained only once and over five years ago. The complexity and frequency of changes to CPR guidelines could be another reason for a poor retention of knowledge.

Relating to the knowledge of CPR, we found that most CPR-trained participants knew the right number to call. Some people answered with the wrong number of 911 which is used in the United States. The researcher assumes that 911 can be often heard from the American media, or the number 911 may be close to 191, which is the emergency number in Thailand. Calling an ambulance was the CPR step that participants within this study were most willing to do. This finding is in contrast to a previous study, which found that some minorities or immigrants may be afraid to call an ambulance due to a fear of law

enforcement involvement, a concern about immigration status and language barriers (Sasson et al., 2015). However, the participants within our study did not mention those concerns as barriers to providing help for a cardiac arrest victim. Their willingness to call an ambulance was very high. This might indicate a good public trust of law enforcement and their English skills might not be a major barrier preventing them from calling for help.

Every CPR guideline emphasizes high quality CPR, which includes the optimal rate and depth of chest compressions. In our study, only a small number of participants remembered the correct rate and depth of chest compressions. This was found to be similar to many international studies which showed that people could not retain CPR knowledge. A study in China revealed that only half of participants who had previous CPR training knew the correct CPR procedure (Chen et al., 2017). Qara et al. (2019) confirmed that in Saudi Arabia, a very small number (7.5%) of CPR-trained participants knew the correct rate of chest compressions. In New Zealand only four percent of participants who lived in urban areas could remember the correct rate of chest compressions (Larsen et al., 2004). Data from our study and previous literature have confirmed that even in a CPR-trained person, knowledge of CPR is not fully retained. The reasons for poor retention of CPR knowledge in laypersons may relate to the complexity of CPR steps and changing guidelines.

Before 2000, the chest compression rate was recommended by international guidelines to be between 80-100 compressions per minute and between 2.5-5 cm in depth (Kwon, 2019). The recommendation was changed to provide compressions over 100 times per minute and more than 5 cm in depth in 2010 (AHA, 2010). This CPR guideline in 2010 had encouraged a number of laypersons to begin CPR as the campaign emphasized simply to compress the victim's chest hard and fast (AHA, 2010). The guidelines did not provide an upper limit to the depth of chest compression and chest compression rate. However, this became controversial as administration of chest compressions that were too fast and too deep can compromise adequate perfusion. For instance, when a bystander is pushing too fast, he/she might not be able to achieve sufficient depth of chest compressions (Zou et al., 2015); and in the case of a layperson pushing too deep, over 6 cm, it related to there was an increased frequency of organ injuries such as fractured ribs, fractured sternum or internal organ damage (Hellevuo et al., 2013). Therefore, the current guideline for adults now recommends a chest compression rate of 100-120 per minute and a depth of 5 cm (which could be around one third of the chest wall) but not over 6 cm for an optimal chest compression depth (AHA, 2020).

These findings should lead us to question what rationale should be used in publications and in teaching of CPR guidelines to laypersons in order to be most practical in a real cardiac arrest event. For instance, the rate of chest compressions has been taught to follow a rhythm of some famous songs or to count two chest compressions per one second; however, the depth of chest compression would be very hard to estimate during a real cardiac arrest event. A hands-only CPR guideline which skips MMV is

an example of how evidence based medicine cannot provide benefits when people had negative attitudes toward MMV. Even though the benefit of rescue breathing is clear, a number of people refrain from administering CPR, because they are reluctant to perform MMV. The number of bystander CPR cases in Sweden markedly increased after MMV was excluded from the steps of CPR (Riva et al., 2019). This might indicate that the less complicated the guideline, the more practical and easier it is for people to remember.

Retention of CPR knowledge may relate to duration of previous CPR training, frequency of CPR course-refresher, complexity of guidelines and changing of CPR guidelines. In our study, we found that most of our CPR-trained participants had previously trained in CPR only once and over five years ago. It was hard to retain their CPR knowledge, and this could affect both the confidence to initiate CPR and the quality of CPR performance. The qualitative data supported and confirmed that our participants felt a need to refresh their CPR training to feel confident enough to initiate CPR. Training intervals have been examined to determine the best time to refresh and boost training again. Deterioration of CPR skill was reported ten weeks after the initial training (Madden, 2006). Meissner et al. (2012) revealed that student participants who had trained in CPR could only provide high quality chest compressions up to four months after training. This is similar to a study in Florida which supported the notion that proper retention of knowledge of CPR endures for four months (Watanabe et al., 2017). Generally, it is recommended to refresh CPR training every year. Participants could gain more confidence if they refreshed their CPR training more frequently (Oermann et al., 2020; Sutton et al., 2011; Watanabe et al., 2017). Some have suggested that to spend less time at each CPR training and take more frequent CPR trainings could improve knowledge retention and CPR skill (Oermann et al., 2020; Sutton et al., 2011). Hands-only CPR training was proposed from many studies as a way to shorten the duration of CPR training and minimize the complexity of the CPR algorithm in order to help long-term retention of CPR knowledge. A study in children, who are believed to have a better memory than adults, revealed that one year after CPR training, children still retained more than 80% of CPR knowledge (Takahashi et al., 2012). CPR training in school was also found to be superior to adult training as it can remain as a beneficial lifelong skill.

5.4.3 Further harm to a cardiac arrest victim

Thais were afraid performing CPR would further harm a cardiac arrest victim. According to our quantitative results, the three major barriers for participants to bystander CPR were fear of further harm, lack of knowledge and lack of confidence. The qualitative findings had similar results indicating that these three barriers were also the main notions that Thai participants were concerned about and fed into feeling reluctance to perform CPR. Lack of knowledge and confidence to perform CPR are linked and have already been discussed. A fear of further harm to a victim was described in our quantitative data as a bigger factor that prevented participants from performing CPR, bigger than lack of knowledge and confidence. Previous literature also reported that a fear of further harm was the

leading barrier preventing people performing CPR (Becker et al., 2019; Huang et al., 2019), and it impacted bystanders stronger than other causes such as a fear of disease transmission (Blewer et al., 2010).

Nearly 90% of our study population were Buddhist. Ethical values from Buddhist teaching may influence their perceptions. The most important ethical principle in the first precept in Buddhist teaching is do no harm or do not kill. This teaching is a very strong notion with influence over Thais. This can be seen in the case of a Thai physician denying the withdrawal of ventilation even when a patient had a low chance of survival because the physician held strongly to this first precept (Stonington & Ratanakul, 2006). Another potential explanation for the fear of doing further harm could relate to the principle of merit and sin. This can be explained that when we do good, we receive Boon (merit) and when we do bad, we receive Baab (sin) (Assanangkornchai et al., 2002). One of our participants stated that she wanted to help because Buddhism teaches Thais to help one another to receive Boon. We considered whether our participants were concerned about further harm because it could cause a sin (Baab) according to Buddhist teaching? However, none of our participants mentioned that they were concerned about Baab

Evidence of complications from CPR is low (Deliliga et al., 2019; Krischer et al., 1987; Moriwaki et al., 2012). The benefits of CPR are clear and much outweigh complications of CPR (Moriwaki et al., 2012). From the qualitative data, our participants expanded that they felt that if they performed CPR incorrectly, they might reduce the victim's chance of survival. This might indicate that improved knowledge of CPR could help to cope with this fear. An education that ensured trainees understood that CPR is a life-saving procedure with low rates of complications could help bystanders to understand that they do not need to be afraid of harming the victim when performing CPR. The perception of CPR as a life-saving procedure should be promoted, in correlation to Buddhist teaching. Successful implementation of other health promotion programs in Buddhist temples or participating with community monks has been reported with positive results (Treerutkuarkul, 2008). Every district of Thailand has at least one temple in the community. In ancient times, the temple was an education center for the public. Even though today people go to school for education, the temple remains a center of community, especially in rural areas. Chalepad et al. (2019) reported that employing CPR training in the temple can be another strategy to increase bystander CPR in Thailand. This strategy is not only to advance CPR teaching in the community, but it could also imply that providing CPR to a victim is not against the Buddha's teaching. In the New Zealand context, temples are very much a center of Thai community (Pattanarattanamolee, 2020), and thus a communication or activity through a Thai Buddhist temple could be another option to reach Thai people in New Zealand.

5.4.4 A high willingness to perform CPR

Though Thais were concerned about barriers to performing CPR, Thais had a very high willingness to perform CPR. Thai culture and Buddhism relate to the notion of helping and this willingness to help could contribute to overcoming other barriers. Besides lack of knowledge and confidence to perform CPR and fear of further harm, Thais reported some other barriers to bystander CPR such as the language barrier, fear of disease transmission or the victim being a stranger. Those barriers also seemed to prevent some Thais from performing bystander CPR. However, interestingly, Thais had a very high willingness toward performing CPR as nearly 80% of participants were willing to perform, despite perceived barriers. This willingness in Thais was as high or higher than some areas which had a high rate of bystander CPR such as in Japan, the United States or Sweden (Axelsson et al., 2006; Kuramoto et al., 2008; Sipsma et al., 2011). For instance, in Japan only 13% of Japanese participants were willing to perform CPR to their family members and seven percent to a stranger (Kuramoto et al., 2008).

A study in China, Crimea, Israel and the United States revealed that willingness to perform bystander CPR was associated with previous CPR training, duration since the last training and frequency of training (Birkun & Kosova, 2018; Emily et al., 2020; Sipsma et al., 2011; Zhou et al., 2019). This was in contrast to our study that found willingness to perform CPR was not related to previous CPR training. This could possibly be because our study population was small. However, the willingness to perform bystander CPR was high in both CPR-trained and CPR-untrained participants: these two groups showed an equal willingness.

Previous literature demonstrated that willingness to perform bystander CPR decreased when participants were asked to perform CPR on a stranger. Fewer than 10% of our participants indicated that the victim being a stranger would prevent them from providing CPR. Unwillingness to perform CPR on a stranger can be found in many studies, particularly in countries in Asia such as China, Japan, Korea, Singapore and Taiwan (Ong et al., 2013; Huang et al., 2016; Kuramoto et al., 2008; Moon et al., 2019; Huang et al., 2019). Two main reasons were identified in the literature for general populations not being willing to perform CPR on a stranger: fear of litigation and fear of physically contacting a stranger (Hung et al., 2019; Su-May, 2006). Previous literature also supported the idea that immigrants may suffer from a fear of exposure of their immigration status. It is possible that our study population might not perform CPR on a stranger because of fear of litigation. However, in our study only one participant indicated concern about possible litigation even though nearly all participants (98%) were born overseas. This may be associated with the No-fault Accident Compensation system in New Zealand, which allows all injuries to be funded by the Accident Compensation Corporation (ACC) (Keenan et al., 2016; Wallis, 2013). This system protects bystanders and health providers from being sued in cases of complications or injury resulting from resuscitation (Tobin & Schoeman, 2005). This might remove a fear of litigation from performing bystander CPR.

Even though 79.3% of our participants were willing to initiate CPR, only 12% of participants were willing to perform MMV (mouth-to-mouth ventilation). This could relate to a fear to contact with a victim, including a fear of disease transmission, a fear of contacting body secretions, and fear of physical contact. However, our findings showed that only a small number of participants were concerned about these barriers. We did not further explore what other reasons Thais felt as difficulties to performing MMV. The researcher questions whether this could relate to the fact that in Thai culture physical contact in public is only acceptable between the same genders. A close physical contact between those of different genders is not common in Thai culture (Sasamon & Amankwaa, 2003), especially kissing or hugging in public. In our study, only three participants reported that they felt reluctant to provide CPR to a differently gendered victim; however, MMV between a male and female might be a close contact procedure that can be awkward in Thai culture.

As MMV shows obvious benefits, especially in children and prolonged CPR, an education on the low risk of disease transmission during MMV should be encouraged. Hands-only CPR should also be considered in cultures where MMV is not acceptable. Most CPR training manikins were originally male. Female CPR manikins were introduced in CPR training in order to make a bystander feel less reluctant to perform CPR to someone of a different gender. Performing CPR only on victims of the same gender as the bystander might be practical in some cultures where contacting someone of a different gender is prohibited. But it means all genders should be encouraged to learn CPR. An implementation of CPR training with cultural relevance should enhance willingness to perform CPR. In addition, with the current situation of COVID-19, the use of MMV should be reassessed in areas where there are high levels of anxiety about disease transmission.

Some of our participants reported that they would refrain from administering bystander CPR because they believed that there must be someone else in the situation that knew CPR or did it better than them. Some believed that they should leave CPR to medical personnel. This could relate to poor confidence and knowledge to perform CPR. On the other hand, this might be explained by what it is called the bystander effect. Latané and Darley (1979) identified the bystander effect, documenting that when there were other bystanders, people felt less likely to intervene in an emergency situation. Bystander effect further explains that when the responsibility toward a victim was diffused then the potential blame would be shared (Darley & Latane, 1968). This might explain why the procedure that our participants were most likely to perform was to call an ambulance. This might not simply be a call for an ambulance; it could be another way to share their responsibility with medical personnel or to ask for permission or authorization to do something to a victim. It is noticeable that in a situation when a victim did not survive, some bystanders felt they were responsible for the outcome, and they felt guilty (Mathiesen et al., 2016). This might be another reason that people do not want to intervene in a cardiac arrest event, because they do not want to undertake a responsibility toward the victim. Telephone-assisted CPR can also be another way to share bystanders' responsibility with medical personnel. Not

only can it help to support people who have never trained in CPR and people who feel lack of confidence to perform CPR, it might also relieve bystanders' stress and lead them to intervene by helping a victim.

Thai participants in our study were highly willing to perform CPR, despite feeling limited by the barriers we have discussed. The qualitative data has enabled a more in-depth understanding of this willingness. The notion of helping was a strong facilitator that led Thais to overcome barriers to bystander CPR. This finding aligns with research by Axelsson (2001) which found that when a bystander has a will to help, there is a strong possibility that he/she is going to intervene in a cardiac arrest event. Bystanders who had intervened in a cardiac arrest situation used their will to help to overcome their fear.

Latané and Darley (1979) studied the process of decision making to intervene in an emergency situation. They found five steps that influenced helping a victim. First, bystanders recognize the event. Then, they interpret the situation as an emergency condition. Third, they decide if they should take responsibility over the situation or not. Fourth, bystanders decide how they can help, and the fifth and last step is to intervene in the situation. The third step, trying to decide whether they should take responsibility for a situation or not, depends on many factors such as personal will to help and social norms and expectations. Meanwhile, the fourth step of determining how to help depends on what knowledge or skills a bystander has. We can see from this that the decision around taking personal responsibility is made first, before self-evaluation of knowledge and skill needed to intervene in an emergency situation. These studies by Axelsson (2001) and Latané and Darley (1979) support the idea that willingness or assuming responsibility plays a stronger influence on the decision to intervene over knowledge and skill of CPR.

Many were willing to help because they had a 'good wish' for the victim, respected the value of life, and wished to prevent a victim from an early death. Some respondents strongly suggested that not helping a cardiac arrest victim would be wrong for them. Helping is a common social value. Batson and his colleagues (1989) pointed out that religious people were more likely to help other people and had increased levels of altruism. However, there has been an increasing number of non-religionists around the world, particularly in Western societies. A study by Yablo and Field (2007) found that Thais were more altruistic than Americans. They believed that helping behaviour was underpinned by Buddhist teaching. Though some of our participants pointed out that the determinants to intervene in a cardiac arrest were not about religious teaching, others disagreed and explicitly referenced Buddhist teaching. Buddhist teaching emphasizes sympathy and empathy for people who are suffering (Spiro, 1982). Buddhist altruistic behaviour was explained by Cheng (2015) who stated that helping others could benefit the helpers to gain personal growth and practice their enlightened mind. For Buddhists, practicing enlightenment by doing good and following the Buddha's teaching can achieve Nirvana, a state in which people are free from suffering and the terminal goal of the Buddhist way (Aich, 2013).

Therefore, to intervene to help in a cardiac arrest event might provide a chance for Buddhist bystanders to exercise their enlightened mind. Helping in Buddhism is not linked to any expectation of something in return, however, the teaching says that one who helps will receive happiness and Boon in return. This could relate to the reason that Thais had strong altruistic tendencies and high willingness for helping others.

5.4.5 CPR and concept of good death

Perceptions of a 'good death' relate to how people would like to die. Literature revealed various meanings of a good death. Meier et al. (2016) summarised that most literature related the term of a good death to preferences for the dying process. For some people this related to pain-free status, religiosity or emotional well-being (Meier et al., 2016). Through the researcher's working experience in Thailand as an emergency physician, many cases of out-of-hospital cardiac arrest were observed where victims had return of spontaneous circulation, yet their family members asked to take the patients home. A previous study revealed that in some areas of Thailand, people prefer not to have their family member resuscitated and would rather take them home to die to fulfil the wish of a good death. Our current study asked if Thai culture or the concept of death in Thais might affect one's decision to perform CPR.

A number of conditions have been reported for a good death, for instance, an awareness of death, a peaceful death, death at home, and being with one's family or loved ones (Chindaprasirt et al., 2019; Stonington, 2012). Our study found that four people were concerned that a wish for peaceful death might affect their decision to perform CPR; however, our study did not provide further details of how this notion may relate to performing CPR. A peaceful death could also refer to a physical place where one desires to be during the end of one's life. Home was described as a peaceful place that many terminally ill patients wished to be (Stonington, 2012). This might relate to the idea that home is a place where patients can be with their loved ones. However, none of our participants reported that a wish to die at home affected their decision to initiate CPR.

Five participants agreed that CPR might prolong life and suffering in a victim. Buddhist teaching aims to support people to get to the state that is free from pain and suffering, or what we have known as Nirvana (Kalra et al., 2018). The key to attaining Nirvana is to accept the truth of humanity (Aich, 2013). Buddha had observed how people are born, get old, get sick and die (Masel et al., 2012; Somaratne, 2018). These four steps are the cycle of suffering. Those who can accept this and let go of themselves are ones who are freed from suffering (Aich, 2013). CPR can prolong life, but in terms of this Buddhist view, it could also prolong suffering, which confounds the view of a good death. Thais might have a conflict between the concept of helping others and prolonging a victim's suffering.

Buddhist teaching has a strong influence over Thai culture. It also underpins the concept of a good death in Thai. Thais believe that every action that they do will be interpreted as a good action or a bad action. This is called good Karma and bad Karma. Karma affects everyday life (Aich, 2013). As

Thais believe in life after death, the sum of doing good and bad (good Karma and bad Karma) will affect life in the future, life after death and a new life (Aich, 2013; Stanford & Jong, 2019). For instance, if we kill someone, in the next life we might be killed or will be born in a worse condition than in the current life. This means if one does more good than bad one could be reborn in a better place. This concept might relate to our finding that helping is a good thing to do. Participants strongly related helping to a decision whether or not to perform bystander CPR. We discussed earlier that Thais want to help as a way to exercise their enlightened mind. However, Thais might also fear that not helping would be bad karma, and it would affect their future life.

Our study reveals that the cultural concept of death had minimal effect on our participants' decision to perform CPR. The researcher believes that our given scenario of patients in cardiac arrest was different from previous studies which were more focused on terminally ill cancer patients. A cardiac arrest event is sudden. A victim may not be a family member, bystanders do not know what the cardiac arrest victim would wish them to do, and they do not know what is best for a victim. Time to make a decision is short. A decision whether or not to provide resuscitation is difficult and complicated by individual levels of fear, of knowledge and/or confidence, of personal willingness and responsibility. With all these powerful factors involved, the concept of a good death might only have a minimal effect on the bystander's decision to intervene in a cardiac arrest event.

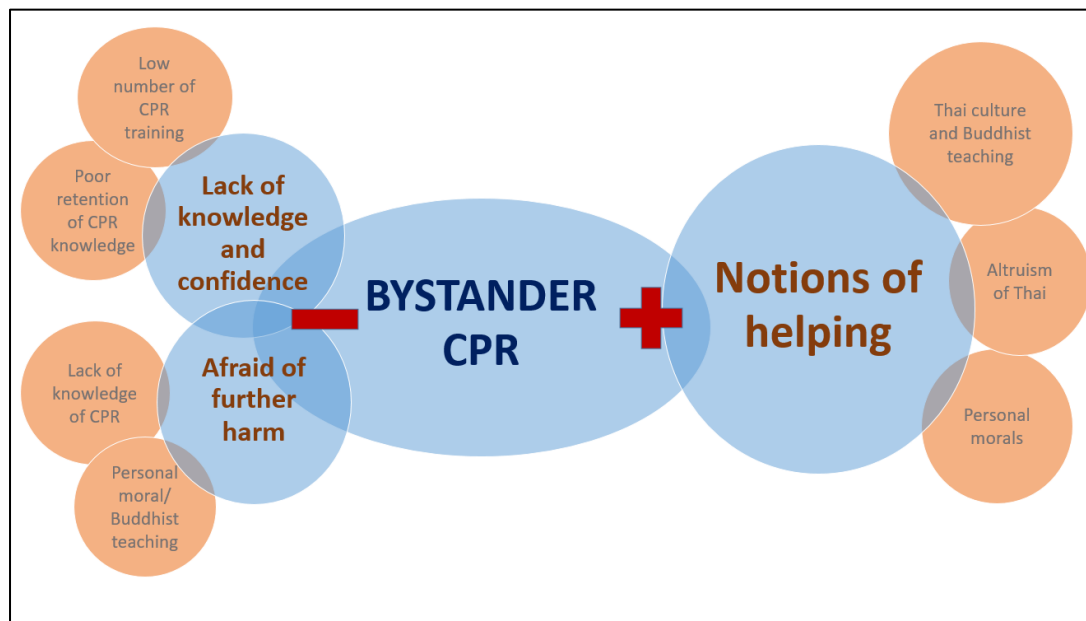
5.4.6 Determinants to bystander CPR in Thais in Auckland

We purpose a diagram of determinants to bystander CPR in the group of Thais who live in Auckland based on our findings and previous literature review. We believe that suboptimal knowledge of CPR, lowered confidence in performing CPR correctly, and a fear of further harm to a cardiac arrest victim were major barriers to bystander CPR by Thais in Auckland. Notions related to willingness to help others, which might be underpinned by Thai culture and Buddhist teaching, were strong drivers for Thais to intervene in a cardiac arrest event, despite the barriers.

The decision whether or not to perform bystander CPR was a balance between positive and negative tensions in each individual. On the positive side was a strong sense that 'helping' was a good thing to do for someone in need. On the other side, lack of knowledge / confidence and a fear of doing further harm were barriers against intervening. Personal morals and Buddhist teachings appear on both sides of this equation - doing good was a facilitator, while increasing suffering or removing the possibility of a good death were barriers – see Figure 8.

Figure 8.

Determinants of bystander CPR in Thais in Auckland



Note: Notions of helping act as positive determinants on the decision to perform bystander CPR. On the other hand, lack of knowledge and confidence, and fear of further harm have negative effects on bystander CPR and could prevent people from performing CPR.

5.4.7 Application of KAP and the Theory of Planned Behaviour.

KAP theory is a behaviour theory that is used to gain an understanding of health behaviour. KAP stands for knowledge, attitude and practice. It is believed people will act (practice) according to what they know (knowledge) and how they perceived the action (attitude) (Wan et al., 2016). Literature review revealed that poor knowledge of and attitudes towards bystander CPR were the two main reasons affected a decision to intervene in a cardiac arrest event. According KAP Theory, when people know how to perform CPR and have a positive attitude toward bystander CPR, people are more likely to decide to provide CPR in a real cardiac arrest event.

Our finding showed that our participants felt that lack of CPR knowledge could prevent them from performing CPR; attitudes toward CPR procedures were also related to decisions to intervene in helping a cardiac arrest victim, particularly in relation to a fear of doing harm to a victim. We agree with the theory of KAP that knowledge and attitudes have influence over willingness to perform bystander CPR in Thais who live in Auckland. However, we found that the notion of helping seemed to be part of Thai culture with a strong influence over Thais' decision to perform CPR. Helping cannot be easily characterised as 'attitudinal' because it is not that people felt positively toward a cardiac arrest

event, rather it seemed to be a cultural norm or an obligation that Thai people are supposed to help. Besides, the researcher reviewed recent literature and found some factors such as altruism, cultural beliefs and ethical values could not clearly define as attitudinal factors and did not fit well in the KAP model. Therefore, not all factors related to bystander CPR can be well explained simply through knowledge and attitude in the KAP model.

The researcher explored other behaviour theories that might better explain and fit those factors. Literature showed that people will not perform CPR unless they have intention or a will to perform CPR (Axelsson et al., 2000). Some cultural beliefs also influenced how people think of bystander CPR and affect their intention to perform CPR. The researcher selected the Planned Behaviour Theory, first proposed by Ajzen (1985), to explain the barriers and facilitators of bystander CPR and to help structure the literature review chapter. This theory suggested that attitudes, subjective norms and perceived behaviour control together influenced people's intentions. The researcher chose to apply the Planned Behaviour Theory because the theory appeared to fit the known factors and the theory included people's intention and people's perception of how people should behave within the model. In the literature review chapter, we asked the questions whether this theory could meaningfully interpret the facilitators and barriers of bystander CPR in the published literature, and our findings.

The researcher found all three components of the Planned Behaviour Theory within our study results – see Figure 9. However, not all the findings can be sorted by using this theory. Some factors could not be distinctly defined into the three categories of the theory. According to our findings, Thais perceived themselves as having poor knowledge of CPR; Thais also had some negative attitudes toward CPR such as the procedure could further harm a cardiac arrest victim. However, the notion of helping was a stronger factor that influenced their willingness to intervene in a cardiac arrest event. We observed three issues to do with applying Planned Behaviour Theory to the results of our study. First, unlike KAP theory, the Theory of Planned Behaviour did not include knowledge as a factor that affected people's intentions. We would have to consider the lack of knowledge which concerned our participants as some sort of indirect 'perceived behaviour control' that could reduce their intention to perform CPR. Secondly, the fear of further harm is an 'attitude' but it is not to be as strong as the notion of helping. Third, we defined the notion of helping as a 'subjective norm' in the Planned Behaviour Theory. This notion of helping where Thais described helping a cardiac arrest victim as the thing that they would like to do or should do - this notion is the strongest factor influencing the decision to perform CPR in Thai participants. The researcher believes that the notion of helping was a moral norm derived from Thai culture or Buddhism because our participants referred their willingness to help to Buddhist teachings, things that people should do or a social obligation to help. Therefore, the researcher categorised the notion of helping as a subjective norm in the Planned Behaviour Theory. The notion of helping could also be part of altruistic behaviour in Thais would place it within 'perceived behaviour control' in the theory, because several of our participants stated that they just wanted to help. Our study was limited

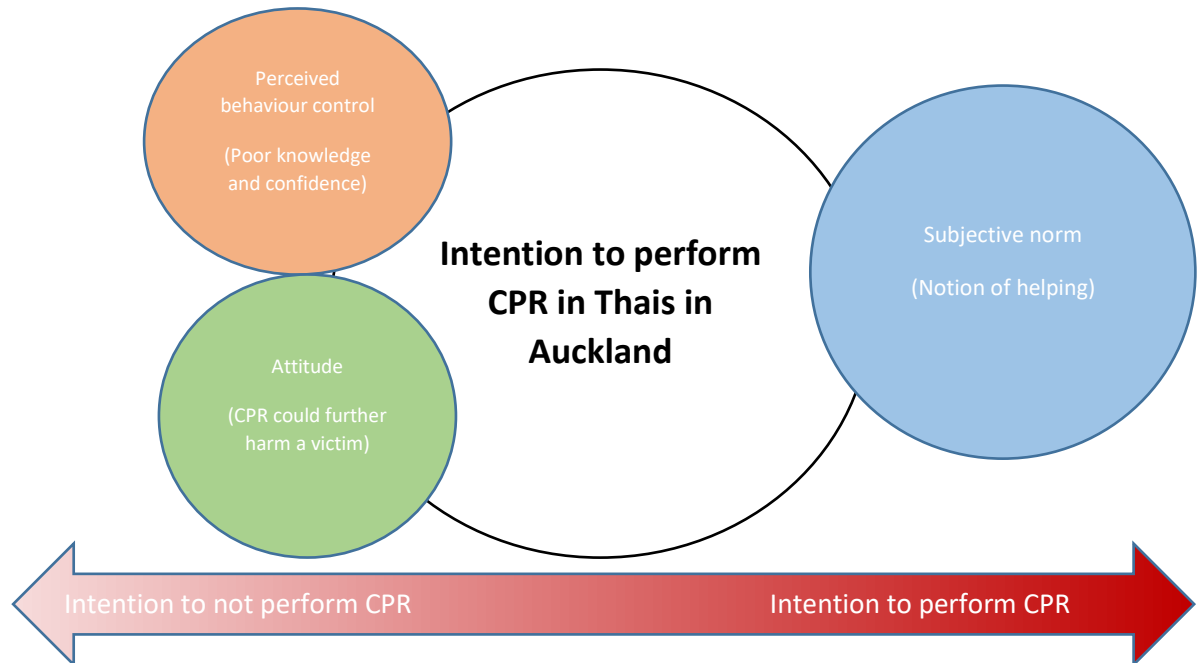
from further investigating the underlying reasons for this notion of helping, but our results showed that this notion related to Thai culture and Buddhism teaching.

Our findings are contrast to some recent studies. A study by Vaillancourt et al. (2013) showed that attitude was the strongest factor predicting participants' intention to perform CPR for an older person, rather than subjective norms and perceived behaviour control. Magid et al. (2019) used the same survey to Vaillancourt et al. (2013) and again found that attitude was the most powerful predictor of intention to perform CPR in college students. We believe our results may be different to previous studies related because our qualitative survey allowed us to investigate a boarder dimension of the decision making process. It is also possible that Thai culture and belief were different from the populations of the other recent studies. However, we can see some close features in common between the recent studies and our results. In the study of Vaillancourt, participants believed that "they could save someone life", one of the main factors that motivated them. Similarly, in our study, our participants stated that should save someone's life. Note that Valiancourt defined this notion as 'attitudinal' whereas our study clarified the notion of helping as a subjective norm strongly influenced by culture and religion.

It can be seen that both theories can be partially applied to explain the reasons whether Thais in Auckland would perform bystander CRP or not. KAP theory was easy to understand because it only categorised each factor into knowledge, attitude or practice. However, the attitudinal category appeared too board. Some barriers such as cultural beliefs, ethnic disparities, language barriers or altruism, cannot all be identified simply as attitudes. Instead, the Theory of the Planned Behaviour could more broadly accommodate these factors within their elements of subjective norms and perceived behaviour control. Despite this, our results could not be fully explained by the Planned Behaviour Theory. For example, in terms of knowledge of CPR, the Theory of Planned Behaviour only focused on how people perceived themselves regarding knowledge of CPR. Actual knowledge level found no place within this model. We also found it is difficult to clearly define the terms of attitude, subjective norms and perceived behaviour control. The notion of helping could be part of both subjective norms and perceived behaviour control. Another example was gender disparities. At first the researcher categorized these as subjective norms (see the literature review) because the researcher them to be influenced by people in society, or particular to a culture. However, gender disparities could also be personal and attitudinal. The Theory of Planned Behaviour Control proposes that intention is the key that affects an action. However, in real situations, a person's intention may not overcome some attitudes, such as the panic or paralysis of fear. Our study showed that subjective norms within a culture were a strong component influencing the decision to perform CPR in Thais, stronger even than individual perceived behaviour control and attitude.

Figure 9.

Applying the Theory of Planned Behaviour to predict the intention to perform bystander CPR in Thais in Auckland



Note: The notion of helping is a subjective (cultural and moral) norm that prompts Thais to be more likely to intervene with bystander CPR. Perceived behaviour control including poor knowledge and confidence, and the attitude of fear of further harm negatively affected Thais' intention to perform CPR. Note that the subjective norm was the strongest factor, which could overcome perceived behaviour control and negative attitudes towards bystander CPR

5.5 Limitations

Characteristics of Thais in our study population such as religion, level of education, and number of New Zealand born Thais were slightly different to the national report of Thais who live throughout New Zealand. This could relate to our data collection methods. Temples are one of the places that our research used to recruit the participants. Temples are centres of Thai community; however, in New Zealand, Thais have a higher diversity of religion. Though the majority of our participants responded through an online questionnaire, collecting data from the temples could possibly have incurred a selection bias and resulted in a slightly higher proportion of Buddhist respondents. This could limit our understanding of Thais who follow other religions. On the other hand, this might also relate to a change in characteristics of Thais in New Zealand. The most up-to-date national report was in 2013, and the number of Thai immigrants has since increased, and subsequently the demographics of Thais in New

Zealand might have changed. Therefore, the possibility remains that our participants and our findings may not accurately represent the full Thai population in Auckland, or elsewhere within New Zealand.

Due to a higher response to the online questionnaire over the paper-based questionnaire, this survey sample may be biased towards people who can access the internet. It seemed that people who answered the online questionnaire had a higher education level than those who answered the paper-based questionnaire. This might be the reason why our participants had a higher education level than the general Thai population in New Zealand. However, the researcher hypothesized this result might be closer to the real population of Thais who live in Auckland, because some Thais came to New Zealand for education, and Auckland is a city where there are more institutes of education than in other areas of the country. Some recent literature has revealed that a higher education was related to a high rate of willingness to perform bystander CPR (Chew et al., 2019). This could have affected our results, which showed a high rate of willingness toward bystander CPR. Similarly, literature showed that females were more willing to intervene in a cardiac arrest over males (Birkun & Kosova, 2018c). Females were predominant in our study; this might relate to the high willingness of the study population.

We employed a survey which include closed-ended and open-ended questions. The close-ended questions were provided in order to collect data that could be directly transferred for statistical analysis. We believed that closed-ended questions would be easy for our respondents to answer; however, a number of participants in our study did not complete every question of the questionnaire. For instance, only 79% of all participants continued to answer the third part of the questionnaire, which asked about the attitudes toward bystander CPR. The research coded the participants who did not answer the question as a 'non-response'. However, it was not clear whether participants did not answer some questions because they did not agree with any of the provided options, because they intentionally chose not to answer the questions, because they didn't know the answer, or for some other reason. This potentially led to unclear interpretation of data. Open-ended questions were used where we wanted to learn about the influence of culture and religion, and we did not want to limit the responses. Elsewhere, we also provided open-ended spaces for participants to clarify their answers further or give other reasons that we did not provided. Most of these answers were left blank, just a small number of people used these opportunities.

Employment of a mixed methods study helped the researcher to understand more about the problems of bystander CPR in Thais. Quantitative data showed us the magnitude of problems, such as the low number of those with CPR training. It helped us to understand the major concerns of Thais toward bystander CPR, however, it was limited in its ability to explore attitudes such as wanting to help and willingness to intervene. Qualitative data instead clearly showed the relationship between the notion of helping and a high willingness to perform bystander CPR. It also provided a deeper explanation of this relationship. The combination of both types of data has led the researcher to see a bigger picture of

the problem. We found some weaknesses in both qualitative and quantitative approach in our study methodology. For instance, no results were statistically significant relating to the decision to perform bystander CPR. This may relate to a small sample size in a quantitative approach. In the qualitative approach, there was no requirement for a level of significance. When we performed triangulation of data, we were not always sure whether data from different levels of confidence could be comparable. For instance, data from the quantitative method showed that a majority of participants were concerned about further harm to a victim, but from the qualitative data, less than half of participants mentioned this.

We applied a concurrent triangular design, which is a type of mixed method that collects both types of data at the same time and separately analyses the data. Both types of data can provide understanding of the problem; however, there were some data that could not be integrated. For the instance, we found that less than 20% of participants were willing to perform MMV, however, this result could only be examined using the quantitative data because we did not receive any explanation about this phenomenon from our qualitative approach. Because the collection of both types of data happened at the same time, we could not apply results from one method to further design the other methods. For instance, we found that many CPR-trained participants were concerned about a lack of knowledge. We hypothesized that this may relate to a poor retention of knowledge, however, we could not further dig into the real reasons underpinning this problem as there was no further opportunity to seek information from each participant. An explanatory design would use the data from the quantitative study to design the qualitative questions, but we were unable to employ this method, because as bystander CPR by Thais in Auckland was not a previously researched area, we did not know from the beginning what approach would illuminate key problems.

5.6 Recommendations

- Our study population characteristics were close to the wider Thai population in New Zealand. We think that our findings could apply to Thais in the other areas of New Zealand. In addition, since the characteristics and culture of Thais have some commonality to other southeast Asian peoples, our findings might also be able to be generalizable to this larger demographic.
- Thais perceived themselves as lacking CPR knowledge and skill, but this did not limit their willingness to perform CPR. Encouragement to learn CPR and refresh CPR knowledge should be supported in order to overcome this negative self-perception and to provide effective CPR. Telephone assisted CPR can also increase the likelihood of Thais performing CPR.
- Thais did not know how to join a class or learn CPR, thus an approach to the Thai community through Thai temples or the Facebook group of Thais in New Zealand is a good option to connect to the Thai community and to provide this information. Young generations of Thais can speak better English than older generations. An approach to the Thai community through a

younger generation could bridge to older generations where language obstacles may prevent them from accessing emergency care or general health care or health care education.

- Social media in the Thai language would be beneficial in enabling Thais to access health care or health education. Many Thais had no time to attend a CPR training, thus CPR training videos or online advertising could be an option for them to learn CPR. Compulsory CPR training at schools or a mandatory CPR training as a work regulation or before obtaining one's driver's license could be other ways to increase the rates of CPR training.
- Regarding a strategy to improve retention of CPR knowledge, CPR training should take place early in one's life since younger learners' knowledge lasts longer. The CPR guidelines for laypersons should not contain too many steps and details. Making CPR steps short and easy would help laypersons to remember and retain knowledge of CPR.
- For those people who lack confidence to perform CPR, CPR training and regular refreshing could help empower them to initiate CPR. However, those who cannot overcome a lack of confidence should be encouraged to call an ambulance and receive telephone assisted CPR instructions, to help spread the burden of personal responsibility.
- Positive attitudes through shared cultural and ethical values and social participation can also be harnessed as another strategy to influence people to perform CPR. The Buddhist concepts of Boon (merit) and Baab (sin) can be applied to help Thais better understand that CPR is a rescuing procedure rather than a harmful procedure.
- CPR is more than a set of techniques and the reasons why bystanders perform CPR (or not) are complex and multifactorial. The decision to intervene is influenced by a person's culture, religion and other subjective norms. The teaching of CPR should be aware of differing subjective norms and should be culturally safe and appropriate.

5.7 Further research

- New Zealand is a multi-cultural country. Due to an increase of immigrants in New Zealand, CPR training should also be tailored to other ethnic groups where CPR education might not have been available in their home country. To understand the magnitude of the problem, the survival outcome of OHCA and knowledge of CPR in sub-ethnic groups should be evaluated.
- Even when people know how to perform CPR, without the willingness, they might decide not to intervene. Further studies are needed to understand barriers to bystander CPR in each culture. A gap between CPR procedure and cultural belief should be evaluated and understood. For some cultures where people are reluctant to perform MMV such as Thais, hands-only CPR could be an option. Where some cultures prohibit physical contact with a different gender, CPR training for the same gender can be encouraged. CPR training could be taught differently depending on the context and culture of the target population. Implementation of CPR training

with appropriate cultural considerations can increase understanding and willingness to perform CPR.

- Mixed methods study was a good method to understand the obstacles to bystander CPR. The researcher found that using a qualitative survey such as an open-ended questionnaire helped explore people's values and attitudes. A questionnaire also prevented bias from face-to-face interviews, or interviewer bias. People freely described how they felt about the phenomenon. It was useful for obtaining a variety of views and for seeing the magnitude of a problem. However, it did limit our ability to further dig into understanding the phenomenon. We suggest that an initial qualitative survey could be used for those research questions where the problem is not well defined. Using an initial survey could identify possible issues of interest, while a second qualitative collection method such as interview or focus group could then be used to dig deeper into understanding each problem or the details of the phenomenon.

5.8 Conclusion

Bystander CPR can increase survival in out-of-hospital cardiac arrest victims. Literature shows a low rate of bystander CPR, especially in minor ethnicities. This study aimed to understand the knowledge of and attitudes toward bystander CPR among Thais who live in Auckland, and the factors that related to their decision to perform bystander CPR. We found that Thai participants had a very high willingness to perform bystander CPR. The notion of helping in Thai culture and Buddhist teaching were the underlying reasons that influenced Thais to overcome any fears of performing CPR. Thais perceived themselves as lacking CPR knowledge. This possibly related to their low rate of CPR training, and poor retention of CPR knowledge. Thais were also concerned that performing CPR could do further harm to a victim. However, these perceptions did not prevent Thais' willingness to intervene in a cardiac arrest and to perform CPR. In order to improve confidence in performing CPR, CPR training and refresher courses should be encouraged in the Thai community. Such training should recognize that the Thai community has its own cultural values, often underpinned by Buddhism, and should be delivered in a culturally appropriate way. Further studies focusing on cultural norms in relation to bystander CPR could inform the way CPR is taught within New Zealand, could enhance cultural safety, and could potentially increase rates of bystander CPR.

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Appendices

Appendix A: Ethics Approval



Auckland University of Technology Ethics Committee (AUTEC)
Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

28 November 2019

Amanda B Lees
Faculty of Health and Environmental Sciences

Dear Amanda B

Ethics Application: 19/456 **Knowledge of and attitudes toward bystander CPR among Asians in Auckland**

I wish to advise you that a subcommittee of the Auckland University of Technology Ethics Committee (AUTEC) has **approved** your ethics application.

This approval is for three years, expiring 26 November 2022.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

Yours sincerely,




Kate O'Connor
Executive Manager
Auckland University of Technology Ethics Committee

Cc: ongmarbu@gmail.com; Graham Howie

Appendix B: Tools

a) Advertisements in English and Thai


TE WĀNANGA ARONUI
O TĀMĀKI MAKĀU RĀU

Kia Ora and Sawasdeeka. My name is Marturod Buranasakda. I am from Khon Kaen, Thailand. I am here in New Zealand to study a Master of Health Science at Auckland University of Technology. I kindly invite you to help with my research questionnaire.

**KNOWLEDGE OF AND ATTITUDES TOWARDS
BYSTANDER CPR AMONG THAIS IN AUCKLAND**

If you are

Thais


Aged over 20

Live in Auckland


This research Project is being undertaken as part of Master in Health Sciences qualification for Marturod Buranasakda at Auckland University of Technology. If you are interested, please go to

- ❖ https://aut.au1.qualtrics.com/jfe/form/SV_4TjccPblHzJlsZ for English
- ❖ https://aut.au1.qualtrics.com/jfe/form/SV_3CpzBX89iXW008R for Thai
- ❖ Or e-mail: hss0672@aut.ac.nz
- ❖ Or scan

For English



For Thai



เคียว โอรา และ สวัสดิ์ตะ ขำพเจ้า นางสาวมธุรส บุณตักดา มาจากจังหวัดขอนแก่นเพื่อ
ศึกษาระดับปริญญาโท ณ มหาวิทยาลัย Auckland University of Technology (AUT) ใน
สาขาวิทยาศาสตร์สุขภาพค่ะ ขำพเจ้าขอชวนเชิญพี่น้องคนไทยในเมืองโอ๊คแลนด์เป็นส่วน
หนึ่งของงานวิจัย

ความรู้และทัศนคติของคนไทยในเมืองโอ๊คแลนด์ต่อการทำการ ช่วยเหลือพื้นดินชีพเบื้องต้นโดยผู้เห็นเหตุการณ์

หากท่าน

เป็นคนไทย

อายุมากกว่า 20

อาศัยอยู่ในเมืองโอ๊คแลนด์

งานวิจัยนี้เป็นส่วนหนึ่งของวิทยานิพนธ์เพื่อการศึกษาในระดับปริญญาโทวิทยาศาสตร์สุขภาพ
ของนางสาวมธุรส บุณตักดา มหาวิทยาลัย สังกัด มหาวิทยาลัย Auckland University of
Technology ถ้าท่านสนใจโปรดศึกษาเพิ่มเติมได้ที่

❖ https://aut.au1.qualtrics.com/fe/form/SV_4TJccPbLHzJilsZ สำหรับภาษาอังกฤษ

❖ https://aut.au1.qualtrics.com/fe/form/SV_3CpzBX89iXWQ08R สำหรับภาษาไทย

❖ หรือติดต่อ E-mail: hss0672@aut.ac.nz

❖ หรือสแกน

สำหรับภาษาไทย



สำหรับภาษาอังกฤษ



b) Paper-based participant information sheet and questionnaire in English

Knowledge of attitudes toward bystander CPR among Thais in Auckland

What is the purpose of this research?

Cardiopulmonary resuscitation or CPR is a life-saving procedure that help maintain circulation for a person who suffered a cardiac arrest. CPR provides chest compressions with or without artificial breathing. You may have seen CPR being done on Television or have your own experience of this procedure. Usually CPR is carried out in the hospital but sometimes a cardiac arrest happens elsewhere. Bystander CPR means CPR that is performed by a layperson who is not medical professional. The purpose of this research project is to understand the knowledge of and attitudes towards bystander CPR among Thais in Auckland. By answer the questionnaire, we hope that the results will help to better understand the factors that influence Thai people to intervene a bystander cardiac arrest event. Your participation can help inform future practice on how to improve training for and outcome of bystander CPR. The findings of this research will contribute toward me gaining my master of health science degree and may also be used for academic publications and presentations.

How was I identified and why am I being invited to participate in this research?

You were invited though intercept or Facebook advertisement because you have the potential to be bystander in a sudden cardiac arrest event. Please complete the questionnaire if you meet these criteria: Thais Live in Auckland Aged 20 and over Not CPR trained professional

How do I agree to participate in this research?

You can agree to participate in this research project by completing the online or paper-based questionnaire. Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. However, after you complete and submit the questionnaire or return the questionnaire to the box researcher provided, the researcher is not able to withdraw your data. This is due to this research is anonymous which means that the researcher does not know who the participant

is but your data will remain unidentifiable.

What will happen in this research?

You will be asked to complete the questionnaire. It will ask about your knowledge of bystander CPR and attitude toward bystander CPR. If you choose to participate, it will take about 10 minutes to complete the questionnaire.

What are the discomforts and risks?

Some participant could feel discomfort thinking about cardiac arrest. However, you can choose not to answer questionnaire or withdraw from the research project.

What are the benefits?

This research project may benefit to you as it may promote a better understanding of bystander CPR and raise awareness of cardiac arrest. This could also benefit society as a whole as the outcome of study may help to understand knowledge of CPR of Thais in Auckland and how bystander CPR could fit with Thai culture. Lastly, this study will benefit to the researcher to gain the master degree of health science.

How will my privacy be protected?

The questionnaire is anonymous. No identifiable information is collected.

What are the costs of participating in this research?

There are no costs involved other than your time which will be approximately 10 minutes.

What opportunity do I have to consider this invitation?

You can take time and make a decision after understand clearly about the research project. The online questionnaire will be open for three months. I will make several visits to Thai temple, you can ask questions or decide to participate later.

Will I receive feedback on the results of this research?

We will post a summary report of this research in the Thais in New Zealand Facebook group and at Watyarnprateep Buddhist Temple, Wat Dipadhammarama and Vimutti Buddhist Monastery.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project

Supervisor, Amanda Lees amandab.lees@aut.ac.nz. 64+ 9 921 9999 Ext 7647.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTC, Kate O'Connor, ethics@aut.ac.nz , . 64+ 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Marturod Buranasakda, hss0672@aut.co.nz

Project Supervisor Contact Details:

Amanda Lees, amandab.lees@aut.ac.nz. 64+ 9 921 9999 Ext 7647.

Approved by the Auckland University of Technology Ethics Committee on type the date final ethics approval was granted, AUTC Reference number type the reference number

Part 1. General information.

This part will ask about the general information of participants.

Gender

- ☐ Male
 - ☐ Female
 - ☐ Gender diverse
-

Age

- ☐ 30 or younger
 - ☐ 31-40
 - ☐ 41-50
 - ☐ 51-60
 - ☐ 61-70
 - ☐ 71-80
 - ☐ 81 or older
-

Are you Thai?

☐ Yes

☐ No → This is the end of questionnaire. Thank you for your time but you are not eligible
for this survey

Are you a health professional?

☐ Yes → This is the end of questionnaire. Thank you for your time but you are not eligible
for this survey

☐ No

Do you live in Auckland?

☐ Yes

☐ No

Religion

☐ Buddhism

☐ Christian

☐ Muslim

☐ None

☐ Other, please specify _____

Highest education level

- ☐ Less than high school
 - ☐ High school
 - ☐ Undergraduate
 - ☐ Post-graduate
 - ☐ Masters
 - ☐ Doctorate
-

Were you born in New Zealand?

- ☐ Yes
- ☐ No



If you were not born in New Zealand, how long have you been living in New Zealand for?

- ☐ Less than 1 year
 - ☐ 1-5 years
 - ☐ 6-10 years
 - ☐ 11-20 years
 - ☐ 21-30 years
 - ☐ 31 years or longer
-

Have you ever heard about cardiopulmonary resuscitation or CPR before?

☐ Yes

☐ No

Part 2. Knowledge of CPR.

This part of questionnaire will ask about what participants know about CPR.



"CPR is a life saving procedure to help maintain circulation for a person in cardiac arrest by providing chest compression with or without artificial breathing. Doing CPR, can double or triple the survival of a cardiac arrest victim."

Have you ever had to perform bystander CPR on a real cardiac arrest person?

☐ Yes

☐ No

Have you ever attended a CPR training course before?

☐ Never, please continue on section 1

☐ Yes, please continue on section 2

Section 1. Please answer this section if you have never had CPR training before. If you have received training CPR, please ignore this section.

What are the barriers or reason that you would not attend CPR training course? You can choose more than one answer.

- ☐ I don't know how to join
- ☐ I don't have time
- ☐ It is not necessary
- ☐ I don't think I have ability to learn or perform CPR
- ☐ I cannot afford to pay for CPR course
- ☐ Other, please specify _____

Please continue to part 3

Section 2. Please answer this section if you had CPR training before. If you have never trained CPR before, please ignore this section.

How many times have you attended CPR training?

- ☐ 1
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ >5
-

When was the last time you had CPR training or learning about CPR?

- ☐ less than 1 year
 - ☐ 1-2 years
 - ☐ 3-5 years
 - ☐ 6- 10 years
 - ☐ 11 years or more
-

If someone collapses, what is the number to call for help?

- ☐ 105
- ☐ 111
- ☐ 112
- ☐ 911

When performing CPR, where should you put your hands?

- ☐ Left side of chest wall
- ☐ Middle of chest wall
- ☐ Right side of chest wall

For an adult, how deep should chest compression be?

- ☐ 2cm
- ☐ 3 cm
- ☐ 4 cm
- ☐ 5 cm

At what rate per minute should you aim to do chest compressions?

- ☐ At least 50
 - ☐ At least 100
 - ☐ 100-120
 - ☐ 120-150
-

What is an automatic external defibrillator (AED) used for?

- ☐ For calling the ambulance
 - ☐ For giving a shock and reverse heart to normal beating
 - ☐ For mechanical chest compression
-

Do you know where is the nearest AED to you work place or home?

- ☐ Yes
- ☐ No

Part 3. Attitudes toward CPR.

This part will ask participants about the attitudes toward willingness to perform CPR.

If you discover someone collapsed on the floor, would you be willing to perform CPR?

☐ Yes

☐ No



When you see someone collapse, do you think you can perform some of these procedures? You can choose more than one answer.

- ☐ Touching a person to check for response
- ☐ Calling ambulance
- ☐ Providing chest compressions
- ☐ Opening the airway
- ☐ Giving mouth-to-mouth breathing
- ☐ Using AED and deliver electric shock to a person

Which of these factors might prevent you performing CPR? You can choose more than one answer.

<input type="radio"/> Person is a stranger	<input type="radio"/> I cannot remember how to perform CPR
<input type="radio"/> Person is a family member	<input type="radio"/> I am afraid of doing further harm to a person
<input type="radio"/> Person is someone I know	<input type="radio"/> I am afraid of physical contact with a person
<input type="radio"/> Person is different ethnicity or religion to me	<input type="radio"/> I am afraid of contact body secretions or disease transmission
<input type="radio"/> Person is opposite gender	<input type="radio"/> I am afraid of exposure of my migration status
<input type="radio"/> Person is a child	<input type="radio"/> I don't know what the person wishes
<input type="radio"/> Person is an older person	<input type="radio"/> My communication in English is limited
<input type="radio"/> I lack of confidence to perform CPR	<input type="radio"/> I leave it to the medical professionals
<input type="radio"/> Other reason, please specify	

Would you be more likely to do CPR if the emergency centre gave you instructions over the phone?

☐ Yes

☐ No

Did you know that rescuers are protected against lawsuits when performing bystander CPR in New Zealand?

☐ Yes

☐ No

In what ways do your personal beliefs, culture or religion affect what you think about CPR and might affect your decision to perform bystander CPR? You can choose more than one answer.

☐ I want to perform CPR because helping people is the good thing to do.

☐ I think CPR would cause a person suffering by prolonging life

☐ I believe CPR would affect the cycle of rebirth

☐ I would like my family member to die at home rather than in the hospital

☐ I prefer a peaceful death

☐ CPR does not support a good death

☐ CPR is against karma

☐ The acceptance of death is one of the keys to attaining nirvana

Please expand on how your beliefs influence your views on bystander CPR. I am particularly interested in your personal views. Thank you for taking extra time here.

.....
.....
.....
.....

This is the end of questionnaire. If you are comfortable with your responses and with participating, please return to the drop box. Thank you for your participating. If you are interested in training CPR, please look online for St John, Red Cross or other private providers.

c) Paper-based participant information sheet and questionnaire in Thai

ความรู้และทัศนคติของคนไทยในเมืองโอ๊คแลนด์ต่อการทำการช่วยฟื้นคืนชีพเบื้องต้นโดยผู้เห็นเหตุการณ์

วัตถุประสงค์งานวิจัย

การทำการช่วยฟื้นคืนชีพเบื้องต้น หรือ cardiopulmonary resuscitation หรือ CPR เป็นหัตถการที่ทำเพื่อช่วยเหลือผู้ที่ประสบภาวะหัวใจหยุดเต้นให้มีการทำงานของหลอดเลือดและหัวใจ โดยการทำการกดหน้าอกของผู้ป่วยและอาจจะมีการช่วยหายใจร่วมด้วย บางท่านอาจจะได้เห็นการทำการช่วยเหลือฟื้นคืนชีพจากละครโทรทัศน์โดยการใช้มือกดที่หน้าอกของผู้ที่ประสบภาวะหัวใจหยุดเต้น โดยปกติการทำ CPR มักจะทำในโรงพยาบาลแต่ในบางครั้งเมื่อบุคคลเกิดภาวะหัวใจหยุดเต้นนอกโรงพยาบาล ผู้เห็นเหตุการณ์สามารถที่จะช่วยทำ CPR ขณะที่รอความช่วยเหลือจากบุคลากรทางการแพทย์ได้ วัตถุประสงค์งานวิจัยนี้มุ่งที่จะทราบถึงองค์ความรู้และทัศนคติของคนไทยที่อาศัยอยู่ในเมืองโอ๊คแลนด์ มีต่อการทำ CPR เพื่อเพิ่มพูนความเข้าใจและทราบถึงปัจจัยที่ส่งผลต่อการเข้าช่วยเหลือทำการ CPR ในกลุ่มของคนไทยในเมืองโอ๊คแลนด์ การเข้าร่วมงานวิจัยของท่านจะเป็นประโยชน์ต่อชุมชนคนไทยที่อาศัยอยู่ในเมืองโอ๊คแลนด์และสามารถเป็นแนวทางให้ระบบสาธารณสุขของประเทศนิวซีแลนด์มีความเข้าใจและสามารถที่จะเข้าถึงให้บริการชุมชนคนไทยอย่างเหมาะสม

การคัดเลือกและเชิญเข้าร่วมงานวิจัย

ท่านจะได้ถูกเชิญเข้าร่วมงานวิจัยผ่านโฆษณาทางเฟสบุ๊ค หรือการชักชวนตัวต่อตัว ในการศึกษาครั้งนี้ต้องการ

- คนไทย
- อายุมากกว่า 20 ปี
- อาศัยอยู่ในเมืองโอ๊คแลนด์
- ไม่ได้เป็นบุคลากรทางการแพทย์

ท่านจะเข้าร่วมงานวิจัยนี้ได้อย่างไร

ท่านสามารถเป็นส่วนหนึ่งของงานวิจัยได้โดยช่วยตอบคำถามเกี่ยวกับ การช่วยฟื้นคืนชีพเบื้องต้น โดยผู้เห็นเหตุการณ์ โดยการตอบคำถามท่านสามารถเลือกแบบสอบถามที่เป็นกระดาษแบบสอบถามหรือแบบสอบถามออนไลน์ การเข้าร่วมในงานวิจัยครั้งนี้ของท่านสามารถทำได้โดยสมัครใจ ท่านสามารถปฏิเสธที่จะเข้าร่วมหรือสามารถยกเลิกการเข้าร่วมในงานวิจัยได้โดยไม่กดส่งคำตอบออนไลน์หรือไม่ส่งกระดาษคำถามคืนในกล่องตอบรับที่ได้จัดไว้ การ

ตัดสินใจยกเลิกการเข้าร่วมงานวิจัยจะได้ไม่ส่งผลใด ๆ ต่อความสัมพันธ์ระหว่างผู้วิจัยและท่าน การเข้าร่วมงานวิจัยจะไม่ส่งผลกระทบต่อสถานะผู้อพยพ และการจ้างงานของท่าน

การดำเนินการวิจัย

ท่านจะได้รับให้ตอบแบบสอบถาม โดยคำถามจะเกี่ยวกับความรู้และทัศนคติของท่านต่อการช่วยเหลือพื้กันชีพผู้ป่วยหัวใจหยุดเต้นเบื้องต้น โดยผู้เห็นเหตุการณ์ โดยแบบสอบถามจะใช้เวลาประมาณ 10 นาที

ผลกระทบที่อาจเกิดขึ้นในงานวิจัย

งานวิจัยอาจมีกล่าวถึงผู้ประสบภาวะหัวใจหยุดเต้นซึ่งอาจทำให้ท่านไม่สบายใจได้ อย่างไรก็ตามถ้าท่านรู้สึกว่าได้รับผลกระทบจากงานวิจัยท่านสามารถถอนตัวจากการเข้าร่วมงานวิจัยโดยไม่ส่งแบบสอบถามกลับคืน

ประโยชน์ที่ได้รับจากการเข้าร่วมงานวิจัย

การเข้าร่วมงานวิจัยนี้อาจไม่ก่อประโยชน์โดยตรงแก่ตัวท่าน แต่ข้อมูลที่ได้รับจากท่านนั้นจะก่อประโยชน์ต่อส่วนรวมในชุมชนในการกำหนดการเรียนการสอนเรื่องการช่วยเหลือพื้กันชีพผู้ประสบภาวะหัวใจหยุดเต้น โดยผู้เห็นเหตุการณ์และการขับเคลื่อนเพื่อปรับการให้ความรู้และการปฏิบัติการพื้กันชีพผู้ประสบภาวะหัวใจหยุดเต้นสอดคล้องกับวัฒนธรรมและความเชื่อของคนไทยที่อาศัยในเมืองโอ๊คแลนด์ อนึ่ง ส่วนหนึ่งของผลการวิจัยจะถูกนำไปใช้เป็นส่วนหนึ่งของงานนิพนธ์ระดับปริญญาโทของหนึ่งในผู้วิจัยและอาจใช้ตีพิมพ์หรือเผยแพร่สู่สังคม

การรักษาความเป็นส่วนตัวของผู้เข้าร่วมงานวิจัย

หากท่านเข้าร่วมในงานวิจัย แบบสอบถามและคำตอบของท่านจะถูกจัดเก็บแบบไม่เป็นการระบุตัวตน (anonymous) ชื่อและข้อมูลส่วนตัวของท่านจะไม่ได้รับการเปิดเผย และไม่สามารถระบุตัวตนของผู้ให้ข้อมูล

ค่าใช้จ่ายในการเข้าร่วมงานวิจัย

ไม่มีค่าใช้จ่ายใด ๆ ในการเข้าร่วมงานวิจัย มีเพียงการเสียเวลาของท่านประมาณ 10 นาที

เวลาในการตอบรับงานวิจัย

ท่านไม่จำเป็นต้องตอบรับเข้าร่วมการศึกษาในทันที ท่านสามารถใช้เวลาอ่าน หรือสอบถามเพิ่มเติมเกี่ยวกับข้อมูลงานวิจัยได้ โดยสอบถามกับผู้วิจัยโดย email: hss0672@aut.ac.nz งานวิจัยจะเปิดให้ตอบคำถามระหว่าง 1 ธันวาคม 2562 ถึง 28 กุมภาพันธ์ 2563

ท่านจะทราบผลการศึกษาได้อย่างไร

ผลการวิจัยจะถูกรายงานผ่านกลุ่ม Facebook คนไทยในนิวซีแลนด์ และตีพิมพ์ในวารสารวิชาการ

หากท่านต้องการติดต่อสอบถามเพิ่มเติมเกี่ยวกับงานวิจัยนี้

หากท่านมีข้อสงสัยหรือข้อกังวลเกี่ยวกับงานวิจัยนี้ โปรดแจ้ง

ผู้กำกับกรวิจัย Amanda Lees ที่ email: Amandab.lees@aut.ac.nz หรือโทร 64+9219999 ต่อ 7647 หรือติดต่อผู้ดูแล

ควบคุมงานวิจัยของมหาวิทยาลัย AUT, Kate O' Connor ที่ email: ethics@aut.ac.nz หรือโทร 099219999 ต่อ 6038

หากท่านต้องการติดต่อผู้วิจัยติดต่อได้ที่ นางสาวมธุรส บุณยศักดิ์ (Marturod Buranasakda) email: hss0672@aut.co.nz

Approved by the Auckland University of Technology Ethics Committee on [date] AUTECH Reference number [#]

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

ส่วนนี้เป็นการสอบถามเกี่ยวกับข้อมูลทั่วไปของท่าน

เพศ

- ☐ ชาย
- ☐ หญิง
- ☐ เพศทางเลือก

อายุ

- ☐ น้อยกว่า 30 ปี
- ☐ 31-40 ปี
- ☐ 41-50 ปี
- ☐ 51-60 ปี
- ☐ 61-70 ปี
- ☐ 71-80 ปี
- ☐ มากกว่า 81 ปี

ท่านเป็นคนไทยหรือไม่

- ☐ ใช่
- ☐ ไม่ใช่ ขอบคุนสำหรับเวลาของท่านแต่ท่านไม่เข้าเกณฑ์ในการศึกษา

ท่านเป็นบุคลากรทางการแพทย์หรือไม่

- ☐ ใช่ ขอบคุนสำหรับเวลาของท่านแต่ท่านไม่เข้าเกณฑ์ในการศึกษา
- ☐ ไม่ใช่

ท่านอาศัยอยู่ในเมืองไอ้คนแลนด์ใช่หรือไม่

- ☐ ใช่
- ☐ ไม่ใช่

ศาสนา

- ☐ พุทธ
- ☐ คริสต์
- ☐ อิสลาม
- ☐ ไม่มีศาสนา
- ☐ อื่นๆ โปรดระบุ _____

การศึกษาขั้นสูงสุด

- ☐ ต่ำกว่าระดับมัธยมศึกษาตอนปลาย
- ☐ ระดับมัธยมศึกษาตอนปลาย
- ☐ ระดับปริญญาตรี
- ☐ ระดับอนุปริญญาโท
- ☐ ระดับปริญญาโท
- ☐ ระดับปริญญาเอก

ท่านเกิดที่ประเทศนิวซีแลนด์หรือไม่

- ☐ ใช่
- ☐ ไม่ใช่



ถ้าท่านไม่ได้เกิดที่ประเทศนิวซีแลนด์ ท่านได้มาอยู่ที่ประเทศนิวซีแลนด์
นานเท่าใด

- ☐ น้อยกว่า 1 ปี
- ☐ 1-5 ปี
- ☐ 6-10 ปี
- ☐ 11-20 ปี
- ☐ 21-30 ปี
- ☐ 31 ปีหรือ นานมากกว่า 31ปี

ท่านเคยได้ยินเกี่ยวกับการทำการช่วยฟื้นคืนชีพหรือ CPR หรือไม่

- ☐ เคย
- ☐ ไม่เคย
-

ส่วนที่ 2 ความรู้เกี่ยวกับการช่วยเหลือนฟื้นคืนชีพหรือ CPR

ส่วนนี้จะเป็นการสอบถามเกี่ยวกับความรู้ของท่านในเรื่องการช่วยเหลือนฟื้นคืนชีพหรือ CPR



“การช่วยเหลือฟื้นคืนชีพหรือ CPR เป็นการปฐมพยาบาลเบื้องต้นโดยการกดที่หน้าอกและ/หรือช่วยหายใจเพื่อให้มีการไหลเวียนของระบบหลอดเลือด และหัวใจชั่วคราวในขณะที่บุคคลประสบภาวะหัวใจหยุดเต้น โดยการทำ CPR สามารถเพิ่มอัตราการรอดชีวิตของผู้ที่ประสบภาวะหัวใจหยุดเต้นได้ 2-3 เท่า”

ท่านเคยได้ให้ความช่วยเหลือฟื้นคืนชีพแก่ผู้หัวใจหยุดเต้นในชีวิตจริงหรือไม่

- ☐ เคย
- ☐ ไม่เคย

คุณเคยได้รับการอบรมการช่วยเหลือฟื้นคืนชีพหรือ CPRหรือไม่

- ☐ ไม่เคยได้รับการอบรม โปรดตอบคำถามในหน่วยที่ 1
- ☐ เคยได้รับการอบรม โปรดตอบคำถามในหน่วยที่ 2

หน่วยที่ 1 โปรดตอบคำถามในส่วนนี้ถ้าท่านไม่เคยได้รับการอบรม CPR

โปรดให้เหตุผลที่ท่านไม่เคยได้รับการอบรม หรือเหตุผลที่ท่านไม่ต้องการเข้าร่วมอบรม ท่านสามารถเลือกได้มากกว่า 1 ข้อ

- ☐ ฉันไม่รู้ว่าจะเข้าร่วมการอบรมได้อย่างไร
- ☐ ฉันไม่มีเวลา
- ☐ ฉันไม่คิดว่ามันจำเป็น
- ☐ ฉันคิดว่าฉันไม่สามารถทำการช่วยเหลือฟื้นคืนชีพได้
- ☐ ฉันไม่สามารถที่จะจ่ายค่าเข้าอบรมได้
- ☐ สาเหตุอื่น _____

เมื่อท่านตอบคำถามนี้แล้วโปรดข้ามไปที่ส่วนที่ 3 ไม่ต้องตอบคำถามในหน่วยที่ 2

ท่านเคยเข้ารับการอบรมเป็นจำนวนกี่ครั้ง

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ >5

ท่านได้เข้ารับการอบรมครั้งสุดท้ายเมื่อใด

- ☐ ภายใน 1 ปี
- ☐ 1-2 ปี
- ☐ 3-5 ปี
- ☐ 6-10 ปี
- ☐ มากกว่า 11 ปี

ถ้าท่านพบคนหมดสติ เบอร์โทรศัพท์ใดที่ท่านจะโทรเพื่อขอความช่วยเหลือ

- ☐ 105
- ☐ 111
- ☐ 112
- ☐ 911

เมื่อท่านทำ CPR ท่านวางมือของท่านบริเวณใดของหน้าอก

- ☐ หน้าอกข้างซ้าย
- ☐ กลางหน้าอก
- ☐ หน้าอกข้างขวา

ในผู้ใหญ่ การทำ CPR ให้กดหน้าอกลึกเท่าใด

- ☐ 2 เซนติเมตร
 - ☐ 3 เซนติเมตร
 - ☐ 4 เซนติเมตร
 - ☐ 5 เซนติเมตร
-

ในการทำ CPR ท่านควรกดหน้าอกที่อัตราความเร็วเท่าใดต่อนาที

- ☐ อย่างน้อย 50 ครั้งต่อนาที
 - ☐ อย่างน้อย 100 ครั้งต่อนาที
 - ☐ 100-120 ครั้งต่อนาที
 - ☐ 120-150 ครั้งต่อนาที
-

ท่านทราบหรือไม่ว่า Automatic external defibrillator หรือ AED ใช้เพื่ออะไร

- ☐ เพื่อเรียกพยาบาล
 - ☐ เพื่อใช้ไฟฟ้ากระตุ้นหัวใจให้กลับมาเต้นปกติ
 - ☐ เพื่อใช้กดหน้าอกอัตโนมัติ
-

ท่านทราบตำแหน่งของเครื่อง AED ที่อยู่ใกล้ที่ทำงานหรือใกล้บ้านของท่านหรือไม่

- ☐ ทราบ
- ☐ ไม่ทราบ

ส่วนที่ 3 ทักษะคิดต่อการช่วยเหลือฟื้นคืนชีพหรือการทำ CPR

ส่วนนี้จะสอบถามท่านเกี่ยวกับทัศนคติของท่านและความยินดีในการช่วยเหลือฟื้นคืนชีพหรือ CPR

ถ้าท่านพบคนหมดสติอยู่ที่พื้น ท่านยินดีที่จะให้การช่วยเหลือฟื้นคืนชีพหรือ CPR หรือไม่

- ☐ ยินดี
 - ☐ ไม่ยินดี
-



ถ้าท่านพบบุคคลหมดสติอยู่ที่พื้น ท่านคิดว่าท่านยินดีและสามารถที่จะทำหัตถการใดได้บ้าง ท่านสามารถเลือกได้มากกว่า 1 ข้อ

- ☐ ฉันยินดีที่จะสัมผัสและตรวจสอบว่าบุคคลนั้นยังมีความรู้สึกตัวหรือไม่
 - ☐ ฉันยินดีที่จะโทรตามรถพยาบาลให้ได้
 - ☐ ฉันยินดีที่จะเปิดทางเดินหายใจให้แก่ผู้หมดสติ
 - ☐ ฉันยินดีที่จะกดหน้าอกให้แก่ผู้หมดสติ
 - ☐ ฉันยินดีที่จะช่วยหายใจ ปากต่อปาก (mouth to mouth ventilation)ให้แก่ผู้หมดสติ
 - ☐ ฉันยินดีที่จะใช้เครื่องกระตุกไฟฟ้าและกดปุ่มช็อกไฟฟ้าให้แก่ผู้หมดสติ
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ท่านคิดว่าสาเหตุดังต่อไปนี้อาจทำให้ท่านรู้สึกไม่สบายใจ หรือเป็นสาเหตุที่ทำให้ท่านเลือกที่จะไม่ให้ความช่วยเหลือฟื้นคืนชีพหรือไม่ ท่านสามารถเลือกได้มากกว่า 1 ข้อ

<input type="checkbox"/> บุคคลนั้นเป็นคนแปลกหน้า	<input type="checkbox"/> ฉันกลัวว่าจะทำให้บุคคลนั้นบาดเจ็บมากขึ้นหรือเสียชีวิตในภายหลัง
<input type="checkbox"/> บุคคลนั้นเป็นคนในครอบครัว	<input type="checkbox"/> ฉันกลัวที่จะต้องสัมผัสกับบุคคลนั้น
<input type="checkbox"/> บุคคลนั้นเป็นบุคคลที่รู้จัก	<input type="checkbox"/> ฉันกลัวว่าจะโดนสัมผัสสารคัดหลั่ง หรือ โรคติดต่อจากบุคคลนั้น
<input type="checkbox"/> บุคคลนั้นเป็นคนละชนชาติ หรือศาสนากับฉัน	<input type="checkbox"/> ฉันไม่มีความรู้เพียงพอที่จะให้ความช่วยเหลือ
<input type="checkbox"/> บุคคลนั้นเป็นเพศตรงข้ามกับฉัน	<input type="checkbox"/> ฉันกลัวว่าถ้าฉันให้ความช่วยเหลือสถานะเรื่องการอพยพเข้าเมืองของฉันจะถูกเปิดเผย
<input type="checkbox"/> บุคคลนั้นเป็นเด็ก	<input type="checkbox"/> ฉันไม่รู้บุคคลนั้นอยากมีชีวิตอยู่หรืออยากเสียชีวิตมากกว่า
<input type="checkbox"/> บุคคลนั้นเป็นผู้สูงอายุ	<input type="checkbox"/> ภาษาอังกฤษของฉันไม่ดีมาก ทำให้ฉันรู้สึกลำบากใจที่จะให้ความช่วยเหลือ
<input type="checkbox"/> ฉันไม่มั่นใจที่จะให้ความช่วยเหลือ	<input type="checkbox"/> ฉันคิดว่ามันเป็นหน้าที่ของบุคลากรทางการแพทย์
<input type="checkbox"/> โปรดระบุสาเหตุอื่น ๆ ที่ทำให้ท่านรู้สึกไม่สบายใจที่จะทำ CPR	

ถ้ามีศูนย์ช่วยเหลือบอกขั้นตอนการทำ CPR ทางโทรศัพท์ขณะเจอผู้ประสบภาวะหัวใจหยุดเต้น จะช่วยให้ท่านกล้าที่จะทำ CPR มากขึ้นหรือไม่

- ☐ ใช่
- ☐ ไม่ใช่

ท่านทราบหรือไม่ว่าในประเทศนิวซีแลนด์ผู้ให้ความช่วยเหลือผู้ประสบภาวะหัวใจหยุดเต้นจะได้รับความคุ้มครองไม่ให้โดนฟ้องร้อง

- ☐ ทราบ
- ☐ ไม่ทราบ

จากความเชื่อส่วนตัวและความเชื่อทางศาสนาของท่าน ท่านคิดว่าเหตุผลใดที่จะส่งผลต่อการตัดสินใจของท่านที่จะเลือกทำหรือไม่ทำ CPR

<input type="checkbox"/> ฉันต้องการทำ CPR เพราะการช่วยเหลือผู้อื่นเป็นสิ่งที่ดี
<input type="checkbox"/> ฉันคิดว่าการทำ CPR ทำให้ผู้ป่วยต้องทุกข์ทรมานมากขึ้นเนื่องจากการยืดชีวิตของผู้ป่วยออกไป
<input type="checkbox"/> ฉันคิดว่าการทำ CPR อาจส่งผลต่อการเกิดใหม่ในชาติหน้า
<input type="checkbox"/> ฉันอยากให้สมาชิกในครอบครัวของฉันเสียชีวิตที่บ้านมากกว่าที่จะทำ CPR แล้วอาจจะไปเสียชีวิตในโรงพยาบาล
<input type="checkbox"/> ฉันอยากการจากไปของฉันหรือสมาชิกในครอบครัวเป็นไปอย่างสงบสุข
<input type="checkbox"/> การทำ CPR ไม่ถือเป็นการตายดี
<input type="checkbox"/> การทำ CPR เป็นการผิดกฎแห่งกรรม
<input type="checkbox"/> การยอมรับในเรื่องการตายเป็นแนวทางสู่นิพพาน

ข้าพเจ้ามีความสนใจอย่างมากในความคิดเห็นของท่าน โปรดช่วยอธิบายเกี่ยวกับความเชื่อของท่านที่อาจมีผลต่อการตัดสินใจว่าจะช่วยหรือไม่ช่วยทำ CPR ให้แก่ผู้ประสบภาวะหัวใจหยุดเต้น ขอขอบพระคุณที่สละเวลาเพิ่มเพื่อตอบคำถามนี้

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สิ้นสุดการตอบแบบสอบถาม ถ้าท่านต้องการส่งแบบสอบถามนี้ โปรดส่งในกล่องส่งแบบสอบถาม

ขอขอบพระคุณเป็นอย่างสูงสำหรับเวลาของท่าน ถ้าท่านสนใจเรื่องการฝึกอบรม CPR ท่านสามารถเข้าดูรายละเอียดที่เว็บไซต์ของ **St John, Red Cross** หรือผู้ให้บริการเอกชน