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Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst parents residing in Southern Tasmania

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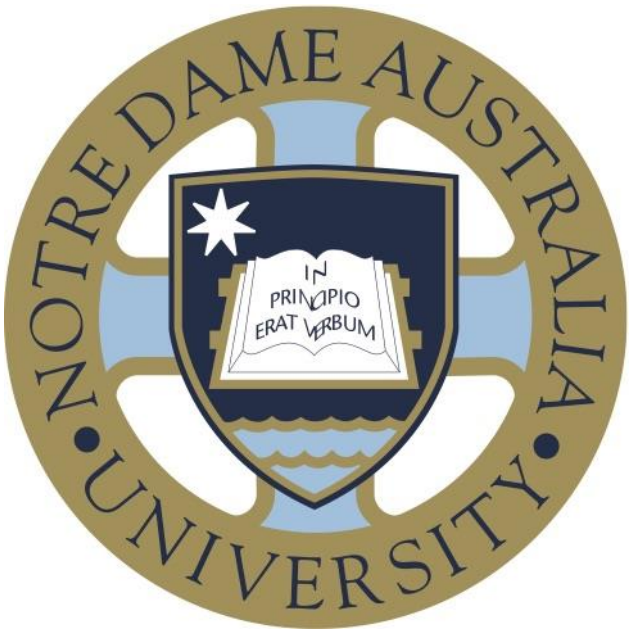
A thesis submitted in fulfilment of the of the requirements for the degree of Master of Philosophy



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Declaration of authorship

This thesis is the candidate's own work and contains no material which has been accepted for the award of any degree or diploma in any other institution.
To the best of the candidate's knowledge, the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

Nakita Stephens
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List of Abbreviations

CPR: Cardiopulmonary Resuscitation

HREC: Human Research Ethics Committee

LiL: Launch into Learning

NICU: Neonatal Intensive Care Unit

OHCA: Out of Hospital Cardiac Arrest

SIDS: Sudden Infant Death Syndrome

SUDI: Sudden Unexpected Death in Infancy

WHO: World Health Organisation

List of Definitions

Adult CPR: Cardiopulmonary resuscitation for those aged over 8 years

Antenatal: Occurring before birth; during pregnancy (prenatal)

Antenatal class: Pre-birth education for expectant parents

Bystander: Non-medically trained layperson

Cardiac Arrest: Abrupt cessation of heart function in a person

Cardiopulmonary Resuscitation: Emergency procedure that combines chest compressions with ventilations to manually preserve intact brain function until further measures can be taken to restore spontaneous blood circulation and breathing in a person.

Compressions: the act, process or result of compressing especially when involving a compressing force on a bodily part

Infant: child aged under 12 months of age

Infant CPR: Cardiopulmonary resuscitation for those aged under 12 months

Neonate: Baby aged under 28 days of life

Paediatric CPR: Cardiopulmonary resuscitation for those aged between 1 to 8 years

Postnatal: Occurring after birth especially immediately after birth

Sequalae: Any abnormality following or resulting from a disease, injury or treatment.

Ventilations: A system of means of providing fresh air. The circulation and exchange of gases in the lungs that is basic to respiration

Abstract

Prenatal and postnatal education help to prepare parents to care appropriately for their newborn child. This education however, rarely includes learning infant cardiopulmonary resuscitation or CPR. CPR for Infants differs from both adult and paediatric resuscitation techniques, and most people who do learn CPR usually only learn adult techniques. Research shows that bystander intervention with CPR improves the chances of both survival and survival without sequelae in out of hospital arrests. Including Infant CPR education as part of the general parent education could assist in scenarios of Sudden Infant Death Syndrome (SIDS) or other emergency situations. Some concern has been raised over whether this would affect parents' anxiety levels, however most research indicates that it helps to decrease anxiety and increase confidence.

This was an exploratory pilot study on which further large studies could be based. This study was a descriptive convergent (concurrent) mixed methods study utilising a survey to gather both quantitative and qualitative data in conjunction with interviews with nurses from the neonatal intensive care unit (NICU). The hard copy survey collected data to determine current infant CPR knowledge levels using closed questions and perceptions of infant CPR using open ended questions. It also provided information about the parents' perceived need for infant CPR education as part of standard pre and postnatal education. The sample population involved parents of infants and children up to two years of age, located in Southern Tasmania. The interviews were conducted with neonatal intensive care (NICU) nurses in order to

gather an understanding of what current education is provided and what nurses perceive in regard to infant CPR being introduced as part of discharge education.

From the data collected, it was found that the overwhelming majority of parents would like to learn infant CPR around the birth of a baby and felt that such education would help improve confidence and decrease anxiety associated with having a new baby. The nurses interviewed felt that the education could be included with minimal disruption and if scheduled well and education provided to the nurses, there would be minimal issue in providing parents with this education.

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I would like to dedicate this work in loving memory of my partner Andrew (Andy) Scott Brazendale. The proudest supporter of all my endeavours. Forever loved and sadly missed.

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Chapter One: Introduction

1.1 Background

The birth of a new baby can be both an exciting and daunting experience for many parents. Among an array of classes and instructional material offered to both prospective and new parents during the antenatal/postnatal period, there remain some areas that receive very little focus, such as Cardiopulmonary resuscitation or CPR training. Currently between hospital antenatal classes, postnatal ward teachings and attendance at parent groups, parents are aware of the birthing procedure and different options available for their impending birth and how to care for their newborn baby. Prospective parents also learn how to care for their new baby and the options available in how to perform these tasks. Options may include learning about the warning signs and symptoms of postnatal depression, how to breastfeed, bathe, safe sleeping techniques and even how to change the baby's nappy, which are all acknowledged to be the basics for keeping a newborn infant alive (Barry, 2015). However, one other important area that is often overlooked is learning resuscitation techniques for newborns and infants which is not routinely taught to parents (Barry, 2015). Teaching infant CPR is not currently included in the clinical practice guidelines for antenatal care, released by the Department of Health from the Australian Government in November 2014. Sudden Infant Death Syndrome (SIDS) and Sudden Unexpected Death in Infancy (SUDI) including fatal sleeping accident, defined as a death that has occurred in the infants sleep environment that was potentially preventable (Department of Health, 2013), generally occurs between the ages of one

and 12 months of age, with peak incidence of SIDS occurring between two to four months of age (Red Nose, 2016).

1.2 Topic and purpose

The topic of this research is perceptions of parental awareness, knowledge and anxiety regarding Infant CPR training amongst parents residing in Southern Tasmania. This study sought to determine (i) the current level of knowledge of Infant CPR amongst parents of children aged two and under, (ii) whether parents' thought learning infant CPR around the time of a birth of a child would have an effect on their levels of anxiety either positively or negatively and (iii) when parents perceive to be the best time to learn around the birth of a baby. This study utilised a survey method to determine parents' knowledge of Infant CPR and how they felt about learning Infant CPR around the birth of a baby. The interviews with nurses sought to explore their opinions and insights on integrating Infant CPR education into the current discharge education provided. As discharge education is provided by the nurses caring for the patients, it is important to discover their views on the subject and whether they feel this is education they can provide, should provide and is wanted by parents. It is also important to determine whether adding Infant CPR to discharge education may negatively impact nurses who can already be time constrained when providing care.

1.3 Significance

Cardiopulmonary resuscitation is an increasingly standard acquired skill within the general community, with approximately 50% of respondents in one study reporting that they had attended some form of CPR training (Cu, Phan & O'Leary, 2009).

Prompt administration of CPR is the second step in the chain of survival produced by the American Heart Association (2018). The chain of survival consists of five steps which are early recognition/call for assistance, prompt CPR with chest compressions, rapid defibrillation, basic advanced care/advanced life support and post cardiac arrest care which is understood worldwide to be critical in survival without sequalae. A study by Knight, Wintch, Nichols, Arnolde and Schroeder (2013) noted that five of their study participants had utilised the infant CPR they were taught, and that their children recovered completely with no sequalae. It is also noted in a study by Chia and Lian (2014), that infants are the most likely paediatric population that would require CPR. However, this form of CPR education is usually focused on adult resuscitation, which is considerably different to infant resuscitation. Indeed, infant resuscitation is often given less priority/time during education sessions, which can subsequently increase fear of performing infant CPR incorrectly, given that participants are left with the understanding that infant CPR is performed differently to its adult counterpart (Pierick, Waning, Patel & Atkins, 2012).

Resuscitation education is available in Australia from organisations such as St. John Ambulance and Royal Life Saving Society as well as several other organisations. However, these educational courses can be expensive, which could render them unaffordable for families or new parents. Many parents may also not be aware of the significance of learning infant CPR or may not even be aware that learning infant CPR is an option, or where to look for training. Furthermore, the time required for parents to attend external classes may discourage many parents due to lack of resources for child care. The provision of training specifically related to infant resuscitation at a time when pregnant women and their partners will be most likely to require this

information, could become part of standard practice and freely available to all parents of newborns and infants.

Parents of specifically 'at risk' neonates, described by the World Health Organisation (WHO) 'as a child under 28 days of age when they are most vulnerable and have the highest risk of death' (WHO, 2018) are sometimes taught infant CPR before discharge from NICUs. However, this is not a requirement for all NICUs or for every discharge from them. A study by Knight et al. (2013) found that, in general, parents are not taught this crucial information prior to discharge, often due to nursing time constraints and skill levels. There is however, the potential for this type of education to be included as a component of antenatal or postnatal education, if parents perceive that it is an important skill to be learnt as part of their pre and post education on parenting.

1.4 Study Aim and Research Questions

The primary aim of this research is to establish the current level of awareness around CPR training and knowledge of infant CPR amongst parents of newborns in Southern Tasmania. This study will determine whether a knowledge deficit exists amongst this population group, thereby demonstrating whether there is a need for this specific CPR education.

The secondary aims are to (i) determine whether parents of infants believe that having such training would have either a positive or negative effect on anxiety and confidence levels, (ii) to identify the perceived ideal time for parents to learn how to

perform infant CPR and (iii) to explore what are nurses' views about teaching infant CPR.

The research questions are as follows:

- What is the current level of knowledge about infant CPR amongst parents in Southern Tasmania?
- Do a sample of parents in Southern Tasmania perceive that learning CPR would affect their anxiety levels either positively or negatively?
- When do parents perceive is the most appropriate time to learn Infant CPR around the time of a birth of a child?
- What are nurses' views on providing infant CPR education as part of discharge education to parents in the Neonatal Intensive Care unit?

1.5 Thesis configuration

This thesis comprises six chapters. Chapter one provides a background on Infant CPR, parent education, the study aims and research questions. Chapter two provides a review of the relevant literature surrounding infant CPR, parent education, benefits and psychological impact on parents of learning infant CPR. Chapter three discusses the methodologies used to conduct this pilot study including survey and interview design, as well as the sample population. Chapter four provides an analysis of the quantitative and qualitative data collected through survey and interviews. Chapter five discusses the findings from the analysis and how it relates to the relevant

literature. And chapter six provides recommendations and conclusions drawn from this pilot study.

Chapter Two: Literature Review

2.1 Introduction

The literature around learning infant CPR or CPR in general covers many varying facets such as retention of information, use of information and techniques as well as instructional approaches. Although numerous studies have been completed regarding the best method of teaching infant CPR to improve retention, no studies could be sourced that indicated teaching parents infant CPR caused any harm (psychological) to the parents. It is however noted, that infant out of hospital cardiac arrests (OHCA) are not as common when compared with adult OHCA, with around 72.71 and 126.52 per 100 000 people respectively in 2015 (Hawkes, Murphy, Dempsey & Ryan, 2015). Nonetheless, it is noted that infants have a lower survival rate for OHCA compared with adults (3.3% and 4.5% respectively), (Hawkes et al. 2015). It is unclear from the literature, whether this lower survival rate, could be related to inadequate infant CPR education. A number of studies have discussed teaching infant CPR to parents, post child birth, however none of the researched literature determined whether this was a skill parents wished to attain and only a few determined parents' current level of knowledge regarding infant CPR, however this was not a focus of that study (Barry, 2015).

The introduction of safety education initiatives such as SIDS and Kids, specifically the "Back to Sleep" campaign, is currently taught to all parents prior to discharge from

hospital (Hendrie & Meadows-Oliver, 2013). Although the overall incidence of Sudden Infant Death has declined, there still remains around 87 confirmed SIDS deaths a year in Australia (Red Nose, 2019; Evans, Bagnall, Duflou & Semsarian, 2013). Whilst prevention is an essential strategy in reducing the incidence of SIDS, it is however, not always successful and, can sometimes lead to the necessity of parents being instructed over the phone, by emergency staff on how to perform a lifesaving technique, which they have often no experience with prior to this event. Although CPR instructions via phone still lead to improved rates of survival with good neurological outcomes, immediate commencement of CPR is preferable in both adults and children (Goto, Maeda & Goto, 2014). In addition, if parents had previously learnt Infant CPR, instructions from emergency personal may potentially be more successful, resulting in the possibility of lives being saved. Parents may also feel more confident and knowledgeable regarding what to do immediately upon finding an unresponsive infant, rather than waiting for instructions from professionals via phone or other bystanders.

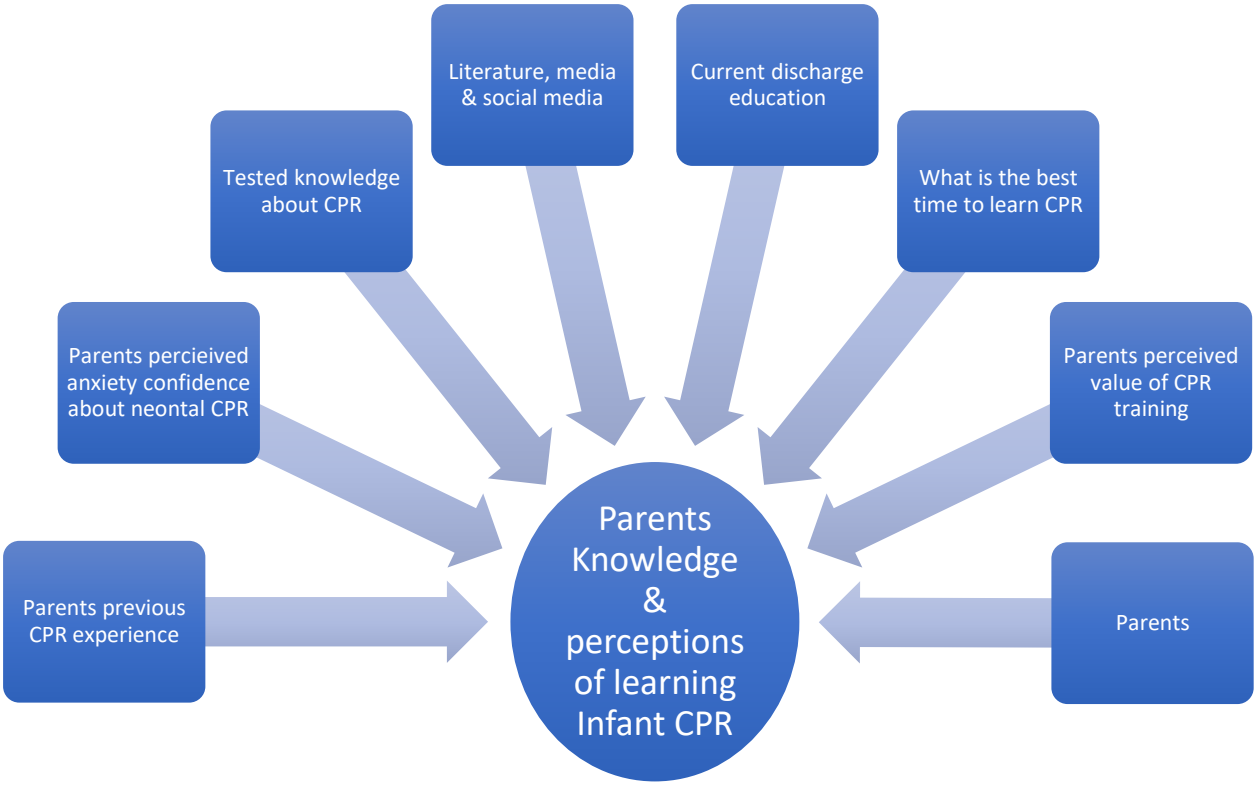
2.2 Conceptual framework and the exploratory nature of this study

Although there is some literature regarding the effectiveness of CPR and teaching parents CPR, this study is considered to be an exploratory one and therefore did not adhere to a particular theory. Thus, study is focused on parents current knowledge, perceived effect of learning CPR and when they felt was the most appropriate time to learn it. Therefore, as maintained by Miles and Huberman (1994) and Smyth (2004) the conceptual framework does not adhere to a particular theory. Instead, the conceptual framework is emergent and avoids adhering to existing theories in case

these may 'mislead' the researcher. Thus, the conceptual framework will emerge as the study proceeds, and parental awareness, knowledge and attitudes towards CPR training, become evident using the survey methodology.

There are however, a number of key areas to consider within the emergent conceptual framework for this study. (See figure 1). Figure 1 demonstrates how the varied and differing aspects will together form the basis of understanding parental knowledge and perceptions of CPR educational requirements.

Figure 1: Factors affecting the development of Conceptual Framework for parent's perceptions of Infant CPR.



2.3 Early parenting days – a time of anxiety and uncertainty

Boykova (2016) stated that many first-time parents may experience anxiety over transferring home from hospital, after giving birth. Indeed, it can be an unsettling and unfamiliar time, particularly for first time parents. Furthermore, this period of time, can be filled with conflicting information from friends and family over how best to care for their baby. Many grandparents, who were not exposed to the "Back to Sleep" campaign created by SIDS and Kids may, for example, instruct first time parents to put their babies to sleep on their stomachs with the time honoured saying of "it was good enough for you when you were a baby" (Stiffler, Cullen, Stephenson, Luna & Hartman, 2016). Additionally, Stiffler et al. (2016) noted that parents often would not take the advice of health professionals, such as general practitioners, midwives or child health nurses, if they did not trust the person providing the advice. This leads to lots of anxiety for first time parents over how to do things the 'right' way (if such a way exists).

Many new products are available that claim to monitor baby breathing however, these types of products are not foolproof and will not necessarily prevent an event happening, but rather warn a parent once a baby has stopped breathing (if the product is used correctly). However, this could mean that an event will render parents, with an unresponsive infant, potentially without knowing how to perform CPR effectively. Furthermore, products designed to monitor infant breathing, may sound an alert or alarm inadvertently and can sometimes foster unnecessary anxiety amongst first time parents. Alternatively, if a product frequently makes false alarms, parents may become complacent and not check on the baby for the sounding of every alarm.

Knight, Wintch, Nichols, Arnolde and Schroeder (2013) found that parents who received infant CPR education, often had decreased anxiety when being discharged from hospital. The parents of infants in Neonatal Intensive Care are a very different population and may potentially already be stressed and anxious due to the difficult start to their baby's life. However, this raises the question as to whether heightened anxiety and stress over their newborn's wellbeing, translates to the broader population of new and first-time parents, whose babies had a 'straightforward' delivery.

2.3.1 Timing of resuscitation training

Stadtlander (2013) noted that the phenomenon known as 'baby brain' amongst new mothers, is well known in the literature and within popular culture. This term refers to the difficulty experienced by pregnant women with short-term memory, forgetfulness and poor recollection. It could not be determined from the literature, how this may affect infant CPR retention rates or if this factor had been considered.

Stiffler, Cullen, Stephenson, Luna and Hartman (2016) noted that teaching the 'safe to sleep' campaign in America, just prior to discharge, lead to less than adequate retention of the education by the parents. Although the study did review retention rates in relation to when the education occurred, it only involved the specific 'safe to sleep' campaign and did not discuss what other education was provided at the same time. Infant CPR education could be provided with discharge education; however, knowledge retention could be poor as was the case with the Stiffler et al. (2016) study.

No study could be sourced that discussed the optimal time for learning infant CPR around the time of giving birth. There are several options to consider when deciding when best to deliver resuscitation training. Timeframes could vary between training prior to birth, prior to discharge from hospital after birth or in an ad hoc manner at parent's groups, which usually occur when the baby is around six weeks old. The latter may well be an advantageous time to learn, as according to Red Nose (2016) the peak incidence of SIDS events, is between two to four months of age. It would however, potentially leave the first six weeks of the infant's life without the parents having this knowledge.

Training prior to birth would avoid this issue. Antenatal classes usually occur in the last months of pregnancy and may be a suitable option for learning. However, as this is usually for first time parents and is not attended by all parents, potentially leading to significant portion of the population missing this education. Another option to deliver the CPR training could be during the midwife visits which occur a few days after the family has been discharged from hospital. However, new parents already have a lot of information to take in during these sessions as well as adjusting to their new life and thus teaching CPR at this time might not be optimal. No literature could be sourced studying this aspect. CPR training needs to be delivered at the right time, and at such a time that will be most beneficial for parental recollection (Barry, 2015). Furthermore, determining any potential effect on anxiety levels is important to determine whether infant CPR may reduce anxiety or conversely, heighten anxiety.

According to Crawford (2011) resuscitation classes were taught at the maternity hospital, however it was suggested that classes may have been better attended had they been held in the local health centres, nurseries or play groups. This concept may also work well when targeting certain groups in the community that may be regarded as higher risk (Crawford, 2011). It was also stated by Crawford (2011) that it is important to ensure that caregivers understand how to deliver CPR. Namely, how to stimulate, clear an airway or start cardiopulmonary resuscitation if the need arises.

2.4 The mechanisms of delivering CPR

In many parts of Europe, particularly in Ireland where a study by Barry (2015) took place, teaching CPR to new parents is not routinely undertaken. The World Health Organisation (2018) have advocated for parents to learn CPR, as it is a critical first response in the 'chain of survival'. The chain of survival is understood worldwide to include five steps; Early recognition and call for emergency assistance, Prompt CPR with chest compressions, Rapid defibrillation, Basic advanced Care and Advanced life support and finally Post cardiac arrest care, (American Heart Association, 2018). Cardiopulmonary resuscitation has been demonstrated as a critical first response in life saving situations in all ages (Moran, Stanley & Rutherford, 2012). As parents are often the first in attendance when their baby needs CPR, this is a critical factor. A number of studies also indicated that parents have indeed used the knowledge learnt from CPR training, upon discharge from hospital. A study by Knight et al. (2013) noted that five participants used the skills they learned in CPR training and that four of those five infants resuscitated, not only survived resuscitation attempts, but also remained neurologically intact. One study showed that the majority of paediatric (including

infants) Out of Hospital Cardiac Arrests or OHCA's, occurred in the home, making parents and family members the first responders (Gelberg et al. 2015). It has also been noted by Chia and Lian (2014) that the most likely paediatric population to suffer a cardiopulmonary arrest including a SIDS event, is amongst infants up to 12 months, and that this is most likely to occur in the home environment with parents being the immediate responders (Moran & Stanley, 2011). According to Akahane et al. (2013) investment in basic life support training for the public (or bystanders in CPR terms) may assist in improving survival rates with favorable neurological outcomes, after an OHCA event. Gelberg et al. (2015) also noted that home environment events were found in the highest proportions amongst the zero to 12-month age group.

2.4.1 Bystander and parent CPR

According to Becker, Vath, Eisenberg and Meischke (1999) bystander CPR is classified as cardiopulmonary resuscitation being provided by a layperson, or non-medically trained personnel. Data from Bergamo, Bui, Gonzales, Hinchey and Sasson's 2016 study, has demonstrated that for every thirty people who receive bystander CPR, one will survive, which demonstrates the importance of bystander CPR in the chain of survival. This is also dependant on the quality of CPR, but bystander CPR remains extremely important none the less (Srither & Lateef, 2016). The WHO stance on this topic, is based on a number of studies that demonstrate favourable outcomes, as a consequence of bystander CPR (Bergamo et al. 2016; Moran, Stanley, & Rutherford, 2012). According to Bergamo et al. (2016) providing CPR as a bystander in OHCA can double or triple survival, unfortunately bystander CPR is only provided in less than half (46%) of OHCA's. A study by Gelberg et al. (2015) found that bystander witnessed

cardiac arrest also improved survival in the under 12 months age group. Bystander CPR has also been noted to help improve neurological outcomes and neurologically intact survival from OHCA's, (Beskind et al. 2016). However, according to Beskind et al. (2016) it is only provided in 30 – 50% of cases. There are several reasons why CPR trained bystanders are reluctant to provide CPR. These reasons include panic in the moment, fear of incorrect CPR performance, which includes potentially injuring the person, transmission of disease, along with the involvement in possible legal disputes (Bergamo et al. 2016). A study by Chia and Lian, (2014) found that a number of participants in their study, would refuse to perform bystander CPR on their own or other people's children due to a lack of confidence and fear of litigation, this is important for educators of CPR courses to take into account, and provide further education in these areas, as well as providing regular refresher courses to assist with confidence levels. Given that parents are usually the first to find their child unresponsive, it is imperative that swift CPR is commenced to improve outcomes for the infant. Higgins et al. (1989) found that patients who had delayed commencement of CPR, had poor prognosis, due to the delay, whereas 46% of those who had swift commencement of CPR survived without sequalae.

Neonatal Intensive Care Units in many American hospitals require parents to participate in CPR training prior to the discharge of their infant (Moser, Dracup & Doering, 1999). A study by Higgins, Hardy and Higashino (1989) reviewed practices at a number of different hospitals, some of which provided CPR training and others that did not. It was noted that only infants and children from the hospitals that taught CPR, had attempts to resuscitate them made by their parents, and there were no

survivors from hospitals that did not teach CPR. Teaching Infant CPR prior to discharge has been anecdotally noted not to be the case in a number of Australian hospitals, although it varies from state to state and hospital to hospital. A review regarding NICU provision of CPR training to parents, conducted by Lumsden and Holmes (2010) found that of the 15 units reviewed in the UK, only eight offered parents CPR training, while the other seven only offered it to parents of patients with specific conditions. Knight, Wintch, Nichols, Arnolde and Schroeder (2013) found that many physicians felt that CPR training for parents is important, despite the fact that it is not always routinely provided for parents at discharge. The literature shows many gaps in this area of study, particularly in the area of current parental knowledge and when to teach parents infant CPR, such given that there has not been a more recent study conducted by Higgins et al. in 1989. Nonetheless, in the study by Higgins et al. (1989) it was noted that 100% of survivors came from the hospitals that taught CPR and when compared with a previous study of a similar nature where patients presenting to an emergency room requiring CPR had very poor prognosis due to delayed CPR. Further, Higgins et al. (1989) found that 46% were successfully resuscitated by parents with no sequalae.

First aid and CPR courses typically focus on adult CPR, with infant resuscitation often given less priority and time during the CPR courses (Pierick et al. 2012). However, the causes of cardiac arrest are different between adult and infant populations, with adults often experiencing a sudden cardiac event, whilst a cardiac event amongst the paediatric population usually involves respiratory arrest *prior to* cardiac arrest (Hawkes, Murphy, Dempsey & Ryan, 2015), or secondary to a prolonged period of

hypoxia, resulting in respiratory failure leading to circulatory hypo perfusion (Gelberg et al. 2015). This indicates a potential need for teaching of specific paediatric and infant cardiopulmonary resuscitation, focusing on these differences. The incidence of bystander intervention in a witnessed event ranges from study to study, from 27% (Cu et al, 2009), 43% (Barry, 2015) and up to 69% (Straney et al. 2015). Several studies have found that rates of bystander CPR differ between regions within different states and countries (Bergamo et al. 2016; Beskind et al. 2016; Straney et al. 2015; Deasy et al. 2010). For optimal survival and positive neurological outcomes after a cardiopulmonary arrest or from a sudden infant death event prompt CPR must be initiated (Knight, Wintch, Nichols, Arnolde & Schroeder, 2013; Parsons & Mackinnon, 2009). A study by Chia and Lian (2014) noted that the chance of survival in children who had CPR administered within 4 minutes was 43% which decreased by 7 – 10% for every passing minute. Many infants who have a respiratory arrest will respond to prompt CPR, or bystander CPR (Chia, & Lian, 2014; Parsons, Mackinnon, 2009), however only around 30 – 50% of infants received bystander CPR prior to the arrival of emergency services (Knight et al. 2013).

2.4.2 Parental Knowledge of CPR

The researcher sourced only one article which examined current parental knowledge of CPR. Cu et al. (2009) utilised a self-administered questionnaire to parents willing to participate in the study, who were attending the emergency department of a large Australian children's hospital during 2009. The researchers were able to obtain 348 responses, from which it determined that 53% of respondents had undergone some form of CPR training previously, with the vast majority of the courses attended

involving adult CPR, and first aid only. However, only 25% had attended training within the last 12 months whilst 40% of respondents had attended some form (predominantly adult) CPR training within the last one to five years, and 35% had training more than 5 years ago (Cu et al. 2009). It is widely acknowledged that the longer the length of time between CPR classes is a predictor of poor performance of CPR, with deterioration of basic life support knowledge noted to occur within as little as two to three months' post education (Beskind et al. 2016; Papalexopoulou et al. 2014). Cu et al. (2009) also noted in their study that confidence of respondent's ability to perform CPR declined significantly as the length of time since attendance at a CPR classes increased. There was a noted deterioration of CPR skills as little as two months after learning (Beskind et al. 2016), with refresher courses usually occurring every two years post initial certification (Srither & Lateef, 2016). However, clearly there are many potential benefits to teaching infant specific CPR.

2.5 The Potential benefits of teaching Infant CPR

Although the incidence of out of hospital cardiac arrest in infants is low at 72.7 per 100 000 person-years, it is still considered a significant issue (Chia & Lian, 2014). Chia et al. (2014) also noted importantly that the most likely reason for an out of hospital cardiac arrest in infants is due to sudden infant death syndrome or SIDS. This was also noted by Tonkin, Davis and Gunn (1995) who stated that SIDS or life-threatening events in infants, often occur around six months of age, with a peak at around four months. Tonkin et al. (1995) also noted that these were the most likely conditions to require CPR in infants.

Knight et al. (2013) conducted a study where they instructed 117 parents of high-risk infants in CPR. Upon review, they found that five of the 117 participant parents had used the acquired skills, and of that five, four infants had survived to discharge neurologically intact. Pelligrino, Bogumil, Epstein and Burke (2018) noted that healthcare professionals teaching parents infant CPR, has the potential to improve infant mortality rates. Barr et al. (2013) stated it is especially important for parents to learn infant CPR, and that during the year of 2005, 2230 infants (under one year) died of Sudden infant death syndrome in America, earning SIDS the title of the third leading cause of death among infants. However, in a study by Moran, Stanley and Rutherford (2012), the parents who had witnessed a cardiopulmonary arrest of their child performed CPR at a low rate, suggesting that infant CPR is not a skill which has been learnt by a sufficient number of parents. Schlessel et al. (1995) noted as far back as 1995, that teaching the lay public CPR is economically feasible, and Moran et al. (2012) additionally noted that aside from the use of self-instructional method being the most cost effective, they also found that teaching the public has been a contributing factor in the increased discharge rates and decreased length of stay in adults after cardiac arrest. Given that approximately 16 000 episodes of paediatric out of hospital cardiac arrest occurred annually in the United States, with the majority of these occurring at home (Knight, Wintch, Nichols, Arnolde & Schroeder, 2012) increasing parental knowledge of infant CPR would be an important factor. Although it is accepted that CPR retention rates decline significantly over time, Barr et al. (2013) demonstrated that prompts from 911 operators could assist in refreshing skills during an incident or reviewing CPR material would assist in retention.

This is an important finding given the recent increase in emergency situation smart phone applications or 'apps'. Furthermore, there have been smart phone apps released specifically related to Infant only CPR. Barr et al. (2013) found that teaching parents infant CPR had the dual benefit of not only educating the parents, but also increasing their self-confidence at the same time. In a study by Moran, Stanley and Rutherford (2012) found that parents had a lesser knowledge of child CPR with only 16% of the 1716 participants questioned, able to identify the correct compression to depth ratio, with 62% of the parents admitting to feeling anxious about their skill and level of ability in performing CPR. Although more research is required in this area, a number of hospital institutions have implemented studies on how to best teach infant CPR, and to determine whether this might create a psychosocial burden on parents (Barry, 2015). It was noted by Barr et al. (2013) that parents ranked learning Infant CPR as their number one priority in discharge education, Knight et al. (2013) came to the same conclusion with their study. Even though most of these studies occurred with high risk patients in NICUs, potentially the same infant CPR education could be provided to all parents of newborn infants. By providing this education, it assists parents who may otherwise not have been able to access such education. Barr et al. (2013) noted that if parents were required to acquire such knowledge themselves, the majority would decide not to receive this education. They also found that this unwillingness may be due to perceived substantial barriers in seeking infant CPR, some of which include time, money, attending a site, care of their newborn, performance anxiety and the overuse of medical terminology in some group setting CPR courses (Barr et al. 2013). Making infant CPR easily accessible, may increase the

number of parents who undergo the training and would be better prepared in an emergency situation. Lumsden and Holmes (2010) noted that despite educational attempts to decrease the incidence of SIDS, it remains an issue, therefore preventative education, such as infant CPR education should be implemented. The United Kingdom implemented a program aimed at teaching CPR to students in school, to increase the likelihood of a bystander knowing and implementing CPR in an emergency (Blackmore, 2011). Although the program was aimed at teaching adult CPR, indicating an understanding that bystander CPR is integral in the chain of survival without sequalae. Knight et al. (2012) stated that any CPR is superior to not attempting CPR at all and Lumsden and Holmes (2010) found that performing either ventilation or compressions independent of each other is still better 'than nothing at all'. This is highly relevant when considering that anxiety and stress around caring for a newborn is potentially at its highest amongst new parents.

2.5.1 The psychological impact of learning infant CPR

Having a baby has been described as one of, if not *the* most challenging life events, whereby expectant parents' entire lives often undergo an adjustment (Enstieh et al. 2016). Enstieh et al. (2016) further noted that in order to cope well with a transition such as this, planning and increased knowledge assist greatly, gaining the most relevant and important knowledge for what to expect and tactics for coping with these, will result in a positive experience during this time. Therefore, educating parents may also assist in reducing stress levels and increasing their self-confidence as parents. Reducing parental stress has been noted as resulting in improving parental interactions with their child, which consequently will result in a more

relaxed family atmosphere (Landsem, Handegard, Tunby, Ulvund & Ronning, 2014). It is important to note how parent stress is defined, which was articulated by Landsem et al. (2014) as an incongruity between ability, knowledge and perceived expectations, with the demands of caring for an infant.

It has been assumed that parental education aids with the challenges of parenting, which is thought to be a result of a lack of knowledge and confidence (Gilmer et al. 2016). By providing infant CPR education parents are provided with another resource in their arsenal. Lavender, Ebert and Jones (2016) found that during pregnancy mothers are at their most receptive for obtaining information and education that will prepare them for the transitional and postnatal period. Lumsden and Holmes (2010), felt that teaching infant CPR could be done at two specific time points that would be the most beneficial for parents, these were namely just after the baby is born, whilst they are still in hospital or in the immediate postnatal period just after the parents have gone home and settled in to their new life. According to Gilmer et al. (2016), parent education is defined as the development of information, perceptions and thoughts whilst gaining further knowledge and abilities about the relationships between parents and their children.

There is a plethora of literature surrounding the teaching of cardiopulmonary resuscitation in general. This includes literature involving learning infant CPR in various different forms and statistics around the parent's ability to retain the information (Papalexopoulou et al. 2014). However, there is limited literature as to whether knowing infant CPR has any effect on parents' anxiety or confidence levels

when taking their baby home from hospital or to determine what the current parental levels of infant resuscitation knowledge are. Given that parents are already faced with sleep deprivation, looking after a newborn and changes to their entire lifestyle and relationship with each other, this warrants further exploration (Mihelic, Morawska & Filus, 2018). This area in particular calls for further research (Barry, 2015; Dracup, Moser, Doering, Guzy, Juarbe, 2000; Schlessel et al. 1995). Potentially making parents feel more confident by providing them with skills to use in an emergency situation could be beneficial. According to Lumsden and Holmes (2010) many parents anxieties related to learning infant CPR, could be reassured that the fear may be due to not knowing what to do in an emergency situation. Furthermore, once they had acquired CPR skills, parents showed increased confidence and reduced anxiety in caring for their newborn. It is reported that after the birth of a baby, couples only felt 18% confidence in their ability to care for the new baby (Mihelic et al. 2018). Improved confidence can have far reaching effects. Mihelic et al. (2018) noted that improved confidence led to better abilities to cope, improved relationships, and decreased depression leading to positive parenting skills.

Given this research, it is in all stakeholder's best interests, to provide any education that will help improve parent's confidence levels in the early postnatal period. Increased parenting confidence leads to improved parenting skills and greater potential for improving the wellbeing and health of their children and the family (Mihelic et al. 2018). It is also important to include both the mother and father in the education process, as it will not only benefit the new family but allows the parents to start on their parenting journey together as a couple. Mihelic et al. 2018, noted

that when both parents attend an educational intervention on parenting together, it has a stronger effect on the couple and new family. However, learning CPR skills may in fact create more stress for parents, as it compels them to face a situation that they may not have considered previously, or potentially reminding them that their child is at risk, if they have learnt CPR in a NICU setting (Moser, Dracup & Doering, 1999). An earlier study by Moser et al. (1999) discussed concerns about the requirement for parents to imagine they have found their child lifeless or in extreme danger, which may increase stress, anxiety and depression. However, Barry (2015) noted that this view was not supported by the literature. One study conducted by Burnham, Feeley and Sherrard (2013) found that parents of high-risk infants leaving the NICU, believed that an infant CPR course should be provided prior to discharge, so parents would feel better equipped to handle an emergency situation. Research literature notes that parents expressed concerns with providing CPR out of hospital, such as a lack of confidence and fear of litigation (Chia & Lian, 2014) as well as performing CPR incorrectly, causing injury or having not had training in a long time.

Antenatal and parent education classes are intended to prepare parents not only for the upcoming birth, but also the transition to parenthood (Enstieh & Hallstom, 2016). Enstieh and Hallstrom also noted that new parents often needed more 'hands-on', practical education for the early postnatal period. As previously noted, educating parents that attempting some form of CPR is better than not attempting CPR at all, and may assist with overcoming the anxiety and concerns described by Knight et al. (2013).

Studies indicate that teaching infant CPR can lead to feelings of increased confidence, competence and willingness to help, as noted by Barry (2015) and that exposure to CPR training and simulations assisted in improving this confidence. This information is consistent across a number of studies, that show an increase of confidence, whilst not increasing anxiety amongst parents who had been taught Infant CPR (Moran, Stanley & Rutherford, 2012; McHugh, 2000; Moser, Dracup & Doering, 1999; Clarke, 1998; Conroy, Bond & Tao, 1990). Many studies note that there is a significant increase in the levels of confidence parents experience after learning CPR (Knight et al. 2013; Bruce, 1995; Messmer, Meehan, Gilliam, White & Donaldson, 1993). Knight et al. (2013) noted that along with the increase in confidence, CPR education had dramatically decreased levels of anxiety in those involved. As noted by Mihelic et al. (2018) strategies needed to be implemented to help families and encourage protective influences for infants, which could include popular media and social media awareness raising.

2.6 Promotion of Infant CPR using Social Media

In recent years, awareness regarding the benefits of learning cardiopulmonary resuscitation has increased. Use of internet for educating one's self is increasing in popularity, with many using sites such as YouTube to do so, (Williams, 2014). This has particularly been noted in the healthcare industry with relation to videos educating about cardiopulmonary resuscitation, (Williams, 2014). As well as the development of applications for use on smart phones to assist with providing CPR or finding someone nearby who can assist with providing bystander CPR, (Physio-Control, 2015). CPR training is offered by a larger variety of places and is often a training

requirement for workers in certain industries. Research has been conducted into the mechanisms of CPR and has provided knowledge that different physiological requirements between adults, paediatrics and infants, alter how CPR should be performed for each group. In recent years, awareness has been raised regarding learning infant CPR with even celebrities becoming involved in raising awareness. An article published in June of 2017 on people.com, discusses a CPR class attended by Actor Ryan Reynolds and his wife, actress Blake Lively (Kimble, 2017). In this article written by Lindsay Kimble, it discusses how Blake Lively encourages all parents to attend an Infant CPR class. When asked about the class, Lively is quoted as saying;

> "I can't recommend this enough, I took a CPR class with a focus on babies and toddlers…. For those of you who haven't done it, you will love it. It's so helpful by giving you knowledge, tools and some peace of mind." (Lively, 2017, p.3)

Blake Lively also posted a photo of herself and a resuscitation dummy with the caption; "ALL MAMAS AND DADDIES OUT THERE." Which was 'liked' by 625 274 people as of September 2018 (Lively, 2017). On Instagram, Blake lively has 23.6 million followers who would be able to view this message. Given the status and fame of these celebrities, this information has the potential to reach many sectors of the population.

Another news article found on website which covers industry safety and hygiene news in February of 2015, explains how a worker at an electric company was able to use the CPR training provided by his employer, to save a baby's life. The worker was noted as saying that he attends CPR training yearly for work purposes nut was told

at the training that they are more likely to use the training in their personal lives than for work purposes. In this instance, the worker was at lunch with colleagues when a nine-month-old baby began choking and due to his training, he was able to provide life saving measures to assist.

In two additional journals under the news section, another two stories were also sourced discussing times infant CPR was put into action. The Nursing Standard published an article about an off-duty nurse who resuscitated her grandchild noted that all parents should know how to deal with life threatening situations and that basic life support is enough to know what to do in an emergency situation. She also urged parents to get some training in CPR.

An article in the Emergency Nurse written by Sophie Blakemore in 2011 discusses a campaign for the inclusion of emergency life support skills in national school curriculum in the UK. In this article, it notes that a number of corporations have passed mandates to make learning CPR in schools' part of the mandatory curriculum. It is also noted in the article that the government wants mandatory emergency lifesaving skills taught in schools in Scotland and Wales. There was also overwhelming support from parents and teachers for the introduction of such classes in schools. Maura Gillespie from the British Heart Foundation stated that CPR education is as important as teaching young people to read and write (Blakemore, 2011). Given the support for teaching children cardiopulmonary resuscitation, the same consideration should be given to teaching parents infant CPR during Antenatal classes, at discharge from hospital or at mother's groups or playgroups.

As previously noted, the concept of educating parents about infant CPR has received worldwide interest, with many different ideas and plans being put in place. An article written by Alina Polianskaya (2018), for The Independent, demonstrates the importance of learning Infant CPR. In this article Alec Brown, the father of an 8-month-old baby boy, relates how he used CPR skills he had been taught a few months prior, on his son who had stopped breathing. As they live remotely, help was not immediately available. The father was able to successfully resuscitate the boy, who survived with no neurological or physical side effects. Alec Brown was noted in the article as discussing the difference between adult and paediatric CPR and urging parents to take specific child and infant CPR courses, as they differ from general CPR courses which are generally adult based. The father had attended a free infant CPR course that was organised by a mother who had also had to use CPR on her infant and worked for a first aid company. An article written by Jane Hansen, sourced from the Sunday Telegraph written in 2017 in New South Wales, discusses the importance of parents learning to perform infant CPR. Furthermore, there have been a number of people calling for infant CPR to be included in Antenatal classes which are available to all parents, yet currently do not include infant CPR on their syllabus. As of November 2018, it has still not been put into practice. According to Sarah Lance who is the CEO for the New South Wales branch of St. Johns Ambulance, less than one third of parents know how to perform infant CPR or what to do in an emergency. According to Sarah Hunstead, who runs CPR kids, it would cost the government approximately $2 million dollars to provide 3000 Infant CPR classes to parents

attending antenatal classes. In the article Alan Morrison, New South Wales director of education stated;

> "It's simple basic stuff you can learn in an antenatal class in 30 minutes"

Shadow health minister at the time Walt Secord also supported the education of parents about infant CPR.

Although infant CPR is becoming more widely recognised by lay people as an important skill, the majority still do not have this education and skills. Although barriers exist for many to seeking infant CPR education, it could save a child's life, which would be worth the effort. Many parents are influenced by the wider popular media but despite the publicity that learning infant CPR has received recently, free classes suitable for parents, are still not widely available to the public.

2.6.1 The media portrayal of Infant CPR

Infant CPR training has also been evident in popular television shows such as the Big Bang Theory, (Lorre & Prady, 2016). In one of the recent episodes titled "The property division collision" in season 10, as Bernadette and Howard are expecting their first baby, their friend Raj encourages the couple to attend Infant first aid training. A simple search of YouTube yields many results on the subject of Infant CPR, including predominantly instructional how-to videos, which together have well over a million views (YouTube, 2018). This allows for easy access to demonstrated information, however as this differs from country to country and videos can be uploaded by anyone on YouTube, this would not be an ideal way to teach parents as the information could be incorrect. It does however assist in demonstrating some

interest in infant CPR, although this as well would be seen as low given the numbers would be worldwide and does not take into account people re-watching videos or those who already know infant CPR, accessing the videos for refreshers or educational purposes.

2.7 Summary

In summary, there is a potential to demonstrate that teaching parents of newborns to perform CPR, may reduce anxiety and provide new parents with knowledge and skills to act in a potentially life-threatening situation with their newborn baby. Although rates of learning CPR are increasing in the general population, the literature identifies that more work needs to be done to increase the rates of infant CPR knowledge (Cu et al. 2009). Furthermore, CPR has been shown to increase chances of survival for out of hospital arrests if implemented quickly by bystanders (Barry, 2015). Many studies have shown that teaching CPR to new parents has helped to decrease levels of anxiety and improve levels of confidence (Barry, 2015). This study seeks to determine the levels of knowledge and psychosocial impact (specific to anxiety levels) amongst parents in Southern Tasmania.

Chapter Three: Methodology

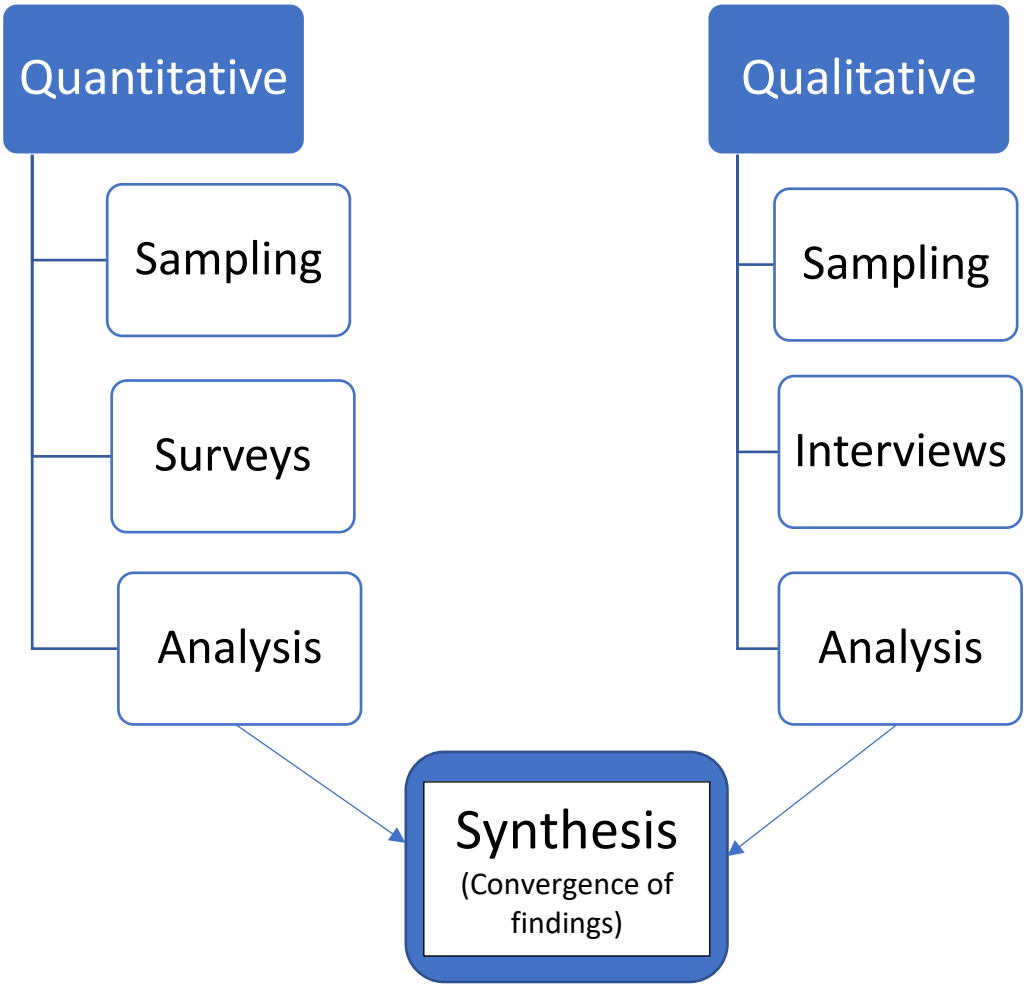
3.1 Introduction

Descriptive research methodology is used to gain an understanding of a concept, phenomenon or to characterise a group (Tarzian & Zichi Cohen, 2011). This approach is suitable when new concepts need defining and clarifying and can include both quantitative and qualitative methods (Tarzian et al. 2011). Thus, a mixed methods approach is most appropriate for this study in order to answer the research question.

3.2 Research Design

This study is a convergent (concurrent) mixed methods study, utilising both a survey and interviews to gather both quantitative and qualitative data (Punch, 2011). The descriptive cross-sectional design ensures triangulation of data using the two data collection methods (see Figure 2).

Figure 2: Convergent (concurrent) mixed methods approach



Concurrent mixed methods utilise both quantitative and qualitative data collection that is collected within the same timeframe (Creswell & Creswell, 2018).

The use of triangulation describes how both the qualitative and quantitative data will be collected via different sources, in this case through surveys and interviews and then integrated together for analysis (Creswell et al. 2018). If reoccurring themes can be established based on converging data from more than one source of data, this will also help to add a level of validity to the research findings (Creswell et al. 2018), as well as allowing for internal validity and verification by using the triangulation

approach (Creswell et al. 2018). The use of mixed methods allows for both quantitative and qualitative data to be collected through the survey design in this research, utilising both open ended and closed ended questions (Creswell et al. 2018).

Survey design takes a cross sectional view of a section of the target population at a single point of time (Walter, 2013). Data obtained provide a 'once off viewpoint' of the target population who responded to the survey, and a more in-depth understanding of their views from their open-ended answers.

3.2.1 Quantitative component: Survey Methodology

Survey methodology is designed to collect data in relation to the research questions and sub-questions, by way of a structured survey (Fawcett & Pockett, 2015), and is one of the methods chosen for this research. According to Leedy and Ormrod (2010) surveys can be used to collect data such as attitudes, characteristics, opinions and previous experiences of the population being surveyed. Closed ended questions have been used in the survey to determine the current level of knowledge surrounding infant CPR. The use of close ended questions was decided upon as there will be correct and incorrect choices and therefore only a finite amount of responses available (Lobiondo-Wood & Haber, 2018). This approach is classified as a descriptive survey (Leedy & Ormrod, 2010). Demographic data has also been collected about the participants, in order to be able to describe the study sample appropriately and determine if it is comparable to the general population (Lobiondo-Wood et al. 2018).

Surveys' were conducted with parents expecting a child or with a child under 2 years of age living in Southern Tasmania.

3.2.2 Qualitative component: Interviews

Interviews are used when a researcher would like to explore a more personal or deeper understanding of the problem or an issue (Lobiondo-Wood & Haber, 2018). This allows the interviewer to probe further and clarify aspects of the interviewee's responses (Lobiondo-Wood et al. 2018). The use of open-ended questions in the interview allow for varied responses from interviewees as they can respond in their own words and may allow for options the researcher had not previously considered (Lobiondo-Wood et al. 2018). Interviews also allow for richer, more complex data to be collected by allowing the interviewer to gather an understanding of why respondents answered in a particular way (Lobiondo-Wood et al. 2018), as well as allowing the researcher to collect more descriptive data that will help explain the lived experience of the respondent in relation to the research phenomenon (Lobiondo-Wood et al. 2018). The interviews were conducted with nurses who worked in the neonatal intensive care unit.

3.3 Sample and Sampling

3.3.1 The study population

In this study we sought a sample of parents in the region of Southern Tasmania. The target population were parents with a child under the age of two, who were residents of Southern Tasmania. The inclusion criteria were parents who have a child aged two or under that attend a playgroup or launch into learning program, which is held at schools and is similar to playgroups, parents attending discharge follow up or in the

nursery of the neonatal intensive care unit and parents attending antenatal classes, regardless of whether they have other children. Exclusion criteria include parents whose youngest child is older than two years of age, as this is a study looking at infant resuscitation which would no longer be a concern for parents with older children. The sample was a cross sectional sample, whereby the knowledge base and perceived anxiety burden could be determined by taking a cross section of the community to be involved. This sample was obtained from a number of sources. Namely (i) antenatal classes, (ii) the nursery of the Neonatal Intensive care unit where babies are feeding and growing and preparing for discharge or (iii) discharge visits in the Neonatal Intensive care unit or (iv) at parent groups held in child health centres or (v) Launch into learning programs held at Tasmanian schools.

3.3.2 The setting

There are seven catchment districts for schools located in Southern Tasmania according to the Department of Education Tasmania (2018), which encompass schools that provided the Launch into Learning (LiL) program. For this study, at least one school in each catchment area has been attended by the researcher. (See figure 3).

Figure 3. Tasmanian Regions

Furthermore, five Child and Family centres located in Southern Tasmania which hold various parent groups were attended by the researcher. Discharge nurses working for the neonatal intensive care unit, completed survey with parents of babies in the nursery and parents attending discharge follow up appointments. This was conducted in the Neonatal Intensive Care unit at Royal Hobart Hospital, which is the leading level three tertiary unit in Tasmania. Antenatal classes have been included, as this is where much of the education takes place for expectant parents and may be an appropriate time to learn infant CPR. It was felt that it would be important to have the opinion of whether soon to be parents feel this would be an appropriate time to learn infant CPR.

3.3.3 Survey sampling

Non-probability sampling in the form of multistage cluster convenience sampling was utilised for the survey section of this study. Convenience sampling uses the most convenient sample of the population, who are easily accessible for participation during the data collection timeframe (Burnard, Morrison & Gluyas, 2011). Multistage cluster sampling refers to the use of an intermediary person, whom can be used to gain access to the desired groups of the population from which to sample (Creswell & Creswell, 2018). Convenience sampling is frequently used in survey research, as it provides a snapshot of the population at a specific point in time. In this study contact was made with group leaders and educators in the desired sectors and attendance at these groups were used to gather the sample population.

3.3.4 Interview sampling

Additionally, purposive sampling was applied to obtain the sample population of participants for the interviews. In purposive sampling the researcher will select participants who can be deemed representative of the desired population (Lobiondo-Wood & Haber, 2018). Purposive sampling is often used when a very specific group has been chosen to be studied and will be described in great detail, so the reader gains a very specific idea of who the group studied is (Lobiondo-Wood et al. 2018).

The interviews were conducted with nurses who work in the Neonatal Intensive Care unit in Perth. An amendment to ethics approval letter (See Appendix 6) is provided for the interview component. The choice of location was due to two key factors. One was from an opportunistic incentive, in that the researcher had planned to spend some time in Perth. Secondly, it was also believed that given that the researcher

works in the same setting in the Southern Tasmanian NICU, this might bias the responses and affect the willingness of nurse colleagues to speak openly about their experiences and beliefs. As the Perth sample are the nurses who work with families of high-risk newborns and infants and also provide all the discharge education to parents prior to them taking their babies home, we sought to understand their viewpoint on the subject of CPR education for parents of newborns. It was believed that the interview participant nurses will already understand how much education must be provided prior to discharge, as well as have some understanding of what parents want and need prior to discharge from the NICU environment. We also sought to find out whether these nurses feel that teaching parent's infant CPR prior to discharge will place an undue burden on nurses, who may already have very busy work schedules. Interviews were conducted with two nurses from the Neonatal Intensive Care unit on separate occasions. Approximately ten nurses had initially been approached to be interviewed for this research, however due to time and availability constraints with both the researcher and nurses only two were able to be interviewed.

3.4 Data Collection: Instruments and Procedures

3.4.1 Parental Survey development

The survey was developed in order to determine the current level of knowledge parents have regarding infant CPR. The survey was provided in hard copy/paper format only and distributed by the researcher in the settings outlined above in the previous section. It was intended that by delivering the survey in person rather than

the other potential methods (e.g. mailout, online) that this would increase the response rate.

Questions were created based on available CPR questionnaires sourced by the researcher, as well as through discussion with staff at first aid training centres (Australian Resuscitation Council, 2017; Kids Health SCHN, 2017; Department of Health, 2014). Information was also collected from the Australian Resuscitation Councils website, for the knowledge section of the survey as well as by telephone conversation with an educator who provides Infant cardiopulmonary resuscitation classes, as to which aspects of the available quizzes would be important to determine knowledge levels. The questions are specific to infant CPR and do not include any questions relating to child or adult CPR. See Appendix 1 for survey. The data collected can be generalised to the overall population of Southern Tasmania, particularly with relation to the current level of knowledge regarding infant CPR, as at present there is no literature in regard to this. Therefore, demographic data was collected at the beginning of the survey, to help determine whether parents have an occupation in which they will have learnt infant CPR, previous first or second-hand experience in providing CPR, as well as general age and education attainment questions.

The survey also asked both open ended and closed (code frame) questions, in order to collect both quantitative and qualitative data from the participants. The quantitative data collected was used to determine the current levels of awareness, perceptions and knowledge of infant CPR amongst participants. The qualitative data was used to help determine whether, in the parents' perceptions, learning infant CPR

would allay or increase any anxiety experienced, they have also provided parents' perceptions of the most appropriate time to learn such information. These qualitative responses helped add depth to the quantitative information gathered using the Likert rating scale. The qualitative responses collected helped determine what participants think and feel in regard to whether learning CPR would have any bearing on their anxiety levels and when they feel would be the best time to learn such information. These included questions to determine if parents have ever felt anxious about becoming a parent, and whether they believe that having been taught Infant CPR, either in the antenatal or postnatal period would have had an effect on that level of anxiety.

A 5-point Likert scale was used to determine the perceived level of anxiety felt in regard to learning infant CPR. Open ended comments were provided for parents to give further information if they wished to do so. Finally, parents were asked when they believe would be the optimal time to learn infant CPR skills. The options that were provided for parents to choose from included four different time points that may be appropriate to teach parents this skill. These were as follows:

- At antenatal classes occurring during the last months of pregnancy, which often focus on birthing and general care of the newborn. This would be a useful time as parents are attending to learn and most will have a husband or partner who attend these classes with them.
- Prior to discharge home from hospital was another option, however stays post birth are becoming increasingly shorter and time pressure may be an issue during this period.

- The visiting midwife service. This usually occurs within a few days after birth, by a midwife or child health nurse and takes place in the home of the new parents. Some partners may be present at this time as it is shortly after birth and Paternity leave would still be in effect, if taken.
- At parents' groups, which usually takes place when the baby is around six weeks of age. The issues that would arise from this option is that many partners do not attend as this is typically a mother's group. Secondly six weeks has already passed since discharge from hospital, so it may have minimal effect on anxiety.

3.4.2 Content validity processes

The survey were then given to first aid employees and two Neonatal Intensive Care Unit staff for face and content validity. Specifically, the reviewers were asked to provide feedback regarding content and accuracy of the survey items. This was achieved using the Fraenkel and Wallen (2009) Content Validity Index (CVI) questions as follows;

- Is this a question that can be asked exactly the way it is written?
- Is this a question that will mean the same thing to everyone?
- Is this a question that people can answer?
- Is this a question that people will be willing to answer given the data collection procedures? (page 396)

Additionally, Lawshe's (1975) Content Validity Ratio (CVR) was calculated, which ranks each question as (1) irrelevant (2) important but not essential or (3) essential.

This was provided as a scoring sheet for each question. For each item a CVR is computed which provides a score, indicating the proportion of experts that considered the items important or essential for the content of the scale (Lawshe, 1975). See Appendix 3 for the content validity index.

The final hard copy survey was given to parents to be completed. Distribution occurred primarily at parents' groups that are held at the local child and family centres, as well as the Launch into Learning programs held at the schools. Furthermore, parents attending antenatal classes were also offered the opportunity to participate, where each parent was given their own survey to complete. Recruitment was done in person by the researcher, who attended classes at mothers' groups, and educational sessions at hospitals. The premise of the study was explained in a brief letter (the participant information sheet) attached to the front of the survey (see Appendix 2). Signed consent was not required as completion of the survey was determined as consent to participate. This is termed 'implied consent' and is appropriate for a survey methodology due to the importance of maintaining the anonymity of the respondents (Roberts, 2012).

The survey took approximately ten minutes to complete. Once completed, respondents were asked to place their anonymous survey in a sealed box / receptacle at a suitable location within the area where participants had completed the survey. As the researcher visited in person, each of the centre's parents were given the survey and the researcher waited for them to complete it, at which time they placed it into a locked box in the possession of the researcher. Participants on wards or

educational sessions were asked to complete the survey before they left the session and place in the locked box in the researcher's possession. Data was collected over a four-month period.

3.4.3 Interview procedure

The face to face interviews took place on separate days at the convenience of the participant, in order to coincide with differing shifts and availability of nurses. Options of areas for children of the participants to play, were made available during the interview. Participants were given a consent form and had the process of the interview explained to them, once they were satisfied that they understood what would be taking place, a signed consent form was acquired from each participant. Each participant was asked if they agreed to having the session recorded and recording only took place if all participants were in agreement. A series of pre-prepared questions were then asked by the researcher, who also probed for further information on any answers received. The questions that the participants were asked related to previous experiences with parental discharge education, their thoughts on teaching parents infant CPR, whether teaching infant CPR would put an undue burden on their work schedules and about what parents have requested to learn as part of their discharge education. This process took between 45 and 90 minutes, with refreshments on offer for participants. Upon completion of the interview, all participants were thanked and given a token of appreciation from the researcher. A transcript was then prepared from the recordings and field notes for analysis.

3.5 Analysis

3.5.1 Quantitative data analysis

The quantitative data was analysed using SPSS (V25, IBM). Data was summarised using means/standard deviations and count (percent), as appropriate. Logistic regression was undertaken to investigate the associations between whether participants had passed or failed the knowledge section and several variables such as their highest level of education, age, confidence in performing infant CPR and previous infant CPR education. Each of the three sections of the survey were analysed separately. Qualitative data was analysed using one of two approaches. Firstly, shorter open-ended comments which could be re-coded numerically were presented as descriptive statistics using tables to display counts and percentages of analysed data. Longer open-ended responses were thematically analysed within a Word document by the researcher. This was then sent to another researcher for confirmation and to ensure accuracy and validity of the analysis.

3.5.2 Qualitative data analysis

Data from the interviews were analysed thematically. Inductive Thematic Analysis (TA) is a method for identifying and analysing patterns of meaning in a dataset (Patton, 1990). The TA process encompasses four parts as explained below in greater detail:

- Naïve reading,
- Comprehensive understanding and interpretation,
- Structured thematic analysis and

- Matrix coding

Part 1 – Naïve reading, transcriptions were read repeatedly by the researcher to ensure familiarity with the text,

Part 2 – Comprehensive understanding and interpretation, by immersing in the breadth and depth of the data collected, repeated reading and use of active reading.

Part 3 – Structured thematic analysis is a process of open coding to obtain common themes by comparing across all transcripts.

Part 4 – Matrix coding, the transcripts were coded line by line to determine if any subthemes emerged.

3.5.3 Rigour and validation

Lincoln and Guba (1985) have established a framework for assessing rigour in qualitative research, namely, credibility; dependability; confirmability and transferability. Credibility refers to the confidence in the accuracy of the data and the interpretations drawn from them (Polit & Beck, 2009). Dependability refers to the reliability of the data and that if the study was repeated, findings would be similar (Polit et al. 2009). Confirmability refers to the relationship between the data and the interpretation and that the interpretation accurately reflects what was presented by the participants (Polit et al. 2009). Transferability refers to the extent to which the findings can be applied to other uses (Polit et al. 2009).

In order to validate the findings, the two transcripts were also independently read and coded by a supervisor. The researcher and the supervisor then discussed

common themes and reached an agreement regarding coding structure (Braun & Clarke, 2006).

3.6 Ethical Issues: Consent, Access and Participants protection

Ethical Approval was sought from the Human Research Ethics Committee (HREC) at the University of Notre Dame, Australia (Appendix 4) and the HREC at the University of Tasmania, (Appendix 5), which covers ethical approval for research at the Royal Hobart Hospital in Southern Tasmania. This research required a low risk ethics review, as information relating to infant CPR classes accessible to the public, was provided to any person who requested such information. Although CPR training was not offered as part of this research, parents were directed as to where to access such education on the introduction letter attached to the front of the survey. This information served to allay any concerns that new parents may have had around access to CPR training. Pamphlets for these educational organisations were provided when requested by parents. Although the surveys did collect demographic data, all surveys are anonymous.

As previously mentioned, signed consent was not required from respondents as implied consent is suitable for survey type data collection. An introductory letter was attached to the front of the survey explaining the research. Once the parents were informed about the research appropriately, including that participation is voluntary, participation in the survey was understood as consent. Feedback on the research findings will be provided to respondents by way of an explanation of findings posted

on bulletin boards in places such as antenatal wards and areas where antenatal appointments take place, as well as child health centres.

3.7 Summary

This chapter discussed the methodology and tools used in this pilot study. Qualitative and Quantitative data was collected using a survey that was developed based on questions used in CPR and first aid classes, which were reviewed by NICU nurses and CPR instructor for Content Validity. Further qualitative data was collected from interviews with nurses, whose responses underwent thematic analysis and were merged together with the qualitative and quantitative data from the survey to gain a greater understanding of the issue.

Chapter Four: Results

4.1 Introduction

The surveys and interviews were conducted over a period of four months from July to October 2018. During this time, several sites both medical and educational were visited to collect data. This chapter presents the demographic data, parental knowledge of infant CPR levels, parents' views on learning infant CPR and when they feel would be the best time to learn this information, followed by the perspectives of learning Infant CPR from the nurses who may be involved in teaching it.

4.2 Survey findings

A total of 175 surveys were collected from 14 sites, with at least one site visited in each of the 7 catchment districts across Southern Tasmania. This was done to ensure data was collected from all over Southern Tasmania and not just from one section. Some sites were visited multiple times on different days to attend different groups and classes.

4.2.1 Demographic survey data

The ages of parents ranged from 19 to 64, with a mean age of 33 (Std. Dev. = 7.653) years. This included grandparents who had custody of their grandchildren who were under the age of 2 (n= 4, 4%). Of the 175 surveys collected, 140 were completed by females and 34 by males, with 1 respondent identifying as "other". Upon review of this survey it was noted that 'male' was ticked, with unrelated information written in the 'other' section, causing this survey to be incorrectly recorded as 'other'. A total of 63 respondents had completed university education, with 22 (13%) having

completed a postgraduate degree. 44 (25%) respondents had received a TAFE qualification and 29 (17%) had completed high school. Furthermore, 14 (8%) had completed up to year 11, 22 (13%) had completed up to year 10 and 1 (1%) had completed up to year 9, with 2 (1%) respondents not completing this question.

4.2.2 Cardiopulmonary Resuscitation Knowledge Levels

A total of 8 questions were asked, that address (i) positioning, (ii) breathing techniques, (iii) hand placement, and (iv) pressure relating to infant CPR. All questions had the option of 'don't know' for respondents who did not know the answer to a given question.

Table 1. Number of correct responses received from the knowledge section.

Question	Responses (n)	Correct responses (%)	Incorrect/ don't know (%)
How should chest compressions be performed on an infant	170	139 (81.8)	31 (18.2)
What is the ratio of chest compressions and ventilations for an infant	170	55 (32.4)	115 (67.6)
How deep should chest compressions be	169	101 (59.8)	68 (40.2)
What type of breath should be given to an infant for ventilation	169	101 (59.8)	68 (40.2)
How many sets of compressions should be completed in a two-minute period	169	17 (10.1)	152 (89.9)
The Australian Resuscitation Council recommends infant CPR for (age group)	168	38 (22.6)	130 (77.4)
In what position should an infant's head be in for CPR	167	91 (54.5)	76 (45.5)
How should breaths/ventilation be given to an infant	165	20 (12.1)	145 (87.9)
Number of respondents who answered everything correctly	165	1 (0.6)	N/A

Only one respondent answered all 8 knowledge questions correctly (1%). The area of knowledge that showed the best understanding by respondents was how deep the

chest compressions should be, the answer being 1/3rd the depth of the chest as well as what type of breath should be given to an infant for ventilation' with the answer in this instance being a gentle puff from your cheeks. The area that showed the weakest area of knowledge from respondents was how many sets of compressions should be provided in a two-minute period, to which the answer was 5 sets in a two-minute period. One question which was how should chest compressions be performed on an infant, had two correct answers, namely, two thumbs or index and middle finger. Both answers were included in this question, as infant CPR can be provided either with the index and middle finger or with two thumbs. This could account for this question being answered correctly by many respondents and being the question, which had the highest number of correct responses of all questions in the knowledge section.

In order to investigate factors associated with good performance on answering the questions, the pragmatic decision was made to dichotomise the groups into pass, if greater than 50% of the answers were correct or fail, if 50% or more of the answers where incorrect or 'don't know'. 50% is generally understood to be a passing mark in most institutions, educational and otherwise. The Percentage of correctly answered questions in the knowledge section table below displays the number of questions (out of 8) each person answered correctly (see Table 2).

Table 2. Percentage of correctly answered questions in the knowledge section.

No. of correct answers	N	Percentage of sample (%)
1	14	8.2
2	29	17
3	22	12.9
4	37	21.6
5	29	17
6	17	9.9
7	3	1.8
8	1	0.6
Not answered	19	11.1
Total	171	100

One respondent answered all the questions correctly, a further 3 respondents scored 88% and 17 scored 75%. A total of 50 respondents passed the Infant CPR knowledge section and 102 respondents did not. Several variables were considered regarding the pass or failure levels. This included respondents age, level of education obtained, self-reported confidence in performing infant CPR and previous training in infant CPR. The possible variables that may affect knowledge scores table below (see Table 3) displays the odds ratios from individual logistic regression models which assess the association between passing, as defined above, and predictor variables of interest.

Table 3. Possible variables that may be associated with the odds of passing.

Variable	N	OR	96% CI	p-value
Gender				
Male	32	(ref)		
Female	138	1.312	0.55 to 3.16	0.544
Education				
High School	64	(ref)		
TAFE	43	5.728	2.02 to 16.26	0.001
Undergraduate	40	7.145	2.50 to 20.39	0.000
Postgraduate	22	9.667	2.96 to 31.63	0.000
Age	168	1.030	0.99 to 1.08	0.164
Confident in CPR				
No	114	(ref)		
Yes	50	10.144	4.68 to 22.00	0.000
Previous Training	90	(ref)		
No	75	7.376	3.39 to 16.03	0.00
Yes				

There was a significant association between education and passing ($\chi^2(3)=23.6$ $p<0.001$) with those who had obtained education beyond high school (TAFE and University), had greater odds of passing the knowledge section of the survey, compared with respondents who obtained only high school qualifications (see Table 3). A significant association was also found between respondents who self-reported feeling confident to perform Infant CPR had a higher odds of passing the knowledge section, than those who reported low or no confidence, ($\chi^2(2)=30.5$ $p<0.001$). A significant association was also seen between those who had previous Infant CPR training, being 7 times more likely pass in the knowledge section than those who had no previous training, ($\chi^2(1)=29.9$ $p<0.001$).

4.2.3 Respondent perceptions of importance of learning CPR

Respondents were also asked if they felt that learning infant CPR was an important tool for parents to know, and why they thought that. There were 164 responses, with 163 (99%) answering yes, they thought learning infant CPR was important and one respondent saying no. The respondent that answered 'no' was male, the highest education level attained was TAFE and he had also completed a senior first aid course for work, 6 months prior to completing the survey and stated in the comment section attached to this question;

"How many babies need CPR? Would the average parent need this skill."

However, in the same question a vast majority of respondents felt that it was better to be prepared and have the knowledge in case an emergency were to happen. Several themes emerged in the comment section as noted in Table 4.

Table 4. Open ended responses regarding why CPR is important to know.

Response (open ended)	N	Percentage (%)
Save a life	55	60.5
Preparedness/emergency can happen anytime	44	48.4
Improve confidence	18	19.8
Ambulance response times	8	8.8

Written responses were as follows. In relation to the potential for long wait times when calling for an ambulance in rural communities in Tasmania;

"In Tasmania could be a while away from help"

"Remote are – long ambo times"

"A fast response if the situation arises would be best! I'd much prefer to know what to do than rely on others"

The following comments related to the potential to save a life and provide care in an emergency;

"Can be life saving – saving and providing some confidence especially in conjunction with SIDS/Safe sleep info"

"Because it differs from adult CPR, & an infant will be joining your life"

There were also many comments about the importance of being prepared in case of an emergency situation, such as choking and the significance of reassurances in such situations;

"Because there are so many risks of children choking and being prepared for anything would be good"

"Important to be prepared, including being able to recognise the signs"

"It would make me feel better just knowing what to do just in case, it's better to know what to do, than just be helpless not knowing"

Some respondents wrote about the allaying of anxiety, by knowing they had the skills to assist in an emergency. The idea of knowing what to do in an emergency, is believed by respondents to help increase confidence and decrease anxiety rather than increasing anxiety;

> "Saves lives, reduce anxiety"
>
> "Because it's reassuring to know, and you never know when you may need it."
>
> "It is extremely important to save lives + gives parents confidence with their own kids"
>
> "General first aid is always helpful – could help parents feel more confident"
>
> "There is enough worry with bringing a new baby into the world. Training would alleviate this a little"
>
> "Life saving Peace of mind/Preparedness"

Several respondents also commented on a time when they or someone close to them had to perform life saving techniques on their own children. One wrote of her son on whom she used CPR skills and the value of this in a remote location in Tasmania,

> "Jack had an apparent life threatening event at 5 months of age with difficulty breathing + loss of consciousness. We used some of the CPR skills. It was essential as we were remote + had no access to medical care at the time."

Another recounted the time that her child had choked on some food and the value of CPR in that situation. She wrote;

> "My child nearly died from a completely blocked airway at 10 months. Food lodged and he became unconscious. My sister performed back thrusts and

first aid. She had just refreshed her first aid 2 weeks before. We were lucky we knew what to do."

4.2.4 Preference for time to learn Infant CPR.

Respondents were also asked when they thought would be the best time to learn infant CPR. There were four options for responses which were at antenatal classes, prior to discharge home from hospital after the baby was born, at mother's groups and at another time, where respondents were asked to suggest a time they thought would be optimal. Many respondents selected several options for when they would like to learn.

Table 5. Time preference for learning Infant CPR (multiple response).

When would you prefer to learn Infant CPR	N	Percentage (%)
Antenatal Classes	117	66.9
Discharge from Hospital	33	18.8
Mothers group	74	42
Another time	53	32.7

As demonstrated in the table above, the preferred time to learn infant CPR was at antenatal classes prior to the birth of a baby. The second most preferred time was at mothers' groups with the third option being another time. It should be noted that majority of those who selected another time, had selected several options (n-61), with a preference for refreshers spread over the three options which were during parents' classes prior to the baby's birth, prior to discharge from hospital after having the baby or during mothers groups held when the baby is around 6 weeks of age.

This question also had a section for a written response (comment). Although this was intended for respondents to write a time they thought more appropriate to learn.

Many respondents selected many or all the options provided and suggested how this might work best;

> "Mothers group refresher" (Both antenatal classes and mothers' groups selected)
>
> "All three for refreshers" (All options were selected)
>
> "Early stages of pregnancy (more time)"
>
> "There is a lot to remember/learn before birth so it should be reinforced in some method after birth"
>
> "Both antenatal classes and mothers' groups to build confidence and increase opportunity for knowledge absorption"
>
> "Antenatal classes for basic and mothers' group for reminder"
>
> "All 3 for refreshers"

One commented on the current stress new parents are under with a lot of education being provided at this time, but still felt it was important education to be provided;

> "So much going on for an expectant and new mum, it's hard to say when is the best time for this info. Maybe made available at several/all times so mum can choose best/optimum time for her to absorb and retain info."

Although antenatal classes were the top preference for many respondents, it is important to note that these classes are generally only attended by first time parents and not all parents attend an antenatal class as was noted by one respondent;

> "At a time that will catch the majority of parents – not all parents attend antenatal classes"

Overall there seemed to be an interest in having a number of opportunities to learn Infant CPR, with the option to do refreshers strongly suggested by respondents.

4.3 Interview findings

4.3.1 Introduction

Participants were interviewed using a semi structured interview schedule with the interviewer probing further into the responses given. Although it is acknowledged by the researcher that two in depth interviews were conducted, the level of knowledge of participants provided extensive information around the topic from the nurse perspective.

4.3.2 Education provided by nurses in the neonatal intensive care unit

Nurses spoke of their experiences with parents in the neonatal intensive care unit and the education they provide parents with. There were several notable themes raised by the participants in their answers to this question, which included mother crafting skills, providing basic care for the baby, SIDS education and CPR training.

4.3.2.1 Mother crafting skills

Mother crafting skills generally refer to skills required by the mother to correctly and comfortably breastfeed their baby, as well as how to hold the baby whilst breastfeeding. It also includes education around expressing milk and care of the breast.

> "we provide the mother crafting skills… how to bath the baby and the basic needs."

4.3.2.2 Providing basic care

In the neonatal intensive care unit, basic care refers to the basic needs and care of a newborn baby, such as nappy changes, feeding and bathing. The basics for taking care of a baby.

> "We provide… education about everything from the basics of changing nappies, dressing them, bathing them, feeding them…"

4.3.2.3 SIDS education

Education regarding Sudden Infant Death Syndrome (SIDS) is provided to all parents who give birth in the hospital setting. The topics includes safe sleeping practices, how to wrap a baby, appropriate bedding and co-sleeping.

> "we provide the mother crafting skills that sort of thing and then their SIDS education…"

4.3.2.4 CPR training

Cardiopulmonary resuscitation training is on occasions provided to some parents prior to discharge from the neonatal intensive care unit, however this is not a requirement in many sites and often depends on the medical condition of the baby.

> "depending on the kid, CPR training"

However Infant CPR training is not routinely provided to all parents of infants in the Neonatal Intensive Care Unit,

> "…pretermers definitely get it (CPR training) … any kid with a cardiac condition, all the palliative kids go home with CPR education which seems a bit bizarre… I don't know the exact criteria (to receive CPR education) to be honest."

Through the interviews it was clear that teaching CPR to the parents of this 'at risk' population, was not a common scenario on this ward, as neither nurse was sure of who was required to receive the education.

4.3.3 Nurses perceptions of parents being taught CPR

The second question asked whether the participants felt parents should be taught infant CPR. The common themes noted in the answers to this question included the importance of this information to be taught to parents of long term patients prior to their discharge in order for the parents to be able to recognise the symptoms which would provide confidence, the fact that babies in the Neonatal Intensive Care unit generally are at a higher risk of adverse events and the importance of quick intervention by parents can make a large difference in long term outcomes. The most notable theme in response to this question was that the participants felt that parents knowing this information would make them feel more confident in coping with their new baby once discharged from the unit.

> "I do …especially for our really younger mum's and dad's as well to give them that confidence in case something happens."
>
> "Yes … even to recognise those symptoms and what to do before the ambulance gets there, that's just five minutes of your kid not breathing and that's where the difference is made … if you can get them breathing again then they don't deteriorate further…"

4.3.4 Parental desire to be taught CPR

The nurses where then asked if parents of their patients, had asked to be taught infant CPR or for more information about where they could take classes. Key themes in the responses to this question included the use of social media and parental research changing the situation in that parents can easily find their own information on classes relating to infant CPR. However, parents do expect more from discharge education presently and parents of babies in the Neonatal intensive care unit understand that their babies are more complex and therefore more likely to request CPR training, as well as the importance of reassurance through education, where knowing what to do in a situation makes it somewhat less 'scary'.

> "… everyone was really keen… they had a choice did they want to, it was always offered (in this participants previous hospital in another state) but nearly everyone always would like to do that (infant CPR)."

This question also asked the participants to give any examples of such interactions they had had with parents. Some noted that anxious parents benefited most from CPR advice and training prior to being discharged.

> "Yes! Generally, the anxious parents, especially if they've got a complex kid that's had a few almost go home and then deteriorate again, those parents it often makes them feel a little bit better that they're doing something to help their kid"

Another noted that parents are often informed these days through the use of social media and their own research. Some parents will access private CPR education on their own, which may account for not many parents asking about CPR education.

> "… parents are doing a lot more research … people are going elsewhere and a lot of child services places are offering it as well, so I think they may not be asking because now there is new places for it to be found coz it's not in the unit, but our unit is a special group of people which I think could do with that information…"

4.3.5 Perceived benefits of CPR

The participants were then asked if they believed there were any benefits or otherwise to adding infant CPR to the current discharge education for all parents, which included probing for issues such as whether this may place an undue burden on nurses. The main themes noted in the responses to this question were that (i) the education doesn't need to be too in depth for parents, (ii) scheduling of classes is important for both nurses and parents and that (iii) generally nurses would likely be "annoyed at first as they are with all new things" that are implemented but would soon get used to the idea and if properly educated would not have an issue with teaching parents. One explained,

> "I definitely think there is a benefit, I can't see any downsides, … No (about CPR causing anxiety), I think they feel better because at least then they know what to do in an emergency, because some of them know that that's a very real possibility coz they've seen it happen, they tend to feel better that they've done something that they have done what they can do to help their kid. "

Another spoke of the benefits and enjoyment of teaching infant CPR to parents,

> "I don't think it was too scary, so we basically gave them the skills of what the CPR ratio was at the time, coz obviously that changes all the time which is also a problem. I enjoyed doing it, I think it's a great thing and disappointed we actually don't do it in our unit…"

4.3.6 Perceived burden on nurses to teach infant CPR

Nurses often provide education of varying types to patients prior to discharge. The nurses where then asked about the effect having to teach infant CPR to parents, may have on nurses who are already very busy. The participants had the following to say;

> "I think if the nurses had proper education on how to teach the parents… a designated parent day that they could do it on, … I don't think it would be that hard to incorporate. …"

The following nurse discussed how CPR education was provided in a previous neonatal intensive care unit in another state and how scheduling the training regularly into the nursing routine, whilst parents are in hospital made it more accepted by staff;

> "I think they'd be annoyed going "oh another thing we have to do" but I think if like what we did with my other unit, … like twice a week and that was scheduled times out that you knew, that was gonna happen, you knew where it was gonna happen, in what room and the parents knew what time to go, then I think it would ease it into it, … rotate on who would do it (teach parents), and there was a script so it wasn't like you had to know everything."

Both nurses felt that at first there would be some annoyance at adding another item to the list of discharge education requirements, however, if the classes where

scheduled, a script and education for the nurses was provided, then it would become accepted by the staff without increasing the burden on nurses.

4.3.7 Perceived effect on parents of learning infant CPR

When the nurses were asked if this type of education may cause stress and anxiety for parents, one of the participants stated that she regarded the training as a stress reduction mechanism. She explained as follows:

> "You know, I don't think so because most of them are already worried about this happening, see so if they are already worried about it happening, knowing what to do is only going to make them more at ease about it, not less"

The final question asked if there was anything not yet discussed that the participants wished to bring up. The main theme noted in this answer was that the participants felt that including infant CPR into parent education would be a good thing. One felt that there would be no downside to including Infant CPR into the current discharge education;

> "I don't think there can be anything bad about empowering parents on how to recognise and react to their deteriorating baby."

Another felt it would be a good idea if implemented in the scheduled way, as previously mentioned as well as suggestions for how it could be implemented. She also felt that the current use of a DVD would not adequately provide CPR education;

> "I do think it's a good idea but it would be hard to bring in coz obviously units are very busy, but like I said I think it would have to be more set times than every day, …they're going home, watch a DVD and go, like we'll have it, this

is when it occurs and more maybe just for our high risk one's than everyone, if it had to be to start off with and everyone else at least watch the DVD and then if we can, then take them to do the special class."

4.3.8 Current Infant CPR education provided in NICU's

Through interviews with staff it has been noted that the infant CPR is currently taught with the use of a DVD. Anecdotally this seems to be standard practice in a number of Neonatal Intensive Care Units in Australia.

"I don't think we do too much at all at our unit, we have like the DVD, …"

"We have a video actually, pretty much…"

The use of DVD's presents an issue for parents to actually learn infant CPR, as they watch the video often while feeding or providing care for their baby in a busy NICU with many distractions. Watching the DVD is also a requirement for some parents prior to leaving the hospital;

"I think that's very much put a DVD on, I'll sit there, yep I have to get this ticked off, so I can go home, it's not actually learning … I think it should be more physical for them, especially our very long termers and young parents."

4.4 Summary

The findings from the survey of parents demonstrated that knowledge of infant CPR was low amongst the sampled population, however there is a definite desire amongst the respondents for infant CPR to be included in the education provided around the birth of a baby. The nurses interviewed felt that this could be incorporated into the

current education provided and parents felt it should be provided at several points of time so that refreshers could be incorporated into the education.

Chapter Five: Discussion

5.1. Introduction

This study aimed to determine the current level of infant CPR knowledge amongst parents of children under two in Southern Tasmania, whether parents felt learning infant CPR would affect their anxiety levels either positively or negatively and when do parents think would be the best time to learn infant CPR around the time of a birth of a baby, as well as what nurses thought about teaching infant CPR to parents. This chapter will discuss the interpretation of the findings, how they have addressed the research questions and their relevance to the literature previously discussed.

5.2 Background

One article mentioned in the literature review that was the closest to this study was conducted by Cu, Phan and O'Leary (2009), who asked parents attending a large paediatric Emergency department in Australia to complete a survey about their knowledge of paediatric CPR. Although this was in relation to paediatric CPR and included 348 responses, the demographic data was very similar in nature to the findings of this study. As was the case in that study, there was a lower percentage of males involved, however there were similarities with educational attainment levels, although there were more respondents that had achieved postgraduate education in this study. It is important to note in Cu et al.'s study that many respondents stated that they would not perform paediatric CPR, due to a lack of knowledge.

As predicted, there was many more female respondents than there were males, which is common with the attendance of people at the sites that were visited, particularly the launch into learning program. However, it would have been better if

more male respondents were to participate, as their views may differ from the mothers. This variance was however, not demonstrated amongst the small male population in this study, who had similar views to the mothers on learning infant CPR. As previously noted, the respondents in this study may well be better educated and a more interactive group than the general public, although this is difficult to determine from the data available. The respondents involved in this study also showed a high level of interaction during the data collection process, with many discussing their thoughts on infant resuscitation or previous experiences of the same with the researcher.

5.3 Addressing the research questions

The findings of this study are discussed for each research question and drawing on the wider literature around the topic as presented below.

5.3.1 Current level of knowledge of infant CPR

Research Question: What is the current level of knowledge about infant CPR amongst parents in Southern Tasmania?

Although only one respondent answered all questions in the infant CPR knowledge section correctly, a total of 50 respondents received a pass mark of at least 4 or more items answered correctly (50%). This means that only 29% of respondents received a passing mark. This demonstrates that although there is some level of infant CPR knowledge, the knowledge is limited and would likely not be effective if a situation arose whereby an infant needed resuscitation. It was also noted that respondents generally did better in some areas over others. The question, where the respondents showed the highest level of knowledge, was in relation to the hand/finger position

when providing compressions. There were 170 responses with 82% answering correctly. Although this question had two correct answers, 77% selected index and middle finger, with 5% answering two thumbs. Even though this question had two correct answers, it still had the highest number of correct answers for one choice, that being the index and middle finger. This demonstrates that the majority of respondents knew the correct position of their hand/fingers to provide appropriate compressions. There were three other questions where at least 50% or more of respondents got the answer correct. This was in relation to the rescuers mouth position to provide breaths, how the ventilations/breaths should be given and how deep the compressions should be. Given that 68% incorrectly answered the ratio of chest compressions to ventilations, and 90% incorrectly answered how many sets should be completed in two minutes, this area seems as though it is not as well understood as other sections of resuscitation. Cu et al. (2009) also found that fewer people knew the correct ratio of compressions to ventilations in infant CPR with only 11% in their study. This result also demonstrates that the majority of people had some knowledge of infant CPR, but that more education is required to improve knowledge levels surrounding infant CPR.

It was also noted that the respondents who had previous cardiopulmonary resuscitation training, had 7 times higher probability of passing the knowledge section of the survey. This was similar to findings by Cu, Phan and O'Leary (2009) who found that parents with previous training, were more confident, with Schlessel et al. (1995) showing similar outcomes. This demonstrates that some training in Infant CPR, is better than no training and that aspects of previous CPR training are retained somewhat by these respondents, which is contrary to the literature. The literature

notes that level of skills and knowledge start to degrade in as little as 6 weeks after completing a cardiopulmonary resuscitation and first aid course. Those respondents that stated they had previous training, noted that the recency of the training ranged from 6 months to 12 years. Similarly, Cu et al. (2009) found that their respondents had training within the past 1 to 5 years.

It was also found that those respondents who received education beyond the tertiary level, scored higher on the knowledge section. It is unclear whether this had to do with reading or writing proficiency for those who scored lower. Only one person declined to participate due their inability to read and write during site visits. It is also noted that those respondents who self-reported feeling confident, also scored higher on the knowledge section. However not all respondents answered this question. Further study in this area may well need to ask these particular respondents who had higher levels of confidence, whether they felt more confident taking their baby home from hospital, given that they had this knowledge or if it made no difference to their overall confidence and anxiety in caring for their new baby.

5.3.2 Perceptions of CPR training and effect on anxiety levels

Research question: Do a sample of parents in Southern Tasmania perceive that learning infant CPR would affect their anxiety levels either positively or negatively?

There is limited literature available that considers how parents feel about learning Infant CPR around the birth of a child. Parsons and Mackinnon (2009) determined that teaching parents Infant CPR would not impact parents' psychosocial burden, however, this was not determined by asking the parents for their opinion/view on the subject. The present study found that all but one respondent felt that learning

Infant CPR was important around the time of a baby's birth. Many respondents also felt that learning Infant CPR would lead to increased parental confidence and decreased parental anxiety, which would have further reaching, positive impact than just for the parents. Furthermore noted by Enstieh et al. (2015) increased confidence and decreased anxiety, lead to more positive parenting strategies, leading to healthier relationships. Furthermore, many parents would like to be taught infant CPR, either prior to or shortly after the birth of a baby, with many wanting several opportunities to learn and refresh their skills. A few respondents felt that it may be difficult to learn CPR around the birth of a baby, as parents are often inundated with a multitude of educational requirements. However more parents felt that it was important to have attained this training, than to not be taught infant CPR. In the written comments, many parents felt that learning Infant CPR would increase levels of confidence as well as decrease their anxiety. This view was also reflected in the responses from the nurses that were interviewed, who felt that the training would increase parent's confidence and would not increase anxiety but would instead likely decrease anxiety if they were provided with infant CPR knowledge. Respondents also indicated that learning this information was not only wanted by parents around the time of the birth of a baby, but also felt to be a very important piece of education that should be provided to parents around this time.

5.3.3 Parental perceptions of most appropriate time to learn CPR

Research question: When do parents perceive is the most appropriate time to learn infant CPR around the time of a birth of a child?

In the survey, three options for times to learn infant CPR were presented to parents, with an option for choosing a time they thought would be best. The most popular

option was for infant CPR to be included in antenatal classes. This would be ideal as it would prepare parents prior to them having the baby. However, this may only then be taught to new parents, given that parents who have more than one child very rarely attend antenatal classes after they have had their first baby. Mothers group was the second most popular option; however, this occurs when the baby is around 6 weeks of age and is often usually only attended by a single parent, which is usually the mother. This renders the fathers without the knowledge of infant CPR or the possibility of attending the group to learn. Many respondents felt that infant CPR should be taught at all three time point options, as this would allow them to refresh their skills. This would be ideal as it would reinforce the education, leading to the likelihood of better retention rates as well as providing the opportunity for both parents to learn and the likelihood that more people would be educated at some point around the birth of their baby (Barr et al. 2013). Although this was the desired option by parents, it was noted in the interviews with the nurses, that this may be difficult. The nurses felt that initially, having to teach parents infant CPR would not be received well by nurses, however with training and planned classes it would become acceptable for the nurses to teach infant CPR. As noted in the literature review, some high schools in the United Kingdom currently teach adult cardiopulmonary resuscitation to their students. The study findings showed that the higher educational level one obtains, the more likely they are to know and recall infant CPR. The findings of this study indicate that teaching CPR should be done early in high school, and would reach more of the population, including those that may not obtain higher education. This would lead to more people having CPR knowledge and therefore more likely to provide assistance in case of an emergency. This training

could easily be incorporated into current health classes, that are undertaken at many high schools already. There was no literature that could be sourced that asked parents when they thought would be the best time to learn Infant cardiopulmonary resuscitation.

5.4 Qualitative findings and the wider literature

As per the interviews with staff at the Neonatal Intensive care unit in Perth and anecdotal professional experience of the researcher, it is evident that parents of high-risk babies in the neonatal unit are being provided some infant CPR education, however the format is currently that parents are provided with a DVD to watch around the topic of performing infant CPR. This can potentially be an issue as the neonatal unit is often very busy. There are many distractions for parents, who may also be caring for their baby while watching the video. As mentioned by one of the nurse participants, it is questionable how much parents will learn in this way, when they understand that viewing the DVD must be completed in order for them to take their baby home. Furthermore, the researcher also works in the Neonatal and Paediatric Intensive care unit at the Royal Hobart Hospital, which is the main hospital in Tasmania, servicing people from around the state as well as being the main hospital for those living in Southern Tasmania. The researcher of this study has observed that it is also a requirement for parents of babies in this unit, to learn infant CPR prior to discharge, however this is also provided by a DVD, which is put on in the unit to be watched by parents, with the added distractions of the busy unit around them. No practical aspect is included in this education either and could be an issue as mentioned previously. It is also noted that the DVD is just put on for the parents,

with the nurse leaving them to 'watch' it as they continue with cares for their other patients. It is noted that this passive form of learning is often ineffective for retaining knowledge and understanding the subject (Kachergis, Yu & Shiffrin, 2013). It was also noted in several studies, that the showing of an instructional DVD, is the most common method of teaching parent's infant CPR prior to discharge from the Neonatal intensive care unit (Lumsden & Holmes, 2010). In 15 neonatal intensive care units in the United States, 7 offered CPR training only to parents whose children had specific conditions (Lumsden & Holmes, 2010), which is similar to what was discussed with the nurses in the interviews during this study.

From the 175 responses to the survey and the two interviews with NICU nurses, it was found that both parents and nurses alike felt that learning infant cardiopulmonary resuscitation around the birth of a child, is both important and desired knowledge, as well as having the potential to improve parents confidence in caring for their infant and decrease parents anxiety when taking their child home from hospital. Many parents wanted several opportunities to learn infant CPR and refresh their knowledge around the time of the birth of their babies. Not only could this improve parent's confidence and decrease their anxiety but could also save a life as noted by the two respondents who shared their personal experiences in needing to provide CPR for their infants.

5.5 Synthesis of Findings

It is notable that both the nurses, as well as the majority of respondents, felt that learning Infant cardiopulmonary resuscitation around the time of a birth of a baby

would not only increase parents' confidence in their abilities to care for their baby, but also likely decrease parents' anxiety in taking their baby home from the hospital. Although the nurses felt that including infant CPR into discharge education may not be well received initially by colleagues, they felt that if it was structured and scheduled appropriately, it would not place an undue burden on the nurses. All but one respondent (including the interviewees) felt that Infant CPR was important to learn around the time of having a baby. It is noted that this respondent had done a first aid course in the six months prior to completing the survey and they felt that not many infants would need CPR. While this may have been their opinion, the overwhelming majority felt that having this knowledge was not only important, but that it would decrease their anxiety and increase their confidence. It is also noted that of the 175 respondents, two had had to use CPR skills on their own children. The nurses interviewed who are involved in discharge education, felt that infant CPR could be incorporated into that area, however according to the results from the survey, this was the least favourite option for when parents would like to learn. It should further be noted, that parents also wanted a number of opportunities to learn Infant cardiopulmonary resuscitation and attend refresher education sessions, particularly at antenatal classes and mothers' groups.

5.6 Limitations

There are several limitations with this study that should be discussed. First as this was an exploratory study, only 175 completed surveys were collected in the four-month time period. Secondly as data was collected from parents attending antenatal classes, launch into learning programs, and hospital follow up or in the Neonatal

Intensive Care Unit, this population of willing participants may differ from the general population, as they are seeking out and attending programs that are not required to be attended. Although the researcher cannot determine exactly how this population may differ from the general population, it is felt that those willing to participate in this study and these programs, may be more educated and more willing to seek out educational opportunities, and therefore more interested in learning infant CPR. It is also unclear as to whether the sampled population in this study, is a more educated and employed section of the population, when compared with the general Tasmanian population. As well as the surveys being completed predominantly by females, however it is also important to note that mothers generally spend the majority of time alone with the infant, as many fathers return to work a few weeks post the baby's birth.

Another limitation found in this study, was that only two nurses were interviewed, of the ten who were invited to participate. Although around ten nurses from the Neonatal Intensive Care Unit were approached to take part in the study, due to time restrictions, shift work and general availability, only two nurses were able to be interviewed. However, it should be noted that between these two nurses, there was nearly three decades of experience working in a number of Neonatal Intensive care units and would be considered the more senior nurses in this area. The key themes that arose from the two interviews agreed with the wider literature around infant and child CPR delivery in the hospital setting.

5.7 Summary of discussion

In summary, as identified from the surveys, the current level of knowledge in Southern Tasmania, in relation to infant CPR was able to be investigated. Only one respondent answered all questions correctly, however 50 respondents received a passing mark for the knowledge section. Overall the respondents generally felt that learning infant CPR would increase confidence and decrease anxiety for parents, this view was also supported by the nurses that were interviewed. Finally, the preferred time for learning Infant CPR was at antenatal classes, however many respondents felt that there should be multiple opportunities to learn infant CPR and refresh their knowledge. Nurses felt that with adequate scheduling and good preparation, nurses would not suffer any undue burden by providing infant CPR education to parents prior to discharge from hospital. As such, there appears to be a need for education in this field, and a parental desire to engage with it, with an expectation of reducing anxiety and increasing confidence at this stage of life. The nurse's views align with those of the parents, believing it will decrease anxiety. The nurses could see no downside to teaching parents Infant CPR and viewed it as a positive item to include in discharge education.

Chapter Six: Recommendations and Conclusion

The aim of this study was to determine what the current level of infant cardiopulmonary resuscitation knowledge was in Southern Tasmania, whether this was something new parents wanted to learn around the birth of their child and whether they felt learning infant CPR would have a positive or negative effect on anxiety and confidence. This was an exploratory study of a small population in Southern Tasmania, the results of which could inform the design of a nation-wide study with a larger sample population. Both surveys and interviews were utilised in the framework of this study. The surveys tested both the current level of infant CPR knowledge, as well as determining if this education is something parents would want to learn around the birth of a baby.

The interviews were conducted with nurses from the Neonatal Intensive Care unit and asked for their opinions on teaching infant CPR. There were three research questions, the first of which was 'what is the current level of knowledge about infant CPR amongst parents in Southern Tasmania' and was answered via the knowledge section of the survey. It was determined that there was predominantly limited knowledge and understanding of Infant CPR among the sample population, although those respondents with a higher education level tended to know more, leading to the recommendation that special focus should be placed on teaching those with lower education levels or from lower socio-economic backgrounds. The second question related to whether a sample of parents in Southern Tasmania perceive that learning infant CPR would affect their anxiety levels, either positively or negatively.

Through the survey, it was determined that majority of respondents felt that learning Infant CPR would increase confidence levels and decrease anxiety. This was also the view of the nurses that were interviewed.

Enstieh et al. (2015) noted that increased confidence and decreased anxiety, lead to more positive parenting strategies culminating in healthier relationships. Teaching infant CPR to parents, could help lead to positive parenting strategies, by decreasing anxiety and increasing confidence. The third and final research question was 'when do parents perceive is the most appropriate time to learn infant CPR around the time of a birth of a child'. Three options were presented to respondents, as well as a section for respondents to suggest their own preferred time. Many respondents felt that the best time to learn would be as part of the antenatal classes. However, antenatal classes are usually only attended by first time parents and not all parents, this may not be the optimum time. Many respondents suggested two or more of the options, so that parents could have a refresher course and would also include most parents. Therefore, it would be recommended, to offer classes in Infant CPR over several points in time, to provide for the majority of parents and allow for refresher classes as well, which was the preference of the majority of parents.

From the interviews, it was determined that the nurses felt that learning infant CPR was an important skill for parents to learn, and that it would help increase confidence and decrease anxiety amongst parents and that after adequate training, and with schedule management for classes, nurses would accept teaching parents infant CPR without too much of an issue. It was felt by the nurses however, that the major issue would be, if each parent had to taught individually, instead of teaching a group class on a set day, which was the preferred option for providing the education.

From this study it is recommended, that further larger scale studies be implemented to determine the wishes or effect on the general population. The vast majority of respondents felt that learning infant CPR was an important skill, that would have only benefits if taught and not lead to any excess anxiety or negative impact upon parents. Through the literature, it has been demonstrated that learning infant CPR can increase confidence and decrease anxiety in parents (Knight et al. 2013; Lumsden et al. 2010) and has minimal cost and time management implications (Hansen, 2017).

Through both the survey and interviews with nurses that would be involved in providing infant resuscitation education to parents, it has been determined that parents not only want to be taught this education, but believe it is important to know for a variety of reasons mentioned previously. Given that this education could easily be implemented and is wanted by parents, may help increase parental confidence and decrease anxiety and with the added benefit of potentially saving a life, there is no reason not to implement this type of education for parents.

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Appendix 1: Survey

Thank you for taking the time to complete this questionnaire.

Section A: Demographics

A1. Age

A2. Gender

Female

Male

Other (please specify)

A3. How many children do you have?

A4. What is the highest level of education you have attained

Year 9

Year 10

Year 11

Year 12

TAFE

Undergraduate University degree

Postgraduate University degree

A5. Before having your baby, what was your employment status?

A6. Have you had previous Infant/Paediatric Cardiopulmonary resuscitation training?

YES ☐

NO ☐

If yes, where and when did you undertake this training? ☐

A7. Was previous training for work or personal education?

Yes ☐

No ☐

A8. If it was for personal education why did you decide to undertake training?

Section B: Infant Cardiopulmonary Resuscitation

B1. The Australian Resuscitation Council recommends infant CPR for

- Children under the age of 18 months ☐
- Children under the age of 12 months ☐
- Children under the age of 6 months ☐
- none of the above ☐
- don't know ☐

B2. What is the ratio of chest compressions and ventilation for an infant

- 10:2 ☐
- 15:2 ☐
- 30:2 ☐
- 20:2 ☐
- don't know ☐

B3. How many sets of compressions should be completed in a two minute period?

- 5 sets ☐
- 4 sets ☐
- 10 sets ☐
- 1 set ☐
- don't know ☐

B4. How should compressions be performed on an infant?

- Palm of hand ☐
- Two hands ☐
- Two thumbs ☐
- index and middle finger ☐
- don't know ☐

B5. In what position should the infants head be in for CPR?

- Full tilt ☐
- Sniffing position ☐
- Any position ☐
- No head tilt ☐
- don't know ☐

B6. How should breaths/ventilation be given to an infant?

- Mouth to mouth ☐
- Mouth to nose and mouth ☐
- Mouth to nose ☐
- don't know ☐

B7. How deep should chest compressions be?

- One third the depth of the chest ☐
- Two thirds the depth of the chest ☐
- With as much pressure as you can ☐
- don't know ☐

B8. What type of breath should be given to an infant for ventilation?

- Normal breath ☐
- Shallow breath ☐
- Gentle puff from your cheeks ☐
- don't know ☐

Section C: Anxiety and Attitudes

C1. Do you feel confident performing CPR now?

- Yes ☐
- No ☐

C2. If yes, how confident?

With 1 being no confidence and 5 being complete confidence

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

C3. How would you feel about learning infant CPR around the time of your child's birth? Eg. Antenatal class, discharge information etc.

C4. Do you feel infant CPR is an important skill to learn and why?

Yes ☐

No ☐

What is the reason for your response ☐

C5. When do you think would be the best time to learn infant CPR?

At discharge from hospital after birth ☐

At antenatal classes prior to birth ☐

At mothers group ☐

Another time, (please write below when you think it should be done) ☐

Thank you for you participation with this research.

Appendix 2
PARTICIPANT INFORMATION SHEET

Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst first time parents residing in Southern Tasmania.

You are invited to participate in the research project described below.

What is the project about?

The research project investigates what the current level of knowledge of infant cardiopulmonary resuscitation is amongst parents in Southern Tasmania and whether you would feel that learning such information would be beneficial to you and when education should take place. The aim is to determine if there is a need and a demand for this kind of education prior to the birth of your new baby or before discharge home from the hospital with your baby.

Who is undertaking the project?

This project is being conducted by Nicky Stephens and will form the basis for the degree of Master of Philosophy at The University of Notre Dame Australia, under the supervision of Associate Professor Caroline Bulsara and Dr Dana Hince.

What will I be asked to do?

If you consent to take part in this research study, it is important that you understand the purpose of the study and the tasks you will be asked to complete. Please make sure that you ask any questions you may have, and that all your questions have been answered to your satisfaction before you agree to participate.

What does this project involve:

- Completing the attached questionnaire which asks you about your knowledge and attitudes towards Infant Cardiopulmonary resuscitation and skills.
- The questionnaire will take around 10 minutes to complete.

Are there any risks associated with participating in this project?

There is no foreseeable risk in you participating in this research project. However, if the survey makes you feel a little anxious about CPR, the details for organisations providing CPR training for parents of newborn and infants via pamphlets of a number of different organisations that provide Infant CPR training will be provided.

What are the benefits of the research project?

Although this research will not benefit you directly, your answers will help determine if teaching Cardiopulmonary resuscitation to new parents would be a useful skill to learn. Cardiopulmonary Resuscitation is defined as "a procedure to restore normal breathing after cardiac arrest that includes the clearance of air passages to the lungs, mouth to mouth method of artificial respiration and heart massage by the exertion of pressure on the chest."

There are some questions on 'compression and ventilation'. Compressions are defined as "the act, process or result of compressing especially when involving a compressing force on a bodily part"

Ventilation is defined as "a system of means of providing fresh air. The circulation and exchange of gases in the lungs that is basic to respiration"

What if I change my mind?

Participation in this study is completely voluntary. Even if you agree to participate, you can withdraw from the study at any time without discrimination or prejudice. You cannot withdraw after you submit your survey/questionnaire, as surveys are non-identifiable.

Will anyone else know the results of the project?

Information gathered about you will be held in strict confidence. This confidence will only be broken if required by law. The survey is anonymous and no personal information will be able to be identified as your own.

Once the study is completed, the data collected from you will be anonymous and stored securely in the School of Nursing and Midwifery at The University of Notre Dame Australia for at least a period of five years. The data may be used in future research however your survey will remain anonymous. The results of the study will be published as a thesis and possibly in a journal article.

Will I be able to find out the results of the project?

Once we have analysed the information from this study we will display a flyer in the clinic with a summary of our findings. A two-page summary of results will be available at the clinic for you to take home should you choose to do so. You can expect to receive this feedback in 5 to 6 months once the project is completed.

Who do I contact if I have questions about the project?

If you have any questions about this project please feel free to contact either myself Nicky Stephens, 0450900871 or my supervisor, Caroline Bulsara, 08 9433 0297. My supervisor and I are happy to discuss with you any concerns you may have about this study.

What if I have a concern or complaint?

The study has been approved by the Human Research Ethics Committee at The University of Notre Dame Australia (approval number 017008F). If you have a concern or complaint regarding the ethical conduct of this research project and would like to speak to an independent person, please contact Notre Dame's Ethics Officer at (+61 8) 9433 0943 or research@nd.edu.au. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

This study has been approved by the Tasmanian Health and Medical Human Research Committee. If you have any concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 6254 or email human.ethics@utas.edu.au. The Executive officer is the person nominated to receive complaints from research participants. Please quote ethics reference number H0016246.

How do I sign up to participate?

If you are happy to participate, please complete the attached survey and submit it in the box provided.

Thank you for your time. This sheet can be removed from the front of the survey and is for you to keep.

Yours sincerely,

Nicky Stephens

BN, GCClinNurs, PGDipChl&AdolHealth

Master of Philosophy (Nursing) Student, University of Notre Dame Australia

Appendix 3

Knowledge Questions	Reviewer 1	Reviewer 2	Reviewer 3
The Australian Resuscitation Council recommends infant CPR for (age group)	3	3	2
What is the ratio of chest compressions and ventilation for an infant?	3	3	3
How many sets of compressions should be completed in a two-minute period?	2	3	3
How should compressions be performed on an infant?	3	3	3
In what position should the infants head be in for CPR?	3	3	3
How should breaths/ventilation be given to an infant?	3	3	3
How deep should chest compressions be?	2	3	3
What type of breath should be given to an infant for ventilation?	3	3	3
Totals	22	24	23

Anxiety and Attitudes	Reviewer 1	Reviewer 2	Reviewer 3
Do you feel confident performing CPR now?	2	3	3
If yes, how confident?	2	3	3
How would you feel about learning infant CPR around the time of your child's birth?	3	2	3
Do you feel infant CPR is an important skill to learn and why?	3	3	3
When do you think would be the best time to learn infant CPR?	3	2	3
Totals	13	13	15

1: Irrelevant
2: Important but not essential
3: Essential

Appendix 4

Office of Research Ser.ices
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HUMAN
RESEARCH
ETHICS
COMMITTEE
(TASMANIA)
NETWORK

UTAS

24 March 2017

AssocProf Bulsara
Research Co-ordinator
School of Nursing and Midwifery
University of Notre Dame
Fremantle

Sent via email

Dear AssocProf Bulsara

REF NO: H0016246
TITLE: Perceptions of parental awareness, knowledge and anxiety levels regarding .Infant Cardiopulmonary Resuscitation training amongst first time parents residing in Southern Tasmania: a pilot study

Document	***Version***	***Date***
Tasmanian Health and Medical Low risk Application form	Revised	21/3/2016
Participant-Information-Sheet-final	Revised	21/3/2016
Questionnaire		11/1/2017

The Tasmanian Health and Medical Human Research Ethics Committee considered and approved the above documentation on 22 **March 2017** to be conducted at the following site(s):

Royal Hobart Hospital
Child Health Centre

Please ensure that all investigators involved with this project have cited the approved versions of the documents listed within this letter and use only these versions in conducting this research project.

This approval constitutes ethical clearance by the Health and Medical HREC. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approvals of other bodies or authorities are required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

THE UNIVERSITY OF NOTRE DAME AUSTRALIA

19 Mouat St (PO Box 1225) Fremantle WA 6959
+61 8 **9433 0555** | enquiries@nd.edu.au

28 August 2018

A/Prof Caroline Bulsara & Ms Nakita Stephens
School of Nursing & Midwifery
The University of Notre Dame Australia
Fremantle Campus

Dear Caroline and Nakita,

Reference Number: 017008F

Project Title: "Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst parents residing in Southern Tasmania."

Your application for an amendment to your approved low risk research project has been reviewed by a sub-committee of the University of Notre Dame Human Research Ethics Committee (HREC) in accordance with the *National Statement on Ethical Conduct in Human Research* (2007, updated 2018). I am pleased to advise that ethics approval has been granted for the proposed changes.

Other researchers identified as working on this project are:

Name	School/Centre	Role
Dr Dana Hince	Institute for Health Research	Co-Supervisor

All research projects are approved subject to standard conditions of approval.
Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

THE UNIVERSITY OF NOTRE DAME AUSTRALIA

19 Mouat Street (PO Box 1225) Fremantle WA 6959
+61 8 9433 0555 | enquiries@nd.edu.au

8 February 2017

Associate Professor Caroline Bulsara & Ms Nakita Stephens
School of Nursing & Midwifery
The University of Notre Dame Australia
Fremantle Campus

Dear Caroline and Nakita,

Reference Number: 017008F

Project Title: "Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst first time parents residing in Southern Tasmania."

Your response to the conditions imposed by a sub-committee of the university's Human Research Ethics Committee, has been reviewed and assessed as meeting all the requirements as outlined in the *National Statement on Ethical Conduct in Human Research* (2007, updated May 2014). I am pleased to advise that ethical clearance has been granted for this proposed study.

Other UNDA students and researchers identified as working on this project are:

Name	School/Centre	Role
Dr Dana Hince	Institute for Health Research	Co-Supervisor

All research projects are approved subject to standard conditions of approval. Please read the attached document for details of these conditions.

On behalf of the Human Research Ethics Committee, I wish you well with your study.

Yours sincerely,

Dr Natalie Giles
Research Ethics Officer
Research Office

cc: Prof Elaine Pavlos, Dean, School of Nursing & Midwifery

Tasmanian Government

Tasmanian Health Service
GPO Box 125, HOBART TAS 7001 Australia
Ph: 1300 135 513
Web: www.ths.tas.gov.au

TASMANIAN HEALTH SERVICE

Contact: Susan Gannon
Phone: (03) 616600671
Email: susan.gannon@ths.tas.gov.au

Dear Nakita

Subject: Study for a Master of Philosophy (Nursing) for Nakita Stephens

In regard to your study entitled, 'Perceptions of parental awareness, knowledge and anxiety levels regarding Infant Cardiopulmonary Resuscitation training amongst first time parents residing in Southern Tasmania'.

This letter is an acknowledgment of the in principal support from Susan Gannon, Executive Director of Nursing, Midwifery & Allied at the Royal Hobart Hospital. We wish you all the best with your study and look forward to being made aware of the results once they are available.

Kind regards

Susan Gannon
Executive Director of Nursing Midwifery & Allied Health

February 2017