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Health Care Professionals' Perspectives on Sedation Practices
when Caring for Mechanically Ventilated Patients:
A Case Study from Australia and the UK

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Abstract

Sedation is commonly used within the intensive care unit and is one of the most widespread procedures performed on critically ill patients. Research has highlighted how we sedate patients can affect and influence: patient mortality, time to extubation, length of stay and delirium; this list is not exhaustive. Much of the research already gathered has focused on the relationship between sedation and its impact on patients, but little research has explored the views, meanings and perceptions health care professionals have about sedation practice. Using two different ICUs in two countries (Australia and the UK), this study aimed to examine the contextual and cultural factors surrounding sedation practice for the mechanically ventilated patient along with the views, meanings, and perceptions that health care professionals attach to sedation practice.

Using qualitative case study methodology while applying an interpretivist theoretical lens, one case study site was selected in Australia and the UK. For each case study, qualitative data was collected through one focus group, four to six weeks of direct participant observations, and up to 11 interviews.

The data collected suggests that sedation is a tool interwoven with many aspects of nursing and medical practice, with wider organisational factors impacting the practice of sedation. There is a heavy influence from unit culture and psychological distress of health care professionals, which affects the sedation practices for mechanically ventilated patients. Finally, sedation practice can create challenges to the relationship of the multi-disciplinary team where priorities need to be balanced and boundaries set. The discussion chapter addresses the findings and places them within the context of wider research to better understand the results of the research and how we can learn to improve future practice through policy, education and further research.

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Abbreviations

Below is a list of abbreviations I have used within this thesis. The abbreviations will also be written out in full the first time that they appear:

AMED	Allied and Complementary Medicine Database
ASSIA	Applied Social Sciences Index and Abstracts
BNI	British Nursing Index
CINAHL	Cumulative Index to Nursing and Allied Health Literature
COVID-19	Coronavirus Disease of 2019.
GCS	Glasgow Coma Scale
GDP	Gross Domestic Product
HDU	High-dependency unit
HRA	Health Research Authority
HREC	Human Research Ethics Committee
LOS	Length of Stay
MeSH	Medical Subject Heading
MDT	Multi-Disciplinary Team
ICU(s)	Intensive Care Unit(s)
OECD	Organisation for Economic Cooperation and Development
PADIS	Pain, Agitation/Sedation, Delirium, Immobility and Sleep
PICO	Population Intervention Comparison Outcome
PPI	Patient and Public Involvement
PTSD	Post Traumatic Stress Disorder
RASS	Richmond Agitation Sedation Scale
REC	Research Ethics Committee
REGIS	Research Ethics and Governance Information System
SAS	Sedation Agitation Scale
SPIDER	Sample, Phenomenon of interest, Design, Evaluation and Research type
TA	Thematic Analysis
VPN	Virtual Private Network

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PREFACE

I qualified as a nurse in September 2014, and after recognising through my undergraduate training where I wanted to focus my career, I immediately began working in an Intensive Care Unit (ICU) in the North of England. In September 2015, I partially self-funded a postgraduate certificate in adult critical care practice to specialise and be recognised as a qualified ICU nurse. After completing this course, in January 2017, I took a sabbatical from the NHS to work in Australia, returning in July 2018. Whilst in Australia, I predominantly worked in the ICU and theatre recovery. Throughout the first four years of my nursing career, I was exposed to several different ICU environments in the UK and Australia.

My decision and the opportunity to undertake a PhD research project came about in 2018. The trust that I worked for, in collaboration with the local National Institute for Health and Care Research, advertised two fully-funded PhDs for professions underrepresented in academia. As a passionate nurse committed to providing the best patient care, I saw the chance to do the PhD as a great opportunity for myself, the nursing profession, and the patients I care for. This PhD post saw that I remained part clinical (15 hours/week) and part academic (22.5 hours/week). For me, the nursing profession is undervalued worldwide. This is evident in the low pay, negative press coverage, and underrepresentation within academia and research. Fewer than 0.1% of nurses, midwives and allied health professionals are classed as clinical academics, compared with 4.6% of the medical workforce (Baltruks and Callaghan, 2018). It is my ambition and personal determination to change the future of the nursing profession so that it becomes the forefront of pioneering research that improves the outcomes for the patients I care for.

When applying for the opportunity of the PhD, I had to present a research project to the panel members. I used this opportunity to reflect on my nursing experience in the UK and Australia and compare practices between the two countries. While most of the care and practices were the same, one of the main differences I experienced was my perception that the Australian ICU, where I spent the majority of my time, had the ability to have a lightly sedated patient who was tolerant of the endotracheal tube and the ventilator. At the time, I reflected that they often used mechanical wrist restraints in Australia, and I linked this with being able to reduce

sedation whilst also maintaining airway protection. I initially proposed my PhD project to focus on the use of restraint and how this influenced light sedation practices. However, I was guided by my PhD supervisors to do a research project that focused more on the sedation practices of health care professionals. Reflecting again on the sedation practice that I witnessed, I believe that some of the light sedation I experienced in Australia may have come from a different medication that they were using called Dexmedetomidine, which is an adjunct sedative to their sedation agents. However, I was unaware of this sedative agent at the time because it was not used in the ICU where I worked in England. In Australia, I perceived a big drive and push from the medical and nursing staff to get the sedation as low as possible, and I wondered whether this, too, could have influenced my perception and experience.

What I hoped to discover and learn from this study is whether the difference in practice in the UK and Australia can be further illuminated through an in-depth study of health care professionals' views, meanings, and perceptions and if contextual and cultural factors impact any differences in sedation practice. I hoped the research I intended to do would discover whether we can learn from the exploratory work to provide better care, leading to better patient outcomes.

CHAPTER 1

BACKGROUND AND CONTEXT OF SEDATION IN INTENSIVE CARE UNITS

1.1 Introduction

Throughout this chapter, I will provide a brief insight into the history of intensive care and mechanical ventilation before providing a better understanding of sedation and sedation practice. I will then further expand on why the study focuses on the sedation practices within Australia and the UK, why the research is important and why it is now needed. This chapter will set the foundations of the research.

1.2 A Brief History of Intensive Care

The first Intensive Care Unit (ICU) opened in Copenhagen during the Polio epidemic in 1952 (Ibsen, 1954; Kelly *et al.*, 2014). Leading the way with the first ICU was the anaesthetist, Doctor Ibsen, who detailed his remarkable accounts of attempting to ventilate polio ICU patients along with the challenges he faced (Ibsen, 1954). The challenges he detailed are often synonymous with the challenges experienced today, such as maintaining artificial airways, secretion management, sedation choices, cardiovascular stability, digestive function and weakness (Ibsen, 1954; Chanques *et al.*, 2020). From the very early account of ICU practice in 1952, there were challenges surrounding the choice of anaesthesia and sedation, described by Doctor Ibsen himself as “difficult” (Ibsen, 1954, p. 8). Since the first ICU opened, there has been an improvement in survival rates and outcomes for ICU patients, undoubtedly due to advances in technology and the greater understanding that health care professionals now have in managing the ICU patient (Kelly *et al.*, 2014).

Patients who are admitted to the ICU will more than likely be experiencing an over-sympathetic response with respiratory and cardiovascular instability (Hughes, McGrane and Pandharipande, 2012). Health care professionals aim to control this instability and stabilise the patient, often done primarily through invasive procedures such as mechanical ventilation (Silva and Rocco, 2018). An ICU is now a highly specialised area where organ function in critically ill patients is supported or replaced temporarily (Kelly *et al.*, 2014). An ICU team can consist of several health care professionals, such as nurses, doctors, dieticians,

physiotherapists and pharmacists, with patients usually nursed on a one-to-one ratio (Kelly *et al.*, 2014).

1.3 Mechanically Ventilated Patients and the Use of Sedation

One of the most considerable technological advances over time, and a defining part of ICU care, is the improvement of mechanical ventilation (Kacmarek, 2011). Early ventilators worked by mimicking the natural process of breathing through negative pressure ventilation and were commonly referred to and recognised as the “iron-lung” (Slutsky, 2015, p. 1108). However, through Doctor Ibsen’s work during the polio epidemic was the introduction of positive pressure ventilation, which, despite its complications, was found to be greatly beneficial, more practical and potentially lifesaving for many patients with respiratory failure who were critically ill (Slutsky, 2015). To achieve positive pressure mechanical ventilation, a breathing tube is inserted into the patient's trachea, usually via the mouth, before being connected to a ventilator (Dellaca, Veneroni and Farre, 2017). Since the introduction of positive pressure mechanical ventilation, there have been further advancements in different ventilation modes with the encouragement of spontaneous modes of breathing that are more user intuitive (Slutsky, 2015). Overall, a ventilator aims to provide respiratory support to assist ventilation and gas exchange in the lungs, which supports the normal function of other organs. Its use is seen in over 50% of ICU admissions to provide respiratory support for those who are critically unwell (Park and Griffiths, 2005).

To tolerate positive pressure ventilation and the insertion of an invasive artificial airway, sedation in one form or another, is frequently used (Richards-Belle *et al.*, 2016). Sedation in the context of ICU describes a sedative, analgesic and/or an anti-anxiety agent (Rowe and Fletcher, 2008; Patel and Kress, 2012; Grounds *et al.*, 2014). Sedation for mechanically ventilated patients will typically be given either as an intravenous continuous infusion or via a bolus method, intramuscularly or enterally (via the gut) (Kollef *et al.*, 1998). The use of sedation for patients who are mechanically ventilated is seen globally. A study in 20 countries showed that 68% (3540 patients) of patients received sedation at any one time while receiving mechanical ventilation (Arroliga *et al.*, 2005). More recent research was examined during the Coronavirus Disease of 2019 (COVID-19) in 2020 and showed that up to 70.9% (2088 patients)

of mechanically ventilated patients received at least one type of sedation for a median of 7.0 days, highlighting the ongoing dominant use of sedation within the ICU (Pun *et al.*, 2021).

The dominant use of sedation is not without its complications. Sedation can have adverse effects on the body systems, including the nervous system as it can cause a reduction in sympathetic drive that occurs, often necessitating extra cardiovascular support (Unoki *et al.*, 2009). This is compounded by increased intrathoracic pressure seen during mechanical ventilation, which reduces venous return to the heart and cardiac output (Mahmood and Pinsky, 2018). Further research has illuminated the adverse effects associated with the use of sedation, such as triggering the release of histamine, decreasing vascular tone or causing a loss of airway reflexes (Hughes, McGrane and Pandharipande, 2012; Sahinovic, Struys and Absalom, 2018). In addition, sedation can reduce gastrointestinal function due to gastroparesis, which causes an inhibition of gut motility, increasing the risk of malnutrition and constipation (Hughes, McGrane and Pandharipande, 2012). Furthermore, the use of sedation can cause acute cognitive dysfunction, recognised as delirium¹, it can also increase the likelihood of muscle atrophy, resulting in profound weakness (Koukourikos, Tsaloglidou and Kourkouta, 2014; Mart *et al.*, 2021). Moreover, there is an additional risk of accumulation, which can lead to the re-distribution of sedation away from the central nervous system (Hughes, McGrane and Pandharipande, 2012). No form of sedation is perfect and risk-free, and not all drugs have been tested explicitly for all types of illness that can occur in the critically ill; something that would be very complex to achieve.

Like mechanical ventilation, the history of sedation is just as colourful. Sedation is an interchangeable and universal term that can describe all three components (sedative, analgesic, anti-anxiety) of drugs due to their crossover effects. For example, Morphine, which is first and foremost viewed as an analgesic, also has sedative and anti-anxiety properties, or Ketamine, which is primarily an intravenous sedative but, in low doses, is an analgesic (Shafiekhani, Mirjalili and Vazin, 2018). Therefore, for ease and continuity, throughout this thesis, the term 'sedation' will be used as an umbrella phrase, but briefly, I will explain each component.

¹ Delirium is a state of acute mental confusion that can suddenly develop with harmful outcomes for the patient (Wilson *et al.*, 2022).

A sedative in the ICU would be recognised as general anaesthesia, which can create a “state of controlled unconsciousness” (NHS, 2021, para. 1). The general anaesthesia sedatives in the ICU are most likely to be intravenous or inhalational anaesthesia. Sedatives and anti-anxiety agents (also known as anxiolytics) have substantial similarities. When an anxiolytic agent is given in enough quantities, it has sedative properties. Both a sedative and an anxiolytic can depress the patient’s awareness of their environment, which can achieve the appearance of a sleep-like state (Rowe and Fletcher, 2008). A sedative and an anxiolytic cross over substantially when looking at the pharmacological agents used to sedate patients who are mechanically ventilated in the ICU (Crippen, 1999). Common intravenous sedatives and anxiolytics agents that have been employed include agents such as Etomidate, Midazolam, Ketamine and later Propofol, as well as other agents such as the alpha agonists Dexmedetomidine and Clonidine (Shafiekhani, Mirjalili and Vazin, 2018). Inhalation anaesthetics such as Isoflurane or Sevoflurane are sometimes used, but as they are volatile agents, they require specialised devices to vaporise the liquids into inhalation gases (Jerath *et al.*, 2015). In addition, a process called scavenging also needs to be carried out to prevent the release of anaesthetic inhalation gas into the atmosphere, which can make their use more complicated (Sackey *et al.*, 2004). An analgesic is primarily prescribed for mechanically ventilated patients to provide pain relief and anxiolytic effects, but also for its sedative effects (Hughes, McGrane and Pandharipande, 2012). Analgesics come in varying preparations and formulas, and a wide range are used in the ICU. Common analgesics seen in the ICU are Morphine, Fentanyl, Oxycodone, Hydromorphone, Alfentanil and Remifentanil (Hughes, McGrane and Pandharipande, 2012).

The use of sedation was initially native to the operating room, where there is a practice of deep sedation to anaesthetic levels required to obtund surgical stimuli, sometimes combined with the use of neuro-muscular blockades (paralysing agents). Many earlier ICU practices were influenced by general anaesthesia with little specific knowledge about sedation for the ICU patient, where a surgical depth of anaesthesia is generally unnecessary (Shehabi, Bellomo, Mehta, *et al.*, 2013). In 1995, the first sedation and analgesia guideline for ICU patients was developed (Shapiro *et al.*, 1995). As highlighted by others, this guideline consisted of 13 references and six recommendations (Shehabi, Bellomo, Mehta, *et al.*, 2013).

This guideline was the catalyst for further research about best practices surrounding sedation for ICU patients (Stollings, Balas and Chanques, 2022). More recent guidance that includes best practices about sedation comprises 538 references (Devlin *et al.*, 2018).

The use of sedation for the critically ill patient was found to be complex, dependent on factors such as the patient's presenting complaint, severity of illness, and influenced by available resources and the practices of health care professionals (Jackson *et al.*, 2010). For example, much influence over what sedation agents are used is connected to their economic costs, which we continue to see today. Historically, sedation agents such as Midazolam and Morphine were widely popular due to their relatively low cost compared to Propofol, which once was found to be four times more costly than Midazolam (Carrasco *et al.*, 1993; Soliman, Mélot and Vincent, 2001). However, when a cost-effective analysis was completed, it was found that Propofol over Midazolam was more cost-effective when looking at mechanically ventilated days and length of stay (LOS) (Andrade *et al.*, 2021). Despite this, Propofol can still have unpredictable accumulation when used for long periods and rarely in high doses, which can lead to Propofol infusion syndrome ² (Roberts *et al.*, 2009). More recently, Dexmedetomidine is a relatively new sedative agent for ICUs, with some potential benefits such as reduced delirium, anti-inflammatory effects and analgesia-sparing results, but it has been known to induce cardiovascular adverse events (Chen *et al.*, 2015; Scott-Warren and Sebastian, 2016). Compared to Propofol, it has a higher initial economic cost, with the cost of one ampoule of Dexmedetomidine being €23.44 compared to Propofol, which is €1.05 (Aggarwal *et al.*, 2020; Ter Bruggen, Stronks and Huygen, 2020). Therefore, research has focused on the cost-effectiveness of Dexmedetomidine, but at present, there is conflicting evidence of the cost-benefits associated with Dexmedetomidine (Patanwala and Erstad, 2016; Aggarwal *et al.*, 2020).

From this brief overview of mechanical ventilation and the use of sedation, it is clear that there are several cost and risk factors associated with the use of sedation and why importance is placed on optimum sedation practice.

² Propofol infusion Syndrome is characterised as rhabdomyolysis (breakdown of muscle tissue), hyperkalaemia, metabolic acidosis, and renal and cardiac failure and has a high mortality rate (Roberts *et al.*, 2009).

1.4 Current Understanding of Sedation Practice

Often, the definition of sedation practice can only be found when looking at guidance for procedural sedation or dental sedation not affiliated with ICU practice (Intercollegiate Advisory Committee for Sedation in Dentistry, 2015; Academy of Medical Royal Colleges, 2021). As a result, there is a lack of a definition of what sedation practice means for the ICU. This is likely to be multifactorial but is expected because of the multiple techniques, numerous sedation agents, fluctuating needs of patients, and fluctuating depths of sedation, which all depend on the input of multiple health care professionals across the multi-disciplinary team (MDT) resulting in varying standards of ICU practice (Shehabi *et al.*, 2018). Therefore, for the purpose of this research, I have attempted to define sedation practice by taking inspiration from key guidance and landmark research projects (Osternmann *et al.*, 2000; Richards-Belle *et al.*, 2016; Devlin *et al.*, 2018; Shehabi *et al.*, 2018; Aragón *et al.*, 2019). I have defined sedation practice as: **a continuum of technique which may include administering, withholding or reducing a single or multiple sedative, anxiolytics and/or analgesic to induce a state that allows a patient to tolerate intensive care medicine, practice and procedures based on their clinical need.**

Findings from existing research have shown that sedation practice can significantly impact the outcomes of a sedated and mechanically ventilated patient (Kollef *et al.*, 1998). The early 1998 study from the USA compared the effects of giving continuous sedation with sedation by intermittent bolus (Kollef *et al.*, 1998). The results showed that continuous infusion of sedation led to a longer duration of mechanical ventilation and a longer LOS in the ICU (Kollef *et al.*, 1998). Further research since 2000 to 2020 from Scotland, Malaysia, Switzerland, Germany, Australia, New Zealand, the USA, Brazil and the Netherlands has continued to evidence how sedation delivery and depth can affect the LOS, duration of mechanical ventilation, psychological health and overall survival (Kress *et al.*, 2000; Treggiari *et al.*, 2009; Stephens *et al.*, 2018; Cuthill *et al.*, 2020). In addition, Shehabi *et al.* (2018) conducted a longitudinal study exploring the effects of sedation intensity in the first 48 hours of mechanical ventilation. The study involved 42 ICUs across Asia and Australasia over three years. The results showed that if there was an increase in sedation intensity within the first 48 hours, it independently affected 180-day survival by increasing the predicted risk of death by 30%, increasing the length of time spent on the ventilator, and increasing the risk of

delirium by 25% compared to patients who had a decreased sedation intensity (Shehabi *et al.*, 2018). These detrimental and harmful increases in sedation are significant to the critically ill patient. A further observational, matched-pair analysis from Germany looked at mechanically ventilated patients who were deeply or lightly sedated in the first 48 hours of admission to the ICU (Balzer *et al.*, 2015). They discovered that those deeply sedated in the first 48 hours of ICU admission had a reduced two-year follow-up survival rate (Balzer *et al.*, 2015). These results accentuate the significant long-term impact of sedation practice. Another systematic review and meta-analysis looked at the impact of sedation practice on psychological function by observing deep sedation versus light sedation (Porhomayon *et al.*, 2015). Eleven studies were included in the review. They discovered that where sedation levels were deeper, it resulted in a higher incidence of delirium, posttraumatic stress disorder (PTSD), depression and anxiety (Porhomayon *et al.*, 2015). Research continues to identify how overwhelmingly harmful the impact of sedation can be, especially deep sedation. The significant impact makes it highly important to ensure sedation management is optimised. Given the high prevalence of sedation used in an ICU, combined with its detrimental impact, there have been calls for more explicit guidance on sedation management (Shehabi, Bellomo, Reade, *et al.*, 2013).

One guideline that has existed since 2002 and is published by the USA Society of Critical Care Medicine is the guideline for Pain, Agitation/Sedation, Delirium, Immobility and Sleep (PADIS) for the critically ill, which is commonly referred to as PADIS (Devlin *et al.*, 2018). Since the guideline's publication, it has been translated into five languages, followed by an increase in research on sedation in the ICU (Devlin *et al.*, 2018). The guideline was updated in 2018 and is unofficially recognised by the international ICU community to create standardised best practices (Barr *et al.*, 2013; Devlin *et al.*, 2018). The guideline uses a combination of evidence-based practice and clinical expertise. The guideline was produced by an international committee using international evidence to make recommendations, good practice statements and non-actionable statements (Devlin *et al.*, 2018). The recommendations given within the guidelines have been derived from Population Intervention Comparison Outcome (PICO) questions with evidence to support the practice. The non-actionable statements are descriptive remarks with rationales provided to support the statement alongside evidence.

The guideline is split into key headings of Pain, Agitation/Sedation, Delirium, Immobility and Sleep, and due to the interconnectedness of each section, the authors recommend that the guideline should be implemented in its entirety (Devlin *et al.*, 2018). As the guideline discourages splitting each section, it is therefore not promoted as a sedation guideline (Devlin *et al.*, 2018). Within the PADIS guideline, there are several recommendations and non-actionable statements regarding the agitation/sedation management of critically ill adults. On reviewing some of the key concepts within the agitation/sedation section of the guideline, we begin to see how the literature previously discussed has influenced the guideline.

Recommended practice: “We suggest using light sedation (vs deep sedation) in critically ill, mechanically ventilated adults” (Devlin *et al.*, 2018, p. 838).

The recommendation of light sedation over deep sedation has been recognised as being a crucial part of care within an ICU. This recommendation of light sedation has been established from evidence over the last two decades. The benefits of light sedation for critically ill patients have been highlighted, and the harmful effects of deep sedation have been demonstrated in earlier sections 1.2, 1.3 and throughout this section, 1.4. The following recommendation looks at specific pharmacological agents suggested for sedation practice.

Recommended practice: “We suggest using either Propofol or Dexmedetomidine over benzodiazepines for sedation in critically ill, mechanically ventilated adults” (Devlin *et al.*, 2018, p. 840).

The recommendation of using Propofol or Dexmedetomidine over benzodiazepines has again come from evidence established over several years. Benzodiazepines are a class of drugs that have an anxiolytic and sleep-like effect, and they are typically seen as Midazolam, Lorazepam, and Diazepam within the ICU setting (Young and Prielipp, 2001). Studies as early as 1993 have been highlighting that benzodiazepines have more limitations for critically ill patients than when using Propofol or Dexmedetomidine (Carrasco *et al.*, 1993). The early 1993 study showed that when benzodiazepines were used compared to Propofol, patients had a longer LOS (Carrasco *et al.*, 1993). The next point is a non-actionable statement which asserts the use of protocols.

Non-actionable statement: “In critically ill, intubated adults, daily interruption of sedation protocols and Nurse Protocolised-targeted sedation can achieve and maintain a light level of sedation.” (Devlin *et al.*, 2018, p. 838).

This non-actionable statement addresses the use of protocols to achieve and maintain a light level of sedation. The statement makes remarks and rationales as to why it is recognised as important within the ICU environment to support health care professionals in providing the best care for patients in achieving light sedation.

One of the recommendations within the guidelines was to use “light sedation (vs deep sedation) in critically ill, mechanically ventilated adults” (Devlin *et al.*, 2018, p. 838). At present, there is no universal definition to help describe what light sedation is (Devlin *et al.*, 2018). This creates a challenge when formally recommending it within a guideline. In the ICU, sedation tools are often used so that health care professionals can monitor, assess and titrate the patient’s level of sedation. The sedation tools are either subjective or objective (Devlin *et al.*, 2018). Objective tools primarily record the electrical activity of the brain to determine the level of consciousness of the patient, but they are mostly recommended to be used when deep sedation is required or neuro-muscular blockades (paralysing agents) are in use (Devlin *et al.*, 2018). Therefore, as subjective sedation tools are the recommended practice for light sedation, I will primarily focus on their use in this thesis.

Several versions of a subjective sedation tool exist and are primarily known as sedation scales. A sedation scale relies on the interpretations of health care professionals to assess patients based on descriptions provided by the sedation assessment tool (Waldmann, 2010). The most common ones seen in practice are the ‘Richmond Agitation Sedation Scale’ (RASS), the ‘Ramsay Sedation Scale’, the ‘Motor Activity Assessment Scale’ and the ‘Sedation Agitation Scale’ (SAS) (Sessler *et al.*, 2002; Sessler, Grap and Ramsay, 2008). These scales are usually made up of numbers and statements that allow the health care professionals to match a statement to their observation of a patient's consciousness level. The sedation scales help to standardise the score and reduce the subjectivity of health care professionals, although some subjectivity remains.

Light sedation has been researched over the last two decades and has emphasised its benefits (Kress *et al.*, 2000). Other research has focused on how practical it is to achieve optimum sedation, emphasising the challenges and barriers to light sedation and the complexity surrounding the implementation of this practice (Kydonaki *et al.*, 2019). Light sedation often takes different forms, with the most common three forms being recognised as: the practice of daily interruption of sedation, the practice of light sedation, and the practice of no-sedation. Each has its own method, but all move to the same goal of reducing the quantity and depth of sedation that is given to patients. Each of these forms has variations, with individual ICUs adapting practices as they see appropriate. In the following paragraphs, I will discuss the three practices: daily interruption of sedation, light sedation, and no-sedation.

The practice of daily interruption of sedation involves electively stopping the sedation every day until the patient has emerged from deeper sedation (Kress *et al.*, 2000). At the point that the patient is more alert, the sedation is restarted again, but at a reduced rate. This is commonly referred to as a sedation hold or sedation pause. The early study of Kress *et al.* (2000) showed promising results by reducing the LOS and time spent on mechanical ventilation. Since then, several randomised controlled trials have examined the effect of daily interruption of sedation. A review in 2014 included nine of these randomised controlled trials (Burry *et al.*, 2014). It showed that despite the early promising results, daily interruption of sedation did not significantly alter LOS, duration of mechanical ventilation, quantity of sedation delivered or quality of life (Burry *et al.*, 2014). However, later systematic reviews have shown that the benefits first found in the early 2000 study are ongoing with reduced duration of mechanical ventilation, decreased LOS and associated pneumonia risks (Chen *et al.*, 2021).

The practice of light sedation is often supported by the use of a sedation scale, as discussed earlier (p. 9). In principle, the practice of light sedation is recognised as the sustained achievement of a light sedation score against the subjective sedation scale. Many ICUs try to achieve a lighter sedation score, meaning patients are more aware of their surroundings to achieve positive outcomes such as reduced LOS (Boncyk, Nahrwold and Hughes, 2018). Several strategies, such as using a sedation protocol, may be used to achieve and maintain a

light sedation score. Sedation protocols come in many forms to guide the use and titration of sedation (Abdar *et al.*, 2013; Devlin *et al.*, 2018).

Another strategy is the practice of using a 'no-sedation protocol'. This is where the sedative and/or anxiolytic is withheld, and only the analgesic is given if required (Olsen *et al.*, 2020). (Although it is important to recognise that many analgesics can have some sedative effects, especially in higher dosages). A randomised controlled trial in Denmark looked at a no-sedation protocol against the strategy of 'daily interruption of sedation'. They found that the patients in the no-sedation group had reduced time spent on the ventilator and LOS in the ICU (Strøm, Martinussen and Toft, 2010). However, they found more delirium in the no-sedation group (Strøm, Martinussen and Toft, 2010). In contrast, a recent multi-centre randomised controlled trial in the Scandinavian countries compared a no-sedation protocol against the practice of light sedation combined with a daily sedation hold (Olsen *et al.*, 2020). They found that neither approach showed a superior benefit to mortality, duration of ventilation or delirium, but each practice reduced the amount of sedation an individual received, and that light sedation should be the norm for a patient in the ICU unless it is contraindicated (Olsen *et al.*, 2020).

Briefly, some contraindications to light sedation include severe asthma/bronchospasm, acute respiratory distress syndrome, status epilepticus, raised intracranial pressure, targeted temperature management and the use of neuromuscular blockades (Gitti *et al.*, 2022). If not contraindicated, the practice of light sedation continues to prevail within the sedation practices of many ICUs (Stollings, Balas and Chanques, 2022). This practice is only set to remain due to increased awareness about the impact of deep sedation. I will now look at the sedation practices in the UK and Australia.

1.5 Sedation Practices in the UK and Australia

As this research focuses on the sedation practices of two ICUs, one in the UK and one in Australia, I will now examine the sedation practices of each country by examining research already collected about sedation practices in each respective country.

For the UK, two national surveys have examined the sedation practices of health care professionals (Reschreiter, Maiden and Kapila, 2008; Richards-Belle *et al.*, 2016). Between 2006 and 2007, a sedation practice survey was sent to 302 UK ICUs that looked after mechanically ventilated patients and 63.5% of ICUs responded to the survey (Reschreiter, Maiden and Kapila, 2008). Many ICUs promoted practices that led to lighter sedation, such as the utilisation of a sedation scale, the implementation of daily interruption of sedation and the use of a sedation protocol (Reschreiter, Maiden and Kapila, 2008). They found that most ICUs (88.1%) used a sedation scoring tool, and the Ramsay Sedation Scale was the most favoured (66.5%) (Reschreiter, Maiden and Kapila, 2008). Many ICUs reported having a sedation protocol (80%) and implemented daily sedation Interruption (78%) (Reschreiter, Maiden and Kapila, 2008). They reported that the sedation agents used were either Propofol or Midazolam, which depended on the patient's LOS in the ICU (Reschreiter, Maiden and Kapila, 2008). Another study conducted eight years later, in 2014, saw a survey being sent to 235 ICUs in the UK, and 91% of ICUs responded to the survey (Richards-Belle *et al.*, 2016). The majority (93.9%) of units reported using a sedation scale, but most (64.7%) were now using the Richmond Agitation Sedation Scale instead of the Ramsay Sedation Scale (Richards-Belle *et al.*, 2016). 57% of units reported having a sedation protocol (Richards-Belle *et al.*, 2016), which is significantly less than the previous study, with no reason offered. A very high majority (93.9%) reported that daily interruption of sedation is now considered for every eligible patient (Richards-Belle *et al.*, 2016). This was higher than the 2006 percentage, but the previous study reported implementation, and this study reported consideration of use for each patient. In keeping with the previous study, Propofol is the most common sedation agent, followed by Midazolam (Richards-Belle *et al.*, 2016).

In Australia, three national surveys have reported the sedation practices of health care professionals. The first was published in 1997, followed by a survey in 2005, and then a survey published in 2010 (Magarey, 1997; Botha and Le Blanc, 2005; O'Connor, Bucknall and Manias, 2010). The first national survey was conducted in 1996 and looked at the sedation practices of ICUs with five or more ICU beds (Magarey, 1997). They achieved a high response rate, with 90% (65) of the ICUs returning a completed questionnaire (Magarey, 1997). Few units reported using a sedation scale (17%), and no standard sedation scale tool was reported to be in use (Magarey, 1997). 63% (40) of the ICUs aimed for light sedation, but 32% (21)

reported that over-sedation was a problem (Magarey, 1997). The main sedation agents used were a combination of Midazolam and Morphine (Magarey, 1997). A later study taken in 2005 had a response rate of 65% from 72 ICUs (Botha and Le Blanc, 2005). 44.7% (21) of the ICUs reported using a sedation scale (Botha and Le Blanc, 2005), significantly up from the previous survey in 1996. 40.4% (19) of ICUs stated that there was a sedation protocol in use but that it was seldom used, and 29.8% (14) of ICUs said it was never used (Botha and Le Blanc, 2005). The main sedation agents continued to be Midazolam and Morphine, with Propofol very rarely used (Botha and Le Blanc, 2005), which could have been due to the costs as explored earlier in section 1.3. A further survey conducted between 2006 and 2007 included 2,146 members of a professional critical care organisation based in Australia and New Zealand and focused on sedation management practices and opinions (O'Connor, Bucknall and Manias, 2010). They had a response rate of 16% (348), with 67.8% of respondents from Australia. The use of a sedation scale was reported by 72% of those respondents who replied, and the most common sedation scale used was the Riker Sedation-Agitation Scale (O'Connor, Bucknall and Manias, 2010). Daily interruption of sedation was reported within this study, with 62% of participants saying they used it, and most respondents, 54%, said that they used a protocol to manage sedatives (O'Connor, Bucknall and Manias, 2010). Midazolam and Morphine were the most reported sedation agents used (O'Connor, Bucknall and Manias, 2010), and this was in keeping with the two previous surveys.

1.6 Why Australia and the UK?

Throughout the earlier sections of this chapter, I have highlighted how the sedation practices of health care professionals can impact the outcomes for critically ill patients before briefly introducing the sedation practices previously observed in the UK and Australia through surveys. Before I continue, I want to review some key questions related to this research project. One of the key questions is 'Why Australia and the UK?'. This section will explain why I am focused on sedation practices within Australia and the UK.

When focusing on any healthcare related practice, it is crucial to recognise how the culture and context of practice can have an influence. By using two different ICUs in two different countries, it is thought that the culture and context that influence sedation practices might be more easily explored. Whilst comparative research is fraught with risk and complications,

exploratory research in each environment can provide contextualised understanding. Understanding the sedation practices in each ICU can provide more significant learning and insights into common challenges (Anandaciva, 2023). In addition, other comparative research focused on Canadian and French ICUs highlighted that it created an opportunity for further research development and quality improvement (Dodek *et al.*, 2012).

Australia and the UK have some similarities concerning health care and access, and although no direct measurable comparisons will be made between each ICU, having two roughly similar environments will make it easier to understand how culture and context can influence sedation practices. In order to fully explore the context and culture of sedation practices in Australia and the UK, it is important to look at the setting in which they reside. The UK and Australia are part of the Organisation for Economic Cooperation and Development (OECD), a select group of 36 countries working together to promote economic growth and prosperity (Buttigieg *et al.*, 2015). These economic relationships filter into sharing knowledge that contributes to health and health policies, and therefore, each country is regularly compared against each other in the literature (Buttigieg *et al.*, 2015; Dixit and Sambasivan, 2018; Papanicolas *et al.*, 2019). Australia and the UK operate a ‘universal healthcare system’ with the state as the ‘Owner and Operator’ (Buttigieg *et al.*, 2015). Funding for this universal healthcare system primarily comes from taxes, and both countries have projected similar health care spending as a percentage of Gross Domestic Product (GDP) for 2020: Australia’s spending is 9.7%, and the UK’s is 9.9% (Buttigieg *et al.*, 2015). Australia and the UK are recognised as high-income countries with similar patient demographics and illnesses (Papanicolas *et al.*, 2019). Data from several sources gives us a small snapshot of some of the similarities and differences concerning health care, demographics, and illness, which are presented in Table 1.

Health/Demographics Markers	<u>Australia</u>	<u>UK</u>
Population over 65	16%	18%
Median age of the population (2015)	37.4	40.2
Adults with multiple chronic conditions	15%	14%
Estimate of current tobacco use prevalence (2022)	13.1%	14.2%
Obesity rates (Male, Female)	32.05%, 30.00%	26.94%, 28.30%
Alcohol (all types), recorded per capita consumption (in litres of pure alcohol) (2019)	9.51	9.8
Length of stay (All cause, inpatient)	5.6	6.8

Table 1- Snapshot of comparative demographic data between Australia and the UK (World Obesity, no date; United Nations, 2017; Papanicolas et al., 2019; World Health Organization, 2022).

In addition to this data, in 2017 a report was published that compared the healthcare system performance between 11 countries (Australia, UK, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, and the United States) (Schneider *et al.*, 2017). There were many similarities throughout the report, but for health care outcomes, this saw the most significant divide between Australia and the UK. The UK ranked 10th for health care outcomes, and Australia ranked first (Schneider *et al.*, 2017). Health care outcomes included infant mortality, diagnosis of chronic conditions, life expectancy at 60 years, mortality amenable to health care, in-hospital mortality and cancer survival (Schneider *et al.*, 2017). These data highlight that there may be something that the UK can learn from Australia.

In addition, Australia and the UK continue to have similarities in how the ICUs are organised. They have similar care delivery models that are defined as a closed ICU (Vincent, 2017; Wong *et al.*, 2019). A closed ICU is classed as an ICU “where the intensivist is the admitting medical officer and the speciality teams collaborate with ICU staff” compared to an open ICU, which is “where specialist teams have full admitting rights and where an intensivist is merely ‘consulting’”, and is typically found in the USA (Yartsev, 2017, para. 5). A closed ICU has been recognised as a care delivery model that reduces mortality rates of patients (Yang, Du and Shao, 2019). Highlighting these factors of ICUs in Australia and the UK supports the view that they continue to deliver Doctor Ibsen’s work of promoting excellence in care “for every patient who needed it.” (Ibsen, 1954, p. 8).

Typically, both countries have a nurse-to-patient ratio of either 1:1 or 1:2, with a 1:1 nurse to patient ratio for mechanically ventilated patients (Bernat *et al.*, 2007; College of Intensive Care Medicine of Australia and New Zealand, 2011; Prin and Wunsch, 2012; Chamberlain, Pollock and Fulbrook, 2018; Wong *et al.*, 2019). In addition, at least one supplementary nurse oversees the shift and does not take responsibility for the named nurse role for a patient (EfCCNa, 2007; CICM, 2011). Likewise, in both countries, the staffing levels in the medical teams are very similar in experience and medical coverage (EfCCNa, 2007; CICM, 2011). A

closer look at the statistics of the patients usually cared for in the ICU shows similarities and differences between Australia and the UK (minus Scotland). Data from the UK 2017/18 data set of ICU patients is compared against the 2017/18 data set from Australia (ICNARC, 2018; ANZICS, 2019). The datasets from both countries give an insight into the number of admissions, type of admissions, median age of patients, patient sex, length of stay, mortality and if advanced respiratory support was required (Table 2).

Data from 17/18 yearly report	Australia	UK (minus Scotland)
% of ICUs that contributed to the data set	90.4% of all adult public ICUs	98% of all the adult ICUs/High dependency adult and general units
Admissions per year	106,749 Patients	148,817 Patients
Type of admissions	53.4% came from theatre/recovery (40% of these admissions were from planned/elective surgery)	57.8% of all admissions were non-surgical 23.6% of admissions were after planned/elective surgery
Advanced respiratory support required	30.3%	39.4%
Median length of stay	1.7 days	2.5 days
Mean age of patients	65 years	60.7 Years
% of males	56.1%	55.5%
ICU Mortality	5.05%	13.8%

Table 2- Australia and UK comparisons of ICU statistics (ANZICS, 2019; ICNARC, 2018).

This table shows that Australia has a higher rate of post-surgical admissions, with 53.4% coming from the operating theatre. In contrast, the UK has more medical admissions, making up 57.8% of their patients. Australia has patients who require less mechanical ventilation and spend less time in ICU, with less mortality and a higher mean patient age when compared to the UK. The higher mortality observed in the UK ICU compared to Australia is in keeping with high levels of mortality for heart attack and stroke mortality, infant mortality and maternal mortality, suggesting that there are bigger factors at play, such as the quality and access of overall health care in the UK compared to that of Australia (Niemi, 2021). The UK has been estimated to have 7.3 ICU beds per 100,000 people compared to Australia's 8.1 beds (Anandaciva, 2023). This information gives the reader further context to the setup of ICUs in each country. The similarities in context make these two healthcare systems ideal when exploring sedation practices.

1.7 Why is this Study Necessary, and Why Now?

What became apparent when reviewing the literature regarding sedation practices was that despite the evidence being available, sedation practice continues to be sub-optimised. The sub-optimal application of sedation, as highlighted before, leads to increased LOS and more time spent on the ventilator and thus impacts the mortality and morbidity of patients. It is common knowledge that the population age around the world is increasing (United Nations, 2017). Unfortunately, this ageing population is not always healthy, leading to a higher likelihood of co-morbidities (Beard *et al.*, 2016). The risk of unhealthy ageing can sometimes lead to a greater need for healthcare, including admission to the ICU. The UK has fewer intensive care beds than most of its peers, only 7.3 beds per 100,000 people, compared to Belgium, which has 17.4 beds per 100,000 people, or Austria, which has 21.8 beds per 100,000 people (Anandaciva, 2023). It is predicted that there will be significant pressure upon ICUs in the UK, who may have to resource allocate, which can increase the likelihood of inequalities found in healthcare. There is evidence that unfair resource allocation is already taking place. It was highlighted in Scotland that despite an increase in population age, there has been a decrease in ICU patients who are older adults, indicating that resource restriction is already occurring, and was further amplified during COVID-19 (Docherty *et al.*, 2016; Haas *et al.*, 2020). Whilst many of these factors, such as the low volume of ICU beds, are out of the control of health care professionals, elements of care and how health care professionals practice can support the optimisation of the available resources and improve patient outcomes.

I felt that exploring the context, culture, and perceptions surrounding the sedation practices of health care professionals in Australia and the UK might provide an understanding of how sedation is practised to help improve knowledge and help achieve optimum sedation. However, to begin to understand the current position regarding sedation practice and the perceptions of health care professionals, I decided to explore the literature to gather a global understanding of sedation practice and aid in developing my understanding of where the knowledge gaps are. This literature review is presented in Chapter Two. Before I continue, I will provide a plan for this thesis.

1.8 Thesis Structure

This thesis is organised into nine chapters. Following this background chapter, I will now introduce the following chapters.

Chapter Two reviews the literature on the perceived sedation practices of health care professionals in the ICU and gives us a better insight and understanding of some of the current sedation practices. The chapter concludes by presenting the questions for this research using the information gained from the literature review, background reading, and personal experiences.

In **Chapter Three**, I discuss my reasoning and justifications for conducting qualitative research, followed by my theoretical perspective and my chosen methodology- case study methodology. In detail, I describe the theory behind this methodology and how I build the 'case' for each chosen ICU. I then explore the methodology behind my chosen analysis technique, along with reflexivity.

Chapter Four details how I gained access to each case study and the ethical processes I needed to follow. In great detail, I then go through the methods in which data collection was carried out and how I applied the focus group, interviews and participant observations to both case studies. I then discuss how the data was analysed through reflexive thematic analysis.

Chapter Five is where I give a greater understanding and provide further context into the two ICUs that were used as case studies. This chapter aims to set the scene for the findings of the following chapter.

The findings are presented in **Chapter Six** and are separated by each case study. I first detail the UK findings before detailing the findings from Australia. This chapter details the sedation practices of health care professionals when looking after mechanically ventilated patients with understanding and further insights into the context, culture and influences of sedation practice.

Chapter Seven begins by addressing the similarities and differences between each case study whilst also considering how the similarities and differences fit with the broader literature. I then focus on some key findings in the context of the wider literature to further the understanding of sedation practice. I then summarise my contribution to knowledge, my reflections on the quality of the study, the strengths and limitations and the implications for practice.

Chapter Eight details how COVID-19 impacted this research, including the interruption of my PhD studies, changing the UK case study research site, and how I navigated an international case study during a global pandemic.

1.9 Conclusion

Through this background chapter, I have provided a brief history of ICU and given knowledge surrounding the history of sedation and mechanical ventilation before contextualising the current Australian and UK healthcare systems, including the ICU setting. I have given reasons for why this PhD is necessary and why it is necessary now, with reasons related to the improvement of patient outcomes and resource optimisation. In the next chapter, I will present a review of the existing research on health care professionals' perceptions of their sedation practices to give us an up-to-date insight into how health care professionals perceive their sedation practices. Chapter Two is published work (Varga *et al.*, 2022), and therefore, the following chapter will be an expansion of the distributed work.

CHAPTER 2

A SYSTEMATIC MIXED-METHODS LITERATURE REVIEW

2.1 Introduction

This chapter builds upon the background information from Chapter One by reporting a mixed-methods literature review to gather information on a focused question relating to this research. Within this chapter, I will provide a rationale for choosing a mixed-methods review to explore the literature and the choice of inclusion criteria and search strategy. I will then discuss the data extraction and analysis process before presenting the findings from this mixed-methods review. The chapter concludes by presenting the research questions for my PhD. This chapter is based on an extended version of a published paper of which I was co-author: What are the perceptions of intensive care staff about their sedation practices when caring for a mechanically ventilated patient?: A systematic mixed-methods review (Varga *et al.*, 2022).

Perceptions of health care professionals will be sourced from several different types of studies, both quantitative and qualitative. Quantitative work, such as surveys, can provide overall perceptions of the sedation practice that happens in the ICU. Through qualitative sources, they can provide a greater depth of understanding of the perceptions of health care professionals. This literature review aimed to bring together insights that health care professionals had about their sedation practices to provide a global perspective and understanding of sedation practice in the hope that this will guide future research and increase our understanding.

This chapter consists of the following:

- A literature review search strategy.
- Inclusion and exclusion criteria for research papers.
- Findings from the literature review.
- Discussion of the findings.
- Strengths and limitations of the literature review.
- Research questions of the doctoral study.

2.2 Mixed-Methods Review

A mixed-methods review allows for the integration of evidence from qualitative and quantitative studies in a systematic manner. It acknowledges and addresses the differences in quantitative and qualitative methods whilst simultaneously recognising that they can work together to address complex research questions. This approach allows the researcher to consider evidence from quantitative and qualitative studies when commenting on gaps in research and practice (Lizarondo *et al.*, 2020).

The framework followed to undertake this mixed-methods review is by Sandelowski *et al.* (2006). Within this approach, there are three possible ways of completing a mixed-methods review: segregated, integrated and contingent (Sandelowski, Voils and Barroso, 2006). The integrated design begins with one research question that can be addressed by both qualitative and quantitative studies. Both qualitative and quantitative studies are then gathered and analysed leading to a presentation of findings in an integrated way. The segregated design demands individual research questions that can only address one type of data (i.e., only quantitative studies and only qualitative studies). This is then followed by separate retrieval, analysis, and synthesis. After the separate synthesis has been conducted, mixed research synthesis brings the findings together. The final method of the framework is contingent design. This design sees the synthesis of one research question influencing a second and sometimes a third literature review question. The contingent design process begins by retrieving and analysing studies related to the first research question. Following this initial analysis, the results may influence a second research question, and this cycle continues until a comprehensive review is accomplished and the primary objectives are met. For this literature review, the integrated design was followed, meaning that one research question was designed to address both quantitative and qualitative studies together. I designed a research question that would allow me to explore and gain insights into the sedation practices of health care professionals and is as follows:

What are the perceptions of intensive care staff about their sedation practices when caring for a mechanically ventilated patient?

2.3 Inclusion Criteria and Search Strategy

I established inclusion criteria to ensure I gathered the most relevant articles to address the review question. The inclusion criteria covered several areas to make sure the search was robust.

Inclusion criteria:

- Published date from 2009 onwards. (Date of searchers: 09/05/2019 and 01/08/2019).
- Published peer-reviewed journal articles only.
- English language only (or readily available translations).
- Focus on staff perceptions about their sedation practices of mechanically ventilated patients.
- Adult intensive care units only.

Exclusion criteria:

- Studies focused on actual sedation practice and not perceived practice.
- Studies with a narrow focus on sedation practice (i.e., sedation practices of burns patients only).
- Studies associated with improving or changing practice.
- Studies that looked at bundles/protocols/assessment tools that are not exclusive to sedation practice.
- Studies that were not explicitly clear that they focused on mechanically ventilated patients unless I was able to obtain e-mail confirmation through correspondence.

Inclusion Criteria Justification

Time frame (Publication date 2009 onwards):

This time frame was appropriate due to a review published in 2009, which assessed the sedation practices from 1999 to 2009 from several surveys (Mehta, McCullagh and Burry, 2009). A time frame from 2009 onwards was beneficial to ensure the literature review was timely and significant. Further support for this time frame came about because of the recognition that it takes 17 years for research to influence practice (Morris, Wooding and Grant, 2011). The first landmark study highlighting that sedation practices affected patient

outcomes was published in 1998 (Kollef *et al.*, 1998; Shehabi, Bellomo, Mehta, *et al.*, 2013). According to Morris, Wooding and Grant (2011), the practice should therefore have changed by 2015. A time frame of 10 years was thought to have the potential to capture 'current' practice.

Publication type:

All article types are accepted (Quantitative, qualitative, mixed-methods etc.) as long as they are published as a peer-reviewed journal article only.

English language only or readily available translated text:

As my primary language is English and limited funding was available, I could not cover the translation service costs. Due to time constraints, I only included studies where English translations were readily available.

A focus on perceived sedation practices of mechanically ventilated patients:

The studies focused on perceived sedation practices as a primary outcome. There was a principal focus on the mechanically ventilated patient with an endotracheal tube likely to require sedation.

Adult intensive care units only:

Having recognised that sedation practices differ in paediatric intensive care, I only included adult intensive care units.

All geographical regions:

As this review is looking at the perceived sedation practices globally, there is no restrictions on any geographical regions.

Exclusion Criteria Justification

Studies focused on actual sedation practice and not perceived practice:

Due to the literature review question, only evidence about staff perceptions of practice was wanted, rather than observations or other descriptions of actual practice. Therefore, studies that looked at actual practice were excluded.

Studies with a narrow focus on a particular patient group (i.e., sedation practices of burns patients only):

Studies that narrowly focused on a particular patient group may have resulted in the findings having limited applicability to other contexts or environments. In addition, practice can often differ significantly in specialist units.

Studies associated with improving or changing practice:

I wanted to capture the perceptions of usual and continued practice, which is characterised by the following understanding that “Usual care should reflect locally adapted practices” (Yorganci *et al.*, 2020, p. 668). Studies focused on improving or changing practice were excluded because a change in practice does not always continue as ongoing practice after the improvement/intervention has stopped, with change often being short lived, and therefore not locally adapted practice (Cheraghi *et al.*, 2023).

Studies looking at bundles/protocols/assessment tools which are not exclusive to sedation practice:

Only a handful of bundles/protocols/assessments are specific to sedation practice. Most bundles and protocols used in the ICU may incorporate sedation practice but are not only focused on sedation practice.

Studies not explicitly clear that they are focused on the mechanically ventilated patient unless e-mail confirmation was obtained:

I noted that there was an additional body of evidence that looked at staff perceptions of sedation practices. Closer inspection revealed that these papers were not centred on mechanically ventilated patients (Knowles *et al.*, 2010; Hofhuis *et al.*, 2012; Egerod *et al.*, 2013; Everingham, Fawcett and Walsh, 2013; Luetz *et al.*, 2014; Svenningsen, 2015; Richards-Belle *et al.*, 2016; Morandi *et al.*, 2017; García-Sánchez *et al.*, 2019; Urkmez *et al.*, 2019).

Search Strategy

I identified relevant studies using an in-depth search strategy. I utilised the Sample, Phenomenon of Interest, Design, Evaluation and Research type (SPIDER) framework to find published peer-reviewed evidence (Table 3).

<u>Sample (S)</u>	<u>Phenomenon of Interest (PI)</u>	<u>Design (D)</u>	<u>Evaluation (E)</u>	<u>Research Type (R)</u>	<u>Limitations set</u>
"Intensive care" OR "ICU" OR "Critical Care" OR "Critical*" OR "Intensive Therapy" OR "ITU"	"Sedat*" OR "Sedative agent*" OR "analgo sedation"	All study designs	Outcomes were Intensive care staff perceived sedation practices	Quantitative, Qualitative and mixed-methods	English language or available translation. Publication date from 2009. Adult patient population. Peer-reviewed publication.

Table 3- SPIDER Search Strategy for the literature review.

I selected a SPIDER framework for the search strategy as it could be deemed appropriate for quantitative, qualitative and mixed-methods research due to 'R', which allowed the reviewer to determine the research type (Cooke, Smith and Booth, 2012). In addition, using the SPIDER framework enabled the reviewer to promptly generate more relevant and appropriate results for the review (Cooke, Smith and Booth, 2012).

Cooke, Smith, and Booth (2012) have stressed that because of how articles are indexed, not all relevant studies will be found, which could be seen as a limitation of the SPIDER framework. To counteract this problem, I planned to only use some aspects of the SPIDER framework if the search results were unmanageable. The approach to only applying some elements of a search strategy is a recognised technique when conducting a literature review to ensure that research results are manageable (Booth, Sutton and Papaioannou, 2016). When applying the SPIDER search strategy, I began with 'Sample' and 'Phenomenon of

interest' and then combined these terms with 'AND'. This resulted in a large number of articles (7,563) being sourced, however, I perceived that this was manageable for myself. Therefore, only sections 'S' and 'PI' of the search strategy were applied, along with the limitations set where possible.

The search strategy involved the use of nine databases (AMED (Allied and Complementary Medicine Database), BNI (British Nursing Index), CINAHL (Cumulative Index to Nursing and Allied Health Literature), Embase, PubMed (Includes Medline), ASSIA (Applied Social Sciences Index and Abstracts), Scopus, The Cochrane Library and Google Scholar). These databases were selected according to librarian advice and taken from 'Systematic Approaches to a Successful Literature Review' (Booth, Sutton and Papaioannou, 2016). The databases and the Cochrane Library are relevant as their documented coverage includes: medicine, allied health, health sciences and nursing (Booth, Sutton and Papaioannou, 2016; Soares-Weiser, 2022). Google Scholar maintains extensive and far-reaching coverage with the potential for additional peer-reviewed academic content to be sourced (Cecchino, 2010). The search strategy included relevant search terms, techniques and limits, and Medical Subject Heading (MeSH) headings were used where possible. Hand searching was undertaken by cross-referencing those studies that met the criterion. Cross-referencing helped improve the likelihood of obtaining all relevant articles (Aveyard, 2014). I did not search the grey literature due to time constraints, which is highlighted as a limitation later in this chapter (Aveyard, 2014).

2.4 Data Extraction and Analysis

From the search results, the 'title' and 'abstract' were reviewed to establish the appropriateness of the study against the inclusion and exclusion criteria. If deemed appropriate, I then sought the full text. The full text was also sought if there was uncertainty or ambiguity in the title and abstract. I also contacted corresponding authors if required. All studies with uncertainty were cross-examined for appropriateness by supervisors Tony Ryan, Jane Seymour and Tracey Moore.

In total, 7,563 articles were screened (Appendix A). Eighteen studies from ten countries were included, fourteen quantitative and four qualitative (Appendix B). To establish the quality of

each study, the quality assessment tool by Hong *et al.* (2018) was used (Appendix C). Hong *et al.* (2018) designed a scoring system to objectively assess the methodological quality of the studies, decreasing the likelihood of selection bias in the review. Upon reading about the technique, it appeared simple and easy to use. It incorporated qualitative, quantitative, and mixed-methods studies into one assessment tool, removing the need for more than one tool. Completing the methodological quality assessment with an appraisal tool explicitly designed for mixed-methods reviews allowed for consistency throughout the appraisal. Following the appraisal, all studies were screened as being appropriate to include. No studies were excluded for low quality as there is a recognition that low-quality evidence still provides insight (Hong *et al.*, 2018). Following quality assessment, data extraction could then begin.

Quantitative and qualitative data extraction was facilitated by transforming the data into text-in-context statements, which developed meaningful data. The data extraction was guided by the aims of the literature review questions to ensure that it is relevant to the study (Sandelowski *et al.*, 2013). The data extracted was transformed to “text-in-context”, making readable, declarative statements free from method talk with the ability to understand the data separate from the context of the review (Sandelowski *et al.*, 2013, p. 1428). The data extracted kept the context in which it was gathered to make for more meaningful results and ensure that all applicable data were extracted. It also converted the quantitative data into qualitative data, a process known as “qualitizing”, which gave the added benefit of being able to use the same analytic process on all data (Sandelowski, Voils and Barroso, 2006, p. 8). To help enable data extraction, the ‘Rules of thumb’ principle was followed. “Rules of thumb” is where the text statements of findings are anchored with the context in which the findings were found (Sandelowski *et al.*, 2013, p. 1432). Table 4 details the Rules of Thumb and provides examples of some of the extracted data from the studies included in this research.

<u>Rules of Thumb</u>		<u>Examples</u>
Sample	Specify sample according to extent of variation and/or whether these variations are addressed in the findings.	Pharmacists working in the USA in ICU from a sample of 104 viewed the top three

Source of information	Insert source of information whenever there are multiple sources of information about an index person or event.	barriers to using sedation protocols were ‘lack of physician order’ (54%), lack of nursing acceptance (13%), and joint third were ‘prefer more control than a protocol offers’ (7%) and ‘protocol not accessible when needed’ (Tanios <i>et al.</i> , 2009).
Time	Insert time phrase in longitudinal and intervention studies and if time is featured as a variation in the target phenomena in the finding.	
Comparative reference points	Insert between-group and between-theme comparisons.	
Magnitude and significance	Insert frequency, percentage of participants associated with a finding in surveys and statistical significance.	Very few (16.5%) of the Flemish ICU nurses reported in the survey of using Daily Interruption of Sedation mostly or always on ICU mechanically ventilated patients, with the vast majority (80.9%) saying they never or rarely apply daily interruption of sedation (Borkowska <i>et al.</i> , 2018).
Study-specific conceptions	Specify target phenomena as operationalised in the study.	

Table 4: Details regarding ‘Rules of Thumb’ for data extraction (Sandelowski *et al.*, 2013).

Following these specific rules, I retrieved all relevant information, and the data extraction process remained clear and consistent (Sandelowski *et al.*, 2013).

Ten of the 14 quantitative studies looked at a general overview of sedation practices and the factors influencing practice (Salluh *et al.*, 2009; Guttormson *et al.*, 2010; Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Freilich and Shaw, 2014; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017). Two other quantitative studies looked at the perceived sedation practice of daily interruption of sedation and sedation protocols (Tanios *et al.*, 2009; Roberts *et al.*, 2010), and the other

two looked explicitly to the barriers towards analgosedation³ and the weaning of sedation (Sneyers *et al.*, 2014; Borkowska *et al.*, 2018).

Of the four qualitative studies, all were from Scandinavian countries. Two from Sweden and one from Denmark focused on light sedation strategies as the topic of discussion (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). The fourth study, from Denmark, examined physicians' views and perceptions of sedation (Egerod, 2009).

Following data extraction, I completed data analysis of qualitative and quantitative data by following Braun and Clarke's (2006) six uncomplicated steps of thematic analysis. The six steps were: 1. 'Familiarising yourself with your data', 2. 'Generating initial codes', 3. 'Searching for themes', 4. 'Reviewing themes', 5. 'Defining and naming themes' and 6. 'Producing the report' (Braun and Clarke, 2006). Thematic analysis is a recognised method and fundamental approach for qualitative analysis (Braun and Clarke, 2006). It allows the findings to be presented in themes that have rich detail, internal coherence, and distinctiveness, and they help create and support an overarching narrative (Braun and Clarke, 2006). I decided to use Braun and Clarke's thematic analysis process over other forms of thematic analysis due to the extensive literature and resources available regarding their method, all supported by a step-by-step process that would guide me (Clarke and Braun, 2018a).

2.5 Findings

After synthesising the findings, three overarching themes and seven subthemes were identified. The central themes were 'Variation in Decision-Making', 'Challenges in Decision-Making', and 'Thinking Outside the Box'. Figure 1 below demonstrates the central themes and subthemes.

³ Analgosedation is the practice of targeting the patients pain and distress using analgesics first before adding in sedatives, and they are only added in if needed (Devabhakthuni *et al.*, 2012).

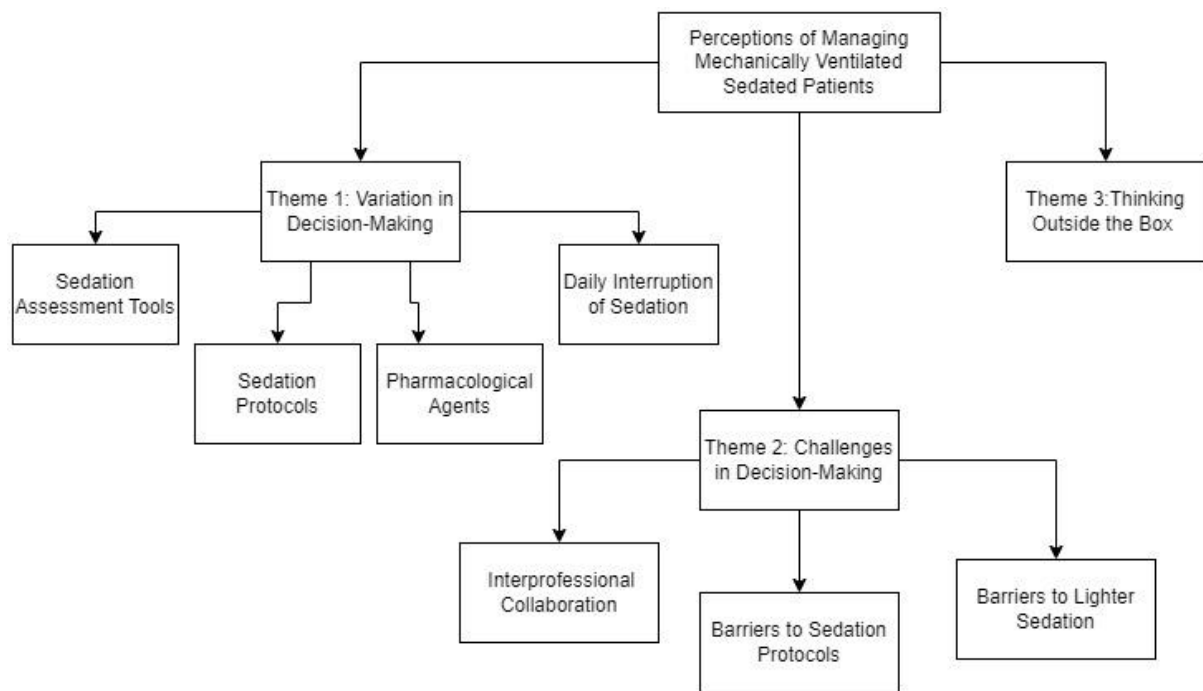


Figure 1- A flow diagram of the findings from the literature review.

2.5.1 Theme 1: Variation in Decision-Making

The theme Variation in Decision-Making includes four subthemes, ‘Sedation Assessment Tools’, ‘Sedation Protocols’, ‘Daily Interruption of Sedation’ and ‘Pharmacological Agents’. Each subtheme covers a separate but interrelated aspect of sedation practice. This theme highlights the range of decision-making that occurs and the variations that occur in sedation practice globally.

Fourteen studies highlighted variations in the implementation and use of formal sedation guidance. There were 13 quantitative studies, four from the USA (Tanios *et al.*, 2009; Guttormson *et al.*, 2010; Roberts *et al.*, 2010; Gill *et al.*, 2012), two from Norway (Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012), two from the UK (Freilich and Shaw, 2014; Yassin *et al.*, 2015) and one each from Belgium (Borkowska *et al.*, 2018), France (The SRLF Trial, 2013), Poland (Kotfis *et al.*, 2017), Brazil (Salluh *et al.*, 2009), and Sri Lanka (Priyankara, Manoj and Samarutilake, 2017), with one qualitative study, from Denmark (Egerod, 2009). Studies often did not distinguish whether they asked participants about perceptions of general implementation or its use in practice. Furthermore, some studies included responses from individuals who responded on behalf of the ICU they worked for, and some responded as individual participants about their own practice and were not linked with any particular ICU. This made it difficult to grasp the extent of differences in perceptions among health care

professionals because of study heterogeneity. Nonetheless, wide variation was seen across many aspects of sedation management.

Subtheme: Sedation Assessment Tools

A sedation assessment tool is used globally by health care practitioners to help assess the sedation level of patients. There are subjective and objective tools used in practice, and this review comments on the use of subjective tools as the PADIS guideline only advises using objective monitoring tools when deep sedation or paralysing agents are required (Devlin *et al.*, 2018). In this review, there was significant variation in the use of sedation tools, which varied from how tools were used to the type of tools used.

For sedation assessment tools, one Polish study asked the lead intensivist to respond on behalf of the ICUs included in the sample (n=165). The study reported that fewer than half (46.1%) of responding ICUs (76/165) used a sedation assessment tool (Kotfis *et al.*, 2017). In contrast, a USA study asked the clinical pharmacist to respond on behalf of the ICUs included in the sample. They found that most (93%) responding ICUs (79/85) used a sedation assessment tool (Gill *et al.*, 2012). More than 50% of participants of responding ICUs in eight further studies reported that a sedation assessment tool was available (Guttormson *et al.*, 2010; Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Sneyers *et al.*, 2014; Yassin *et al.*, 2015; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018). Variation in the availability of a sedation tool extended to the type of sedation assessment tool used. Participants from nine studies across seven different countries reported varying popularity and dominance of the sedation assessment tools used, with evidence that this even varied within the same hospital (Guttormson *et al.*, 2010; Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018). The frequently mentioned sedation tools included the 'Richmond Agitation Sedation Scale', the 'Motor Activity Assessment Score', the 'Sedation-Agitation Scale' and several versions of the 'Ramsay Scale' (Egerod, 2009; Guttormson *et al.*, 2010; Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018). One qualitative study from Denmark and one quantitative study from Belgium reported that

a non-sedation-specific tool was used (Glasgow Coma Scale), highlighting a further variation in practice (Egerod, 2009; Borkowska *et al.*, 2018). One quantitative study from Belgium captured the perceived strengths and weaknesses of using a sedation assessment tool (Sneyers *et al.*, 2014). The strengths of using the sedation assessment tool were that they were perceived to give consistency, more autonomy and guided sedation practices (Sneyers *et al.*, 2014). Some of the perceived weaknesses were that they were too complex and time-consuming to use (Sneyers *et al.*, 2014).

Subtheme: Sedation Protocols

Similarly, wide variation was reported in implementing or using a sedation protocol. Protocols are intended to manage and guide the amount of sedation a patient receives by incorporating a sedation scale, promoting nursing and medical assessments and encouraging the daily reduction of sedation (Rose *et al.*, 2015). Implementation of a sedation protocol was reported by only 19.4% of the responding ICUs (32/165) in Poland, compared to 64% of participants from a sample of health care professionals in a USA study (Tanios *et al.*, 2009; Kotfis *et al.*, 2017). Few participants reported using sedation protocols in the Norwegian and Sri Lankan studies (Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012; Priyankara, Manoj and Samarutilake, 2017). In the USA, Belgium, France and the UK, most participants reported the implementation of a sedation protocol (Guttormson *et al.*, 2010; Gill *et al.*, 2012; The SRLF Trial, 2013; Yassin *et al.*, 2015; Borkowska *et al.*, 2018). However, when participants from the French study were asked how often they believed these protocols were implemented, they perceived protocols were only used about half the time in suitable patients (54%) (The SRLF Trial, 2013). This wide variation was also observed in the qualitative study in Denmark, where some participants explained that health care professionals' preferences influenced use and implementation (Egerod, 2009).

Subtheme: Daily Interruption of Sedation

Daily interruption of sedation is the practice of stopping sedation to allow patients to become more aware and lighter in their sedative state, and it usually occurs daily if the patient is suitable (Kress *et al.*, 2000). Stopping sedation daily is thought to reduce accumulation and provide more accurate neurological assessments (Kress *et al.*, 2000). There was wide variation in the reported implementation of daily interruption of sedation. This ranged from

implementation in 91% of responding ICUs in one UK survey to 10% of responding ICUs in a French study (The SRLF Trial, 2013; Freilich and Shaw, 2014). A study in Brazil showed a significant variation in one country alone; 21% of participants estimated that daily interruption of sedation was never used, 23% estimated it was used just half of the time, and 17% estimated it was used for more than three-quarters of their patients (Salluh *et al.*, 2009). This study showed that not only was there variation between countries but also significant variation within a country (Salluh *et al.*, 2009). A wide variety of use was seen in a further nine studies where the prevalence of daily interruption of sedation was assessed (Salluh *et al.*, 2009; Tanios *et al.*, 2009; Randen and Bjørk, 2010; Roberts *et al.*, 2010; Woien, Stubhaug and Bjork, 2012; Gill *et al.*, 2012; The SRLF Trial, 2013; Freilich and Shaw, 2014; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018).

Subtheme: Pharmacological Agents

Staff perceptions of pharmacological choice were reported in nine quantitative studies and one qualitative: two from the USA (Tanios *et al.*, 2009; Gill *et al.*, 2012), two from Norway (Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012) one each from Belgium (Borkowska *et al.*, 2018), Sri Lanka (Priyankara, Manoj and Samarutilake, 2017), Poland (Kotfis *et al.*, 2017), France (The SRLF Trial, 2013), the UK (Yassin *et al.*, 2015) and Denmark (Egerod, 2009). In all quantitative studies, staff reported there was a preference for the use of Midazolam and/or Propofol as the sedative (Tanios *et al.*, 2009; Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018). The qualitative study highlighted that the decision to use either Propofol or Midazolam was complex, with economics, associated adverse effects and personal preference being of relevance (Egerod, 2009). More diversity of analgesic choice was reported across eight quantitative studies, with specific patient contexts influencing choice (Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; The SRLF Trial, 2013; Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017; Borkowska *et al.*, 2018). Four studies reported that Fentanyl was their preferred analgesic (Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012; Kotfis *et al.*, 2017). Three studies reported that Morphine was the preferred analgesic for specific patient groups (Yassin *et al.*, 2015; Kotfis *et al.*, 2017; Priyankara, Manoj and Samarutilake, 2017). In France, participants

reported that Sufentanil was their analgesic of choice (The SRLF Trial, 2013). In Belgium, the most used analgesic was Remifentanil, as reported by participants (Borkowska *et al.*, 2018).

2.5.2 Theme 2: Challenges in Decision-Making

This theme explores the challenges surrounding decision-making in sedation management for mechanically ventilated patients. There are three subthemes: 'Interprofessional Collaboration', 'Barriers to Sedation Protocols' and 'Barriers to Light Sedation'. This theme explores the challenges staff face, which has been highlighted as having the ability to affect decision-making in sedation practice.

Subtheme: Interprofessional Collaboration

Challenges in interprofessional collaboration were reported in six quantitative studies, and four qualitative studies reported findings of relevance. Two studies each from Norway (Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012), Denmark (Egerod, 2009; Mortensen, Kjær and Egerod, 2019), Sweden (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015) and the USA (Guttormson *et al.*, 2010; Gill *et al.*, 2012), and one each from the UK (Yassin *et al.*, 2015) and Belgium (Borkowska *et al.*, 2018).

For both the Norwegian and the USA studies, some collaboration was reported for sedation management between the health care professionals, and this was deemed to have a positive impact on the mechanically ventilated patient (Guttormson *et al.*, 2010; Randen and Bjørk, 2010; Gill *et al.*, 2012; Woien, Stubhaug and Bjork, 2012). However, this collaboration between nurses, and physicians was limited and not reported in all reviewed studies. The majority of studies reported collaboration between health care professionals as lacking. Many study participants from the UK and Belgium reported that collaboration was lacking in sedation management and protocol development (Gill *et al.*, 2012; Yassin *et al.*, 2015; Borkowska *et al.*, 2018). Some studies reported that a nursing-driven approach adopted by health care professionals potentially limited the input from other health care professionals (Gill *et al.*, 2012; Borkowska *et al.*, 2018). Participants in both Swedish studies felt that frequent turnover of shift patterns and a lack of communication led to a difference of opinion and strategies for mechanically ventilated patients (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015). Two qualitative studies from Denmark, a decade apart, highlighted that

differences between occupational groups made it difficult to deliver optimum sedation practices (Egerod, 2009; Mortensen, Kjær and Egerod, 2019).

Subtheme: Barriers to Sedation Protocols

Several studies reported barriers preventing health care professionals from utilising sedation protocols. Four quantitative studies reported findings of relevance. Two studies came from the USA (Tanios *et al.*, 2009; Gill *et al.*, 2012) and one each from Belgium (Borkowska *et al.*, 2018) and Norway (Randen and Bjørk, 2010).

Three surveys highlighted that a lack of physician order/discussion was a barrier to using a sedation protocol (Tanios *et al.*, 2009; Gill *et al.*, 2012; Borkowska *et al.*, 2018). Both surveys from the USA reported a lack of nursing acceptance as a barrier (Tanios *et al.*, 2009; Gill *et al.*, 2012), and a lack of physician acceptance was reported by participants from Belgium and the USA (Gill *et al.*, 2012; Borkowska *et al.*, 2018). There was a perception among some participants that a sedation protocol limited their degree of control over sedation practice, and this was thus a barrier to their use (Tanios *et al.*, 2009). Some participants in Norway regarded their intuition and experience as more important than research-based knowledge (Randen and Bjørk, 2010). Furthermore, some staff thought protocols were unsuitable for certain types of patients, with cited examples of neurosurgical and head trauma patients (Tanios *et al.*, 2009). Other barriers identified by Belgian participants were high workload (10.7%) and the use of short-term sedation (38.3%) (Borkowska *et al.*, 2018). In one survey in the USA, further barriers, such as a quick nursing turnover and a lack of education, were identified (Gill *et al.*, 2012).

Subtheme: Barriers to Light Sedation

This subtheme gives an insight into the reported barriers to the uptake and implementation of lighter sedation, including the daily interruption of sedation. Seven quantitative studies and three qualitative studies reported findings of relevance. Three studies came from the USA (Tanios *et al.*, 2009; Guttormson *et al.*, 2010; Roberts *et al.*, 2010), two from Belgium (Sneyers *et al.*, 2014; Borkowska *et al.*, 2018), two from Denmark (Egerod, 2009; Mortensen, Kjær and Egerod, 2019), two from Norway (Randen and Bjørk, 2010; Woien, Stubhaug and Bjork, 2012),

two from Sweden (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015) and one from France (The SRLF Trial, 2013).

Reported barriers to daily interruption of sedation and lighter sedation were an increased risk of complications such as line/tube removal, respiratory compromise, agitation and the increased need for physical restraints (Tanios *et al.*, 2009; Roberts *et al.*, 2010; Tingsvik *et al.*, 2013; Sneyers *et al.*, 2014; Karlsson and Bergbom, 2015; Borkowska *et al.*, 2018). Many participants felt unprepared and unsupported when looking after lightly sedated patients (Tingsvik *et al.*, 2013; Mortensen, Kjær and Egerod, 2019). Their frustrations came from a lack of suitable tools, environment and educational preparation to care for the lightly sedated mechanically ventilated patient (Tingsvik *et al.*, 2013; Mortensen, Kjær and Egerod, 2019). This left health care professionals unsure of how to facilitate best practices.

Some studies highlighted that staff were likely to provide deeper sedation for mechanically ventilated patients. Most participants involved in a study from Belgium (71%) and one study from the USA (55%) agreed or strongly agreed that it is easier to care for a sedated mechanically ventilated patient (Guttormson *et al.*, 2010; Sneyers *et al.*, 2014). 54% of participants from the study in Belgium reported that they did not see the point of stopping sedation every day for every patient (Sneyers *et al.*, 2014). This view may have exposed a lack of understanding and awareness regarding the potential adverse effects of sedation. 61% of participants in Randen and Bjørk's (2010) study reported being more likely to give too much sedation than too little. Additionally, Guttormson *et al.* (2010) showed that 47.6% of participants agreed or strongly agreed that there is an intention to sedate all mechanically ventilated patients. 37% of participants from the French study reported that eye-opening only after physical stimulation indicates an optimum level of sedation (The SRLF Trial, 2013). However, according to earlier 2013 PADIS guidelines, a RASS score of -2 was viewed as light sedation, described as patients awakening to voice with no physical stimulation (The SRLF Trial, 2013; Barr *et al.*, 2013). Therefore, eye-opening only post physical stimulation would have been classed as deep sedation (Barr *et al.*, 2013).

Additional challenges that may lead to the relatively liberal use of sedation are the perception and view held by many health care professionals that light sedation is uncomfortable and

stressful for patients. The majority (>90%) of participants from the USA survey viewed mechanical ventilation as uncomfortable and stressful for patients and reported they would want to be sedated themselves if a patient (Guttormson *et al.*, 2010). Relatedly, 80% believed sedation is necessary for patient comfort (Guttormson *et al.*, 2010). Within the qualitative studies, participants questioned the practice of providing no-sedation to ventilated patients. They challenged whether it was appropriate for mechanically ventilated patients to be conscious, with participants reporting concerns about abstaining from sedation (Egerod, 2009; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). This affected the psychological wellbeing of the health care professionals, with some participants reporting feelings of powerlessness, helplessness, and despair (Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019).

However, there was an acceptance of light sedation over deep sedation among health care professionals in all of the qualitative studies, which are from Scandinavian countries (Egerod, 2009; Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). In Egerod's (2009) small study, participants believed that most patients are managed well with sufficient analgesia and a light sedation level and that it was unnecessary to sedate all mechanically ventilated patients routinely. The small study by Karlsson and Bergbom (2015) showed that some participants felt that caring for a mechanically ventilated patient with light sedation is preferred as the patients are interactive.

2.5.3 Theme 3: Thinking Outside the Box

Thinking outside the box highlights how some participants used their clinical knowledge and innovative thinking to develop creative coping strategies to facilitate the practice of light sedation. Through coping strategies, staff perceived they could positively affect patients by establishing trust, good communication and reducing any feelings of anxiety that patients may have. Three qualitative studies reported findings relevant to this theme, two from Sweden (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015) and one from Denmark (Mortensen, Kjær and Egerod, 2019). It should be noted that all three such studies came from Scandinavian countries where there is greater acceptance and use of light sedation practices (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019).

Participants in two studies reported that additional knowledge, good communication and commitment to having a lightly sedated patient were essential if you were required to care for a more conscious patient (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015). Further, all three studies identified creative coping strategies often used to facilitate light sedation (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). Creative coping strategies included holding patients' hands, reducing light and noise, having scheduled rest periods, remaining physically close, using non-verbal techniques of communication and involving family and friends (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). All studies highlighted that participants frequently found caring for lightly sedated patients frustrating. At times, they needed to take themselves away from the patient's bedside briefly, which was viewed as another coping strategy (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019).

2.6 Discussion of Findings

This mixed-methods review aimed to gather qualitative and quantitative evidence about ICU health care professionals' perceptions of their sedation practices when caring for a mechanically ventilated patient. Eighteen studies from ten countries were included. Three themes and seven subthemes about sedation practice were identified. The three themes identified will be used as headings to structure the discussion. Key findings from the review show:

- Staff perceive considerable variation in all significant areas of sedation management.
- There are several challenges to sedation management which play a crucial role in clinical decision-making, especially in light sedation.
- Creativity is often used to facilitate managing patients who are lightly sedated and mechanically ventilated.

2.6.1 Variation in Decision-Making

This review highlights considerable variation in perceived sedation practices reported by health care professionals from ten countries, in keeping with previous reviews (Mehta, McCullagh and Burry, 2009). Previous ICU research has shown that variation is not limited to sedation practice. Variation occurs in other aspects of ICU care, such as palliative care, ICU

mobilisation and staffing levels (Prin and Wunsch, 2012; Bakhru *et al.*, 2016). Inconsistencies and variations in practice can harm the quality of care and patient outcomes and are often associated with increased mortality and LOS (Rocker, Cook and Shemie, 2006; Sakr *et al.*, 2015). Variation in care is attributed to many causes; some reasons are patient-related, physician-related and organisation-related (Appleby *et al.*, 2011).

The broader literature emphasises two main types of variation in health care practice: natural and artificial (Advancing Change and Transformation Academy, no date; Public Health England, 2015). Warranted variation, such as patient differences, is seen as inevitable (Advancing Change and Transformation Academy, no date; Public Health England, 2015). In sedation practice, for example, this would be choosing specific pharmacological sedation agents based on the patient's clinical condition. Unwarranted variation can be attributed to how individuals deliver health care services or manage services (Advancing Change and Transformation Academy, no date; Public Health England, 2015). Unwarranted variation should be possible to limit (Advancing Change and Transformation Academy, no date; Peate, 2018). In sedation practice, unwarranted variation can be attributed to the decisions health care professionals make about managing patients one way or another. For example, some health care professionals may use sedation protocols, while others may not. Much of the variation highlighted in the findings appears to be characterised predominantly by artificial variation.

Applying research-based guidance in the form of 'bundles' or guidelines has been shown to reduce inconsistencies in practice and improve patient outcomes (Dellinger and Townsend, 2013). For sedation practice, these guidelines exist. In 2018, the publication of the clinical guidelines sought to provide transparent, evidence-based guidance on sedation management and other aspects of ICU care (Devlin *et al.*, 2018). Following guidelines supported by evidence may help to negate and limit unwarranted variation. However, throughout this review, health care professionals' perceptions identified challenges towards adopting guidelines, protocols, and tools.

2.6.2 Challenges in Decision-Making

Collaborative working has the potential to limit unwarranted artificial variation. Still, as identified in the theme Challenges in Decision-Making, collaboration between health care professionals in sedation practices was often perceived to be lacking. In the wider literature, a review of teamwork conducted in 2018 identified several aspects that impact the collaborative working of health care professionals (Ervin *et al.*, 2018). These aspects include but are not limited to the physical environment of the ICU and frequent moral and emotional stress when practice disagrees with personal ethical values (Henrich *et al.*, 2016). Both aspects were reported to place limitations on collaborative working. Within the theme Challenges in Decision-Making, collaborative working was not frequently perceived by those health care professionals participating in the studies included in my review. As Ervin *et al.* (2018) reported, the barriers to collaboration appear to be interlinked with the subthemes regarding light sedation practices. For light sedation practices, staff frequently reported that the environment was a barrier against light sedation, and the practice of light sedation was often found stressful by ICU health care professionals. Therefore, if collaboration between health care professionals is improved, the challenges in decision-making towards sedation practice might be alleviated. The review on teamwork highlighted that collaboration might be enhanced and achieved through checklists and protocols, but it is unclear if this includes sedation protocols, which this review found had many barriers towards their use (Ervin *et al.*, 2018).

The lack of adherence to clinical guidelines is not limited to sedation practice. Adherence to sepsis guidelines in the ICU has been reviewed and found to waiver throughout the guideline (Negret-Delgado *et al.*, 2016). Based on the insights from this review and other research, it would appear that more needs to be done when introducing guidelines. In the wider literature, several studies have investigated the mechanics of adherence to clinical guidelines (Cahill *et al.*, 2010; Cnossen *et al.*, 2016). They stress that adherence to guidelines can be achieved. However, upon implementing guidelines, each ICU needs to address their barriers and challenges, which can be achieved through engagement in local quality improvement projects and utilising frameworks to help identify barriers (Cahill *et al.*, 2010). Addressing the context and culture of each ICU will help understand the multifactorial elements that influence implementation and adherence (Cahill *et al.*, 2010; Cnossen *et al.*, 2016).

This review identified elements of culture and context as playing a part in sedation practice. I identified that three out of four of the qualitative studies focused on light sedation, and all of these were from Scandinavian countries (Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). Previous research has also stated that Scandinavian countries are particularly mindful of achieving light sedation (Egerod *et al.*, 2015). This could indicate that Scandinavian culture, context, and greater resources may lead to a greater acceptance approach to implementing guidelines and protocols, especially for light sedation. In the broader literature, ICU culture has been shown to affect other aspects of ICU care. A review of barriers and strategies to early ICU mobilisation found that culture was reported as a barrier in 60% of the studies (Dubb *et al.*, 2016). The barrier of culture posed many challenges when trying to implement early mobilisation practices.

2.6.3 Thinking Outside the Box

Challenges in sedation practice emerged mainly when light sedation was discussed. An earlier review that looked at sedation practices highlighted a trend towards light sedation but did not expand further, mainly due to its relatively new emergence within sedation management (Mehta, McCullagh and Burry, 2009). In this review, light sedation has become a prominent topic, probably due to the recognition that deep sedation is harmful to mechanically ventilated patients. As more health care professionals are now required to practise the art of achieving light sedation, this will also generate more discussion around the topic, particularly how health care professionals achieve and attain light sedation.

In this review, it appears that many health care professionals feel conflicted when practising light sedation, with many feeling that light sedation practice impacts their psychological wellbeing. A review in 2016 highlighted that ICU staff were more susceptible to burnout than other health care workers (Chuang *et al.*, 2016). They attributed burnout to several reasons, one being the process of making ethical decisions (Chuang *et al.*, 2016). Withholding sedation was perceived to be ethically irresponsible by some participants in this review. The practice of light sedation may be contributing to staff burnout, an issue that demands more attention and support (Kerlin, McPeake and Mikkelsen, 2020).

One approach that is frequently recognised as being a viable method of overcoming issues in the workplace is education. For ICU health care professionals in Europe, Australia, North and South America and other parts of the globe, education and continuing development are actively weaved within the job role (Baxter and Edvardsson, 2018; DeGrande *et al.*, 2018; Santana-Padilla *et al.*, 2019). Nurses' and doctors' education and continuing development are often required to be recognised as being trained in critical care (Masud, Lam and Fatima, 2018). Within the final theme, additional knowledge and more experience were recognised as helping the health care professional cope with the practice of light sedation. In the broader literature, studies have identified a benefit to competence and confidence perceived by health care professionals when they have engaged with education (Baxter and Edvardsson, 2018). The benefits from development are recognised to still be present three months later (Frengley *et al.*, 2011). However, in the broader literature, it has also been recognised by ICU health care professionals that more training is required. There was often a lack of ongoing professional development for ICU health care professionals post-undergraduate training, resulting in a lack of knowledge regarding best practices (Santana-Padilla *et al.*, 2019). This was additionally recognised within the previous theme, where reports of a lack of education led to barriers to sedation protocols and light sedation.

Since carrying out the original search in May 2019, it was updated once in August 2019, but has not been formally updated again. However, if the search was to be updated again, there would be some additional publications that would have been included in this review (Nystrøm, Fosser Olsen and Brekke, 2020; Macpherson, Hutchinson and Bloomer, 2024). Nystrøm, Fosser Olsen and Brekke, (2020), conducted a survey on the sedation practices of nurses in three general ICUs in Norway and found that practice varied amongst the ICUs regarding sedation choice, guidelines use and the use of sedation assessment tools. This paper would have contributed to theme one, Variation in Decision-Making. In addition, the paper by Macpherson, Hutchinson and Bloomer, (2024) delivered a qualitative study to examine the factors that influence the sedation practices of critical care nurses in Australia and found that situational awareness and past experiences were a key factor in the perceptions of sedation practice and influenced heavily decision making. The findings from this paper would have contributed to theme two, Challenges in Decision-Making. Both of these studies fit the inclusion and exclusion criteria.

2.7 Limitations

Capturing health care professionals' perceptions of sedation practices has been insightful. However, a limitation of this review was that many studies did not distinguish between perceptions of availability or perceptions of usage when looking at sedation practice. For example, a question on sedation protocols may ask participants if their ICU has one but may not distinguish if this protocol is used. Furthermore, in some studies, one person responded on behalf of a sampled ICU, and in others, the views of individual health care professionals were gathered. Both points made it difficult to grasp the range of perceptions among health care professionals. The Mixed-Methods Appraisal tool employed did not grade studies (e.g., low to high quality), it restricted an objective assessment. It made space for a subjective evaluation, which could have created additional screening bias, especially given that I was the only reviewer to do the initial screening. Other bias may also come from the fact that I carried out most of the thematic analysis. However, the themes were discussed and refined through several stages of development with the support of supervisors (Jane Seymour, Tony Ryan and Tracey Moore).

Additionally, limitations to this review are associated with the inclusion and exclusion criteria. Non-English language articles were excluded. These may have provided additional insights into the perception of sedation practices from across the globe. Similarly, there may have been findings of interest from studies conducted within specialised ICUs that were excluded or research in patient-specific groups that were also excluded. Moreover, a limitation of the literature sources, which may have impacted the review findings, is the lack of clarity in studies that did not specify the patient group being studied. Many potential studies for interest were not included because they lacked an adequate description of the patient group, failing to identify whether they focused on mechanically ventilated patients. Additionally, the grey literature was not searched due to time constraints.

2.8 Research Questions

Following the literature review and incorporating background reading and personal experience, three questions were highlighted as important and unanswered when looking at the sedation practices of health care professionals.

- 1) To what extent are there variations in sedation practice for the mechanically ventilated patient between Australia and the UK in the intensive care unit, and how may we account for these?
- 2) What accounts do staff provide about their sedation practice for the mechanically ventilated patient, and what reasons do they give?
- 3) How do the perceptions and understandings of sedation practice for the mechanically ventilated patient vary between Australian and British ICU staff?

2.9 Conclusion

This chapter has reviewed ICU health care professionals' perceptions of their sedation practices when looking after mechanically ventilated patients. The literature review was conducted in 2019, and I have not included a subsequent update to the review. However, I will be referring to key publications that occurred after 2019 later in this thesis, notably the discussion chapter (Chapter Seven). The main finding from the review is that there continues to be significant variations in sedation practice, with barriers to protocol-driven care. Health care professionals perceive several ongoing challenges associated with sedation practice that need to be addressed, especially the facilitation of light sedation. There is a dearth of qualitative research that looks into the sedation practices of health care professionals. Further exploration of sedation practice needs to be completed to understand the experiences and perceptions of ICU staff, focusing on the context and culture in which sedation practices occur. The next chapter details the methodology of this doctoral work to answer the research questions established.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The literature review showed a dearth of qualitative research about staff perceptions and experiences, and therefore, I set out to address this gap. The review also sensitised me to the research questions that I set out to answer in my study (p. 43). I needed a methodology that would illuminate staff perceptions and experiences to correct the deficit. I also required a methodology that would allow for exploratory work. I used a case study methodology to design the study, which included several elements:

- A critical realist perspective.
- An interpretivism theoretical lens.
- A case study methodology that follows Stake's concept (Stake, 1995), with a case study in the UK and a case study in Australia.
- A reflexive thematic analytical approach.

This chapter sets out the qualitative research methodology and research design I employed. I discuss my ontological and epistemological position and the theoretical lens used with a further discussion regarding the chosen analytical method and approach. Reflexivity is used throughout this chapter to clarify my positionality.

3.2 Qualitative Research

Three main research paradigms exist; qualitative, quantitative, and mixed-methods (Khaldi, 2017). A paradigm is a widely accepted belief or concept that sits upon a spectrum of ontological, epistemological and axiological assumptions (Spencer, Pryce and Walsh, 2014). As the literature review showed a lack of qualitative research, this was where I began my journey, looking at the qualitative paradigm.

The qualitative paradigm is difficult to define in one sentence due to its complexities, history and multiple theoretical paradigms (Denzin and Lincoln, 2011). Additionally, understanding qualitative research is complex due to the numerous methods and interpretive practices

(Denzin and Lincoln, 2011). To make progress within this chapter, a definition from Denzin and Lincoln (2011) has been used:

Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of a set of interpretive, material practices that make the world visible
(Denzin and Lincoln, 2011, p. 6).

Qualitative enquiry is frequently seen within social sciences and the humanities (Denzin and Lincoln, 2011). According to Denzin and Lincoln (2011, p. 7), "qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of meaning people bring to them". From this, we can understand that qualitative research is inductive instead of deductive, where first observations allow you to identify patterns and develop transferability instead of generalisability (Khaldi, 2017). A qualitative researcher emphasises the individual's point of view. Qualitative research is about sense-making situated in the context of the researcher, the research questions and the constraints of real-world research (Denzin and Lincoln, 2011). Qualitative researchers seek detailed descriptions based on their findings, feeling that these descriptions give accounts of the participants' perspectives (Denzin and Lincoln, 2011).

3.3 Theoretical Perspective

When gathering guidance on how to 'do' research, it is essential to understand the many methodological approaches and theoretical perspectives that can be followed (Denzin and Lincoln, 2011). Usually, a position on theoretical perspectives and methodological approaches must be made relatively early on to develop the best enquiry for the research questions.

Ontology and epistemology often go side by side and hand in hand. They influence each other and jointly influence the theoretical perspective (Crotty, 1998). Ontology refers to the structure of reality, and an ontological position aims "to describe the structure of reality" (Liamputtong, 2019, p. 102) and asks, "what is the nature of reality?" (Creswell, 2013, p. 21). Epistemology refers to the nature, limitations and justifications of knowledge (Liamputtong, 2019). An epistemological position will define what counts as knowledge and how it can be justified whilst considering the relationship between the data and the researcher (Creswell,

2013). With this in mind, I need to explain the ontological and epistemological assumptions that I associated with and why I related to these assumptions so that my theoretical perspective can be easily and readily understood. These assumptions often give a particular research methodology, methods, and analysis that should be used. It is noted that these philosophical assumptions can and do change over time, with many researchers not wanting to label their theoretical assumptions. However, I find it necessary to explain the assumptions I decided upon so that others are aware of my theoretical perspective. This will provide a deeper insight into this research, which I believe is needed with qualitative research.

3.3.1 Ontology

In social research, many ontologies exist. Some overlap as the concepts are often fluid and not impermeable to change (Crotty, 1998). Two of the main ontologies you often hear about are realism and relativism. Realism and relativism cover a broad spectrum of different forms of ontologies. Realism, in its most simplistic form, is the belief that only one reality exists, and relativists believe that multiple realities exist (Moon and Blackman, 2014).

3.3.2 Epistemology

Epistemology is the understanding of how knowledge came to be, "how we know what we know" (Crotty, 1998, p. 8). There are three main epistemologies in social research: objectivism, constructionism and subjectivism (Crotty, 1998). Objectivism broadly works on the notion that meaning exists without the need for conscious thinking; the meaning needs to be 'discovered' by an objective observer (Crotty, 1998). Subjectivism broadly works on the notion that meaning is created somewhere else, separate from the object, but then meaning is attached to the object by the individual (Crotty, 1998). Constructionism broadly works on the meaning constructed with the interaction of the mind and the object (Crotty, 1998).

3.3.3 My Ontological and Epistemological Position

My ontological and epistemological position aligned with being a Critical Realist. This is the middle ground between realism and relativism in ontology "There is a reality beyond experience. There is a reality beyond events" (Newman and Kuhn, 2021, slide. 26). Critical realism was introduced by Roy Bhaskar in 1975 as a philosophy of social science but now has many schools of thought (Bhaskar, 1975). Rutzou, (2016, section. 01:07) was quoted as saying

"there is no such thing as critical realism, what there are however, are critical realists, there is not one framework, set of beliefs, method or dogma that define critical realists as a whole". A critical realist perspective includes structures such as social context, relations between people and relations of ideas, whilst also being aware of the natural and social world to help explain the nature of being (Newman and Kuhn, 2021). Social Structures "are dependent on human activity and culture, and they vary over space and time" (Gorski, 2013, p. 662). Therefore, critical realism epistemology mostly aligns with constructionism, but it is said to take a softer social approach (Elder-Vass, 2012). For critical realism, the softer social constructionism approach recognises that there is realism which is independent of its human origin:

"dependent by social forces, this does not mean that it is entirely determined by social forces on the contrary, knowledge claims can also be influenced (sometimes very strongly indeed) by the phenomena that they are about"
(Elder-Vass, 2012, p. 207).

I believe that my experience working as a nurse within the ICU in the UK and Australia has led me to adopt a critical realist approach. I am interested in communicating the multiple realities of my participants by looking at their perceptions and experiences of sedation practice. Still, I am founded on the belief that these multiple realities will be influenced by the social structures of each case study -"it is possible to make sense of the same reality in quite different ways" (Crotty, 1998, p. 47). Throughout my nursing career, I have recognised that no two shifts, no two patients and no two ICUs are the same, and often, the domain in which we deliver care influences our practices. Moon and Black (2014) recognise that the multiple realities of individuals are influenced by culture and history, which rely on them to be formed (Moon and Blackman, 2014). Within the ICU environment, health care professionals are regularly influenced by social structures such as culture, which affect the care they give to their patients. Often, our previous experiences influence the care we provide to the patient and the constraints of the environment in which we practice, such as time, resources, and training. Additionally, policies, ethics and politics influence the care delivered to patients. Having established the reasons why I adopted a critical realist approach, I will now move on to the theoretical perspective in which I carried out this research.

3.3.4 Theoretical Lens

The theoretical perspective is the "philosophical stance lying behind the methodology" (Crotty, 1998, p. 66). It is used to help and guide the researcher and the reader by providing an understanding of the structure, rationale and framework of the methodology (Crotty, 1998). The theoretical perspective that I followed is interpretivism.

The main aim of interpretivism is to understand the social constructs of the participants in research studies by giving them a voice. An interpretive stance heavily focuses on understanding from the perspectives of others concerning the context and meanings they give (Crowe *et al.*, 2011). Interpretations are often influenced by culture and history, which rely on them to be formed (Moon and Blackman, 2014). Through interpretivism, researchers should aim to understand the phenomena, culture and the gaps between theory and practice (Denzin and Lincoln, 2013). All this understanding should be acquired through interpreting the voices of multiple "passionate participants" (Guba and Lincoln, 2005, p. 194). In order to achieve the aims of looking through an interpretivist theoretical lens, researchers should participate in the research process to ensure that the knowledge they are professing is representative of the reality of the participants (Denzin and Lincoln, 2013). This theoretical lens requires using naturalistic methods for data collection to ensure a clear dialogue with participants; the researcher must also use reflection alongside their research methods not to be the dominant voice of the research (Denzin and Lincoln, 2013). Following this decision, I justify why a qualitative research methodology was needed.

3.4 Justification for a Qualitative Research Methodology

A qualitative research methodology was used to carry out this research. The decision to use a qualitative research methodology was based on several factors. To begin with, the literature review in Chapter Two highlighted a lack of qualitative research in an area where there is great need to hear the health care professionals views to understand the behaviour that influences sedation practice (Coursin and Skrobik, 2019). The review highlighted that only four papers out of eighteen collected qualitative data when looking at the perspectives of health care professionals on their sedation practices for mechanically ventilated patients. This

information influenced the generation of research questions that all lent themselves to a qualitative research methodology.

The research questions focused on health care professionals' personal accounts about their sedation practices. Gathering personal accounts required research methods that allowed participants to freely talk and engage in research to express their thoughts and feelings fully. Additionally, the questions also focused on perceptions and understandings of sedation practice. Qualitative research invests time into understanding the social world of its participants (Bryman, 2016). Perceptions and understandings are an essential mainstay of qualitative research. The focus is on words rather than numbers (Bryman, 2016).

Another justification for using a qualitative research paradigm is its flexibility. Flexibility is often found using the qualitative paradigm when looking at individual experiences on a small scale (Robson and McCartan, 2016). I needed flexibility when conducting this research because it was based in a hospital setting, with patients undergoing active ICU treatment, while focusing on understanding the reality of the health care professionals as participants. However, a certain amount of rigidity was needed as I carried out the research within a hospital. This meant that I followed local and national policies alongside a thorough ethical application. The need for flexibility was only heightened by the coronavirus pandemic, which began late 2019. During this time, the study design had several setbacks and required alterations. However, the qualitative paradigm meant that I could be flexible with my methods of data collection in order to accommodate this unprecedented period.

Additionally, the ontological, epistemological and theoretical lenses in which this research was carried out lent themselves to qualitative methodology. As previously discussed, my ontological and epistemological position sat with critical realism, which acknowledged that individual experiences influence multiple experiences, and these experiences are influenced by social and environmental constructs. The theoretical lens through which I carried out this research was interpretivism. Critical realism uses an interpretivist theoretical lens to understand the actions and perspective of the participants; this is frequently paired with a qualitative paradigm that provides a unique environment where the perspective can be understood in context (Bryman, 2016). Additionally, the qualitative paradigm can access

these multiple realities and portray them by focusing on individual perceptions, which is often done through developing themes from the data collected (Creswell, 2013; Braun and Clarke, 2022b).

3.5 Case Study Methodology

Case study methodology uses a case or several cases to gain an in-depth understanding of a specific problem or concern (Creswell, 2013). The case study can be an individual or an organisation, depending on how the case is bound (Creswell, 2013). Different types of methods are often used to gather an in-depth understanding of the case (Creswell, 2013). The use of case studies can explain, describe or explore without controlling behavioural events on a particular phenomenon of interest in its natural context (Yin, 2009). The natural context is a crucial element of case studies as you believe that the natural context impacts and influences how participants behave and is fundamental in understanding the phenomena (Baxter and Jack, 2008; Yin, 2009). Case studies are more suitable for answering questions that have an exploratory focus to aid learning without controlling the behaviour of participants (Yin, 2014). The research questions addressed should aim to achieve the development of "thick description" that provide insight into the "lived experience" of participants (Miles and Huberman, 1994, p. 10). Stake, (1995, p. 15) emphasises that good research questions "will direct the looking and the thinking enough and not too much". The research questions proposed at the end of Chapter Two work well with case study methodology as they gather topical information and address "etic issues brought in by the researcher from the outside" (Stake, 1995, p. 20). Stake, (1995, p. 20) describes etic issues as "the researcher's issues" and may be connected to a larger body of research. As identified through the Chapter One and Chapter Two, the *issues* that are to be addressed have been developed from the understanding that further exploratory research is needed regarding the sedation practices of health care professionals. The topical elements of the questions will then allow me "to understand the complex life of the case" and generate in depth description of the case studies (Stake, 1995, p. 17) Therefore, case study methodology works well with the research questions that were set because they seek a greater understanding of sedation practice that accommodates the vitally important context-dependent factors.

Case study methodology has several schools of thought from Yin, Stake and Merriam. Each author has a different take on how case study research should be carried out. For this research, Stake's (1995) case study methodology was followed, but Table 5 details some of the key differences and similarities of each approach.

	Stake (1995)	Merriam (1988)	Yin (2009, 2014)
Paradigm:	Qualitative	Qualitative	Quantitative
Outcomes focused on:	Particularisation rather than generalisations.	Concepts, generalisations and hypotheses are produced from examining the data.	Generalisability, rigour, construct validity, internal validity, external validity and reliability.
Why and how are cases selected?	A focus on a specific issue that needs exploring or on a case that helps to provide an understanding of something other than directly the case itself (single or multiple cases).	Chooses cases that are intrinsically interesting and which can be learned from, multiple cases are used to maximise and to minimise differences.	Single or multiple-case studies. Multiple-case studies should be used to replicate findings or build a theory, 'replication logic' and 'theoretical logic'
Approach is:	Flexible	Flexible	No deviation once started.

Table 5- Case Study Methodology Comparison.

3.5.1 Stake and Case Building

I found Stake's work to be the approach that fits best with my chosen ontological, epistemological and theoretical lenses as it allowed me to unapologetically explore each case study using qualitative methods while considering the context and relations of participants while offering them a voice. Exploring Stakes' work around case studies has mostly come from his 1995 book 'The Art of Case Study Research'. In this book, he describes three types of case study; intrinsic, instrumental and collective (Stake, 1995). An intrinsic case study focuses on a specific case that has presented itself to the researcher as an issue that needs exploring (Stake, 1995). With an intrinsic case study, there has been no choice in deciding what needs to be explored (Stake, 1995). Conversely, an instrumental case study looks at a case that can help provide a general understanding of something other than directly the case itself (Stake, 1995) and attempts to give an insight into a particular issue through case study design (Baxter and Jack, 2008). A collective case applies the principles of instrumental case study design but on a bigger scale, where more than one case is used to study the phenomena of interest.

Determining the 'case' is the most crucial and challenging part of designing a case study (Baxter and Jack, 2008). Stake gives little direction in constructing and determining what the case should be. However, I used his definitions for an instrumental case study and his case study selection criteria to define my cases. Stake defines an instrumental case as providing a general understanding of something other than directly the case itself (Stake, 1995). Stake's selection criteria emphasised that when selecting a case, there must be an ability to learn, but this should be balanced with variety to allow for meaningful comparisons, yet, there also needs to be appropriate accessibility for a successful project (Stake, 1995).

A collective case study design was used, and two case studies were included. The cases were a research site with a general ICU facilitating medical and surgical patients in a public hospital. The research sites were easily accessible, with a research site in Australia and the UK, allowing for variety and an ability to learn (reflecting on my experiences as a nurse working in both countries, as explained in the Preface and from background information presented in Chapter One). For meaningful comparisons, the context of the case studies was bound by the setting, so there was a similar health care system (Public) and type of ICU (General), with set criteria of participant inclusion within a data collection period.

In addition to selecting cases that enhanced our learning, Stake emphasised that cases should be chosen based on which ones can be accessed easily (Stake, 1995). I established early gatekeeper support from the Australian research site because of my familiarity with the site from my clinical experience between January 2017 and September 2018. Choosing the UK site was slightly more challenging. I was grounded in the belief that this research site needed to be an ICU with which I was not clinically associated, not to blur the lines of health care professional and researcher, but one that I could access easily. The UK site was set up by utilising key contacts I had within the University of Sheffield. Stake (1995) further states that cases may not work out and that these assessments should be made early to replace them with another case. Stake's (1995) case flexibility proved valuable to this research project when the COVID-19 pandemic took hold. The COVID-19 pandemic caused a barrier to establishing research relationships, which resulted in a different research site becoming more accessible. I will discuss more of this in Chapter Eight.

Stake (1995) provided an emphasis on particularisation rather than generalisations. Particularisation is understanding a case and recognising it in its entirety (Stake, 1995). Stake (1995, p. 12) further goes on to state that the emphasis should be on the interpretations of the researcher who "tries to preserve the multiple realities". Through interpretations, Stake provided more flexibility to the researcher, as he believes that it is only through these interpretations that we may come to know the case in a different light (Stake, 1995). Through observations and interpretations, it is accepted that research questions may be changed mid-study (Stake, 1995). Choosing research sites that are both public hospitals meant I could possibly transfer the knowledge from these case studies to other public ICUs. Additionally, selecting research sites with similar health care systems had benefits. It meant that the UK and Australian research sites provided more significant opportunities for meaningful comparisons as fundamental basics kept both research sites on par. However, they also remained balanced with variety so that I could learn from each case study.

Stake advocated that data collection and analysis should be done simultaneously as there is no single point when data collection begins (Stake, 1995). Stake (1995, p. 49) recognised that data collection starts even "before there is commitment to do the study". He sees the data collection through background reading, early interactions with the case and early impressions (Stake, 1995). Stake (1995) offered no set way to gather the data but detailed several methods the researcher should use in case study research. He talked about using observations, descriptions of contexts, interviews and document review (Stake, 1995). I fulfilled the main criteria of what Stake suggested by using the data collection methods recommended. For this research project, the data collection methods used were a focus group, participant observations with document review and interviews discussed in Chapter Four. To help support each method of data collection, and bind the context, inclusion and exclusion criteria were set and are also discussed in Chapter Four.

Stake (1995, p. 95) further emphasised the importance of interpretations being developed through "the interactions of the researcher and phenomena". He emphasised that the phenomena will inevitably be influenced by the case researcher and the 'case researcher role' adopted (Stake, 1995). Stake (1995) saw the unique benefit and importance of recognising how the researcher can influence the interpretations and explained several different 'Case

Researcher Roles' that may be adopted throughout the research. The different case researcher roles included "teacher, participant observer, interviewer, reader, storyteller, advocate, artist, counsellor, evaluator, consultant and others." (Stake, 1995, p. 91). Stake did not advise case study researchers to pick a role and maintain it for the duration of the research. Instead, he recognised that, eventually, each role would be adopted and used to varying degrees at different points of the case study research (Stake, 1995). The roles I adopted are briefly documented later in Chapter Five, section 5.2.

The setting was chosen to be a general intensive care unit that accepts medical and surgical patients but is not specified in any speciality. This decision was made on several understandings about sedation practice and because of my history and knowledge surrounding sedation practice. My ICU background is positioned in a general ICU. For this reason, I perceived myself to have a greater understanding of the practice usually occurring within these settings. I was much more comfortable with exploring sedation practice within this area and thought that it would allow me to generate greater rapport with participants by having some understanding of the context. Moreover, other specialised areas of ICU often have specific sedation practices. For example, a cardiac ICU often strives to extubate patients within the first four hours of arriving at the ICU following cardiac surgery, and extensive literature has been published about these sedation practices (Taculod *et al.*, 2015; Serena *et al.*, 2019; Hao *et al.*, 2020). The practicalities of observing practice within this environment would have been difficult due to the understanding that they strive for a short intubation period following cardiac surgery. Additionally, an ICU setting, such as a neurological ICU, often sees patients sedated for neuroprotective measures and therefore, they are usually sedated for a greater length of time (Burry *et al.*, 2017). As a result of these factors, I positioned my research in a general ICU.

For analysis and interpretations, Stake offered no set way for the data to be analysed; instead, he suggested that the researcher focus on their strengths with analysis and what approaches they are comfortable using (Yazan, 2015). The flexibility of this approach fits well, as I picked an analytical approach that I was familiar with and comfortable with. The chosen method was Reflexive Thematic Analysis (Braun and Clarke, 2022b), which I will discuss in the next section.

Overall, Stake's viewpoint about how a case study is recognised, defined, utilised, analysed and interpreted resonated with me as a newly enthusiastic case study researcher and an ICU nurse. I recognised the flexibility within his design and the advocacy for how the researcher may influence the interpretations. For these reasons, I decided on Stake's case study methodology to guide this research project.

3.6 Thematic Analysis

Thematic analysis (TA) is an analytical approach that uses many typologies and sub-branches with different conceptual foundations. These primarily include coding reliability TA, a codebook approach to TA and reflexive TA (Braun and Clarke, 2020).

The central concept of TA is to work with the data to develop 'themes'. The themes are developed from pattern recognition throughout the data set and are used for greater understanding and learning (Roberts, Dowell and Nie, 2019). Codes/categories/themes are recognised and undergo a process of analysis to help generate learning and understanding from the data set (Roberts, Dowell and Nie, 2019). Depending on which sub-branch of TA is chosen changes how the analysis is approached. The data analysis is usually understood with the context, the focus of the research questions, and other theoretical frameworks that may be in use (Roberts, Dowell and Nie, 2019). The main branch of TA that I have chosen to follow is Braun and Clarke's work on Reflexive TA (Braun and Clarke, 2022b). Clarke and Braun advocate for focusing on coding quality from concentrated engagement with the data and the codes. They stress that to undertake reflexive TA, codebooks and coding frames should not be used but should be understood (Clarke and Braun, 2018b). It is through this understanding of other approaches that ensure I have selected the right approach for TA for this research project. In Table 6 below, the main concepts of each approach are detailed for understanding and clarity.

	<u>Reflexive TA</u> (Braun and Clarke, 2006, 2013, 2022b; Clarke and Braun, 2018b)	<u>Codebook Approach to TA</u> (DeCuir-Gunby, Marshall and McCulloch, 2011; Brooks <i>et al.</i> , 2015; Roberts, Dowell and Nie, 2019)	<u>Coding Reliability TA</u> (Guest, MacQueen and Namey, 2012)
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Paradigm:	Reflexive TA sits closely with constructionist.	Middle of the TA spectrum. A consensus is developed to improve the rigour and reliability of the analysis.	Positivist stance toward data analysis focused on finding the truth in numbers.
Development of themes:	Patterns of shared meaning underpinned by a central concept.	Developed through a joint consensus through refinement and revising.	Focuses on inter-reliability and conducts statical measurements
Researcher influence:	The researcher subjectivities are viewed as a resource.	Limited influence due to joint consensus.	Limits the subjectivity of the researchers.

Table 6- Overview of the main concepts of Thematic Analysis.

3.6.1 Reflexive Thematic Analysis

The reflexive TA journey for Braun and Clarke took off exponentially in 2006 with the publication of their paper 'Using thematic analysis in psychology' (Braun and Clarke, 2006). The original work they produced in 2006 would see the paper being cited more than 100,000 times, and several further publications would follow.

The methodological assumptions underlying reflexive TA sit closely with a constructionist's view of knowledge and how knowledge came to be. Through reflexive TA, you strive for patterns of shared meaning underpinned by a central concept, but through interpreting and creating stories, they are bound in the context of the research and situated in the reflective accounts of the researcher (Braun and Clarke, 2019). Braun and Clarke aim for a systematic and rigorous analysis process, but one that isn't ruled by a codebook or reliant on coding reliability (Braun and Clarke, 2019). It should be a story only told after deep immersion into the data (Braun and Clarke, 2019). To achieve this, Braun and Clarke developed six steps of reflexive TA (Braun and Clarke, 2006).

3.6.2 Six Steps of Reflexive Thematic Analysis

Braun and Clarke's (2006) six-step approach to TA is landmark work. The six steps were; 1. 'Familiarising yourself with your data'. 2. 'Generating initial codes'. 3. 'Searching for themes'. 4. 'Reviewing themes'. 5. 'Defining and naming themes' and 6. 'Producing the report'. Braun and Clarke (2006) explain that analysing and working with the data results in developing themes, with the researcher playing an active role in this analysis process. I will explain each of those six steps in-depth.

Step one, Familiarising Yourself with the Data. This step sees the researcher fully immersed with their data through engagement and re-engagement (Braun and Clarke, 2006). This engagement can take the form of collecting the data, transcribing, reading and re-reading, and includes taking active notes of your early thoughts and understanding (Braun and Clarke, 2006).

Step two, Generating Initial Codes. This step follows familiarisation and is the organising of data into initial codes. Codes are data features that capture the researcher's interest during analysis and may develop into something that needs further exploration (Braun and Clarke, 2006). The coding process can have inconsistencies and tensions (Braun and Clarke, 2006). However, overall, it is meant to capture the raw data meaningfully. After/during the coding process, the codes are collated into similar codes (Braun and Clarke, 2006).

Step three is Searching for Themes. This step took place after all the data had been coded. It is the process of sorting the codes and bringing them together into what might be themes and sub-themes (Braun and Clarke, 2013).

Step four is to review the themes. This step is split into two processes. Initially, the themes are reviewed, refined, and reworked until sense-making occurs (Braun and Clarke, 2006). Secondly, the themes will be scrutinised to see how each fits within the data set (Braun and Clarke, 2006).

After this step had been mastered, you move on to step five, Defining and Naming the Themes. During this step, themes are named and refined again, and further analysis is developed (Braun and Clarke, 2006). This analysis will eventually provide the researcher and the readers with a thorough understanding of the story that the data and researcher are trying to tell (Braun and Clarke, 2006).

After completing this step, the next is step six, producing the report. Producing the report is writing up your themes and analysis to convince the reader that you have successfully answered the research questions and produced an accurate analysis (Braun and Clarke, 2006).

This six-step process is not linear; the researcher often needs to move back and forth between the steps when doing analysis (Braun and Clarke, 2006).

Since the publication of the original 2006 paper, Braun and Clarke have acknowledged that these six steps were left open to many interpretations, and the approach was not always transparent (Braun and Clarke, 2019). As a result, Braun and Clarke have since adopted the name reflexive TA to help clarify, describe and explain their approach to TA more clearly (Braun *et al.*, 2019).

Following the name change and greater clarification through further publications, Braun and Clarke have now emphasised what is required from the researcher to achieve reflexive TA. Braun and Clarke (2019) ask the researcher to detail the assumptions that influence their data analysis and subjectivity. They ask the researcher to be continually reflective throughout the data analysis process. Braun and Clarke (2019) also ask the researcher to detail their ontological and epistemological stance to supplement reflexive TA, which acknowledges the researcher's position. When a reflexive approach to TA is achieved, it will ensure that those who read the findings will fully understand the researcher's position. The subjectivities will be seen as a resource, not a hindrance, and the data will be fully recognised for the context in which it sits and how it is positioned and situated (Braun and Clarke, 2019).

"The researcher's role in knowledge production is at the heart of our [reflexive thematic analysis] approach!" (Braun and Clarke, 2019, p. 594).

As with all analysis techniques, there are criticisms of its use. The following section reviews the main criticisms of reflexive TA.

3.6.3 Criticisms of Reflexive Thematic Analysis

Reflexive TA, is often accused of being a soft approach to analysis, which is descriptive and not sophisticated in its analysis or findings (Braun and Clarke, 2022a). TA has been accused of lacking rigour and design, which some have viewed as untrustworthy for scientific research (Thompson, 2022). These remarks are from those who may have a limited understanding of TA as an analytical method (Braun and Clarke, 2022a).

Reflexive TA might also be considered too time-consuming (Braun and Clarke, 2006). They advocate starting the analysis process as soon as possible and recommend that the researcher completes the transcription process (Braun and Clarke, 2022b). However, the view of being too time-consuming is frequently said for qualitative research in general (Denzin and Lincoln, 2013).

Despite several pieces of literature detailing the reflexive TA process, many researchers still fail to achieve and implement reflexive TA (Clarke and Braun, 2018b; Byrne, 2022). Braun and Clarke (2021, p. 331) continue to explain that they thought those who read their 2006 paper would just "get it" but have since spent many of their later publishing years explaining what exactly reflexive TA is. Whilst this is not a criticism of reflexive TA, understanding reflexive TA is now challenging, with the researcher required to read multiple pieces of their work to "get it". Additionally, Braun and Clarke regularly feature published work that has not achieved reflexive TA, or has not followed the correct methods despite claiming to do so (Braun and Clarke, 2021). As a researcher with little experience in qualitative analysis, I sometimes felt uneasy about choosing reflexive TA. I desperately wanted to achieve reflexive TA, but I often worried that I might too not 'get it'.

Despite the criticisms, there are many justifications for why reflexive TA was used. The following section looks into these justifications.

3.6.4 Justification for Reflexive Thematic Analysis

In this section, I will go through some of the main reasons why using Reflexive TA is justified for this research project.

Reflexive TA is an analytical approach that fits my epistemological and ontological perspectives. Using reflexive TA resulted in a continuous flow of methodology and methods that all fit within a qualitative paradigm (Braun and Clarke, 2022a). This reduced any conflict within the methodology and methods to produce 'Big Q' research as they both fit and sit within the same qualitative paradigm, with no pull and resistance in the opposite direction (Clarke and Braun, 2018a). Furthermore, Reflexive TA worked well with a critical realist

approach as the reflexive TA approach produced rich themes closely linked with the data and its context (Braun and Clarke, 2006). The analytical approach adhered to the exploratory research questions so that various data collection methods would tell a convincing story. Moreover, Reflexive TA is widely accepted as an appropriate, reliable and meaningful way of analysing data in nursing research (Campbell *et al.*, 2021).

During the engagement with the data, I used a reflexive research diary to help achieve reflexive TA. This diary gathered my thoughts and how I made sense of the data. Before engaging with the data, I would detail what I believed I would find within the data set. After each interview, I would record how I felt it went and what I could improve or do differently next time. Additionally, when I transcribed, I would make notes of my thoughts to help highlight any biases that I had.

Another justification for using a Reflexive TA approach is the idea that a theme may come from a single or limited account within the data set as long as the patterns of meaning fit the data set (Braun and Clarke, 2022a). This concept worked well because the data set worked with many health care professionals and patients. I recognised that a single event can still capture something that is still important, which helped me to answer my research question (Braun and Clarke, 2006, Braun and Clarke, 2022a). This understanding of the analytical approach encouraged me that as a lone researcher, even if I was only to come across a single or limited account of an event, as long as it fits with the pattern of meaning, I could still use it within the storytelling themes.

Reflexive TA can work well with several types of qualitative data collection and is not limited by the methods which have been applied (Braun and Clarke, 2006). This flexibility across the choice in methods was needed as the case study research project saw three different data collection methods: a focus group, participant observations and interviews, alongside the research diary. Furthermore, Reflexive TA allowed all the data collection methods to be fed into one analysis.

Moreover, pragmatics played a part in choosing the analytical approach. I could use an online data software tool, which helped me engage with the data to make sense of what I had. The

online data software tool (Quirkos™) was pragmatic due to the large amounts of data I had acquired. I also believed that not having paper copies improved the safety of the data. This also fed into my environmentally conscious mindset by reducing my use of paper resources. Secondly, along the line of practicalities, it is an analytical approach that my supervisors are familiar with. Therefore, they were able to guide me with my analysis and ensured that I produced thorough and well-thought-out reflexive thematic accounts.

Finally, the researcher's position is valuable for understanding the data (Braun and Clarke, 2022a). My experience as a critical care nurse provided a valued dialogue of reflection with the self that influenced the analysis and is not viewed as a hindrance. I felt this point was the pinnacle in deciding to use Reflexive TA. As a result, reflexivity was an elastic concept I weaved throughout the analytical approach. In the next section, I will discuss the researcher's reflexivity and how it was undertaken.

3.7 Reflexivity

Reflexivity is a concept where the researcher reflects on their subjectivity and biases so that they can be embraced (Trainor and Bundon, 2021). The researcher should observe their experience, thoughts and feelings to become self-aware while accepting that qualitative research is complex and “messy”(Braun and Clarke, 2022; Trainor and Bundon, 2021, p. 711). Reflexivity is important and needed to ensure that quality remains in qualitative research, and if reflexivity is not performed it can have a negative impact on the knowledge acquired (Olmos-Vega *et al.*, 2022). Reflexivity is closely tied to the trustworthiness and credibility of the research, and the transferability of the findings (Dodgson, 2019). Reflexivity is a continuous process where the researcher constantly reflects and questions themselves through several avenue such as interpersonal elements, personal experience, as well as biases and assumptions (Dodgson, 2019). Through self reflection and acknowledgement, the positionality of the researcher can be better understood as well as the research findings (Wilson, Janes and Williams, 2022). This reflexivity should then be made visible so that the findings can be situated within the researcher's positionality and the context in which the data was produced.

To help achieve reflexivity, I wrote in the first person so that I became active and not passive in theme development. I included the compromises made for the research and utilised a research diary. My research diary detailed my thoughts, feelings, emotions, first impressions, contexts, any biases I was aware of or became aware of, and my qualitative research experience.

To help my reflexive journey, I read in detail the work of Braun and Clarke and utilised a dedicated website for reflexive TA to help my journey (Braun and Clarke, no date). Partway through this journey, their work advised me to complete a reflexive activity and give an account of Personal Reflexivity, Function and Disciplinary Reflexivity, and Reflexivity around my topic (Braun and Clarke, 2022a). Part of this reflexive account was included in the Preface, so that my positionality was given early on, but I also included further reflexivity around my topic about my preconceptions below.

I have worked both in the UK and Australia and already have some preconceptions about sedation practice. The assumption I hold regarding this topic is that Australia uses more Dexmedetomidine, resulting in people being more lightly sedated. Over-sedation in both countries occurs to manage the workload. If staffing was better, maybe we could have more lightly sedated patients. Also, getting sedation right is extremely difficult, and finding the correct answer or the right sedation level is hard. I am an insider and an outsider in the groups I am studying. I am an insider because I am an ICU nurse, but an outsider because I do not work in the areas I am researching.

From the reflexive Preface account and my preconceptions detailed above, it is hoped that the reader will begin to understand my positionality.

3.7 Summary

Throughout this chapter, I have explored the essence of qualitative research and my ontological and epistemological, theoretical perspective. I have given reasons for my justification for using qualitative research methodology and methods and provided reasoning and understanding for choosing a case study methodology. I have aligned my research project with Stakes' concept of case study methodology to guide my project, and I have explained my

reasoning for using reflexive TA. I have delved into what it means to fulfil reflexive TA whilst also sharing my position as a researcher through a reflexive exercise. The next chapter will detail this research project's methods and give a more in-depth look at each case study.

CHAPTER 4

METHODS

4.1 Introduction

In this chapter, I describe the qualitative research carried out in Australia and the UK. I begin by detailing the research settings of Australia and the UK, how I identified the cases, and the ethical considerations I followed. I subsequently discuss how I carried out the focus group, participant observations, and interviews in Australia and the UK, as well as the evaluation and rigour of the methods used. Throughout this chapter, there will be elements of reflexivity so that my positionality remains clear.

4.2 Identifying the Case Studies

The work of Stake (1995) was followed to guide the sampling strategy for the case studies. As discussed in Chapter Three (section 3.5.1), the cases needed to have the ability to give an insight into a particular issue through case study design with the capability to learn. There must also be some variation between the two cases to allow for meaningful comparisons (Stake, 1995). However, the requirements should be balanced on having convenient and timely access to each case (Stake, 1995). The sampling of my case studies fell heavily on the access component of Stake's work (Stake, 1995). Many ICUs in the UK and Australia are public hospitals accepting medical and surgical patients in a general setting; however, establishing access that would make space for qualitative doctoral research during a pandemic was the more challenging criterion to fulfil. In Table 7, I set the main criteria used and the justifications for these criteria in the two left-hand columns. The two right-hand columns detail how the UK and Australian case studies met the criteria set.

<u>Criteria</u>	<u>Justification</u>	<u>UK Case Study</u>	<u>Australia Case Study</u>
-General ICU	Sometimes sedation practice outside of a general ICU is practised very differently from	A general ICU with mixed level two ⁴ and level three patients (total 36 beds).	A general ICU with mixed level two and level three patients (total 28 beds).

⁴ Level two patients were defined as requiring single organ failure support and not requiring mechanical ventilation or hemofiltration. Level three patients were defined as single or multiple organ failure requiring mechanical ventilation or hemofiltration (Bernat *et al.*, 2007).

	what is commonly seen for a general ICU patient.		
-Public Hospital	There are limited private ICUs in the UK and a public hospital was deemed more accessible with NHS to NHS access. Additionally, I was more familiar and comfortable with the general workings of a public hospital.	Located in a NHS public funded teaching hospital in the North of England.	Located in South-East Australia hospital funded by the public.
-Adequate access	Having adequate access to each ICU was needed to ensure that this research project could successfully collect the data needed in the time limit set.	Main gatekeeper support came from a senior health care professional who had a leading role in research that took place in the environment.	Main gatekeeper support was established at the start of the PhD in October 2018. Their role was managing all of the research that took place in the ICU.

Table 7: The main criteria and reasons why the case studies were chosen.

Each case study consisted of a general ICU for medical and surgical patients in two public hospitals, one in Australia and the other in the UK. Each case study was located in a large city. There were 28 or more general ICU beds that provided an increased opportunity to access a larger pool of health care professionals and a greater scope of access to patients who entered the general ICU. I avoided specialist ICUs such as cardiac, neuro and burns as these cases may not represent a general workload or general sedation practices. However, each general ICU had the resources to take trauma patients. I used purposeful sampling to identify one case study in Australia and one in the UK. Case studies were selected to provide variety and allow for comparisons. Finally, both ICUs were sampled because supportive connections had been established, with each case expressing that they could help facilitate qualitative research.

Initially, there were issues with recruiting the case in the UK due to the COVID-19 pandemic. This resulted in me identifying a case study different from the one highlighted initially, which is explored more in Chapter Eight. Through the support of my supervisory team, I established access to a hospital that met the study criteria and rapidly gained access. For the UK, I quickly established key gatekeeper support at the research site following contact in March 2021. By May 2021, the gatekeeper was joining my supervision meetings, and in June 2021, I was granted an NHS-to-NHS letter of access⁵, a necessary step to help complete the formalities of accessing a UK NHS hospital.

For Australia, I established and maintained good contact with a key gatekeeper from September 2018 to ensure this research unit was accessible and could accommodate the research. The gatekeeper contact was established from former connections that I had with the research site from previous clinical work. Using these contacts, I expressed my vision for the PhD and what support I would require and need. As early as October 2018, I was meeting face-to-face with the gatekeeper, and I continued these face-to-face meetings when I went back to Australia to attend an ICU conference in 2019. Through these meetings and email contact, I was able to generate good rapport and support. Eventually, I had one research site in South-East Australia and one in North England. Each site had a general ICU, accepting surgical and medical patients. Both were located in a public hospital.

From November 2021 to February 2023, data collection was carried out over 16 months. The Gantt chart in Figure 2 below indicates dates and time frames for data collection for each case and method.

⁵ A NHS to NHS letter of access was provided to me as I was a researcher who had an NHS substantive contract of employment with another NHS trust. The letter of access raises concerns of responsibility, accountability, patient safety and duty of care and is an extension of NHS terms of employment for an NHS employee undertaking research in another NHS organisation.

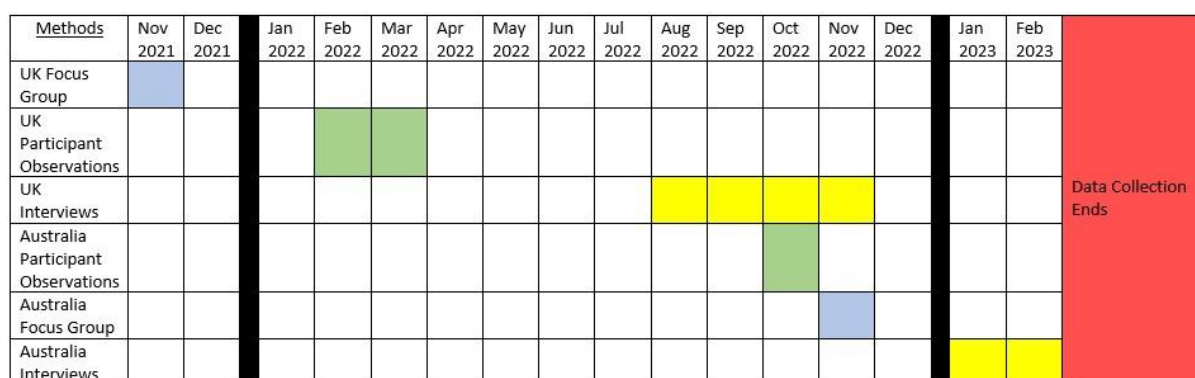


Figure 2: A Gantt Chart of data collection time frames.

4.3 Gaining Access

Gatekeepers have been recognised for influencing several areas of research. They are a significant factor in whether research is successful or not, they can be formal and informal, and sometimes, they are unaware of the role that they are playing (Emmel *et al.*, 2007). In this research context, gatekeepers can come from five distinct groups: health care professionals, research ethics committees, hospital management, relatives and researchers (Kars *et al.*, 2016). Each group can play a significant role in the gatekeeping of research and its ultimate success. They can provide access to participants and research settings that might otherwise not be possible. Gatekeepers are known to help a study and a researcher, but they are also known to hinder the research process as they can often let their own perceptions of the research project influence their decision in supporting the research or not (Kars *et al.*, 2016; Tully *et al.*, 2021). Throughout this chapter, I will refer to the gatekeepers that helped and hindered this research project, both in securing the research site and recruiting participants.

In Australia, gatekeeper support ensured the research site was initiated early in the PhD project (October 2018). I liaised with the consultant nurse of the research department within the ICU after establishing that this was a critical connection from a former nursing colleague. Without this gatekeeper support of the consultant nurse, access would have been difficult. The gatekeeper advised me on the ethics process and the legalities of reaching this research site. I was also fortunate in the UK to quickly find gatekeeper support after the research site in the UK was changed (See Chapter Eight). I contacted this gatekeeper after emailing key connections at The University of Sheffield. This gatekeeper equally supported me in gaining access to the research site and through the necessary process of governance. The gatekeeper

also raised my research profile by disseminating information formally and informally, which helped with recruitment.

I generated a positive gatekeeper relationship with both gatekeepers through face-to-face contact, e-mails and online meetings. For Australia, I was lucky that this gatekeeper had not changed roles or left the research site and, therefore, had been a constant throughout this research project. The UK gatekeeper became involved in my supervisory discussions, which immersed them in several aspects of my PhD project. Both gatekeepers saw the value in nursing research and my PhD project's value, which has been recognised as essential when creating gatekeeper support (Høyland, Hollund and Olsen, 2015).

In addition to gatekeeper support, I have also experienced gatekeepers who demonstrated indifference to the research project, highlighting the fragility of the role. In Australia, the project was met with a four-month delay due to a non-supportive gatekeeper who was hesitant to sign off on the research project. My supervisors and I did not have direct contact with this gatekeeper, so it was difficult to understand their concerns. This 4-month delay was very stressful and prompted talks with my supervisory team regarding an alternative plan. However, the issue was eventually resolved by the primary supportive gatekeeper in Australia. The gatekeeper persistently followed up with the non-supportive gatekeeper and reduced any barriers and burdens of this research project by getting all the paperwork ready to be signed off. I believe the close relationship I had built with the supportive gatekeeper over the previous 4 years heavily influenced their ongoing efforts, as good gatekeeper rapport has been recognised as advantageous for a research project (Høyland, Hollund and Olsen, 2015).

The interactions with these gatekeepers represent the formal primary gatekeepers located in each case study. However, throughout my research ethics and data collection journey, I recognised interactions with other individuals as supportive and non-supportive gatekeepers. Throughout the rest of the Methods Chapter, I will reference the gatekeepers with whom I interacted and how they helped or hindered the research project. Before I detail the methods used, I want to detail more about the nurse I perceive myself as and continue my reflexive journey.

4.4 Reflexivity

As discussed in Chapter Three (section 3.7), reflexivity was integrated through this research project to reflect on my subjectivity and biases so that I could become self-aware of my thoughts and feelings. I found that throughout each method of data collection, much reflexivity took place, especially during my journey through recruitment, consent and positioning myself as an observer-as-participant, discussed further in section 4.9.1. My reflections were captured using a research diary, but at times, they were also intertwined with the notes I made during participant observations. How I perceive the nursing profession and the thoughts, feelings, and values I attach to this role will impact how I can carry out the detailed methods.

For me, nursing is something that I have always been passionate about, ever since I started as a student nurse, following my mum's footsteps. I embarked on this vocational career straight after finishing my A-level studies and thoroughly enjoyed my time as a student nurse. I excelled every clinical placement and continued to achieve good academic scores; I was eventually awarded with First Class Honours. I had just turned 21 when I qualified and I viewed myself as a nurse that always strived to give outstanding care for my patients. One of the reasons why I wanted to go into ICU nursing was because of the 1:1 or 1:2 nurse-to-patient ratios. These ratios allowed me to give all of my care and attention to the patients I was looking after without having the same time constraints of ward-based nursing, where the ratios may be 1:8 or 1:12 at best.

I completed a post graduate certificate in adult critical care practice and would consider myself as an expert ICU nurse with in-depth knowledge about the subject that I was researching. My background in critical care would also be recognised by others as being an 'expert' nurse (Aitken et al., 2009). The knowledge that I have about sedation practices, alongside my past and current experience of working in critical care will have a major influence on my position and interpretation as a researcher.

My first introduction to both research sites came from clinical practice as a registered nurse. My affiliation with the Australian research site came from working as a block-booked agency

nurse over two separate six-month periods from January 2017 to September 2018. During this period, I was welcomed into the environment and formed friendships with the staff. My data collection at this research site took place four years after I worked there, and therefore, I primarily interacted with research participants I hadn't previously met. My affiliation with the UK research site also came from working there as an agency nurse for temporary staffing issues. However, I worked very few hours in this clinical environment compared with the Australian research site. Still, this experience led me to be able to orientate to the environment and navigate their electronic clinical system. As this UK research site is regionally close to my usual place of clinical practice, I had some familiarity with some of the health care professionals at the case study. However, this helped me to build rapport to be accepted as a researcher. My familiarity with both cases allowed me to settle into my surroundings quickly through prior orientation. Using reflexivity helped me to recognise my presumptions and expectations and did not impact my openness to learn from the research sites.

4.5 Ethics

Before any research could occur, I had to ensure I had the necessary ethical approvals. In the UK, I needed ethical approval from the Health Research Authority (HRA). In Australia, I needed approval through the Human Research Ethics Committee (HREC) at the local health district where the case study was based. Often, the list of ethical considerations is not exhaustive, with ever-evolving situations that produce new ethical dilemmas during data and after data collection, which require ethical amendments. To aid my understanding of research ethics and help navigate the ethical process, in July 2019, I joined an NHS research ethics committee (REC).

4.5.1 Patient and Public Involvement

Before submitting my ethics application, I gathered the thoughts and opinions of three different Patient and Public Involvement (PPI) groups. Additionally, PPI is a valued and often needed step in seeking approval from a REC. In addition to project development, good PPI aids in transparency and accountability in research (INVOLVE, 2012). As my research included patients who lacked the capacity to consent and were based in the clinical environment (participant observations), it was important that I listened to the views and opinions of those who had been ICU patients or those who were relatives or friends before conducting the

research. Listening to these views and opinions helped shape the research design to ensure that it was acceptable and conducted in an agreeable way for the patients and families of future ICU patients.

In keeping with principles of good research practice, several approaches to gathering PPI were followed (INVOLVE, 2012). Initially, I accessed PPI support through a UK ICU charity called ICU Steps in August 2020. This charity provided access to a PPI panel that included relatives and ex-ICU patients through email communication. I received feedback regarding the suitability of the research project, and comments were made on the suitability of the research documents. The feedback I gathered from the PPI led to adapting the information sheets to include more information regarding the inclusion of Australia as a comparative research site.

Further PPI support came in September 2020 from the NHS trust, where I had my clinical/research contract. This PPI group comprised patients and relatives but was not ICU-specific. The PPI group were sent research material that the relatives and the patients would see before meeting online to discuss the documents and provide the opportunity for further questions. The study was considered *"important and relevant research"* and *"The group felt on the whole the documents were very clear"*. I received further advice from the PPI group regarding seeking consent and approaching the next of kin for consultee involvement.

The third PPI group came together in November 2020 and remained ongoing throughout the rest of the PhD project. I arranged this PPI event by using an advert on the NIHR website that detailed opportunities for people to get involved in research (<https://www.peopleinresearch.org/>). I had three individuals respond to the advert who had all experienced a relative being cared for in the ICU. They were sent the UK patient and consultee documents to review before comments were provided via email. This was followed up with an online meeting to ask and answer additional questions. Following this PPI meeting, two individuals wanted ongoing participation in the study to act as the PPI board. They were updated initially every three months to detail the project's progress and were given opportunities to ask questions.

4.5.2 UK Ethical Process

I submitted my ethics application to the HRA on the 2nd of March 2021 for a full review by the Camden and Kings Cross REC, and this review took place online on the 22nd of March 2021. Tony Ryan (Supervisor) and I joined the REC online.

We joined the meeting at 3 pm, and I answered the REC's questions regarding the research's conduct. The REC had queries about the Australian research site and the likelihood of this occurring, given the COVID-19 pandemic. They also asked what we meant by the use of 'Culture' within the participant information sheet. Further questions asked were about the process of the participant observation period and how we would seek permission for the patient.

On the 29th of March 2021, we received a provisional opinion on the study. The provisional opinion was based on changes I needed to make to the research. The changes included:

- Seeking personal consultee permission before observations of the health care professionals occurred around the bedside, and including a nominated consultee if a personal consultee was unavailable.
- The committee felt that the word 'culture' was too vague for an information sheet and asked for further clarification about what this meant concerning the metrics for data collection. *(As a result of this, I removed the word culture from the participant information sheet).*
- I needed to update the patient letter to make the patient aware that they could withdraw their data by any means possible.
- I needed to address administrative issues for the information sheet and the protocol.

On the 15th of April 2021, we submitted the changes that were required from the REC. On the 19th of April 2021, we received a favourable opinion from the REC (REC reference: 21/LO/0234). Since this initial approval, six amendments have been submitted to the HRA. Appendix D describes the amendments.

4.5.3 Australian Ethical Process

I submitted my ethics application to the Research Ethics and Governance Information System (REGIS) on the 27th of May 2021, to be reviewed by the HREC on the 9th of June 2021. Unlike the UK ethics meeting, I did not attend this meeting as the researcher is not asked to join.

On the 21st of June 2021, we received an e-mail detailing that more information was required. The HREC wanted to have more information on the following:

- The Committee queried what contingency is in place if the UK researcher is unable to travel to Australia. Who will perform the observations? *(In response to the committee querying what would happen if the UK researcher could not travel to Australia to perform the observations, we introduced five more focus groups into the study if observations could not occur.)*
- An e-mail from the ICU Head of Department in Australia to support the study should be provided to the Committee. The Head of Department should confirm that all staff credentialing procedures (if any) for the UK researcher will be cleared with the Governance Unit before any observations occur.
- Revision of the Protocol and the Participant Information Sheet to include more information on the recruitment of study participants and what would be involved.
- General revision to the protocol information sheets and consent forms for clarity.

On the 9th of July 2021, we submitted the changes required by the HREC. On 14th July 2021, we received approval from the HREC (X21-0174 & 2021/ETH01030). Since this initial approval, two amendments have been submitted. Appendix E details the amendments.

4.5.4 Ethical Dilemmas

Throughout the research process, before and during data collection, I found myself coming up against ethical dilemmas that I found challenging to manage. This section of the methods chapter looks at some of the ethical dilemmas in more detail.

As this research project took place in two countries, I had to navigate two different ethical application approval processes. For the UK, I understood what was expected in the ethics

application due to sitting on a REC. Therefore, I was reasonably confident with the application I was submitting. However, I was not familiar with the ethical requirements in Australia. Consequently, I found myself struggling to navigate this system. When writing the protocol for the study in Australia, I sought advice from the primary gatekeeper, who regularly checked this document. Further support came from the Executive Officer of the HREC, who was happy to meet online to discuss my research project and how I should address the ethics application for Australia. The main difference came from how to include patients in the study who were sedated and ventilated and lacked the capacity to consent for participation. As a result, I followed two approaches that influenced how the data was collected during participant observations.

In the UK, I needed to involve a personal or nominated consultee who would act in the patient's best interests. A personal consultee would take the views and wishes of the patient when considering whether the patient should participate in research. A personal consultee was not necessarily the patient's next of kin. The process I followed was underpinned by guidance from the Mental Capacity Act, 2005 (HMSO, 2005). I was familiar with this Act and the process for involving patients who lacked capacity in research, as it was detailed very clearly in section 30, Research (HMSO, 2005). As most patients in the study regained their capacity after being sedated and ventilated, I provided a letter to the patient that detailed the research project and what data was gathered about them (Appendix F). This letter was given to the patient upon discharge from the ICU, and it allowed them to redact all their personal data up to 3 months after data collection had finished. Five patient letters were given out, and no participant redacted their data.

In Australia, I wanted to follow a similar approach to that taken in the UK, first for continuity and second because I believed this way was ethically sound and just. However, the process for involving Australian patients in the research project looked very different. I received advice from the HREC and the primary gatekeeper that applying for a Waiver of Consent was the usual practice. A Waiver of Consent is accessing the patient's personal or medical information without consent, and the patient may not know they were in the research project (The National Health and Medical Research Council, The Australian Research Council and Universities Australia, 2007). To apply for a Waiver of Consent for the patients, I had to satisfy

the HREC that I had adequately reviewed the National Statement section 2.3.10 and could justify why a Waiver of Consent was appropriate (The National Health and Medical Research Council, The Australian Research Council and Universities Australia, 2007). If the patient had an active request not to participate in the research, or if the family made known that the patient would not want to be included, then the patient was not involved. The HREC granted me a Waiver of Consent as I had satisfied them that the research was low risk and any risks would be justified by the benefits of the research; it also needed to be impractical to gain consent, and there needed to be no reason to think that participants would not have consented if asked (The National Health and Medical Research Council, The Australian Research Council, and Universities Australia, 2007). Additionally, there needed to be privacy and confidentiality of the data, with any significant results being communicated (The National Health and Medical Research Council, The Australian Research Council, and Universities Australia, 2007). Finally, there needed to be no risk of commercial or financial exploitation, and this waiver must not be prohibited by any laws (The National Health and Medical Research Council, The Australian Research Council and Universities Australia, 2007). These differences in patient consent influenced how health care professionals would be recruited in the participant observation period and when patients could be included in the study (discussed later in this chapter). It also meant that in the UK, some patients were included for just observations, and for others, it also meant that I had access to their medical records.

Additionally, from my own ethical perspective, I had to be sure I was happy to go about patient consent this way. I also had to ensure that The University of Sheffield supported acquiring patient consent/the lack of consent in this way, as this research project represents them as an organisation. Although I believed that the way I went about consent in the UK was more ethically sound and robust, I also had to appreciate that the two countries have different ethical guidelines and governance. I also had to appreciate that if I tried to implement this UK approach, the Australian research site would have been very unfamiliar with this process and, therefore, may have created additional barriers and burdens to supporting this research project. Ultimately, I knew that my research project was very low risk, with no change to patient care and minimal gathering of personal and medical data. Therefore, I became comfortable with using this approach in Australia.

I will now re-introduce the research questions and discuss the methods used to conduct the research and why they were chosen.

4.6 Selected Methods of Data Collection

The three research questions posed for inquiry.

- 1) To what extent are there variations in sedation practice for the mechanically ventilated patient between Australia and the UK in the intensive care unit, and how may we account for these?
- 2) What accounts do staff provide about their sedation practice for the mechanically ventilated patient, and what reasons do they give?
- 3) How do the perceptions and understandings of sedation practice for the mechanically ventilated patient vary between Australian and British ICU staff?

Stake (1995) advocates using triangulation in case study methodology, which is frequently mentioned in qualitative inquiry to enable rich understanding (Denzin and Lincoln, 2011). For Stake, the use of triangulation is important in making sure that “we have it right” (Stake, 1995, p. 112) and using it helps to ensure that reporting is not a misinterpretation, which may be a risk in the use of single sources of inquiry (Stake, 1995). With this in mind, I reviewed several methods of data collection that I could adopt, along with guidance from Stake’s (1995) case study work and with discussion with my supervisors. The chosen methods will be discussed in the order in which they were initially proposed to be carried out and Figure 3 shows the order in which data collection actually took place.

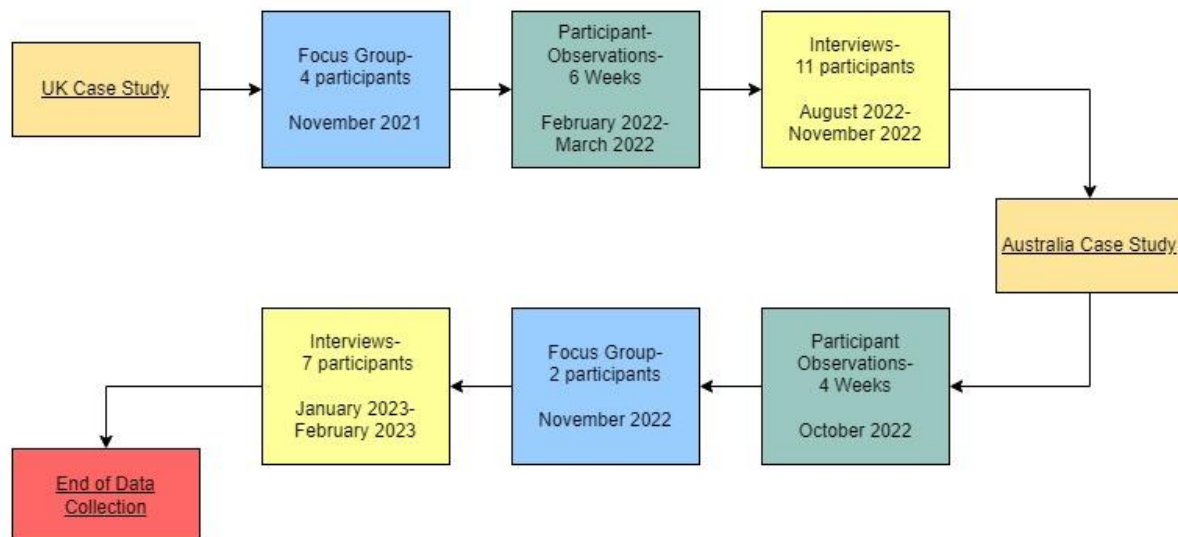


Figure 3- The order in which data collection took place.

I decided to begin my research inquiry by using a focus group. It was thought that starting with a focus group would help me gather a general overview of sedation practice from numerous health care professionals through a group discussion that created a space where individuals and collective voices could express their experiences (Denzin and Lincoln, 2011). Denzin and Lincoln (2011) recognise that you can identify what is important to the participants through focus group discussions. This was advantageous to help me identify and acknowledge what health care professionals viewed as significant sedation practices before I began my observation period. Through using a mixed profession focus group, I addressed my second research question by finding out the accounts that staff provided about their sedation practice for the mechanically ventilated patient and what reasons they gave.

Focus Groups

Focus groups provide in-depth exploratory qualitative data, which can be gathered by having a group of individuals discuss something they have all experienced. This helps identify subcultural norms and intriguing interactions between health care professionals (Kitzinger, 1995; Stewart and Shamdasani, 2015). Previous research looking at the sedation practices of health care professionals has utilised focus groups to collect these data, the focus groups were made up of just one professional group or included a mix of health care professionals (Nygaard *et al.*, 2022; Woein and Bjork, 2013; Miller *et al.*, 2012). Nygaard *et al.* (2022) used a combination of health care professionals when looking at family care in ICUs and did this “to identify different perspectives between the professions and explore interaction and

discussion between them”. Ziebland *et al.* (2013) also recognise that including participants with different experiences in the topic of interest provided more profound, insightful, reflective accounts that were “invaluable” and “useful” (Ziebland *et al.*, 2013, p. 51). The use of focus groups in this way was also pragmatic, where the perspectives of multiple health care professionals could be explored in one focus group before moving on to subsequent data collection methods. Stake does not mention the use of focus groups within his case study text but expresses that “opportunity should be taken early to get acquainted with the people, the spaces, the schedules and the problems of the case” (Stake, 1995, p. 59). Therefore, a focus group was chosen as the first formal data collection method. It was seen as a way of introducing the research and myself and starting to understand the issues surrounding sedation before direct participant observations took place in the research setting.

Participant Observations

Throughout Stake’s key work, he promoted that “observations work the researcher toward greater understanding of the case” and “it is usually so much better if we can see it ourselves” (Stake, 1995, p. 60, p. 67). For both Stake (1995) and Denzin and Lincoln (2011), participant observation is helpful for observing what people say and do. In contrast, other methods rely on participants to self-report. Observation disadvantages mainly refer to reactivity, in which participants respond differently because of being observed (Robson and McCartan, 2016). There are ways to mitigate this phenomenon, but it is impossible to eradicate it when undertaking participant observations in real-world research (Robson and McCartan, 2016). The participant observation method addressed research question one.

Although some observational research in the ICU has already focused on sedation practice (direct and secondary analysis) (Egerod, 2002; Aitken *et al.*, 2009; Laerkner, Egerod and Hansen, 2015), the focus of most of this prior research has been specifically on the sedation practice of the bedside nurse. Egerod (2002) focused on clinicians and nurses but highlighted that the main contributors to the data were the nurses. The observations in my study proposed to focus on all health care professionals and the interaction between all participants and sedation practice. Additionally, limited direct participant observation research on sedation practice has a cross-cultural element in two countries.

Interviews

Lastly, Stake (1995, p. 67) recognised that we often do not have the time to gather full accounts through observations alone and often “have to rely on what others have seen”. Relying on what others have seen is facilitated through interviews and was chosen as the final key method. Qualitative interviews are an advantageous and common way to understand and explore the meanings people give to their social worlds (Yates, 2004). There are varying interview approaches, with the main strategies being structured or non-structured (Polgar and Thomas, 2008). Between these two poles, semi-structured interviews strike a balance (Polgar and Thomas, 2008). Semi-structured interviews allow the participant to express their voice but have a framework of key questions, which is helpful for comparative purposes (Polgar and Thomas, 2008). Although semi-structured interviews have been used in multiple research studies on the sedation practice of health care professionals, I viewed them as a useful tool to complete the triangulation of my research methods (Weir and O’neill, 2008; Tingsvik *et al.*, 2013; Karlsson and Bergbom, 2015; Mortensen, Kjær and Egerod, 2019). Having the semi-structured interviews positioned as the last data collection method for each case allowed me to collate all my thoughts, perceptions and views of sedation practice into questions. This was to help answer my third research question that focused on the perceptions and understandings staff had of their sedation practice for the mechanically ventilated patient. I could ask participants these questions in a space where they could express their perceptions of sedation practice in an environment that allowed them to freely talk and discuss away from the distraction of clinical practice or the influence of another health care professional.

Stake further advocates for document review and descriptions of contexts (Stake, 1995). Throughout the observation period, data gathering through document review was carried out. Additionally, my field notes generated descriptions of contexts throughout the observation period.

The primary data collection methods for each case study were a focus group, participant observations and interviews. Before I provide an in-depth account of each method, I will detail the inclusion and exclusion criteria of the health care professionals used for data collection.

4.7 Inclusion and Exclusion Criteria for Health Care Professionals

The inclusion and exclusion criteria remained the same for each data collection phase/method (focus group, participant observations and interviews). This was the same across each case- Australia and the UK.

Developing the inclusion and exclusion criteria for the health care professionals was straightforward. I focused on health care professionals who had knowledge and awareness of sedation practice, specifically all nurses, all doctors, all pharmacists and all support staff who identified themselves as knowing sedation practice. I excluded participants who were outside agency/outside casual staff because I wanted the involvement of health care professionals who were familiar with the sedation practice in each case. I also excluded those who were not fluent in English as this would have impacted achieving informed consent.

Inclusion Criteria:

- Health care professionals working in the ICU, known as the 'case'.
- To include all nurses, doctors, pharmacists and all support staff of any grade if they identify as having knowledge and an interest in sedation practice.

Exclusion Criteria:

- Health care professionals who are not working in the area known as the 'case' or are there for temporary staffing issues (agency and bank staff).
- Health care professionals who are not fluent in English.

I will now present each method (focus group, observations, interviews) and detail the chosen sampling strategy, recruitment process and data collection process. The method process will be presented together for the UK and Australia for the focus group and interviews. For the participant observations, sampling and recruitment will be presented together, but the data collection will be presented separately due to the uniqueness of the approach.

4.8 Focus Groups

The focus group was the first data collection method in the UK and the second in Australia. I initially proposed starting with the focus group, followed by participant observations and

interviews. This process was completed in the UK, but in Australia, I conducted the data collection methods in order of priority due to the time constraints of my research visa, slow recruitment, and an ethics amendment. For Australia, this meant participant observations had already taken place before the focus group. Additionally, the face-to-face recruitment for the Australian focus group took place during the participant observation period.

4.8.1 Focus Group Sampling

For health care professionals, the sampling strategy was initially based on the study inclusion and exclusion criteria (section 4.7). I wanted to include the appropriate professions to generate discussion, views and opinions that might have been similar when working clinically in an MDT approach. I aimed to include eight health care professionals based on guidance from the literature (Stewart and Shamdasani, 2015). Therefore, I used purposeful sampling to facilitate the inclusion of eight health care professionals from varying professions. Purposeful sampling “sets criteria for representation of key attributes” (Denzin and Lincoln, 2011, p. 363). For the UK, this involved including nurses, doctors and pharmacists within one focus group. For Australia, as I undertook the participant observations before the focus group, I knew that the pharmacists were not heavily involved in any sedation practice and, therefore, focused my efforts on sampling the nurses and doctors only.

I selected participants who had completed an expression of interest form. However, this sometimes left me with a limited selection of participants to cover the range of different professional groups as I found some professions more challenging to engage and recruit into the research than others. Additionally, the number of health care professionals varied throughout the workforce. For example, there are more nurses than doctors in the ICU. Therefore, when selecting participants, there was a larger pool of nurses over doctors and more opportunity for sampling. Another challenge was trying to generate enough overall interest from potential participants. As a result of a small pool of potential participants, my sampling framework moved to convenience sampling in the UK and had some elements of snowball sampling in Australia, which I further discuss in the next section.

4.8.2 Focus Group Recruitment

A recruitment e-mail for all data collection methods was sent out using an arm's length approach to all nursing, medical and pharmacy staff. For the UK, this was sent on the 19th of August 2021, and for Australia, this was sent to nurses and doctors on the 28th of June 2022, and pharmacists on the 6th of July 2022. An arm's length approach was used to prevent any unwanted direct contact from the researcher to potential participants. This recruitment e-mail (Appendix G) included a participant information sheet (UK-Appendix H) (Australia-Appendix I) and an expression of interest form (UK-Appendix J) (Australia-Appendix K). The expression of interest form allowed potential participants to tick which parts of data collection they were happy with for further contact. The potential participants would send this expression of interest form back to my e-mail. From this, I could recruit participants for the study. Further recruitment support came from the main gatekeeper in the UK, who highlighted the research project to the clinical management group and all consultants. I received two completed expression of interest forms from the recruitment e-mail in the UK and two in Australia after the reminder email was sent on the 23rd of August 2022.

My recruitment plan was based solely on an arms-length recruitment e-mail that could be sent twice. I believe I acquired this knowledge of an 'arm's length approach' from sitting on a REC. This process was seen to protect the potential participants from any unwanted contact. I reflected on how my position within the HRA on a REC may have helped and hindered my research project. The ethical process in the NHS (UK) and Australia was one I perceived to be a major challenge with many obstacles, but also a great achievement if I was successful. The REC position made me more aware of the ethical challenges. For this reason, I knew that a minimally intrusive approach would have the least resistance from an ethics committee, and therefore, I went forward with using an 'arms' length' approach. This resulted in me neglecting to look closely at the wider literature regarding the recruitment of health care professionals into research projects. I soon discovered and noted in the literature that health care professionals are a difficult-to-recruit population (Bruneau *et al.*, 2021). I struggled to balance a minimally invasive recruitment approach with having a successful recruitment period. In addition, using the expression of interest form was a cumbersome process that I viewed as ultimately deterring potential participants as it seemed too burdensome. I often received comments from health care professionals that said they did not have a computer to

complete the document. I also received direct feedback from gatekeepers that this approach was arduous. Consequently, amendments were submitted to allow face-to-face engagement sessions, allowing me to enter the research site to generate more awareness of the study and support recruitment.

For the UK, on the 20th of September 2021, the REC approved this amendment, and I entered the research site five times to present the study through introductions away from direct patient care (seminar rooms, staff offices and break rooms). I accessed the research site from the 28th of September 2021 to the 30th of October 2021. I used a recruitment research diary to document this period. I covered several shift patterns from day to night on weekdays and weekends. In total, I spent approximately 23 hours in face-to-face recruitment. My face-to-face recruitment strategy involved positioning myself mainly in the nurses' staff room, attending handovers (with the permission of those in charge) and speaking to people during their breaks. I printed participant information sheets and the expression of interest forms to make them easier for staff to access and reduce some practical barriers to expressing an interest. I also provided a sealed box where potential participants could leave a completed expression of interest form, which I would collect later. I also ensured that recruitment posters were displayed as planned, following consent from ward managers (Appendix L).

For the UK, I initially found the face-to-face recruitment period quite challenging. I spent a lot of my time waiting to talk to potential participants, and I had to put myself in a position where I always initiated these conversations. Sometimes, people were disengaged in the research project, and I often had periods where I felt deflated. Additionally, the nurses and doctors wore scrubs for the COVID-19 pandemic. As a result, I could not recognise the roles of health care professionals. Moreover, identification cards hung low on a lanyard, which made it difficult to see their profession or name to begin a conversation. During face-to-face recruitment, I met some nurses who became informal gatekeepers who were supportive and helpful. Without asking, one nurse e-mailed me a list of individuals who were happy to participate in the research study, permitting me to contact them about the study. Another informal gatekeeper approached me to say they had informed staff that I was looking for participants and encouraged them to talk with me during their breaks.

Overall, the recruitment sessions in the UK allowed me to become familiar with the research site and allowed potential participants to become familiar with me as the researcher. These face-to-face recruitment sessions gave me insight into the culture and routine of the unit. Furthermore, I developed informal gatekeeper support, which benefited me during other data collection methods. Additionally, these face-to-face recruitment sessions allowed me to gather completed expression of interest forms, which was the main objective. Eventually, I had enough interest and support to plan the focus group.

For Australia, the amendment for the face-to-face engagement sessions was approved on the 30th of September 2022 and ran concurrently with my participant observation period. The amendment allowed me to introduce my research to participants at their weekly educational sessions for nurses on Mondays and Wednesdays. Doctors also had educational sessions, which I could have used for recruitment. I inquired about joining these sessions too, but I was advised that I would have to contact a particular doctor, and it was made to seem like this individual would be difficult to approach. I did not enquire any more than this and decided against using the doctor's educational session as an engagement session for the doctors to get involved with the research project. I also believed I would struggle to get a doctor to engage with the focus group as I had struggled in the UK. I, therefore, decided not to pursue this. During the nurse engagement education sessions, I attended these six times and either did the introduction before the teaching session started or afterwards. Despite attending six education/journal club sessions, it did not generate any more potential participants who expressed an interest in participating in the focus group.

Other recruitment in Australia came from when I was consenting participants for the observation period. Twice I had a participant verbally express that they would be happy to join in the other data collection methods. I used these opportunities to get an expression of interest form filled out for future contact. Further recruiting into the focus group came from informal gatekeeper support. One individual had already expressed an interest in participating and communicated with other nurses (unprompted) about the focus group. This communication led to another individual contacting me and signing an expression of interest form (snowball sampling).

For the UK, after the face-to-face recruitment and using the completed expression of interest forms, I e-mailed 16 respondents to ask if they were happy to participate in the focus group and asked them to return a signed consent form. Eight responded to say that they were happy to participate in the focus group. From these eight respondents, I selected a date that would work for the majority (convenience sampling), which left me with six participants. I picked a time outside usual clinical hours to accommodate the shift pattern of the doctors and the pharmacists to increase their likelihood of attendance (purposeful sampling) by limiting any clashes with rostered shifts. As a date was selected to suit the majority (not all) of the participants, I had yet to reach eight participants who could attend the focus group (only six), so I re-e-mailed those who initially had expressed an interest in participating. This e-mail detailed the confirmed date and time of the focus group to see if it would generate any further participation, but it did not.

In Australia, I contacted five potential participants who had expressed an interest in participating. I offered potential participants four dates from which to choose to arrange a date and time. I then moved forward with what most participants said they could do on the selected date (convenience sampling). One participant did not reply to further emails, leaving me with four participants who confirmed they could attend. Participants were sent an email confirming the time and date with a link to the Zoom meeting.

All UK and Australian participants returned a consent form (UK-Appendix M) (Australia-Appendix N) before the focus group took place and were sent a reminder email the day before with a link to Zoom.

4.8.3 Focus Group Data Collection

I created a topic guide with 15 questions and two vignettes to guide the discussion (Appendix O). I designed the focus group topic guide based on the PhD research questions and information available in the literature regarding sedation practice. After the initial development, I informally piloted the focus group between October and November 2021. I piloted the focus group with UK ICU nurses with whom I had direct access, either through colleagues at work or personal contacts. My clinical ward manager granted permission to

display a poster asking for people to participate in a practice focus group. I e-mailed all staff⁶, but only the nurses responded. I conducted three pilots of the topic guide in person and online. After each pilot focus group, I refined the topic guide.

The UK Focus Group took place on Zoom in November 2021 and Australia in November 2022. Participants were thanked for their time, and in the UK, participants were given a £20 gift voucher from The University of Sheffield, and Australian participants were given a \$40AUD gift voucher from personal funds.

For the UK, one participant had signed a consent form and gave their availability but still needed to confirm that they would attend. They did not attend. Another participant cancelled their attendance on the day of the focus group, stating that the ICU was too busy to leave at their finish time. I transcribed the focus group in December 2021, and most of the familiarisation occurred during this time. I included the pauses and laughs of the participants to add context and character to each participant. In January 2022, I familiarised myself again with the work of Braun and Clarke (2006) and began coding in February 2022. I kept a reflexive research diary during this process.

For Australia, out of four participants who had confirmed their attendance, one participant emailed 15 minutes into the focus group to say they could no longer join. Another participant failed to show up (I received an email later that day with apologies; they had just forgotten). I used the transcription service built into Zoom and transcribed the focus group over December 2022; most of the familiarisation occurred during this time.

4.9 Participant Observations

Observations were the second data collection method in the UK, and they were the first data collection method in Australia.

⁶ The colleagues I worked with were all aware that I was undertaking a PhD, and they knew that this practice focus group was to support me in refining my research skills.

4.9.1 Defining the Observer Role

For participant observations, I used an observer-as-participant role across both cases (Seymour, 2001). An observer-as-participant is overt and on a “continuum of involvement” with four levels: passive, moderate, active and complete (Spradley, 1980, p. 58; Creswell and Creswell, 2018). Despite Stake (1995) highlighting that the researcher's role will vary and change, I mostly remained an observer-as-participant. This role meant that the research participants knew my clinical role, the research purpose, and the data I collected. Participants could ask questions, and the research was as transparent as possible. If required, I could intervene to mitigate serious events, i.e., if a patient attempted self-extubation (the accidental removal of an endotracheal tube needed to ventilate the patient). Additionally, the observer-as-participant role recognised my commitments as a registered nurse in the UK and Australia. It prevented a scenario where my nursing practice could be called into question (Nursing and Midwifery Board of Australia (NMBA), 2018; Nursing and Midwifery Council, 2018).

4.9.2 Sampling (Time)

For each case, I planned to spend 4-6 weeks conducting observations, ensuring I spent my time across 24 hours. To ensure I did this, I kept a record of my start and finishing times and included night-time observations. Sometimes, I entered the case part-way through a night/day shift to ensure that I covered all the hours in a 24-hour day. I also ensured that I completed weekends as well as weekdays.

I selected 4-6 weeks as this was thought to be a long enough time in the research site to ensure that this 24-hour period was covered. It was also felt that this would be enough time to ensure that I would get enough exposure to sedation practice and become settled and familiar with each case site with enough opportunity for recruitment. From a pragmatic point of view, as triangulation was occurring, I felt this would be an adequate length of time alongside the other data collection methods, especially as this had to be balanced with a research visa in Australia and my clinical shifts in the UK. Additionally, based on other similar research, 4-6 weeks at each research site is consistent with Aitken *et al.*, (2009) who spent 14 hours in the clinical environment observing sedation practice whilst using a ‘think aloud’ method. Laerkner, Egerod and Hansen (2015) spent 102 days (between 2-12hours/day,

approximately 14.5 weeks) conducting observations, and Egerod (2002) conducted a secondary analysis on 283 hours of fieldwork across four sites (approximately 12 weeks of 23hrs/week).

In the UK, it was challenging to achieve the sampling strategy of time as I had to manage my observation days alongside my clinical shifts, which also consisted of days, nights and weekends (on average, 15 hours of clinical shifts per week). For Australia, it was also challenging to achieve the sampling strategy of time as I had no gatekeeper support outside their usual Monday to Friday 06:30-15:00 work hours, which I relied on for recruitment. Despite the challenges across both cases, I managed to cover the full 24-hour period of observations with weekdays, nights and weekends.

4.9.3 Sampling (Patients)

For the patients involved in the participant observation period, initially, I set the inclusion and exclusion criteria to exclude many different sub-types of patients to focus mainly on medical patients within the general ICU. I originally excluded surgical, trauma, burns, neuro, or cardiac patients. I thought this criterion would serve me as a lone researcher during the analysis period to keep my participant observation period somewhat similar across each research site. I believed that the criterion set for the patients would help me draw meaningful comparisons, as intended in case study methodology. However, due to low recruitment, I had to submit an amendment one week into the UK participant observation period as many patients fell outside the criterion. Therefore, to effectively address or answer the research questions, the inclusion and exclusion criteria were adjusted so that I could observe a greater scope of patients. Appendix P justifies the criteria used across each case for the patients following the amendment.

Inclusion:

- >18 years of age.
- Mechanically ventilated using an endotracheal tube.
- Patients being administered sedation at recruitment.
- An intensive care patient.

Exclusion:

- Patients who are also receiving neuromuscular blockades at recruitment.
- Patients who are pregnant.
- Patients who are being actively cooled.
- Patients who are end of life, or if treatment is being withdrawn.
- Patients whose first language is not English.

4.9.4 Sampling (Health Care Professionals)

Sampling the health care professionals for both case studies was again based primarily on the inclusion and exclusion criteria set out for health care professionals in section 4.7 of this chapter.

For the UK and Australia, the sampling strategy for health care professionals varied depending on what phase of recruitment I was in. If I were sampling health care professionals before participant observations had begun, I would use convenience sampling. However, if I were sampling health care professionals during the data collection period of participant observations, I would use purposeful sampling. There was no difference in the type of data I was trying to gather by using convenience or purposeful sampling. Convenience sampling was used to gather a large pool of potential participants for observations so that when I began data collection, I would have willing and consenting participants ready to participate. Then, during the data collection period of participant observations, my sampling strategy would be purposeful sampling. This was because my data collection was primarily based around the bedside of patients who fit the criteria, which meant that I needed to recruit the health care professional assigned to be the bedside nurse or the clinician assigned to review the patient.

4.9.5 Participant Observation Recruitment

For the UK, I started accessing the research site to conduct face-to-face recruiting before my participant observation data collection began. The research site was accessed three times from mid-January to mid-February 2022. It covered several shift patterns with a total time of 15 hours. During these face-to-face recruitment sessions, I kept a recruitment research diary to help me recognise and reflect upon any struggles I had during recruitment to understand how I might overcome these for further recruitment, either during data collection or in

Australia. This face-to-face recruitment process included introducing the study to potential participants and giving them a participant information sheet and a consent form if requested. As the ICU employed over 150 health care professionals, this allowed me time to gather signed consent forms before the data collection started. It also allowed me to promote the research.

The face-to-face recruiting included attending handovers (with the permission of senior staff), and I positioned myself in the staff room, seminar room and corridors. Here, I introduced the research and talked to potential participants about the research project. I often positioned myself near one of the drinks trolleys, which allowed me to talk to staff about the research project away from patient-facing areas.

During the recruitment period in the UK, I discovered that many doctors were soon rotating and would not be available during the participant observation period once it commenced. This knowledge gave me peace of mind that the doctors would not rotate again during the participant observation period, but it would mean that the doctors that were rotating to the unit might potentially be very inexperienced. As a result, I focused most of my recruitment efforts on nurses. This recruitment period was more successful than the previous engagement events, which may have been because of the greater rapport I developed with the previous face-to-face engagements after moving away from an arms-length approach.

Additionally, this time, I did not use the expression of interest form; this step was replaced with a consent form. This process also removed the need for future e-mails. I found I was more comfortable with the nurses during the recruitment phase than with the doctors. I reflected that this might have been because I was a nurse. Additionally, this might have been because they were due to rotate shortly, removing the need to develop rapport.

Sometimes, I really struggled with recruiting doctor participants. Below is an extract from my reflexive diary taken from when I was recruiting participants for the observation period in the UK.

'On face-to-face recruiting [in the UK], I have found the doctors more difficult to approach, but this could be because of an ongoing personal hierarchical issue that I believe it to be a barrier; I'm a nurse, but doing research, so there's also imposter syndrome. Maybe, I do have deep down feelings that I don't think nurses and doctors do particularly have a harmonious relationship. I remember a doctor at work saying to me, 'I read your [published literature review] article abstract, but I didn't get it'. He then asked me to explain it and what are the take homes. He reported that he wasn't trying to be obtuse, but it felt like he was.'

(Reflexive Diary, UK)

Furthermore, for both case studies, I reflected that I sometimes did not always *'feel comfortable talking or chatting or introducing the research to the doctors.'* (Reflexive Diary, UK). In Australia, I also reflected during one observation day, when a doctor entered the side room, I became *'uncomfortable, but I don't know why.'* (Reflexive Diary, Australia).

The face-to-face recruitment in the UK resulted in 22 participants signing a consent form to participate in participant observations. Following the face-to-face recruitment period, I set the dates for participant observation.

The following section will detail the recruitment of participants, both health care professionals and patients, during the data collection period in the UK and Australia. For both cases, the process began with the researcher and/or gatekeeper approaching the nurse in charge to see which patients met the criteria for inclusion.

In the UK, if the patient fit the criteria, I would find the nurse assigned the patient for the shift. I would ask if it was appropriate to talk to the patient's personal consultee to begin the process of getting permission for the patient to be recruited into the study. On one occasion, I was informed that speaking with the relatives might not be appropriate but that I should check the following day (due to patient circumstances). Due to COVID-19, relatives/friends needed to book a time to visit. If granted permission from the bedside nurse, I would find out when the potential personal consultee was visiting from the nurse or the ward clerk. The COVID-19 measure helped me organise my day and supported participant observations as I

knew when the relative/friend would visit to begin the process of personal consultee permission.

For the UK, as I was seeking a personal consultee, the bedside nurse would introduce me when the family visited. I would explain the study, establish if they were willing to be a personal consultee, and provide them with an information sheet (Appendix Q). Most personal consultees permitted me to observe the nurse around the bed space almost immediately. The personal consultee's permission was often extended to accessing the patient's nursing and medical records, but for this I needed a signed Record of Consultation Form (Appendix R). However, personal consultees would be encouraged to take the information sheet home and speak to other key relatives, and I would speak to them the next time they visited. Most personal consultees visited daily, but due to COVID-19 restrictions, there were limits on how many individuals could visit in one day. Sometimes, the flow of seeing personal consultees was interrupted by my clinical shifts, which hindered recruitment. Often, I would work clinically and miss meeting the relatives, or by the time I was able to return, the patient had moved into the exclusion criteria.

In the UK, once a patient was recruited into the study, my attention would primarily turn to the bedside nurse looking after the patient. Often, the nurse would have been involved in deciding if the patient was suitable to be included in the study (on ongoing basis). I would inform the nurse that the patient was included in the study and ask the nurse whether they would allow me to observe at the bedside. Once I had explained the study, many nurses were happy to give me verbal permission. However, I would then present an information sheet and a consent form as I required formal written consent. I often received looks of confusion as *'they couldn't understand why they needed to give me consent'* (Reflexive Diary, UK, Week One). I found that the consent forms added a layer of complexity that felt unnecessary for the nurses and the doctors, as they perceived that if the family and consultants were happy to have me around for observations, they did not then need to give their permission, despite my research being centred around health care professionals.

For the doctors in the UK, my approach was slightly different. I would attend the morning ward round and observe which doctors were allocated to review the patients already included

in the study through personal consultee permission. Before they reviewed the patient, I would speak to them about the research and ask if they would be happy for me to observe. I then provided them with an information sheet and consent form. This way, I could target the health care professionals most likely to provide input around sedation practice.

In Australia, this process was facilitated by using the support of a gatekeeper. The gatekeeper was a member of the ICU research department and was there to maintain distance between the researcher and the research participant. The gatekeeper would begin by approaching the bedside nurse (looking after a suitable patient) and they would give them a brief overview of the research before getting their permission to be approached by me. Most individuals were happy to be spoken to, and some asked if I could return later. Only one individual declined to be approached. I had a consent waiver for the patients, so I only needed to focus my recruitment efforts on the health care professional. If the family were present, I would ask for their verbal permission that they were happy and if they had any additional knowledge to the nurses that their relative would not want to be included in the research. Additionally, if the patient had a fluctuating Glasgow Coma Scale (GCS), the research would be explained to them.

Using a gatekeeper in Australia was needed to meet the standards of the HREC, which made me very reliant on the gatekeeper's work schedule. Additionally, this factor, combined with the working schedule of the doctors, made it much more challenging to recruit them as a participant group. Often, the gatekeeper was unavailable when the doctors were available, and vice versa. Sometimes, the gatekeeper would approach the doctors during their handover or ward round, but this was when they were the most preoccupied with patient care. Therefore, this became something that neither I nor the gatekeeper enjoyed navigating, as we both found it uncomfortable to disturb the doctors. For this reason, the gatekeeper often opted to speak to the doctors later in the day to approach the doctors formally. This feeling of discomfort or not wanting to disturb the doctors is in keeping with previous engagement attempts that I tried to negotiate to help support the recruitment of doctors, as mentioned in 4.8.2 Focus Group Recruitment. I reflected that this might have been because the gatekeeper, who was also a nurse, might have felt that there were some hierarchical

boundaries and would have been uncomfortable with this introduction that they would have needed to facilitate.

Overall, I found the doctors more challenging to recruit than the nurses across both cases. I reflected that this was likely due to many reasons. Their working schedules and patterns may mean they have less free time. They also spend much of their career training up until the consultant level and might not have any additional capacity for a research project. Additionally, doctors, especially junior doctors, rotate more regularly through different departments and are not necessarily familiar with an environment. Therefore, they may feel uncomfortable discussing or participating in a research project when they have only recently joined the clinical area. Moreover, I am a nurse, and hierarchical structures have notoriously been embedded in the UK health care culture. This has ultimately influenced how I perceive myself as less than the doctors regarding knowledge and value.

In Australia, due to our uncertainty about the best time to approach the doctors and because nurses were more accessible to access with gatekeeper communication, observations often commenced around the bedside of patients before introductions to the doctors were completed. This sometimes led me to informally meet doctors as they reviewed patients on their ward rounds. I would then introduce myself and explain why I was observing the nurse and the patient, often needing to explain that I was not a relative. This usually led to a brief discussion about the research and the data I gathered. As a result of this brief meeting, when the gatekeeper facilitated the formal introductions later in the day, they often insisted that I should be present, despite this being contradictory to the recruiting gatekeeper elements in my ethical approval.

After these initial gatekeeper introductions, the participant would be provided with the information sheet, followed by a period where they could read it. Verbal permission was gained so I could speak to them later in the day. Depending on the number of tasks the bedside nurses or doctors had, they either had time to read all the information, or I would have to go back to them again later in the day or the next day to seek consent. Despite being a clinical nurse, I failed to recognise that health care professionals working at the grassroots level have little time to read extra information unrelated to the care of their patients. The

information sheets I designed were too long as all data collection methods were included, so the REC/HREC only had to review one rather than three, and so the entirety of the research was transparent and covered all bases with in-depth information. Again, my influence of being a REC member influenced this decision as I attempted to limit the number of documents that needed to be reviewed, regardless of the length. This sometimes impacted the observations I could complete due to patient progression, as sometimes, even one hour later, patients no longer met the inclusion criteria to participate in the research project. In this scenario, I asked the bedside nurses if they were happy for me to speak to them at a future date if it was suitable. On-going consent was confirmed if participants had already consented to the research study.

4.9.6 Participant Observations Data Collection

The goal and structure for the 4-6 weeks of observations were to position myself around sedation practice and discussions as much as possible. I planned to start with day shifts before moving on to night shifts. I was primarily focused on sedation practice throughout the patients' journey, anywhere from intubation, ongoing management, and sedation pauses up until extubation was achieved. This included, but was not limited to, interactions between health care professionals, interactions with the patient, interactions with the equipment, and any discussions that were had directly with me. Throughout the 4-6 weeks of observations, I also noted the context in which sedation practice occurred and the perceived culture of the unit.

In the UK, all the observations were recorded in a Microsoft Word document that allowed me to easily and freely document my observations, thoughts, context, and perceived culture to give a detailed description and account of sedation practice. There was no structure to this Microsoft Word document. For Australia, I was required to use a more structured document with columns and tables that helped separate the data (Appendix S). Data was captured this way as it was a requirement from the HREC. At both sites, for data security, I would hotspot my laptop, connect to the university Virtual Private Network (VPN) and save the files to the University of Sheffield's X:Drive. Depending on the environment, I would record using my electronic pen or laptop keyboard, as sometimes I found tapping on the keyboard too disruptive and intrusive if it was quiet, such as in handover.

As the data collection period in Australia and the UK sometimes looked very different, I have kept the following sections separate. I begin by detailing my experience of participant observations in the UK before moving onto Australia.

4.9.7 UK Participant Observations Data Collection

Before data collection began, I e-mailed the nursing manager the chosen dates to ensure they were suitable. I opted for dates on the latter end of any winter pressures and dates outside my planned annual leave. I conducted the participant observation period from February 2022 until March 2022. During this period, observation posters were displayed in staff rooms and waiting areas so that individuals could be aware that observations were taking place (Appendix T). This period lasted six weeks, and most of my recruitment into the study came during this period. In total, 85 health care professionals consented to participate. I gained personal consultee permission for six patients, with two more patients included in observations only.

I spent 142 hours in the case study setting conducting participant observations. During the six weeks, the 142 hours covered every hour in a 24-hour clock throughout the weekday and weekends.

During the first week of my observation, I realised that my initial inclusion and exclusion criteria limited my opportunity to undertake participant observations around the bed space. After the change in criteria was approved, my opportunity to observe health care professionals around the bedside increased.

Most of the data during the participant observation period was collected around the patient's bedside and from the medical and nursing notes. I also generated data by observing the medical handover and ward round. I frequently positioned myself in the corridor where staff congregated near the drinks trolley to generate informal conversations and increase my visibility. As the UK case study was split-level, I sometimes found it difficult to know where to base myself. I usually ended up basing myself primarily on the unit where I had permission from a personal consultee to be around a patient's bedside. This sometimes resulted in

spending more time one week in one area and the following week in the other area. Table 8 gives brief details about how many hours of observations occurred each week over the days. Appendix U includes additional notes from each week, providing greater context with extracts from my reflexive diary.

Week 1	Total Hours: 28.5	Total Days: 6	Note: x1 12-hour clinical shift
Week 2	Total Hours: 19	Total Days: 4	Note: x2 12-hour clinical shifts
Week 3	Total Hours: 29.5	Total Days: 4	Note: x1 6.5-hour clinical shift
Week 4	Total Hours: 31.25	Total Days: 4	Note: x1 12-hour clinical shift
Week 5	Total Hours: 20	Total Days: 3	Note: x3 11- hour clinical shifts
Week 6	Total Hours: 13.75	Total Days: 3	Note: x2 12-hour clinical shifts
Total	142 Hours	24 days	10 clinical shifts

Table 8- Weekly hours spent at the UK case study.

4.9.8 Australia Participant Observations Data Collection

Due to limited time on my research visa, I could only conduct four full weeks of observations between October 2022 and November 2022. Before the observations began, the gatekeeper I closely worked with for recruitment emailed all staff, informing them that I was about to start collecting data. Over the four weeks of observations, 40 participants consented to participate in this data collection section, and 16 patients were included as participants.

I spent 188.61 hours in the case study setting during the participant observation period and covered every hour in a 24-hour clock with observations taking place throughout the weekday and weekends. Again, this was monitored by closely noting my start and finish times. During data collection, my routine and hours were initially dictated by the availability of the gatekeeper as I needed them for recruitment.

Most of the data during the participant observation period was collected around the patient's bedside and from the medical and nursing notes. I also generated data by observing the medical ward round. As I had a consent waiver for patients, I could base myself around the bed space as soon as I had permission from a health care professional. While waiting for staff to read the information sheet and before I could go back for consent, I did most of my waiting

in the research office or the staff room. I did not wait at the nurses'/doctors' station as I felt like I was in the way as the staff and the ward clerk regularly needed to use the computers in this area. In the research office or staff room, I would complete administration work/review my observations from the previous day. However, I could only be in the research office if the gatekeeper was present. Like the UK, early familiarisation of the data would occur as I reviewed the previous day of observations.

After the first few weeks, I was slightly less dependent on using the gatekeeper for recruitment, as health care professionals had consented to participate. Therefore, I could check ongoing consent. This then allowed me to attempt to complete weekends and night shifts. The first weekend shifts were planned after successfully recruiting doctors during the week who I knew would be there at the weekend due to their week on/week off rota schedule. Before the weekend arrived, I sought prior permission from the doctors to ensure that they were happy for me to join them at the weekend. This request was met kindly with no objections. I planned the night shifts for week 3, as this increased my opportunity to observe participants who had consented or had been approached with gatekeeper permission. As I had engineered and formulated a situation that increased my chance of observations, I was, fortunately, able to collect data both around the bedside and by observing medical handovers outside of the gatekeeper's Monday to Friday working hours. Table 9 details how many hours of observations occurred each week over the days. Appendix V provides additional notes and a greater context of what I experienced each week.

Week 1	Total Hours: 37	Total Days: 4
Week 2	Total Hours: 59.7	Total Days: 6
Week 3	Total Hours: 54.16	Total Days: 5
Week 4	Total Hours: 37.75	Total Days: 5
Total	118.61 hours	20 days

Table 9- Weekly hours spent at the Australian case study.

Despite conducting the observations for two weeks less than in the UK, I still completed more hours at the research site. This was primarily due to not having to meet my clinical shifts. Instead, I had four weeks fully dedicated to this data collection.

4.10 Interviews

For both cases, interviews were used as the final method of data collection.

4.10.1 Interview Sampling

My sampling strategy for the interviews was purposeful sampling and again was based initially on the criteria set in section 4.7. I planned to conduct up to 15 interviews with an equal number of nurses, doctors and pharmacists from each profession for the UK, and a balanced mix of nurses and doctors for Australia (i.e., 8 nurses and 7 doctors, or vice versa). The aim for including up to 15 participants was based on the literature that reported 9-17 interviews were enough to reach saturation (Hennink and Kaiser, 2022). Additionally, I thought this number would help achieve saturation alongside the other methods of data collection used in the triangulation process. However, there were also pragmatic elements to choosing up to 15 interviews. From a practical point of view, I knew I would have a considerable amount of data by the time I got to the interview stage. Therefore, I did not want to select a number that would leave me with too much data. Pragmatic considerations have been recognised as appropriate when determining the sample size (Braun and Clarke, 2021). Another practical element to choosing 15 participants was to satisfy the REC/HREC as they commonly like to see a definitive number of participants rather than just aiming for 'saturation'. Moreover, if I did want to include more participants than stated in my ethics application, I would have needed to send an ethics amendment, which would take additional time. Declaring 15 participants was thought to be appropriate, where data saturation would be achieved without seeking further ethical amendments.

I also wanted to have maximum variation and include participants with varying amounts of ICU experience and a range of health care professionals. The aim for having participants with varying ICU experience was based on the findings from the literature review (Chapter Two) that found a lack of voice from the health care professionals with less ICU experience. Using purposeful sampling would support this goal. To facilitate sampling, I developed a list of participants who had expressed an interest in participating. Where possible, this list included their profession, their ICU experience, and if I had already received consent to conduct an

interview. In this list, I sometimes included notes that commented on the rapport I had developed with the potential participant.

I had a pragmatic preference in choosing some participants for whom I had already received a completed consent form. I also sometimes leaned towards those with whom I had developed a good rapport as I wanted participants who would agree to participate and would be comfortable talking to me in an interview setting.

My challenges with this sampling strategy was that I attempted to interview a mix of professions. However, as the number of nurses, doctors and pharmacists is unequal across the profession in the ICU, I realised that it would not be easy to get this 'perfect' mix.

4.10.2 Interviews Recruitment

In the UK, 57 potential participants had given their permission to be contacted; in Australia, 31 potential participants had given their permission to be contacted. In the UK and Australia, most of this permission came from completing the consent form for participant observations. There was the option to express if you were happy to participate in a follow-up interview. In Australia, as most participants completed eConsent (an electronic consent form), they also shared their email addresses, which were used to contact potential participants. However, I did not ask for additional contact details for the UK, and therefore, I primarily relied on the NHS.net e-mail system⁷. This resulted in difficulty trying to acquire their NHS e-mail addresses as sometimes, the e-mail bounced, or I could not find the e-mail address that belonged to the potential participants.

I initially contacted 15 potential participants for the UK via my NHS e-mail. I detailed that I was ready to complete the last part of data collection and briefly explained the process of participating in the semi-structured interview, attaching a participant information sheet and the consent form. If there were no responses, participants were e-mailed one final time. If participants did not get back in touch, I would select another participant from the list to e-

⁷ The NHS.net email system allows you to email and find contacts of other individuals who are employed by the NHS through an address book. Usually, the nhs.net email assigned to employees is their first and last name, and includes information attached to their account about the trust that they work for, as well as their profession.

mail. In total, 21 participants were contacted, either once or twice. Unfortunately, I could not recruit any UK Advanced Critical Care Practitioners for the interviews and saw this as a limitation of the data I collected.

For Australia, as I had a smaller pool of participants, I contacted the majority (27) within one month of completing my observations. Four participants were not contacted as one participant spent most of their time doing outreach work, one had recently come back from working in the UK as a nurse and the other two I was unsure of the roles or names. As pharmacists were not involved in sedation practice in Australia, there were no attempts to recruit them. If there was no response, participants were e-mailed one final time.

4.10.3 Interviews Data Collection

The interview topic guide was developed primarily from the UK data from the focus group and participant observation period. The same interview topic guide was then adapted for Australia.

I developed the interview topic guide after three months of immersing and coding the UK focus group and after participant observation data collection. Coding took a lot longer than I had initially envisioned. Following immersion and coding, I struggled to develop unbiased questions that examined some of the understanding, perspectives or practices I had witnessed. I then looked at the literature for extra support and guidance with its development (Creswell, 2013; Roberts, 2020), as well as seeking support from my supervisors. The interview topic guide was split into an introduction question, followed by five core questions, five profession-specific questions and two to four rounding-up questions.

I submitted the UK semi-structured interview guide (Appendix W) to the REC on the 15th of June 2022, with approval on the 6th of July 2022. The Australian interview guide (Appendix X) was submitted to the HREC on the 21st of November 2022, with approval on the 8th of December 2022.

In total, 11 UK interviews were conducted, and 7 Australian interviews took place. All the interviews were conducted virtually (Zoom) at a convenient time and date for the participant.

Most of the UK interviews were conducted in Australia from August-November 2022, and all the Australian interviews took place in the UK from January 2023-February 2023. For the UK, one participant cancelled 30 minutes before the interview was due and could not be rescheduled, and one participant was also 30 minutes late to start the interview. I used audio and video recording equipment within Zoom to capture the interview. I used a VPN for the interviews and saved the recordings onto the University of Sheffield's X:Drive. I also used the transcription service built into Zoom for some of the interviews after I learnt that this function was available.

After each interview, I detailed how I thought each interview went and what I felt I had learnt from interviewing the participant. Before the next scheduled interview, I attempted to transcribe the previous interview that I had completed. I did this so I could begin the immersion process but also so I could refine and improve my interview techniques.

4.11 Data Analysis

As discussed in Chapter Three (section 3.6), I used Braun and Clarke's work to underpin the reflexive TA. I originally planned to bring the data corpora from Australia and the UK together after step one (familiarisation) and step two (coding). I would have then brought the data from both case studies to complete step three, generating themes, and onwards. However, I found the data corpus from Australia and the UK incredibly large, and I would have struggled to generate themes while still providing context about each case study. The data corpora for Australia and the UK were kept separate, each undergoing its own thorough reflexive TA. Therefore, I completed steps one to six of Braun and Clarke's Reflexive TA separately. I ended the report with a section highlighting the main similarities and differences, and I opted to use the discussion chapter, Chapter Seven, where the findings from both case studies could be addressed together. Figure 4 illustrates this process.

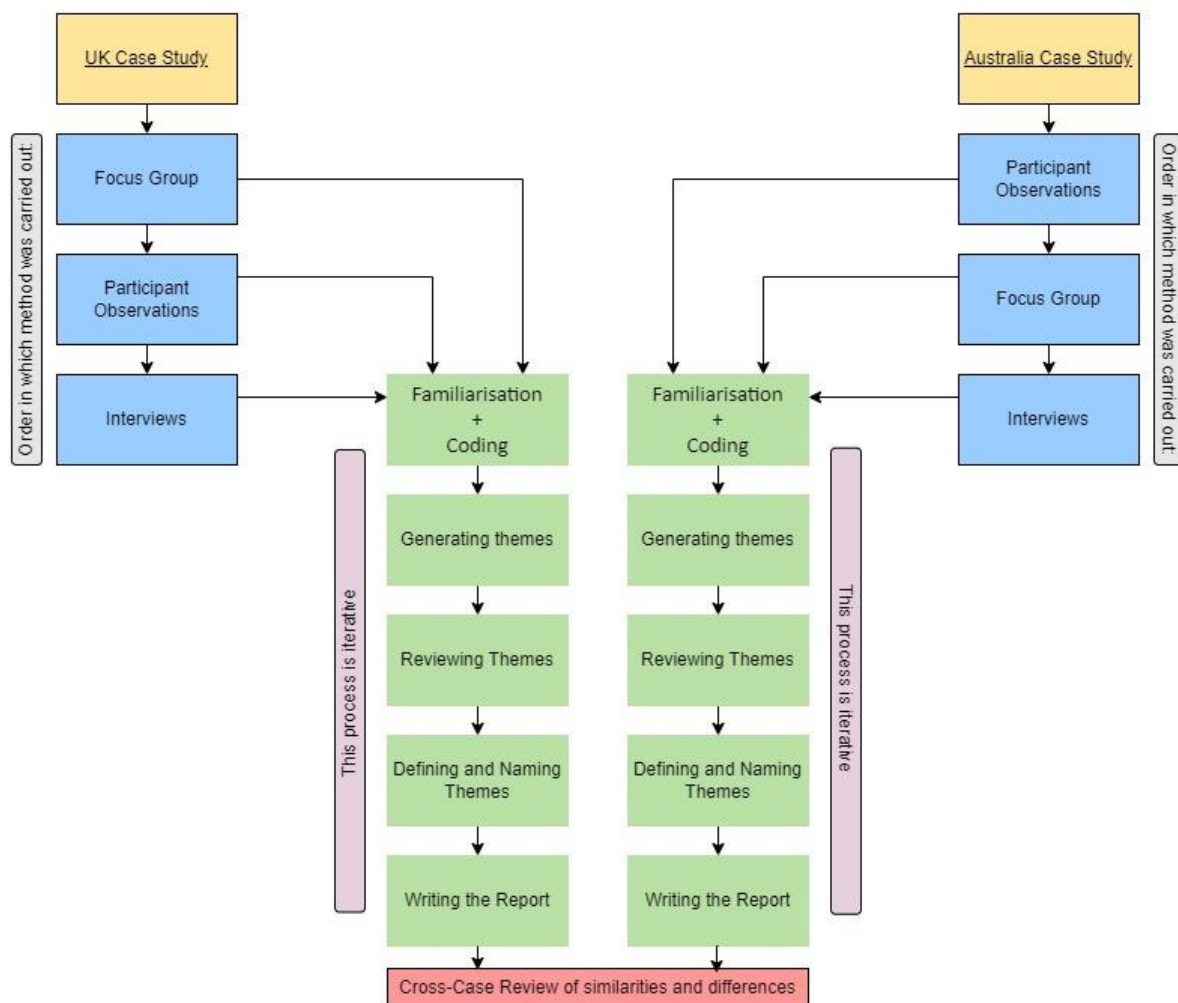


Figure 4- Process of data analysis for Australia and the UK.

4.11.1 Step One: Familiarising Yourself with your Data

I applied this step in many ways. As a lone researcher, I was fully immersed in gaining access to the research site, collecting the data, transcribing the data and making sense of the data by making my notes and observations readable and anonymised. I also had to ensure that the data was in an accessible format that could be uploaded to the analysing software Quirkos™ (Quirkos, 2024). As I had collected all the data for both case studies, this put me in a fortunate position to be already familiar with each data set from Australia and the UK. I then enhanced my familiarity with the data set by transcribing the focus groups and interviews. For the UK, I transcribed most of the audio files, apart from five of the 11 interviews. A transcription service (with ethical approval) was used for the final five interviews. A transcription service for the final five interviews was used due to the time constraints of my PhD. For the Australian data, I transcribed all the audio files, but they were supported by the built-in transcription service

on Zoom, which helped speed up the transcription process. Before I moved to coding the data, I reviewed all the data sets and documented my preconceptions and initial thoughts and ideas about the data sets.

4.11.2 Step Two: Generating Initial Codes

To support this process, I used a data analysing software called Quirkos™ (Quirkos, 2024) as it was promoted by supervisors as being intuitive and user friendly, and it helps build an audit trail for trustworthiness. I uploaded each data set and worked through the data to generate the initial codes. Sometimes, I would start from the top, working my way down, and other times, I would start from the end of the data set and work my way back through. For both the UK and Australia, all the data sets (Focus group, interviews, participant observations and document review) were coded twice to ensure rigour (Braun and Clarke, 2022b). The coding process took a significantly longer time because of the amount of data that I had acquired. I usually began with coding either the focus group or an interview before I moved on to the other types of data sets. I started with an interview or the focus group because of the structure that the conversation provided, which was helpful in starting the coding process and get the flow of coding going. Following this, I coded the rest of the data in no particular order. However, I remained systematic in my process and used tick boxes to help identify which interview or day of observation I had already coded. The codes produced were either semantic or latent. Sometimes, they would be evident with what they encapsulated as they were descriptive (semantic), and sometimes, the code was more theoretical (latent) (Braun and Clarke, 2022b). I would write a small description detailing what the code represented for each code produced. Before each coding session, I would read through this document to re-familiarise myself with where I had got to with coding and what I had already produced. This document came in handy when I had clinical shifts that interrupted the flow of coding and analysis. The second round of coding was much quicker than the first round of coding, and the order in which the data set was coded varied from the first round. For the UK, the second round of coding produced seven more codes, and for Australia, the second round produced 18 more codes. Once the data had been coded twice, I moved on to searching for themes.

4.11.3 Step Three: Searching for Themes

Once all data sets were coded, using Quirkos™ I gathered all data sets together to begin searching for the themes. This process was done separately for the data corpus from the UK and the data corpus in Australia. I developed themes for each data corpus by reviewing the codes in a process that was not linear. Similar codes for the entire data corpus were grouped together where there was a shared pattern or meaning. All codes were considered to see if they fit into any generated theme; however, sometimes, the code did not have any significance to the themes and remained un-themed. Mind maps supported this process as I worked out what data fitted with the theme to tell a worthwhile story. Appendix Y and Appendix Z depict what this looked like in Quirkos™.

4.11.4 Step Four: Reviewing Themes

For this process, I saw myself re-revising the themes I had generated to determine if they worked well with another theme to generate an overarching theme and subtheme. To do this, all the codes and the data included in each theme were reviewed. I would then match or place it with another theme generated. Completing step four like this allowed me to develop themes that could tell an interesting story about sedation practices while capturing the multiple contexts and cultures influencing sedation practices and health care professionals' perceptions. Sometimes, this saw me breaking apart themes and moving back to step three as I re-searched for themes. I refined and reworked the themes until they felt right. Several mind maps and re-revising of themes were needed until I became happy with the themes developed.

4.11.5 Step Five: Defining and Naming Themes

Again, this process saw me move back through steps three and four before I became happy with what was produced for Australia and the UK data corpora. Whilst I had ideas about what each theme would be named, each final theme produced underwent several name changes and restructuring. Again, mind maps were used to support this process. I then tested the names produced to ensure that, at first glance, you would get a sense of the theme.

4.11.6 Step Six: Producing the Report

Again, for the UK and Australia, the report was produced separately. Even though I had progressed to step 6, I often found myself re-looking at the original data sets to ensure that the appropriate story was being told. The report allowed me to generate further clarity on each theme as I pulled quotes and data to support the findings in detail. After both reports were presented, I included a mind map detailing key differences and similarities between each case study before expanding on the findings through a more comprehensive discussion in Chapter Seven.

4.12 Evaluation and Rigour

Any research project must maintain rigour so that the findings may help create progress and change if needed. Often, research is done so that other individuals will benefit. Research can only bring benefits if rigour is maintained throughout (Stahl and King, 2020). To ensure rigour was preserved, I followed Lincoln and Guba's (1985) work on the trustworthiness criteria for qualitative research. These criteria comprise four pillars- credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985).

Credibility, the first pillar, is asking whether the research findings are in agreement or harmony with each other (Stahl and King, 2020). For the next pillar, transferability needs to be attained to ensure that the impact of the study is not limited (Stahl and King, 2020). Transferability is applying the research findings to a different setting or context (Stahl and King, 2020). The third pillar of Lincoln and Guba's (1985) work is dependability. Dependability is the quality of how much we can trust the research and findings. Finally, we move on to the Confirmability of the four pillars. Confirmability is only achieved when the previous elements of trustworthiness are all achieved (Nowell *et al.*, 2017). Confirmability ensures that the findings have been generated by the participants' voices rather than the research. In table 10 I detail how I set out to achieve the four pillars and how I achieved credibility, transferability, dependability and confirmability is discussed in Chapter Seven, Section 7.5.

<u>Lincoln and Guba's (1985)</u> <u>Trustworthiness Criteria</u>	How I plan to address each criteria:
Credibility	The formulation of three research questions through a thorough process ensures that the research has a clear purpose that aligns with qualitative research. Furthermore, triangulation is planned with three methods of data collection (Focus groups, Observations and Interviews) to allow for greater opportunity of agreement within the dataset. In addition, I have established the ability to spend time with each case through gatekeeper support and ethical applications.
Transferability	I aim to address by providing a clear and thorough description of the context of each case study and understanding of each case study- Chapter Five will provide much of the contextual details. Thick description also will be aimed for through qualitative analysis.
Dependability	Throughout the research process I have utilised a research diary which I will continue to do throughout data collection. Through the utilisation of a research diary I aim to be a reflexive researcher making note of my assumptions and biases. Thus, hopefully I will increase the dependability of the research. In addition, I am guided by very experienced supervisors who help support me with ensuring that the research can be trusted. The guidance is achieved through regular supervision and constructive feedback.
Confirmability	I can only achieve this when I have addressed the three prior pillars. In addition, to help further confirmability, the utilisation of my research diary will help achieve this where I aim to be reflexive throughout the entire research process.

Table 10- Application of Trustworthiness Criteria

4.13 Summary

This chapter provides an in-depth look at the methods used to answer the research questions set. I have detailed how I gained access to each case with reflective accounts of how I have been associated with each case. I then describe the formal ethical process carried out before presenting each method, including how I went about sampling, recruiting and data collection for each case. I then give an account of how I approached data analysis to produce the report. Finally, I discuss how I will ensure quality in this qualitative research project. In the next chapter, I will discuss the environment and context of each case study before presenting the research findings.

CHAPTER 5

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5.1 Introduction

This chapter will serve as a preface for the findings, providing additional context and understanding to each case study to help the reader position the findings. I will initially discuss the researcher roles I adopted before presenting the UK case study and its context and set-up, before addressing the Australian case study. No references will be provided to support the demographic details presented to maintain case study confidentiality and anonymity.

5.2 Case Researcher Roles

As discussed in Chapter Three (section 3.5.1), the researcher often adopts and plays different roles throughout data collection. I will take the time to reflect on some of the roles that I believe I adopted.

Through both case studies, I assumed primarily the role of observer-as-participant, and this was discussed further in Chapter Four (section 4.9.1). During some elements of data collection, I adopted the case researcher teacher role as I spoke to participants about the latest evidence regarding sedation practices. At times, I wanted to lean into this role. However, I needed to distance myself from adopting a teacher role as it pushed the boundaries to adopt a nursing role, which was conflicting because I was only involved in case studies as a researcher. In addition, at times, I felt that I took on the role of counsellor as sometimes I found myself empathising with the nurses as I gave words of encouragement and support through data collection. I further believe that during data collection, I took on the role of an advocate for the nurses because, as a nurse myself, it was difficult not to be their advocate. Alongside this role, I also adopted the role of an evaluator, and this was dominant throughout the entirety of data collection as I evaluated the workings of each ICU, comparing them to what I know in the literature, what I know from my own clinical practice, and what I was learning from each case. Finally, I recognised that I adopted the case researcher as an interpreter role as I began to recognise meaning and connections regarding sedation practice.

5.3 The UK Case Study

The UK research site was in a large city in the North of England and directly served a population of just under 600,000; it also supported other local areas with specialist needs. The case study was based at a large NHS hospital with multiple sites and employing over 15,000 staff. The hospital where the case study was based had 1,100 beds, and the general ICU known as the UK case study had 36 beds that were split over two adjoining floors. It was a mixed (medical and surgical) general ICU with the capacity to take trauma patients. Before the COVID-19 pandemic, the two areas were split into a separate ICU (ICU A) and a high-dependency unit (HDU) (ICU B). Before COVID-19, the HDU (ICU B) primarily took post-op surgical and level two patients. The ICU (ICU A) handled mostly level three patients, with level two patients being transferred to the HDU when able. However, COVID-19 required both areas to take level three sedated and ventilated patients. This continued as the pandemic evolved and was still ongoing when I commenced data collection. As a result, both areas were included in the research project, known as the UK Case Study with ICU A and ICU B. The standard sedative administration in the UK was Propofol and Alfentanil in this case study, and out of Propofol and Alfentanil, Alfentanil was a controlled drug⁸.

In the UK, more than half of the beds were individual side rooms. There were two bays in each ICU, which accommodated four patients per bay. Both ICU A and ICU B had similar layouts, see Figure 5 and Figure 6.

⁸ A controlled drug is a medication that is under the misuse of drugs legislation. The UK and Australia have different legislations.



Figure 5- Layout of ICU A, UK.



Figure 6- Layout of ICU B, UK.

The shift pattern of the nurses for both ICU A and ICU B consisted of several shift patterns: 07:00-19:30 (long day shift), 07:00-15:00 (early shift), 11:00-19:30 (late shift), and 19:00-07:30 (night shift). The nurses were usually staffed to cover the required nurse-to-patient ratios with minimal or no surplus staff, known as floaters or runners. The rota was more complicated for the doctors, and the medical cover varied between ICU A and ICU B. The cover in the day shift changed daily and often depended on how the rota was completed.

For the doctors in ICU A, the consultants often worked 08:00-16:00, the junior/trainee doctors often stayed 08:00-20:30, and some worked 12:00-20:30. There was cover from an on-call consultant from 16:00 onwards. The cover in the day shift varied daily and often depended

on how the rota was completed. At a minimum, there were two consultants and up to four junior/trainee doctors. This staffing was for up to 18 beds. However, during data collection, I made one particular observation where I counted *'10 doctors, 2 consultants, 2 pharmacists, 1 physio, 1 Operating Department Practitioner, and one nurse in charge'* (UK, Week Two). For the night, the doctors were rostered to work 20:00-08:30. The night shift cover included one airway-trained doctor and another trainee doctor for ICU A.

For ICU B (original HDU), the consultants often worked 08:00-16:00, and the junior doctors often worked 08:00-20:30 (two in the day usually) and overnight 20:00-08:30 (one junior doctor). One or two Advanced Critical Care Practitioners staffed the unit from 08:00-20:30 and overnight from 20:00-08:30. Overnight, the on-call consultant covered both ICU A and ICU B. Additionally, the airway-trained doctor stationed in ICU A would support ICU B with airway issues. The airway-trained doctor was also expected to provide airway and critical care cover for the whole hospital to review any patients that might be deteriorating or any other emergency patients. Sometimes, this role was supported by another airway-trained doctor in theatres if they could offer support.

During the weekday, there were usually two consultants in ICU A and two in ICU B. Over the weekend, there was usually one consultant for each area. The pharmacists were present from 08:00-16:00 seven days a week, and a non-ICU pharmacist was contactable outside those hours. The pharmacists also rotated to all the other ICU areas within the trust. The unit was supported by support workers who assisted with patient care (washing, turning, feeding, and stocking up at the bedside). Typically, there were at least two support workers day and night in ICU A and ICU B. The junior medical trainees rotated every 4-6 months, and participant observations began at the start of one of the medical rotations.

5.4 The UK Participant Observations- An Observer-As-Participant Role

A typical day would include entering the unit at approximately 07:45. I would usually find the nurse in charge, introduce myself, and explain why I was there. Most of the time, the nurse in charge would be aware of me and my research. I would then ask if it was possible to join the medical handover. This request was always met warmly, and I was invited in. I would check that the senior consultants were happy to have me in the handover room. The

handover would occur at 08:00. If in ICU A, I would sit at the back of the room, out of the way, and listen to the discussion, focusing on the sedated patients in the ICU. If in ICU B, the handover would usually occur in a small room where it was hard to blend into the background. This handover prepared me for the day and made me aware of which patients were suitable or still suitable to be observed. It also allowed me to introduce myself and the research to health care professionals, as morning introductions would be completed after the medical handover.

When I observed at the bedside, I usually got a chair and sat somewhere out of the way of the health care professionals and relatives. This would often be tucked in the corner of the room, near the hand-washing sink or the curtains. Sitting down was not seen as an unusual practice, as the nurse looking after the patient had a chair for the computer. The nurses often told me to pull up a chair, too.

Sometimes, I had several patients I could observe at the same time. I found it helpful if the patients were in the same bay, which meant I could follow multiple participants. However, if the participants were spread out or on different floors (ICU A and ICU B), I found this quite stressful as I would never be sure where to position myself for the most valuable observations. I decided early on that having several patients as participants at once would be beneficial. This would allow me to move around the unit and give the health care professionals I was observing a break from my presence. I was also aware that during the first couple of weeks, I had limited exposure to observing the sedation practices of the health care professionals around the bedside. Therefore, I was conscious that I had not collected much data. Secondly, each patient had different needs, and I wanted to try and capture as much sedation practice as possible.

Initially, when I first began data collection, I would arrive in clothes that were formal enough to wear to the clinical environment but emphasised that I was not a clinician in practice. However, I often felt very out of place wearing my clothes. I think this is because, in general, I am more accustomed to wearing my nursing uniform in this environment. On the second day of observations, one of the doctors (ZCK) commented that I should opt to wear scrubs as I would *'stick out in [my] your civvy clothes'* and said, *'if you want to be accepted, you should*

put scrubs on instead' (Observation Notes, Day 2, ICU A). After this, I opted to wear scrubs. I also felt I wore too much makeup in the first week and appeared too 'made up'. Therefore, in the following weeks, I wore less makeup and scrubs if deemed appropriate, i.e., when observing patients around the bedside. Sometimes, I did not wear scrubs if I knew I would only be there for a short time or if I was only delivering a patient letter. Wearing scrubs also gave me the access and opportunity to share the changing room with clinical staff, which I thought also helped me with being viewed as 'one of them'. Before observations started, I ordered a badge with my name, with 'PhD Student' in bold letters, to make it clear who I was to the health care professionals (Appendix AA). The research site provided me with an identification card. However, I had experienced how difficult it was to read these identification cards and wanted a badge so people could quickly identify me. The identification card was helpful and allowed me to move around the environment freely. I would have struggled if I had not had this access as the case study was split-level.

Each bed area had a large amount of space on either side, which typically made way for the patient monitor, infusion pumps and ventilator. To the side of the bed, or behind the bed, was a lockable medicines cabinet and a trolley stocked up with syringes, needles, linen, intravenous fluids and intravenous lines. There was adequate room for hemofiltration and moving the patient in and out of bed if needed. Most of the documentation was electronic-based; each bed had a computer positioned at the bottom to document observations and medical and nursing records. The side rooms had some visibility through glass panels that slid open or could be switched between transparent and opaque for privacy. However, many of these switches no longer worked, and curtains were used instead.

I found the observation period very tiring and the observer-as-participant role challenging. I was in an environment I was familiar with, but I found participant observations quite stressful. Navigating the ethical dilemmas I faced and maintaining the boundaries between a health care professional and a researcher was challenging to maintain constantly. I viewed myself as a researcher, but first and foremost, I viewed myself as a nurse. Being a researcher was new and did not offer me the same comfort as I perceived myself to be a better nurse. There were a couple of occasions in the first week when I was observing the patient in the side room when I lost sight of my observer-as-participant role. On a couple of occasions, the nurse would

leave the side room, and I would get *'asked to watch the patient'* (Observation, Day 4, ICU A). It was almost like an automatic reflex when I agreed to watch the patient as I *'completely forgot my role of not being responsible for the patient'* (Observation, Day 4, ICU A). I had to remind myself that I was there as a researcher and not a nurse. Following this experience, I learned how to become a better researcher and maintained my observer-as-participant role. I learnt how to politely decline this request while not ostracising myself from being accepted.

On another occasion, I observed a nurse who attempted to troubleshoot a hemofiltration machine that was not connected to the patient. I observed this in ICU B, which previously had been a level two high dependency unit, where they were not as familiar with hemofiltration due to it only being introduced during COVID-19. I wanted to show them how the error could be corrected. This impulse came from a place where I wanted to develop rapport with the nurses and show them that I was 'one of them', as well as helping out the nursing staff. However, I recognised that this was not my place as a researcher and needed to maintain the boundaries. Still, I often felt this urge to help and step outside my researcher role. I think this contributed to how tiring I found the participant observation period. During the six weeks of observations, I met with my supervisors every two weeks online to discuss my progress.

5.5 The Australian Case Study

The Australian research site was in a large city in South-East Australia with a population of 5.23 million. Several hospitals within the area provided health care for the local population. The case study was based at a large public hospital that employed over 4,000 staff members. The hospital had up to 1013 beds, and 56 ICU beds were split into four sections on the same level. There were two specialist areas and two general ICUs. The two general ICUs will be called ICU A and ICU B. The two general ICUs could take medical and surgical patients and were classed as a mixed ICU. The two general ICUs made up the Australian Case Study. The Australian research site was usually staffed to accommodate patient-to-nurse ratios. One support worker worked across the four areas to provide support with manual handling, portering services, and restocking. The standard sedation medication typically used was Propofol and Fentanyl; both were stored as controlled drugs (scheduled medications) and required two qualified staff members to remove them from controlled storage.

ICU A had 15 beds and had been refurbished during the first year of COVID-19 to become a mainly single-roomed ICU. ICU B had 13 beds and had also undergone some refurbishments for COVID-19 to accommodate more single rooms, but was more open than ICU A; see Figure 7 and Figure 8 below for a layout of each ICU. In addition, I marked the bed spaces with an 'X' where I conducted observations (this was an afterthought during data collection in Australia and, therefore, was not completed in the UK case study).

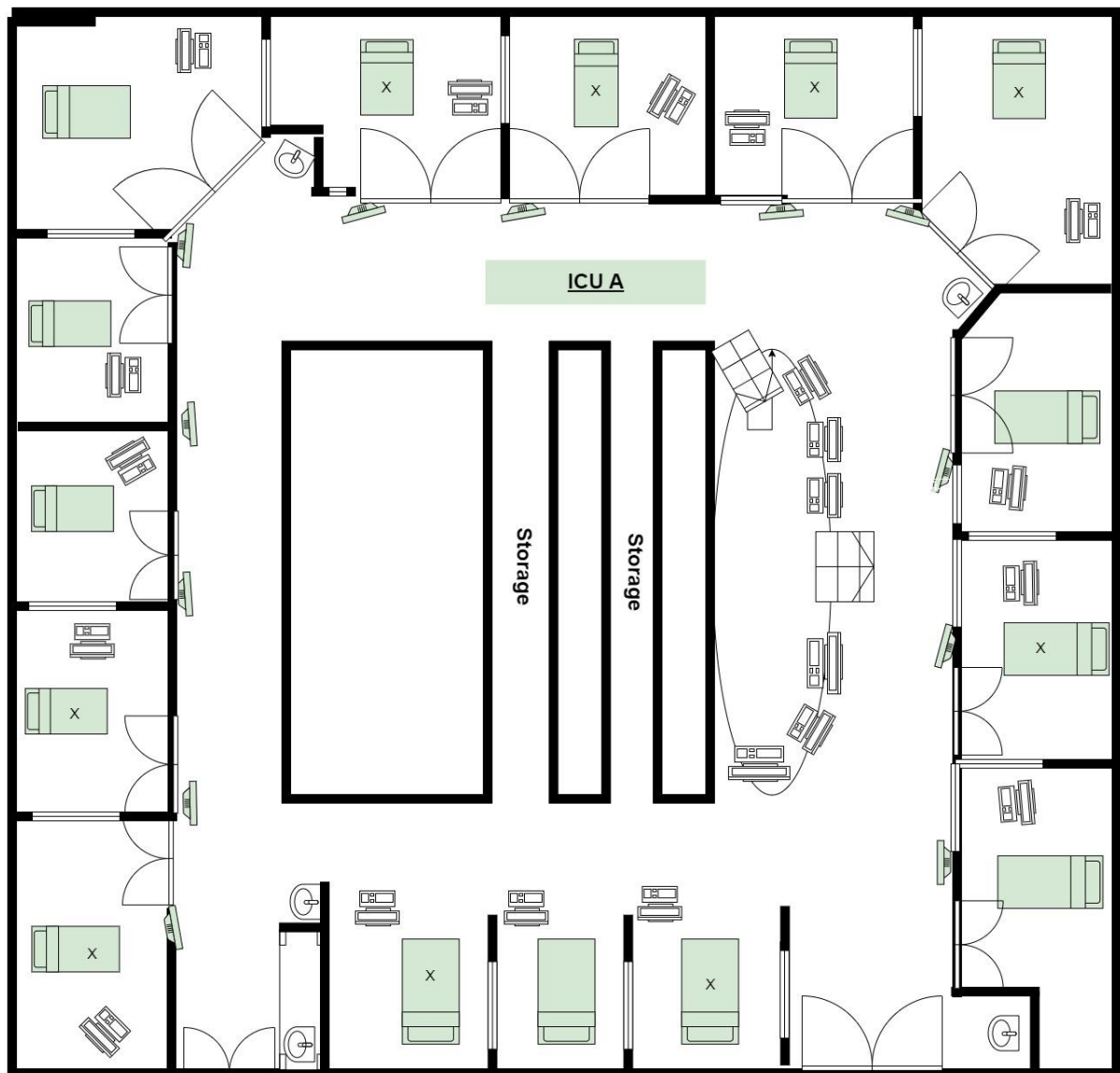


Figure 7- Layout of ICU A, Australia.

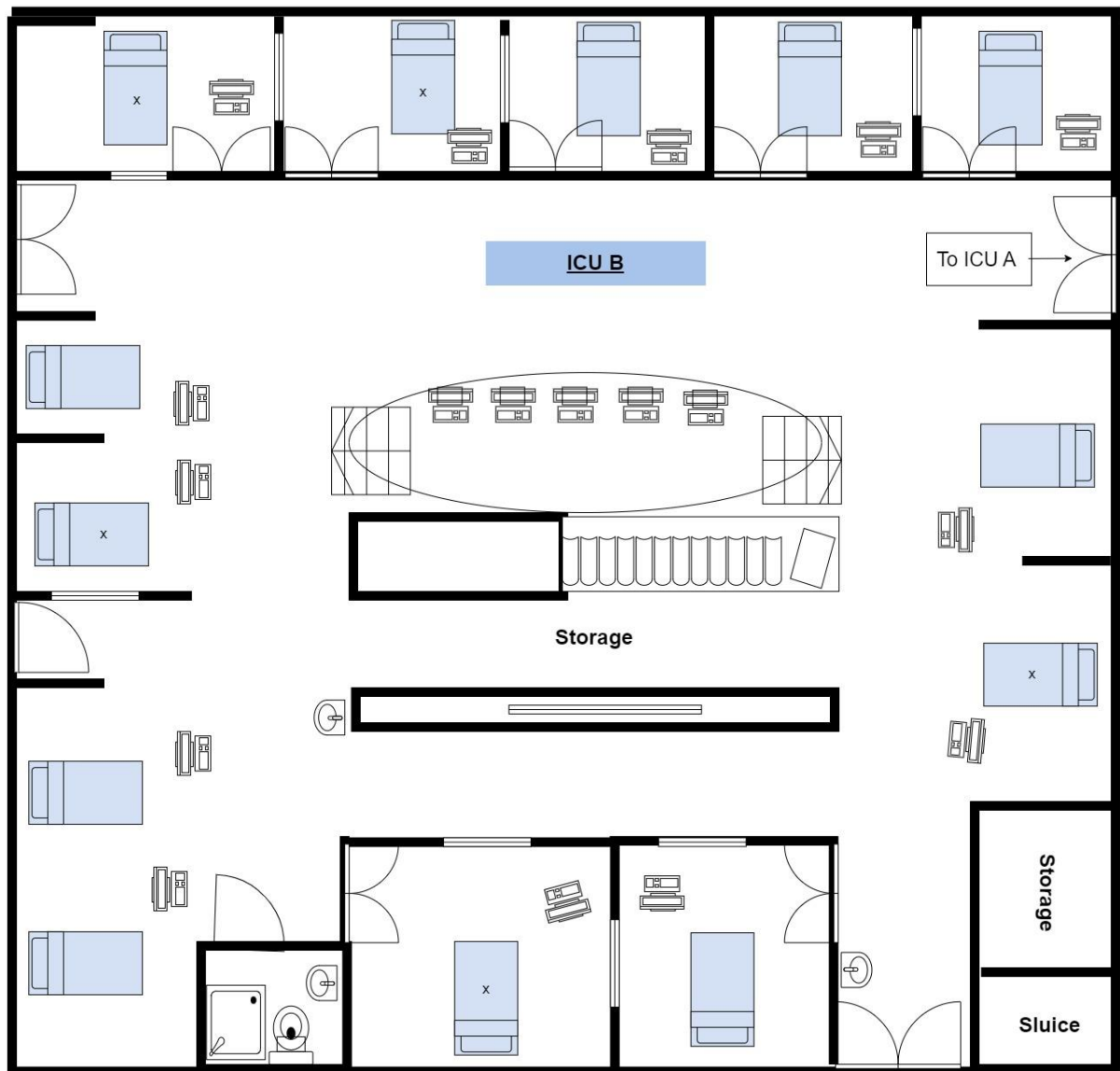


Figure 8- Layout of ICU B, Australia.

Each room/bed area was of a different size. Some rooms were large and accommodated more space to fit all required equipment and mobilisation of the patient. However, some bed spaces were small, limiting the accessibility of the bed space environment. To the side of the bed was a trolley stocked with syringes, needles, linen, intravenous fluids and intravenous lines, regularly used medications and personal protective equipment. All the documentation was electronic-based, and each bed space had a computer at the bottom or side of the bed where observations and medical and nursing records were documented. For a side room, there are often several glass panels around the room and between two side rooms with blinds in situ or curtains that could be pulled across for privacy.

The shift pattern of the nurses consisted of 07:30-20:00 (long day shift), 07:30-16:00 (early shift), 11:00-22:00 (late shift), 19:30-08:00 (night shift, 12 hours), 21:45-08:00 (night shift, 10 hours). The nurses were usually staffed to cover the required nurse-to-patient ratios. Quite often, there would be a cross-over of shifts, allowing extra staff to be on the unit. When nurses begin their employment in the ICU, most complete a rotation programme and move around the four units every six months. Nurses on this rotation programme can only do short shifts (early and late) in their first year. As a result, this led to more staff during the crossover period of early and late changes. Each ICU was also supported by a nursing unit manager and one Access Nurse. The nursing unit managers were accessible and visible for most of the day shift and were present Monday to Friday. The Access Nurse generally did not have a patient, but this was not always the case. In addition, nurse educators were also on the unit to support staffing with teaching and training opportunities. Every Monday and Wednesday, in-house education was provided from 15:00-16:00.

For the doctors, each ICU was typically staffed during the day with one consultant, one registrar, and one resident at a minimum. This smaller team provided a more intimate setting that allowed the ward round to be combined with the morning review. In addition, the workload was also slightly smaller than in the UK, with 13-15 beds per ICU. The doctors would rotate all four units but stay in one unit for a seven-day service of 12-hour shifts. This would be followed by a week off. The registrar and resident (junior doctor) on a day shift would work 12-hour shifts 07:30-20:00. The consultant would arrive on the unit around 08:00 until around 17:00. The consultant would then handover to an evening consultant who would cover both ICU A and ICU B from 17:00-22:00, and this would follow with on-call cover. The night shift would be 19:30-08:00. The doctors would do seven days in a row of 12-hour nights followed by one week off. All doctors are encouraged to attend an additional education session every Wednesday morning.

5.6 The Australia Participant Observations- An Observer-As-Participant Role

A typical day would include entering the unit at approximately 06:45. I would complete the hospital COVID-19 check-in process and then find my way to the research office. After completing some admin work and discussing the plan for the day with the research nurse (gatekeeper), we would typically enter the ICU at approximately 07:45-08:00. Entering at this

time would be the normal time when the research nurse would access the unit after screening patients for their research. It also coincided with when the night shift staff left, and only day staff would be there. This meant that we did not interrupt the nurse-to-nurse handover or get mistaken about which nurse was staying for the day shift.

The process started with the researcher and gatekeeper approaching the Access Nurse. An Access Nurse oversees all the patients and nurses. They would review the inclusion and exclusion criteria so we would know which patients/nurses to approach. Sometimes, the Access Nurse was busy preparing for handover/arranging staffing and, therefore, was limited in being able to review the inclusion and exclusion criteria consistently. As a result, the research nurse would walk around the unit and visually see which patients were intubated and ventilated. If patients were intubated and ventilated, the research nurse would ask the bedside nurse if they were happy with me talking to them about the study. As this approach did not always allow for a full review of the inclusion and exclusion criteria, on my introductions/before observations began, I would have the bedside nurse review the inclusion and exclusion criteria. This process was repeated for each area (area A and area B).

Once participants had been recruited into the study and it had been established that the patients fit the inclusion and exclusion criteria, I would begin my observations. Like the UK case study, I usually got a chair and positioned myself out of the way of the health care professionals, which again was usual practice as the nurse had a chair at the bedside computer. Depending on the patient's bed space, sometimes putting myself out of the way was more manageable in certain rooms.

As I had been granted a patient consent waiver, it was easier to include multiple patients as participants in the research project. However, I depended on which nurse was looking after the patient and whether they had successfully been recruited. Therefore, I sometimes observed the same health care professional rather than the same patient for ease. Part way through, I realised I was not following a patient's journey as much as I had in the UK and was unsure of the impact this would have on my data. I attempted to be more conscious of following the same patients' journey. However, I could not always do this due to slow recruitment or not having the gatekeeper around to facilitate recruitment. Therefore, I

frequently observed the same nurses who agreed to participate in the research and recruited many patients. Equally, this was similar with the doctors due to their rota schedule of one week on, one week off. Therefore, I often observed similar nurses/doctors rather than similar patients. In addition, the ICU in Australia often received many post-operative surgical ICU patients as the hospital where the ICU case study was based carried out complex surgeries. Therefore, due to the duration of time spent on the operating table, it was common for patients to remain sedated and ventilated overnight for observations before being extubated the following day. As I had been given the patient consent waiver, it also meant that I had more accessibility to patients who were surgical post-operative patients, who often spent a shorter time sedated and ventilated.

Throughout participant observations, I wore smart-casual clothing. Unlike the UK, the research department wore smart-casual clothing, and the consultants occasionally opted for smart-casual or uniformed scrubs. Therefore, I did not feel heavily out of place in my clothes. Additionally, the nurses wore uniform scrubs, and there was not much of a culture for nurses to wear theatre-style hospital-owned scrubs, making identifying the nurses easier. I continued to wear my name badge with 'PhD Student' in bold letters and my University of Sheffield ID card on a lanyard. I was not provided with an ID card from the research site, making accessing the research department and the ICU difficult. However, once in the ICU, I could easily access both areas, the staff room and the toilets.

The sedation practice I observed felt quite different from what I observed in the UK, but I could not focus on why it felt different. I remember being asked what I thought the differences were by health care professionals who had consented to participate. Most of my answers would only relate to the medications used. My brain felt clouded, and it was hard to see past this element of sedation practice. I struggled to grasp what I was initially observing because it felt different from the approach I was used to seeing in my own clinical practice. I often wondered if I would ever truly understand.

As with the UK case study, I found the observation period tiring, but the observer-as-participant role was less challenging. I think that for the health care professional, as I was not in scrubs, nor was I local to the area, I ultimately appeared as an outsider. As a result, it was

easier to keep the observer-as-participant role very clear. Occasionally, I was asked to watch patients. However, I had become well versed in adequate responses following my UK participant observation period. Additionally, as I had gatekeeper involvement and support, this maintained clear boundaries. Although sometimes I was frustrated with the process HREC had asked me to follow, having a gatekeeper with whom I could discuss any worries or troubles the research was bringing me was beneficial and supportive. During the four weeks of observations, I met with my supervisors weekly online to discuss my progress.

5.7 Contextual Similarities and Differences Between Each Case Study

At each research site, the nursing-to-patient ratios were 1:1 for level three patients and 1:2 for level two patients. Both ICUs were similar in their monitoring practices. A mechanically ventilated patient would typically be monitored with a five-lead electrocardiogram, an arterial line, continuous saturation monitoring, end-tidal Co2 and central venous pressure. Each case study was based in a teaching hospital, and the staff were familiar with research. However, this familiarity did not extend to qualitative research on health care professionals. The Australian case study had two full-time equivalent embedded ICU research nurses. The UK case study received some support from research services and one consultant, whose role allowed time for research activities.

One of the main differences was the structure of each case study. In the UK, the two general levels were split between two floors. Each area had its own staff room, supplies room and separate entrances, but nurses shared the same changing site. The two ICUs included in Australia were split across the same floor and adjacent. Staff freely moved around the adjacent ICUs for resource sharing, and there was an easy flow with open doors. In Australia, each ICU had individual supplies (pharmacy, linen supply and supply storerooms) but shared some resources (patient kitchen, staff room, changing area). In Australia, if a medical emergency occurred, this would be supported by all medical and nursing staff across each zone. In the UK, if there was a medical emergency, this might be supported by medical staff from each retrospective area if required, but not necessarily by the nursing staff; they typically stayed in ICU A or ICU B.

In addition to the structure, the layout of the ICU was also different. In the UK case study, the ICUs were identical across both floors and set up in a rectangular shape. Most of the rooms/bays could be found outside this rectangular shape. In the middle of the rectangle, you had medical storerooms, a sluice, a pharmacy room and offices. This layout resulted in limited views of the side rooms, as only a corridor or a storeroom connected them. Doors, walls or blinds would often obscure the view into the room. Only once in the bay or side room would you be able to view the patients. In Australia, the layout was different. You would walk into each ICU and see a more circular design with the nurses' station, pharmacy room and other health care resources located in the middle. From walking into the middle of the ICU, most patients would be visible unless a curtain was drawn around the bedside. The central nursing station was raised and often produced a view of most ICU beds.

Appendix BB describes the job roles witnessed in each case study in Australia and the UK during observations.

5.8 Summary of the Participants Participating in the Research

To help contextualise the findings, I will now summarise the participants that contributed to the findings. To help further set the scene and understand the lie of the land. For ease, I have split each section into the three different data collection methods. Appendices will also support this section.

Focus Groups

In the UK, four participants attended the Zoom call, which had a total recording time of 01:23:33. Two participants had their cameras turned on, and two had their cameras turned off. As the focus group moderator and researcher, I had my camera turned on. Initially, there were 10-15 minutes of technical difficulties, and because of this, the focus group ran slightly over. The demographic data collected is presented in Table 11.

<u>Sex</u>	<u>Role</u>	<u>Bracketed ages</u>	<u>ICU experience</u>
Male- 2	Nurse x3	(18-29) x2	3-21 years
Female- 2	Pharmacist x1	(30-39) x1	
		(50-59) x1	

Table 11: Demographic data of participants who took part in the focus group in the UK.

In Australia, two participants attended the Zoom call, with a total recording time of 01:19:31. Both had their cameras turned on. As the focus group moderator and researcher, I had my camera turned on. Initially, there were 10 minutes of waiting to see if the other participants were joining before we began the focus group (not included in the recording time). The individuals provided no demographic data. However, for context, they were both nurses.

Participant Observations

In the UK, 85 health care professionals consented to participate in participant observations. I received permission from six separate personal consultees to carry out observations around the patient's bedside and observe health care professionals, as well as have access to their medical records. Two additional patients (Patient Y and Patient Z) were included in participant observations without access to their medical records. Appendix CC details each patient's demographic data in which observations occurred and where access to medical records was granted. Post data collection, no patient retracted any of their data following discharge from the ICU.

In Australia, 40 health care professionals consented to participate in participant observations. Observations occurred around the bed space of 16 patients, where a waiver of consent allowed me to access the medical records to gather demographic data (Appendix DD).

Interviews

In total, 11 interviews were conducted with participants from the UK case study. Table 12 details the participants' primary demographic (if provided) and provides insights into the length of the interviews.

<u>Sex</u>	<u>Role</u>	<u>Bracketed ages</u>	<u>ICU experience</u>	<u>Length of interviews</u>
Male- 3	Nurse x 5	(18-29) x 4	2 Year- 18 Years	00:26:44-01:17:55
Female- 4	Pharmacist x 2	(40-49) x 3	Mean years of	Mean length: 55
(4 unreported)	Doctor x 4	(4 ages unreported)	experience: 9.	minutes.
			(4 unreported)	Total time: 10 hours 3 minutes.

Table 12: Demographic data of participants who took part in an interview in the UK.

In Australia, seven interviews were conducted with participants from the case study. Table 13 details the primary demographic data of the participants and provides insights into the lengths of the interviews.

<u>Sex</u>	<u>Role</u>	<u>Bracketed ages</u>	<u>ICU experience</u>	<u>Length of interviews</u>
Male- 1	Nurse x 6	(18-29) x 3	2Year- 5Years	00:49:59-01:22:49
Female- 5 (2 unreported)	Doctor x 1	(30-39) x 2 (2 unreported)	Mean years of experience: 3.4 (2 unreported)	Mean length: 1 hour 6 minutes. Total time: 7 hours 43 minutes.

Table 13: Demographic data of participants who took part in an interview in Australia.

5.9 Summary

Through this chapter, I have provided contextual information about the case studies, the health care professionals that make up the ICU and about work patterns and staffing levels. Further insights were given into the researcher roles I adapted with elements of reflexivity intertwined and how I developed as a researcher. This also included personal challenges that I faced when delivering the study. Demographic information and patient characteristics can be found in the appendix. This information will provide further understanding of the patients to whom the sedation practices were observed and connected. This chapter gave transparency that will help support the next chapter as I detail the findings from each case study.

CHAPTER 6

FINDINGS

6.1 Introduction to Findings

This chapter is focused on the findings from the case studies. I begin by presenting the UK findings, where data collection began, before presenting the Australia case study findings. At the end of the chapter, I summarise the findings from both case studies. This chapter is followed by the discussion chapter, in which the similarities and differences between the case studies are discussed. Figure 9 below highlights the themes from each case study.

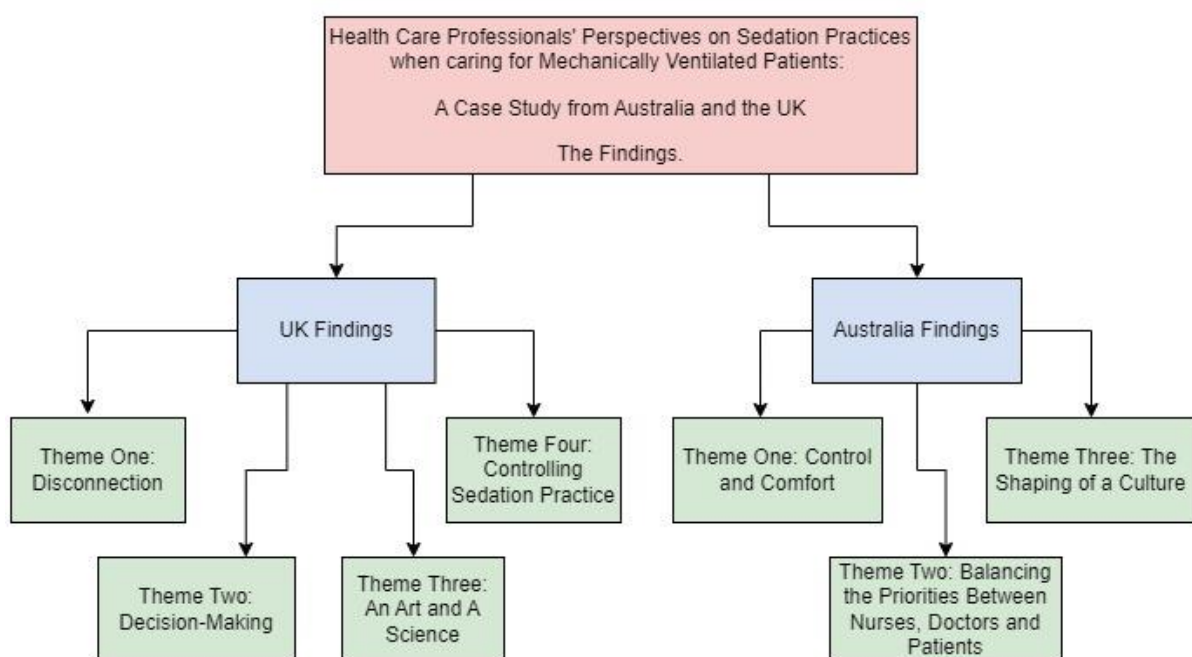


Figure 9- Overview of the main findings from both case studies.

The themes were reached following the detailed process as documented in [Chapter 4, section 4.11](#). For the UK data, 134 codes were initially developed, and this increased to 141 codes following secondary coding. For the Australian data, I produced a significant amount more of semantic codes as the sedation practices differed significantly from my own sedation experience and that of the UK case study. There were 457 codes which increased to 475 codes following a secondary coding process. As there were a large number of codes, some codes were very similar at times. Following coding, and still using Quirkos™, similar codes were then grouped together looking for patterns and shared meanings. This process was iterative and completed mostly in the Quirkos™ software and through using mind maps as demonstrated in [Appendix EE](#).

6.2 Introduction to the UK Findings

The UK findings comprised four themes and 14 subthemes. The findings aim to give a clearer understanding of the sedation practices of health care professionals when caring for mechanically ventilated patients in the UK case study. The four themes are 'Disconnection', 'Decision-Making', 'An Art and a Science' and 'Controlling Sedation Practice'. Figure 10 below highlights the themes and subthemes from the UK case study.

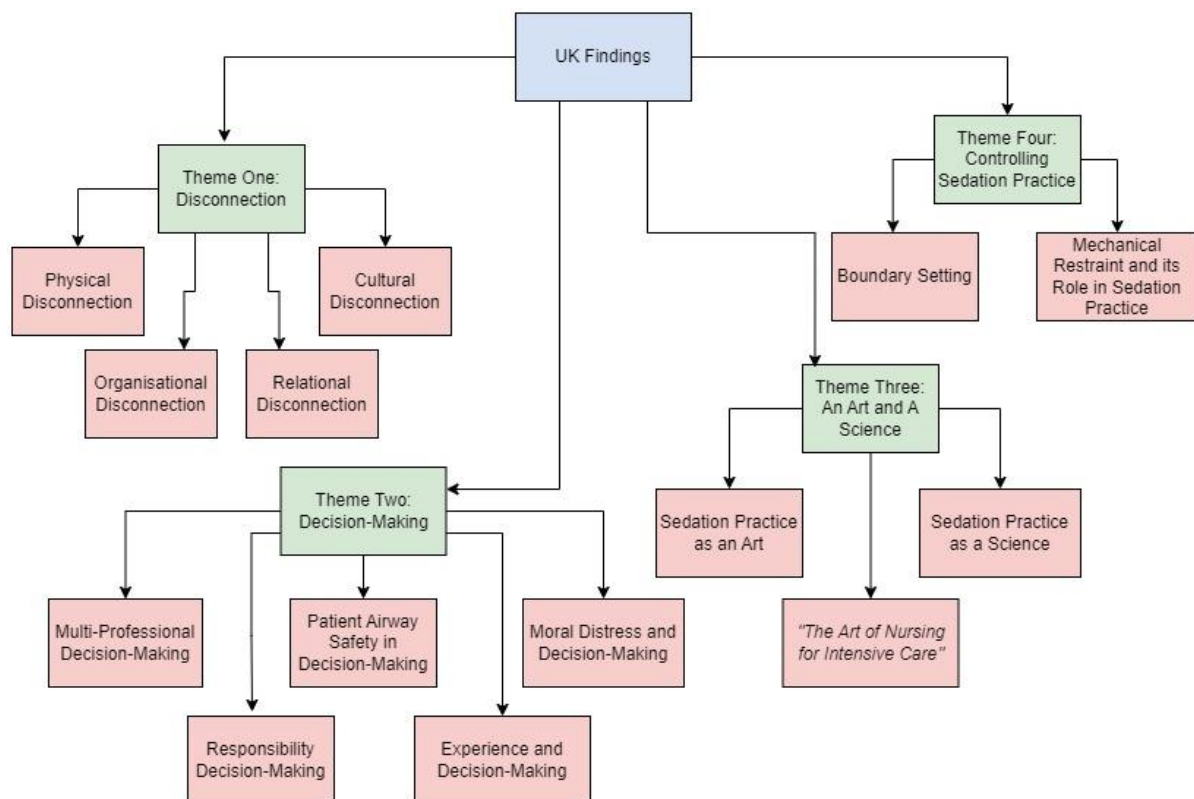


Figure 10- Overview of themes and subthemes from the UK case study.

6.3 Theme One: Disconnection

This theme examined how experiences and feelings of disconnection impacted the sedation practices of health care professionals in the UK case study when caring for mechanically ventilated and sedated patients. The theme encompassed aspects of physical, organisational, relational, and cultural disconnection. All four aspects played a separate role in generating feelings and perceptions of disconnection but have elements of interconnectedness. Throughout the theme, I examined how each aspect influenced sedation practice and its impact on health care professionals.

Subtheme: Physical Disconnection

Health care professionals recounted physical disconnection in several forms, and it often influenced the sedation practices of health care professionals in the UK case study. One aspect that contributed to the theme of disconnection was the ICU's physical structure and layout, which impacted feelings of safety and caused anxiety. As identified in Chapter 5, section 5.3, ICU A and ICU B had a near-even split of individual side rooms and bays. This physical layout created complexities in caring for sedated and mechanically ventilated patients. The space was thought to create vision challenges for nursing and medical staff, with reduced accessibility to seek help or support from other health care professionals. There was a dominating feeling amongst health care professionals that *"the side rooms [...] [were] shocking"* (Interview, Nurse U7B). If a patient was cared for in a side room, sometimes the nurse could not *"leave that room"* (Interview, Nurse 43S). This was often because the physical layout inhibited effective patient monitoring, making it *"difficult to have eyes on all the patients"* (Interview, Nurse TTR). The design of the space was thought to have a heavy impact on nursing and medical practice, as one nurse suggested that it was designed without any consideration for any *"human factors"* (Interview, Nurse TTR). Nursing and medical staff had to consider the complexities of the layout when caring for a patient in the side room, which created additional labour that health care professionals found *"tricky"* (Interview, Nurse 43S). In addition, some of the side rooms were on the inside of the 'U' corridor and were without any windows to the outside, which added to the isolation from others.

An MDT approach to patient care was needed, and there was a reliance on multiple health care professionals to deliver patient care to mechanically ventilated and sedated patients. To deliver optimal care, nurses at the ICU in the UK frequently needed to leave their patients' bed space to access medications, medical supplies, and monitoring equipment, such as the arterial blood gas machine. As a result, nurses depended on other health care professionals being available to assist with the continuous visual monitoring of patients to *"maintain [patient] safety"* (Interview, Nurse 43S). However, at times, nursing staff were limited on who was available to call upon to observe the patient. To access the vital medications and deliver optimal care, staff needed to *"use more sedation than they should"* (Interview, Nurse TTR). Another nurse provided comparisons of what it was like to nurse in a side room versus a

patient bay and confirmed that when in a “side room [...] it can be quite hard [...] [I] just give them a bolus before I pop my head out” (Interview, Nurse 2Y3).

The bay was open plan with space for four patients that were not blocked by windows or any overly large physical structures. The bay allowed nurses to call for support from other staff members more efficiently, and nurses could walk out of the bay and leave the patient. In addition, in my reflexive diary, I commented that compared to the side room, I did not ‘*get asked to watch as much in a bay [...with reflections that] this is probably because they can easily call on the support of their colleagues in a bay. Whereas in a side room, it’s a lot more difficult and the nurses are a lot more isolated.*’ (Reflexive Diary, UK, Week Three). If patients suffered from profound agitation or aggression, they would be moved from the side room into the bay, which was deemed safer for both the nurse and the patient. During the observation period, there were reports that a lightly sedated and mechanically ventilated patient had assaulted a nurse, resulting in the patient being ‘*moved out of the side room into the bay for nurse safety*’ (Observations, Day 38, ICU A, Doctor MNJ). Additionally, during the observation period, it became apparent that, typically, admissions were made into a bay where possible, leaving the side rooms available for infection isolation and end-of-life care.

In addition, when patients were in a bay, nursing staff perceived a greater chance of a doctor being nearby due to the higher number of patients within one area. A nurse reported that when in the side room, they struggled to get “*input from the doctors and the medical staff*” (Interview Nurse, 2Y3). There was a feeling among nurses that when allocated to the side room, the nurse became “*tucked away*” (Interview, Nurse 2Y3) and “*trapped*” (Interview, Nurse TTR). They found it “*quite isolating*” (Interview, Nurse 2Y3). There was a perception that nursing staff and patients were forgotten about in the side room due to the physical disconnection that a side room created. This physical disconnection was seen to impact health care professionals' psychological and emotional well-being with feelings of abandonment coupled with a lack of support. One nurse reflected on the distress that they had felt after being allocated to a side room as they had perceived that they had been put in a position that was “*scary [...and] unsafe*” (Interview, Nurse U7B). This led them to question their seniors' decision-making at the end of their shift as they asked, “*why did you do that to me?*” (Interview, Nurse U7B). The feeling of being unsafe when in a side room often left health care

professionals feeling apprehensive and not “OK” (Focus Group, Nurse 43S). The psychological impact of isolating side rooms was felt heavier by the junior nursing staff, who often found the side rooms “daunting” (Focus Group, Nurse TE3). This ‘daunting’ feeling was acknowledged by senior staff. However, they found that “*because of the side rooms, [...] it’s difficult to support junior staff*” (Interview, Nurse TTR), creating a problematic dilemma.

There were reports from health care professionals that when the unit was designed, there were attempts to add technology that was “*state-of-the-art*” (Interview, Nurse TTR). This was primarily done by installing switchable privacy windows to increase the visibility between side rooms and putting secondary monitors outside side rooms and bays to face into the ‘U’ shaped corridor. In addition, the UK case study was entirely paperless, and this technology allowed for remote access to the patient's medical and nursing notes, recorded observations, and other documentation relating to a patient's admission. The technology was such that no one needed to come near the patient to get the observations, which reduced the amount of traffic passing through the side rooms. One nurse remarked that this sometimes led to doctors who had only reviewed “*the patient remotely*” (Interview, Nurse U7B). The ‘state-of-the-art’ functions were helpful for nursing staff when they covered staff breaks and observed two patients at the same time. However, despite the utilisation of technology, health care professionals frequently found that this technology no longer worked and contributed more to feeling isolated. One nurse commented that the switchable privacy windows no longer worked, which resulted in “*soundproof side rooms that nobody can see into or see out of*” (Interview, Nurse TTR). Another confirmed that “*they’re not windows anymore, they’re just walls*” (Interview, Nurse U7B).

Throughout this subtheme, I examined how the physical layout and structure of the unit impacted the sedation practices of health care professionals at the ICU where the case study took place and how it led to sedation being used more liberally to maintain patient safety and reduce staff anxieties.

Subtheme: Organisational Disconnection

In addition to physical disconnection, the way the ICU was scheduled also created organisational disconnection in the UK case study. Organisational disconnection in this subtheme discusses the influence and impact of staffing resources and the coordinating and structuring of the ICU ward round on sedation practices.

There was a suggestion amongst participants that staffing resources contributed to organisational disconnection. There was a perception that the ICU ran off *“skeleton staff”* (Interview, Nurse U7B) and could no longer accommodate the high number of side rooms as there was no *“slack in the system”* (Interview, Nurse TTR) with staffing that was *“completely off ratio”* (Interview, Doctor YHK). One nurse found that the staffing requirements to facilitate the physical layout of the ICU were no longer being met. They remarked that *“when this unit was built it was meant to have staff floating⁹ because of the side rooms”* (Interview, Nurse TTR). The lack of floatation staff impacted the sedation practice of health care professionals. One nurse described that if they were allocated to a side room, they could not *“possibly leave that bed space for more than 10 mins”* (Focus Group, Nurse RUP). This resulted in the justification and rationalisation of *“why sedation creeps up sometimes”* (Focus Group, Nurse RUP).

One nurse reported they had *“halved the workforce with just as much as the workload”* (Interview, Nurse TTR). Organisational restructuring and a reduced workforce created feelings of being *“stretched”* (Interview, Nurse PPC) with less ability to observe patients, which impacted sedation practices. During my UK observations, I witnessed one nurse caring for two sedated and mechanically ventilated patients and *‘doing two sedation holds simultaneously’* (Observations, Day 11, ICU A, Nurse DS9). The *“diluted”* (Interview, Nurse PPC) workforce resulted in patients receiving additional sedation, and staff felt that they were *“cutting corners”* (Interview, Nurse TTR).

⁹ Floatation staff are usually part of the ICU nursing workforce and they are there to support other nursing staff and patients by being runners to gather equipment and medications, or for break cover and extra support for other tasks.

In addition to a reduction in nursing resources, during participant observations, I observed the delivery of medical staff handovers and ward rounds. The MDT ward round was in a separate location away from the bedside of patients without input from the bedside nurse or the patient. Each day, doctors and other health care professionals would attend an “*MDT round at half past 11*” (Interview, Doctor 83F) and “*come back on the unit at 2pm*” (Focus Group, Nurse RUP). The structuring and scheduling of care, I noted, created a ‘*scarcity of doctors*’ (Observations, Day 17, ICU A). Others also perceived this time of the day was “*a black hole for medical staff*” (Focus Group, Nurse RUP). One nurse described their perception of the medical working day as follows: they “*come round in the mornings and do the assessments, then they go into a ward round midday, a microbiology one, then they go into a medical one, and then they have their lunch [43S Laughs], then they’d come out again*” (Interview, Nurse 43S). The perception highlighted how the organisational set-up and routine sometimes created an unintended absence of doctors.

Another factor that contributed to the organisational disconnection was the separation of the bedside nurse from the MDT ward round. The separate remote ward round was a source of great “*conflict*” (Interview, Nurse TTR), even though the nurse in charge was present. During the remote MDT ward round, the doctors discussed the morning decisions made regarding sedation practice and how the patient had progressed. I often heard decision-making comments such as ‘*I don’t think they [patient] will be extubateable*’ (Observations, Day 8, ICU A) or ‘*Use blood pressure medication to keep off Propofol + Alfentanil.*’ (Observations, Day 9, ICU A). They made decisions and treatment plans without the bedside nurse, which created relational ‘*conflict*’ as the nursing staff perceived that the medical staff were unaware of how the patient had continued to progress. This resulted in what they perceived as inappropriate ward round decisions and ongoing treatment plans. One nurse perceived it was “*decisions being made [...] without the full picture*” (Interview, Nurse TTR). During the remote MDT ward round, I often heard comments from doctors such as, ‘*I think [patient] was unsettled*’ (Observations, Day 18, ICU B, Doctor 7RY) or ‘*on a sedation hold not currently doing much the last time that I saw them.*’ (Observations, Day 8, ICU A, Ward Round). Although doctors recognised that they might only be at the patient’s bedside “*for 20 minutes in a day, sometimes even less*” (Interview, Doctor 25U), I did not find any overwhelming perceptions that the medical participants found the remote ward rounds to be an issue. Whilst this

separation had foundations in organisational disconnection, it was heavily interconnected with relational disconnection.

Furthermore, nursing staff expressed and perceived that the separation of the ward round meant that the educational environment was *'taken away and we [nurses] don't have the opportunity [for education]'* (Observations, Nurse JEY). I, too, recognised the excellent education environment of the ward round during participant observations as I made notes and comments on how the ward round allowed for *'education, asking for advice and learning'* (Observations, UK, Week Four). For these reasons, I enjoyed attending the ward round as I recognised the benefits of my own sedation learning. The separation of nursing staff from the ward round led to calls for better *"education around sedation"* (Interview, Nurse TTR), as one nurse commented that *"we assume people have that knowledge, and they don't always have that"* (UK, Nurse TTR). This perception was influenced by the COVID-19 pandemic, where teaching sessions were reported to have gone *"completely out the window"* (Interview, Nurse 43S). However, it was also exacerbated by excluding nursing staff from the ward round.

Subtheme: Relational Disconnection

Throughout the previous subtheme, I highlighted ways of working that may have contributed to the perception of organisational disconnection. As a potential consequence of the 'black hole' of medical staff, this may have contributed to the effects of relational disconnection between medical and nursing staff.

The UK case study had an ICU schedule where medical staff, during morning handover, would decide about the daily sedation practice with the night team and one senior nurse in charge. This decision was documented on the electronic records system about whether the patient was for a *'sedation hold or not'* (Participant Observations, Day 4, ICU B). A sedation hold is a process of stopping sedation running on a patient, and it can be done for several reasons, such as assessing the suitability for extubation, getting patients onto a mode of spontaneous ventilation or assessing their neurology (Kress *et al.*, 2000). Following the medical handover, *"the nurse in charge comes round, ICU A, and says [to the bedside nurse], straight out of the medical handover, whether a sedation hold is advised or not."* (Interview, Nurse PPC). Doctors then reviewed patients in the ICU between 08:30 and 11:30. During this reviewing period,

medical staff followed up the morning handover decisions with the bedside nurse for either *“sedation holds or sedation reduction”* (Focus Group, Nurse RUP). At 11:30, medical staff attended the MDT ward round, away from the patient area. The separation of the MDT ward round created relational cracks between the two professions as nurses felt that medical staff *“disappear for hours at a time”* (Interview, Nurse TTR). In addition, nursing staff felt that the medical team asked *“for things [sedation holds] and [were] not really being there to see the outcome”* (Focus Group, Nurse RUP) combined with the view that *“they’re not available”* (Interview, Nurse U7B). When medical staff were physically elsewhere, nurses felt they were away for the *“peak effect of the sedation hold”* (Focus Group, Nurse RUP). Medical staff were needed for the ‘peak effect’ of a sedation hold because they reviewed the patient to decide on their ongoing management, such as *“choosing whether to re-sedate”* (Interview, Doctor 2WN). If medical staff were not present for decision-making, nurses would feel uneasy as they *“don’t really know what they are meant to be doing at that point”* (Focus Group, Nurse RUP).

Not having a doctor immediately available resulted in some nurses feeling that they missed the opportunity to extubate the patient. This created frustration and tension as nurses felt the doctors were disconnected from *“sedation practice”* (Focus Group, Nurse RUP). One nurse commented, *“To do a sedation hold on those patients and not have a doctor present almost feels a little bit, not pointless, but if you then have to re-sedate that patient for safety you’ve missed out on an opportunity there to extubate them because there wasn’t a doctor available to review, and obviously [...] we always get the doctor just to cast an eye on them before we extubate somebody. So yeah, at times it can be a little bit frustrating when they are not on the unit.”* (Focus group, Nurse TE3). Viewing the sedation hold as ‘pointless’ due to the lack of medical support was closely tied to elements of theme two, decision-making.

While doctors took part in the remote MDT ward round, nurses felt that they could not interrupt the doctors unless there were *“serious questions”* (Interview, Nurse 2Y3) as it was their *“protected time”* (Interview, Nurse U7B). Doctors also perceived that nurses did not like to interrupt the ward round, as one doctor commented that it was a *“bugbear [...] [if] sedation gets restarted without a discussion. [as they preferred nurses] calling us to say, ‘come and have a look at the patient’”* (Interview, Doctor 25U). However, despite the wishes of doctors, the view that doctors should not be disturbed was deeply rooted among nurses. One nurse

suggested that this deep rooting came from past experiences where they had been made to feel foolish when support was sought. One nurse reflected that when support was sought, *“they [doctors] look at you thinking ‘why have you disturbed us?, can’t you manage that?’”* (Interview, Nurse 2Y3). This perception created a relational disconnection between nurses and doctors, as nurses felt uncomfortable asking the doctors for help. During participant observations, I witnessed a nurse (P8C) come into the medical handover and seek support from the medical staff. There was no verbal acknowledgement to the nurse or discussion, instead, with no communication, one doctor (L32) stood up and left the handover room to go and review the patient (Observations, Day 8, ICU A). Even though there was a response to the request for support, it was performed in silence. The silence in communication could have been interpreted as dissatisfaction with the interruption, as no verbal reassurance was provided. As a result, through this ‘black hole’ period of handover and ward rounds, nursing staff navigated sedation practice by themselves, in what they referred to as sedation practice that was *“freestyle”* (Interview, Nurse 2Y3). The freestyling of sedation by nurses was their version of ‘waiting it out’ until the ward round concluded and a decision about sedation practice was provided. This resulted in a sedation practice that was frequently expressed as *“just a little bolus to keep them safe”* (Interview, Nurse 2Y3). One nurse believed the doctors would not recognise the organisational and physical disconnection and its impact on sedation practice as they would *“argue that they are immediately available”* (Interview, Nurse TTR).

Throughout this subtheme, I highlighted how relational disconnection impacted sedation practices. This subtheme had a close tie with the following subtheme of cultural disconnection.

Subtheme: Cultural Disconnection

Nurses at the UK ICU case study frequently commented on how difficult it was to access medical support with sedation practice, even outside the handover and ward round activities, which shed light on the potential for cultural disconnection. Nurses perceived they were left to manage patients alone when they believed the doctors should have helped them.

Nurses thought that the doctors needed to be *“more present”* (Interview, Nurse 2Y3), and the doctors expressed that, if needed, the nurses *“will come and get you”* (Interview, Doctor

2WN). One nurse commented that the doctors usually remained *“in their glass room unless you call them out”* (Interview, Nurse 43S). This cultural disconnection had elements of both relational disconnection and physical disconnection. During the participant observations, I observed one nurse begin a sedation hold with the reviewing doctor present. The patient quickly became more active and lightly sedated during this sedation hold. They started to lift their arms high, and the nurse had to hold the patient’s arms and hands down away from the endotracheal tube. While the nurse held the patient's arms down and gave constant verbal reassurance, the doctor said to the nurse, *‘right, well, I’m heading to the office’*, evidencing cultural disconnection. The nurse then quickly exclaimed, *‘The patient will be ready to extubate when you leave!’* (Observations, Day 18, ICU A, Patient 5QT, Doctor 6N8, Nurse HEN).

The 'glass room' in ICU A was the junior doctor's office. The office had access to electronic medical records and room for seating in a separate area away from patients' bed spaces, further separated by swipe-access double doors. The separation of doctors from the primary ICU environment resulted in a heavy reliance on the electronic medical records system from the medics, which further deepened the divide between professions. Nurses often expressed their frustration with doctors with comments such as, *“come on, just come, you need to come and have a look at them with your own eyes”* (Interview, Nurse 2Y3). Nurses felt that the electronic system provided *“numbers”* (Interview, Nurse 2Y3) that did not always paint the right picture of the patient's progress. Nurses felt that practice was not patient-centred and was more akin to *“medicines by numbers”* (Interview, Nurse TTR). Through the first week of my observations, I recognised the disconnection of doctors and the expectation that nurses needed to report to the doctors with *‘any issues’* (Observations, Day 7, ICU A, Doctor MNJ). I reflected that the focus group (which was the first method of data collection) had made me more aware of the relationship between the nurses and the doctors, as one nurse commented that there was a *“disconnection”* (Focus Group, Nurse RUP) between doctors and sedation practice. I also reflected that I was intrigued by the reliance on the electronic system, which differed from my clinical place of practice, where we still used paper-based bedside charts.

One nurse participant found that the disconnection was a profound, ingrained cultural issue that nursing staff could not challenge. They perceived that the cultural issue passed on from one rotation of doctors to the next, with an inability to break the cycle as it was a *“taught*

behaviour” (Interview, Nurse U7B). This nurse felt that remote patient reviewing was something the *“consultants let them get away with”* (Interview, Nurse U7B). I perceived nurses wanted a better connection with the doctors, and they wanted them to be *“more visible”* (Interview, Nurse U7B).

Throughout this theme, I identified and emphasised how physical, organisational, relational, and cultural disconnection separately and collectively impacted the sedation practices of health care professionals.

6.4 Theme Two: Decision-Making

The theme, decision-making, looked at the influences of sedation practices of health care professionals and how each profession is interconnected with the decisions made. Nurses relied on doctors and pharmacists to prescribe appropriate sedation agents, and pharmacists and doctors relied on nurses to carry out the decisions made in ward rounds. Sometimes, the interdependence on one another created an atmosphere of great collaboration for decision-making and worked like a well-oiled machine. However, at other times, it created a space for frustration. Decision-making played a significant part in shaping health care professionals' actions and practices. Throughout this theme, decision-making was influenced by several elements, such as multi-professional decision-making, responsibility, patient safety, experience, and morality.

Subtheme: Multi-Professional Decision-Making

Sedation practice decision-making occurred in multiple ways. Sometimes, a single professional group completed decision-making, or it was conducted by collaboration among different health care professionals. How decisions were made depended on factors such as when and where, the availability of health care professionals, personal opinions, staff rotation, and whether patient safety was perceived to be at threat.

As I identified in theme one, disconnection, the ward round occurred without the bedside nurse being present despite the recognition that *“they [nurses] probably know better than us [doctors]”* (Interview, Doctor YHK). Although there was a lack of inclusion from the bedside nurse, other members of the MDT (excluding nurses) felt that decision-making was a

collaborative approach. Doctors and pharmacists frequently felt that decision-making was indicative of a *“team approach”* (Interview, Doctor ZCK) that included *“all of us”* (Interview, Pharmacist 83F). The collegiate approach to decision-making was mainly witnessed during the ward round or handover period. Decisions were usually derived from open ward-round discussions in a space that allowed everyone to be *“listened to and acknowledged and heard”* (Interview, Pharmacist 9YN). In addition, I also felt that a healthy MDT approach to decision-making took onboard the feedback from all health care professionals present. In my reflexive observation notes, I observed *‘Free flowing conversation, education, asking for advice and learning. MDT conversing well.’* (Observations, Day 24, ICU B). I observed that senior *‘Pharmacy [staff] feel very integral to the running of the intensive care unit. I witnessed them advising the consultants, setting plans.’* (Observations, Day 7, ICU A, Pharmacist WYA). However, nursing staff had contrasting views as they felt the decision-making process was *“more like an instruction rather than a discussion”* (Interview, Nurse PPC). The nursing staff suggested that the doctors are *“the people making [the] decisions”* (Interview, nurse U7B) and that the nursing opinion is *“not listened to”* (Interview, nurse PPC).

Despite nursing staff not always being part of the collaborative decision-making, senior nursing staff frequently reported that they had the confidence to work *“autonomously”* (Focus group, Nurse TE3). However, if there were challenges with sedation practice, they sought support from their professional group of peers before they engaged with the wider MDT for *“a new plan”* (Interview, Doctor 25U). The peer-to-peer single professional decision-making process was present in all groups of health care professionals as they looked for a safe space with *“mutual support”* (Interview, Doctor ZCK). Discussion of dilemmas in separate professional groups created a space to clarify perceptions and views about sedation practice, which helped to ensure that the professional group were *“singing from the same hymn sheet”* (Interview, Doctor ZCK).

However, clarity in decision-making was clouded by independent opinions, staff rotation and ineffective communication. Pharmacists found that the multiple rotations of all health care professionals created issues with developing *“a unifying plan”* (Interview, Pharmacist 83F). Frustrations grew among doctors when the nursing staff had to hand over to the next shift, and the set plan was either not handed over or not adhered to as the nurses were not around

to *“hear the discussion”* (Interview, Doctor 25U). Sometimes, the organisational structures of the medical trainee programme exacerbated this issue. Junior medical staff rotated to a different medical setting approximately every four months with *“no way of avoiding it”* (Interview, Doctor 25U). The nursing staff likewise felt frustrated by this rotation because *“by the time they’ve [doctors] got the hang of it and actually they know what sedation is, they’re gone”* (Interview, Nurse U7B). As well as medical staff, permanent nurses, and permanent consultants were expected to rotate between ICU A and ICU B. For doctors, this rotation sometimes occurred daily. For some nurses, they periodically rotated between the ICUs every six months. For nurses and doctors, the rotation was viewed as upskilling the professions that prevented silo ways of working and *“veering off in habits”* (Interview, Doctor ZCK).

Subtheme: Responsibility in Decision-Making

Fundamental accountability, duty, and authority to make decisions fell on the consultants, with the recognition that they had the *“most responsibility”* (Focus Group, Pharmacist 9VV). There was a collective view that the consultants held the highest responsibility and, therefore, had the role of the *“coordinators”* (Interview, Doctor ZCK) as they took charge of *“bringing those strands of information together”* (Interview, Doctor ZCK). There was a perception that if the doctors did not have this responsibility, sedation practice would not progress. Doctors viewed their role as the *“final decision makers”* (Interview, Doctor ZCK), and other health care professionals also accepted this view as they recognised doctors would decide when to do a *“sedation hold, change sedation, [...] or extubate”* (Focus Group, Pharmacist 9VV). However, one nurse attributed this way of working to being influenced by hierarchical structures as *“nurses do what the doctors say, even though that is a done and dusted way of working in the world, it still avails across nursing”* (Interview, Nurse TTR). There was a recognised hierarchy pyramid within decision-making as nurses *“know how to escalate a concern up the hierarchy to the doctors”* (Interview, Nurse TTR), which resulted in diminished *“nurse-led practice”* (Interview, Nurse TTR).

Doctors were likely to be perceived as the decision-makers because they held the responsibility for *“Prescribing the [sedation] drug”* (Interview, Doctor 2WN). Furthermore, the decision-making process had tight links with the doctors because they had a significant role in the patients’ advanced airway management. A position that other professional groups

in this ICU setting could not fulfil. As a result, doctors authorised the decisions for extubating patients and would review patients prior to extubating. Therefore, sedation practice was greatly influenced by responsibility and accountability, which are closely related to a patient's airway safety.

Subtheme: Patient Airway Safety in Decision-Making

Patient airway safety was a significant part of the decision-making process for sedation practice. There was a culture around safe practice, as health care professionals identified *“that everything is about safety”* (Interview, Doctor 2WN). There was the recognition that patient safety was a collective responsibility, and sometimes, decisions were made quickly as health care professionals had to do the *“safest thing”* (Interview, Doctor 2WN). Regarding sedation management, if nurses could not access medical advice for decision-making, they would take the lead on sedation practice. Nurses perceived their role as guardians to protect the patient's wellbeing. One nurse expressed that sometimes nurses could be reprimanded if they decided to re-sedate a patient without a doctor's involvement but expressed that this was to maintain patient airway safety because *“when someone [the patient] is trying to pull the tube out, it's quite difficult”* (Focus Group, Nurse RUP). Airway safety played a significant role in nurses' decision-making process, as it was the *“number one, [...] main priority”* (Interview, Nurse U7B). The nurses saw themselves as advocates for patient safety. They placed their nursing identity on their ability to keep the patient and airway safe. To maintain airway safety, nurses expressed *“that when they [patients] become unsafe [...] sedation goes back on”* (Interview, Nurse U7B), as they *‘don't want the patient (ER2) to pull it [the endotracheal tube] out’* (Observations, Day 8, ICU A, Nurse LF9, Patient ER2).

During the night, airway safety became a significant concern for all health care professionals, and this influenced how decisions were made concerning night time sedation practice. The safety concerns were closely linked with staffing concerns, which related explicitly to airway safety. Through data collection, the UK setting revealed that the ICU often had no immediate availability of an airway-trained doctor for *“on average six hours a night”* (Interview, Doctor ZCK). This was because they had to support all other inpatient areas of the hospital with critical care provisions. The lack of airway-trained doctors was an organisational issue due to the loss of a tier of speciality-trained anaesthetic registrars, which resulted in the lack of a

continuously available doctor with advanced airway skills in “ICU B or ICU A” (Interview, Doctor ZCK). The lack of an available airway-trained doctor resulted in nurses and medical colleagues who worked in this ICU acting more cautiously, using sedation to mitigate the risk of a potential displacement of an airway. There was a common understanding amongst the health care professions that *“deeper sedation tends to be considered safer sedation. So that’s probably what they are aiming for overnight.”* (Interview, Pharmacist 9YN).

During participant observations, I carried out night time observations for data collection. It had just passed half ten at night when I witnessed an airway emergency. I was sitting in a four-bed bay of patients, observing the sedation practices of two patients (TFS and P9S). As I was observing two patients in the same bay, I positioned myself where I could easily see both patients and their assigned bedside nurse. The nursing staff for patient TFS carried out a log roll as the patient was due to be repositioned for pressure area care. As I was observing two patients, I opted to wait outside the curtain. However, I was informed of the additional details of the events from the bedside nurse (ESU). They explained that during this roll, they lost attachment of the airway (endotracheal tube) from the ventilator. The artificial airway slipped further into the patient’s airway and nearly became unreachable, moving further away from the opening of the patient’s mouth down the trachea. The nursing staff struggled to retrieve the airway, the emergency alarm was pushed, the curtains were flung open, and one nurse shouted for the airway-trained doctor to be contacted. Luckily, the nurses at the bedside had managed to grasp the airway from deep inside the patient’s mouth after further sedation boluses deepened the sedation level of the patient until a fully unconscious state was achieved. On arrival of the airway-trained doctor, there were apologetic remarks from the nurse (ESU) to the doctor (MJ3) as they explained that they had tried to mitigate any complications pre-roll and stated *‘they gave them lots of sedation before we [nurses] rolled them [patient TFS]’* (Observations, Patient TFS, Day 25). The comments highlighted the nurse’s responsibility for keeping their patient’s airway safe. Following this, the doctor requested that the patient be *‘well sedated’* (Observations, Patient TFS, Doctor MJ3). Given the scenario, and as an ICU nurse, the request did not seem out of place. I had empathy for the health care professionals who wanted a more deeply sedated patient to help mitigate a dislodged airway while there was less support overnight from an airway-trained doctor.

Other safety elements impacted the decision-making around sedation practice, with the broader context of the environment influencing practice because of safety concerns. Senior staff often judged what was occurring around them before altering their patient's sedation. They recognised they needed to consider *"what's going on in the unit"* (Focus Group, Nurse TE3). Nurses frequently reflected that if their surroundings were busy or needed to accommodate staff breaks, they found it challenging to implement any changes to sedation practice that supported lighter sedation. Sometimes, the documentation of health care professionals elaborated on the broader context to justify their decisions about their sedation practice for the patient. For Patient 5QT, the nurse reported they were *"unable to perform second sedation hold due to emergency admission in the bay"* (Documentation review, Patient 5QT). This highlighted consideration for the wider contexts before any alterations were made to sedation. The environment needed to be seen as safe before adjusting sedation, as one nurse explained that they *'make sure that everyone is safe, set up and running in the bay before we start the sedation hold'* (Observations, Day 11, ICU A Nurse DS9). This view was frequently made by the senior nursing staff, who often recognised the broader context of the ICU's stability and how this influenced their perceptions of safe practice.

Subtheme: Experience and Decision-Making

Experience played a role in the decision-making practices of health care professionals, and senior staff acquired an extra level of insight and knowledge of sedation practice through experience. Health care professionals felt that while experience improved user and patient experience, it often added a layer of complexity to the decision-making process and only through experience could you fully understand the complexities of sedation practice. One doctor felt that experience could not be *"substituted"* (Interview, Doctor ZCK), and only when time was spent in an ICU would this allow for *"experience-based decision-making"* (Interview, Doctor ZCK). They explained that experience and time working in the ICU were needed to create expertise and understanding of sedation because the *"evidence base fails us"* (Interview, Doctor ZCK). One nurse felt that experience gave health care professionals a better interpretation and more confidence in decision-making surrounding sedation practice and allowed nurses to have *"more autonomy"* (Interview, Nurse PPC). Their experiences allowed them to *"crack on"* (Interview, Nurse TTR) with sedation practice, unlike staff with less experience, who could find sedation practice difficult and *"struggle with the dynamic situation"*

(Interview, Nurse TTR). Across the professions, many agreed that *“it’s really hard to get a feel for [sedation] unless you are involved with it”* (Interviews, Doctor YHK), which linked closely to the theme three, an art and a science.

If nurses found themselves supporting and being supported by inexperienced health care professionals, this influenced their decision-making process. Nurses were acutely aware that altering sedation could reduce their availability to support inexperienced staff because the patient required greater attention from the bedside nurse. One nurse remarked that if *“the experience of staff might not be great [...] [they’ve] had to sedate patients more [...] just to keep everyone safe”* (Focus group, Nurse TE3). Another nurse remarked that they preferred being in the side room, despite the ‘disconnection’, as it removed the complexities of worrying about the safety of the other patients and supporting inexperienced staff, which they found *“difficult to balance”* (Interview, Nurse PPC). They believed that once in the side room, they could focus on their patient and sedation practice with little interruption from the rest of the ICU. One nurse suggested that inexperienced nursing staff had *“tunnel vision”* (Interview, Nurse U7B), meaning that you could not rely upon them for support as they could only concentrate on the patient they were allocated.

In addition, the doctors' experience also influenced the decision-making process, which created its own challenges. As highlighted, junior doctors rotated frequently and may have had limited or no experience working in critical care before their rotation. Therefore, consultants and senior trainees had a similar problem expressed by the nurses regarding supervising staff with limited capabilities. As a result, sometimes the decision-making process had to go through a back-and-forth consultation with more senior doctors as the junior doctors attempted to address the concerns of the bedside nurse. The back-and-forth consultation saw the junior doctor as the *“middleman”* (Interview, Nurse PPC), often with *“conflicting information”* (Interview, Doctor 25U). This communication exchange needed to be completed as there was often a lack of knowledge and confidence regarding sedation practice. Still, it created tension between the medical and nursing staff as they navigated this training and learning process in an often highly stressful environment. Below is an extract from the observation notes that depicted this back-and-forth process between senior and junior doctors.

17:06-17:28: Patient [KVE] coughing on ETT.

17:29- Nurse (43S): *"I'll just see if I can get a doctor to come review you [said to the patient KVE]"*.

17:30- Doctor telephoned.

17:32- Doctor (9M7) came to review the patient.

17:36- Patient settled again with coughing. Doctor (9M7)- *"Patient [KVE] settled", nurse (43S)- "Yeah, [patient KVE] has these periods where they settle and then starts coughing again."*

17:37- Doctor (9M7) *"I don't think patient's tiring because they've still got really good tidal volumes, but I don't know why patient's now not obeying commands".*

Doctor (9M7) *"I'm just going to talk to another doctor again."*

17:40- Doctor (9M7) returns. *"I've had a good chat with the consultant, and they say to keep [patient] off it [sedation], give them more time. Leave them off it."*

[...]

18:10- Patient coughing again.- Nurse (43S) doing some more suctioning.

18:10- Arterial blood gas taken.

18:19- Nurse (43S) calling the doctor on the phone to inform about patients arterial blood gas. Doctors said that they would come around and have a look.

18:26- Doctor (9M7) comes into the bedside. *"I've spoken to the doctors-Still give [the patient] longer [off sedation] as not dangerous or desaturating."*

(Observations, Day 36, ICU A, Doctor 9M7, Nurse 43S, Patient KVE)

The observation extract above demonstrated how it was a sequence of learning, processing, rationalising and navigating for the trainee doctor and how this back-and-forth communication process played out. At the end of the interaction, within the extract above, the doctor communicated a plan to *'still give [the patient] longer [off sedation] as not dangerous or desaturating'* (Observations, Day 36, ICU A, Doctor 9M7, Nurse 43S, Patient KVE). This decision was made without the nurse, re-emphasising early feelings that nurses are

sometimes excluded from the decision-making process. During the interviews, I asked the nurse involved about this interaction and how they perceived this experience. The nurse felt that there was a *“different tolerance of what we thought was acceptable for the patient”*. They further went on to express that they *“found that situation very stressful, [...] because I feel like maybe that doctor[‘s] not there by the bedside all the time, like [the doctor] doesn’t understand how inhibiting it can be like having a patient like that”* (Interview, Nurse 43S). This highlighted some of the nursing staffs frustration when presented with these situations and scenarios and how it could raise ethical dilemmas for the nurse if they believed the patient was *“uncomfortable”* (Interview, Nurse 43S).

Subtheme: Moral Distress and Decision-Making

The day-to-day practice in the UK case study was to complete a sedation hold for every patient that met the sedation hold criteria, whether they were suitable for extubation or not. The practice of a daily sedation hold was an ingrained culture within the unit with a *“big focus on sedation holds”* (Interview, Nurse 2Y3). The culture in the UK was so heavily focused on sedation holds that in the focus group, one participant kept on anticipating that I would *“probably talk about sedation holds perhaps a little later on”* (Focus Group, Nurse RUP) and *“I don’t want to jump the gun on sedation holds”* (Focus Group, Nurse RUP). Although I knew sedation holds were likely to come up in the discussion, I had no dedicated questions in my topic guide. Instead, I had broader questions about sedation practice that would have allowed for a sedation hold discussion. However, I soon realised how ingrained this culture was. During participant observations, in my reflexive diary, I reported that when seeing if it was possible to commence bedside observations, staff would make really specific comments to me regarding sedation holds, such as, *‘Oh, they aren’t having a sedation hold today’*, or *‘they’ve already had a sedation hold today’*, or *‘I’m not doing it till later on [sedation hold]’* (Reflexive Diary, UK, Week Two). I initially reflected that they thought my research project was just about sedation holds or were saying that because they did not want me to observe their sedation practice.

The reality of a sedation hold for the bedside nurse is often a morally distressing period that can have a heavy influence on the nurses' decision-making practices. Nurses often commented that they felt *‘mean’* (Observations, Day 11, ICU A, Nurse DS9) when the sedation

was turned off for an extended period. They frequently found this period of their nursing practice morally and ethically distressing and often decided to end sedation holds with comments like *'I'm not letting [the patient] rag all day.'* (Observations, Day 11, ICU, A, Nurse DS9), as they asked themselves if the practice was *"ethically [...] correct"* (Interview, Nurse U7B). Many nurses feared the sedation hold for multifactorial reasons, connected to theme one, disconnection, entwined with elements of airway safety. However, moral distress became quite evident during data analysis. One nurse expressed that when doctors do not request a sedation hold, they are relieved as they *"think, thank you, thank God"* (Focus Group, Nurse TE3). Another nurse explained that, for nurses, avoiding a sedation hold was connected to *"an avoidance of that stressful and uncontrolled situation [...] [as] it's just distressing for the patient and that just rubs off onto the nurse"* (Interview, Nurse PPC). In addition, one pharmacist recognised that sedation hold practice could *"be traumatising for the patient or distressing for the patient"* (UK, Pharmacist 9YN).

Throughout my data collection, I witnessed many sedation holds and became attuned to the belief that many decisions had a link to whether the bedside nurse perceived the patient to be struggling. If the patient struggled or became visually unsettled, with or without haemodynamic and respiratory instability, this impacted the duration of a sedation hold as there was an impact on the bedside nurse's moral comfort and ethical compass. I frequently witnessed conversations between nurses where they commented on how a patient looked, such as *'Oh, they look right uncomfortable'* (Observations, Day 11, ICU A, Nurse 63N). During this observation, this comment was accepted with the acknowledgement that they are not *'going to leave them too long [off sedation]'* (Observations, Day 11, ICU A, Nurse DS9). I, too, found it morally distressing when observing the sedation practices. In my reflexive diary, I commented that I was *'watching the sedation hold of the patient wishing that the tube could come out. Patient Y looks distressed with the ongoings of the sedation hold.'* (Reflexive diary, UK, Week Three). Later, during familiarisation with my UK data set, I then further reflected on my time spent in the UK ICU and how I also endured moral distress, I commented, *'Throughout my observations I felt the same distress as the nurses'* (Reflexive Diary, UK, Familiarisation notes).

Moral distress played a part in the decision-making of health care professionals regardless of whether a sedation hold occurred or not. During the observations, if nurses perceived the patient to be suffering and struggling, with no immediate plans to extubate, then they made changes and comments to justify their sedation practice, such as, *'it's kind of cruel [verbally directed to relative]. Propofol increased to 20mls/hr [action]'* (Observations, Day 19, ICU B, Nurse 53R, Patient TFS). One nurse reported that patients often *"get frustrated that they can't communicate things, which then has an impact on us [nurses], [...] we want to be able to help them. We know there's something wrong, but we just don't know what it is, [...] that's really difficult."* (Interview, Nurse U7B). I viewed that this impacted the nurses' moral comfort, which affected their identity. I often witnessed nurses carrying out roles to protect the dignity and safety of a patient. During observations, I witnessed a nurse holding a patient's *'hands down to protect the endotracheal Tube and protect [...] ER2'S dignity by making sure they were covered by a sheet'* (Observations, Day 8, ICU A, Nurse LF9, Patient ER2). Furthermore, one nurse expressed that *"even if the doctor's given that order, like it's obviously up to you to assess your patient and see if you think it's appropriate"* (Interview, Nurse 43S). If a patient was not suitable for extubating, the bedside nurse had a much lower tolerance for letting the patient continue with reduced/no sedation and often viewed the sedation hold as inducing unnecessary struggling that was *'pointless'* (Observations, Day 11, ICU A, Nurse 63N). Sometimes, the effect on the moral comfort of nurses was not always understood by other professionals, who expressed frustration if a sedation management plan was not followed.

One pharmacist perceived this was a lack of nursing enthusiasm for sedation holds/sedation reduction, which was almost like a performance of *"lip service"* (Interview, Pharmacist 9YN). They described this hollow action by depicting a nurse with low tolerances for sedation holds and stated, *"It'll go off [sedation], they'll [patient] like twitch an arm, and it'll [sedation] go back on"* (Interview, Pharmacist 9YN). Likewise, the nursing staff sometimes believed that other health care professionals always had an *"agenda to do a sedation hold no matter what"* (Interview, Nurse PPC). One pharmacist expressed that often, if a sedation hold was unnecessarily short, they sought the support of the nurse in charge to influence the behaviour of the bedside nurse and expressed, *"I know the nurses in charge, they know me, and they'll kind of go 'Ok, that's fine, I'll have a look'"* (Interview, Pharmacist 9YN). They further expressed that they perceived that the nurse's experience and moral distress were

accountable for this decision-making process, which varied from nurse to nurse. The moral distress and discomfort were sometimes observed in other health care professionals who gave directions such as *'When the patient becomes uncomfortable, just re-sedate them'* (Observations, Day 8, Doctor Z82). Other times, moral comfort was pushed to its limits. I witnessed the nurses' moral comfort level be pushed by boundary setting and abnormal physiological function. While observing practice, one nurse asked the doctor if they could re-sedate the patient *'without coming to get you if the patient's uncomfortable?'* (Observations, Day 11, Nurse DS9, Doctor 9M7). The doctor responded, *'Yeah, if respirations are like 60¹⁰, happy for you to put [sedation] on again.'* (Observations, Day 11, Nurse DS9, Doctor 9M7). This observation had close links to theme four, controlling sedation practice.

Nonetheless, the impact on the nurses was real and tangible regarding their stress and distress when they perceived the patient was suffering. Nurses often expressed that sedation management was stressful, and one nurse confided with me that they found it *'hard when they [doctors] say continue. I've only got so many hands'* (Observations, Day 8, ICU A, Nurse LF9). In addition, one nurse believed that nurses used more sedation to *"manage their sort of moral injuries by trying to have easy shifts"* (Interview, Nurse TTR).

6.5 Theme Three: An Art and A Science

The theme An Art and A Science examined how sedation practice was seen as an art as it navigated its context-dependent surroundings, patients and health care professionals. Sedation was never *"black and white"* (Interview, Pharmacist 83F), with a view that it was easy to do but hard to master, with the mastery coming from *"balancing that double-edged sword"* (Interview, Doctor ZCK). The science came from *"routine driven"* (Interview, Nurse PPC) practice to help *"walk that fine line"* (Interview, Pharmacist 83F).

Subtheme: Sedation Practice as an Art

Navigating sedation practice for nurses was *"more of an art, balancing sedation, than a science"* (Interview, Nurse PPC). When balancing sedation, the aim was for patient comfort

¹⁰ For additional context: A respiratory rate of 60 is three times that of a textbook 'normal' respiratory rate (12-20 respiratory per minute).

with optimisation of physiological stability appropriate to their clinical need, with an opportunity for meaningful interactions between health care professionals and the patient. To ensure balance was achieved within sedation, there was a central belief that science and textbook examples could only take you so far, with a priority set for *“on the job”* (Interview, Nurse PPC) learning *“alongside experienced colleagues”* (Interview, Nurse PPC). There was an acceptance that sometimes sedation practice was *“trial and error”* (Interview, Doctor 25U) with a *“cycle through lots of drugs before we get it right”* (Interview, Doctor ZCK). Sedation practice was a *“balance”* (Interview, Doctor YHK) of safety, but there was a view that when you are in that *“safe place”* (Focus Group, Nurse TE3), the sedation was *“probably too much”* (Focus Group, Nurse TE3). The context frequently influenced the ‘art’ aspect of sedation practice, as previously seen in theme one, disconnection and theme two, decision-making.

The *“balancing act”* (Interview, Pharmacist 83F) was a daily struggle for many health care professionals and often depended on the changing status and ever-evolving patient with *“multifactorial”* (Interview, Pharmacist 9YN) influences. The documentation of nurses and doctors frequently captured the juggling of sedation practice with comments such as *“attempted to reduce to 0.5mcg/kg/min but had to re-increase with Propofol”* (Document Review, Nursing Notes, Patient TFS). It was not uncommon to hear health care professionals recall how patients *“fluctuate”* (Interview, Nurse 2Y3) with their sedation levels, as one account reported that sometimes patients would be *“completely flat, the next second they’re trying to punch people”* (Interview, Pharmacist 83F).

Often, health care professionals sought this delicate balance alongside other aspects of daily care, as they reported that sedation practices had an *“impact on the rest of their work”* (Interview, Doctor 25U). There was a belief that sedation practice was needed *“to maintain the status quo”* (Interview, Nurse TTR). If health care professionals aimed for lighter sedation practice, this often brought other challenges to nursing and medical care that some recognised as *“more difficult”* (Interview, Doctor YHK). One nurse reflected that if there were *“A patient who is light and maybe thrashing around or uncomfortable, it would make it difficult, maybe I won’t be able to administer drugs on time because I’m trying to like keep them safe at the bedside and not have like things come out like cannulas, or them pulling on like lines or tubes [...]”* (Interview, Nurse 43S).

The Art of Sedation practice was closely related to context-dependent factors such as staffing numbers, patient acuity, the environment, experience, and staff confidence. Staff often recognised that contextual factors inhibited maintaining light and balanced sedation. One doctor reported, "*we've usually got a feel for it if the unit is under strain and under pressure*" (Interview, Doctor YHK). In these scenarios, if some strains and pressures caused a lack of control, the light sedation balance would be challenging to achieve as there was a recognition that you needed to keep "*them [patients] and the staff safe*" (Interview, Pharmacist 83F). Nurses also reported that their sedation practice had influences of "*situational awareness*" (interview, Nurse TTR) with a "*sixth sense*" (Interview, Nurse TTR) of what was expected from them and their patients.

One of the main influences on the Art of Sedation practice was the impact of nurse-dependent factors. Sedation practice was recognised as being "*variable [...] dependent upon the person that's looking after the patient*" (Interview, Doctor 25U). Confidence and experience contributed to the variability of the bedside nurse, as seen in earlier themes. Still, interestingly, even if the nurse had many years of experience, this did not mean they would favour light sedation. It was expressed that "*some staff, they're all for it [sedation practice], and they're a bit more tolerant, and they'll try drop the sedation as much as they can whilst being safe, and then you look at other staff, and they don't*" (Interview, Nurse U7B). Often health care professionals reported that trying to get indifferent nurses involved in sedation management was "*tricky*" (Interview, Doctor 25U) with the recognition that "*people like sedated patients*" (Interview, Nurse TTR). During participant observation, you sometimes heard comments like, '*once everyone is back on sedation, it will be nice again*' (Observations, Day 11, Nurse 63N). The responses and perceptions were complex, with influences seen in previous themes and within this theme. However, despite some of these responses and perceptions, there was a recognition that nursing "*staff know that lighter sedation works better for patients*" (Interview, Nurse TTR). Nurses often highlighted that lighter/reduced sedation allowed them "*to extubate*" (Focus Group, Nurse TE3) their patient from the ventilator and reduce "*triglyceride levels*" (Interview, Nurse 43S) associated with Propofol use. Doctors also perceived that nursing staff "*understand the benefits of it [reduced sedation]*" (Interview, Doctor 25U).

Subtheme: “The Art of Nursing for Intensive Care”

This subtheme placed sedation practice in a tight link with nursing practice because they were responsible for the day-to-day “*minutiae*” (Interview, Pharmacist 83F). Managing the day-to-day ‘*minutiae*’ and the responsibilities attached to this gave nursing staff the feeling that sedation practice was “*nurse-led*” (Interview, Nurse U7B). Nursing staff felt comfortable with sedation because the medication in use was “*fairly standard*” (Focus Group, Nurse RUP), which allowed nursing staff to practice autonomously without medical and pharmacy team involvement. In addition to the ‘fairly standard’ medication of “*Propofol and Alfentanil*” (Interview, Doctor 25U), the nursing staff had easy access to the continuous infusions. This meant that staff frequently and “*pre-emptively*” (Interview, Nurse TTR) gave boluses of sedation following “*their own assessment*” (Interview, Nurse 43S) for activities such as repositioning and other nursing care activities.

Nurses were confident and happy to have control of sedation as it helped encapsulate their identity, with one nurse commenting that sedation is “*one of those things that’s the art of nursing for intensive care, its where you’re having to decide what’s happening. You know, that to me, it’s one of perfectly nurse-led, it’s a good example of nurse-led practice*” (Interview, nurse TTR). In addition, doctors also found that once sedation was “*started, we [doctors] don’t necessarily have much to do with the up and down*” (Interview, Doctor 2WN). As a result, nurses developed “*confidence*” (Interview, Nurse 43S). This self-assurance progressed with time and interconnected with other areas of nursing practice, such as ventilation optimisation and cardiovascular stability. I often observed nurses altering sedation practice to optimise ventilation and cardiac stability without involvement from other health care professionals. Subsequently, the heavy involvement in sedation practice led to an autonomous way of working, and many nurses found they were “*protective over our [their] sedation*” (Focus group, Nurse TE3). During observations, I witnessed the nursing staff's protectivity with the extract below.

‘10:00- Context the doctor [B2G] turned off the sedation of another patient without the bedside nurse being present or letting anyone [nurses] know.

Nurse [PPC] addressing the Doctor [B2G]- *“you know when you turn the sedation off can you just let us know because the nurse wasn’t at the bedside and we need to know. Just a little wave.”*

Nurse [PPC] turned to me- *“Can you document that? Doctors turning off sedation?”*
it felt that the nurse was clearly frustrated and exasperated by the doctor’s practice.

(Observations, Day 17, ICU A, Nurse PPC, Doctor B2G)

The protectiveness over sedation had interconnectedness with theme one, disconnection and theme two, decision-making. In theme two, decision-making, nurses were not always involved in the decision-making for patients. Therefore, nurses sometimes lacked insights into the patient's plans or the *“targets”* (Interview, Doctor 2WN) that were set for sedation, as there was no mutual agreement. Additionally, a lack of joint decision-making reduced the doctor’s awareness and understanding of other factors that nurses considered, such as *“how many staff are available and whether or not they're having their breaks”* (Interview, Doctor 25U). Frequently, the changes to sedation management were *‘planned for post-break’* (Observations, Day 7, ICU A, Nurse HAK, Patient ER2).

Changes to sedation practice usually occurred ‘post-break’ because nurses had an active role in sedation management. Frequently, during sedation holds, nurses were *‘positioned and poised stood ready at the bedside’* (Observations, Day 9, ICU A, Nurse EYB, Patient ER2). They were in this position to give practical and emotional support to the patient in an often challenging situation where patient safety, comfort, ongoing suitability for extubation and physiological stability are under continuous assessment. I often saw nurses stood for extended periods *‘at the bedside holding and pushing away [hands] from the patient’s face’* (Observations, Day 9, ICU A, Nurse EYB, Patient ER2). In addition, they gave constant emotional reassurance at the bedside, such as *‘Alright dear, alright lovely, Just relax’* (Observations, Day 6, ICU A, Nurse VGX, Patient ER2). This active role often impacted the nurses’ working day and ability to carry out other nursing jobs freely, as they were tied *“down to that bed space”* (Interview, Nurse PPC).

Sedation practice could be stressful and distressing for the nurse. At the same time, doctors and pharmacists could be slightly more detached, as discussed in theme one, disconnection. This added to the protectiveness that nursing staff had for sedation management. Other health care professionals could recognise the distress for nurses but suggested that this distress was not a shared experience with other health care professionals. One pharmacist commented that they *“appreciate from a nurse[s] point of view it’s probably a lot more stressful [...], it wouldn’t provoke I suppose stress within me if they were lightly sedated at all”* (Interview, Pharmacist 9YN). It was not always clear if the patient was experiencing distress. During the observation period, I witnessed nurses asking patients if they were in pain. On one occasion, the patient denied the presence of pain, but I still observed nurses administering additional sedation. In my reflexive notes, I questioned whether this administration was for the patient or the nurse: *‘it feels like it’s more for the nurses than the patient’* (Observations, Day 31, ICU B, Nurse G4K).

Subtheme: Sedation Practice as a Science

The science aspect of sedation practice was seen in guideline management and daily routine. Staff appreciated the guidelines, as they informed *“when it’s safe to do a sedation hold and when not to”* (Interview, Nurse PPC). The guidelines gave nursing staff greater autonomy in their sedation practice. The guidelines allowed for caring practices that were *“routine driven”* (Interview, Nurse PPC), which helped unify sedation practice. One doctor acknowledged that the guidelines were beneficial in creating standardised practice and *“standardised sedation holds”* (Interview, Doctor ZCK). Still, again, this was dependent on the context of the individual patient, with the recognition that it is often *“dictated by the patient”* (Interview, Nurse 2Y3). Furthermore, despite having these guidelines, health care professionals frequently commented that they were only a guide, with one nurse stating that there was *“no kind of strict, kind of, nobody’s saying ‘you must leave it [sedation] on half’”* (Interview, Nurse 2Y3).

Despite guidance being available, at times, there was a lack of awareness of what benefits you could gain from completing the standardised assessments for sedation practice, with some viewing them as *“tick box exercises”* (Interview, Nurse PPC). Generally, completing these assessments and documents fell on the responsibility of the bedside nurse. However, there was discontent from the nurses, who often reported that this standard practice

requirement was not usually *“helpful”* (Interview, Nurse U7B). Target sedation score setting was another standardised practice that sometimes was inaccurate, with completion being viewed as *“auto-pilot”* (Interview, Nurse 43S). The nurses completed the ingrained hourly sedation score assessments, and the doctors set daily sedation targets. Still, the sedation score was thought to contribute poorly to the nurses' and doctors' ongoing judgments and assessments of sedation management. Nurses reported wanting more guidance for these assessments. The doctors reported that they do not look for the sedation score on the electronic system as they believed the *“numbers [don’t] mean anything to anyone”* (Interview, Doctor YHK).

Many nurses found that the post-sedation hold period was one of the more challenging times as they played catch up with other aspects of care once the patient was *‘settled’* (Observations, Nurse LF9, Day 8). Therefore, the *‘sedation hold summary form’* was inconsistently completed because the form was populated on the electronic system for nurses to complete as soon as the sedation hold had ended. One nurse expressed frustration towards the interface, useability and timing of the *‘sedation hold summary form’* as it populated on the computer and prevented access to other key information and *“that’s why it’s poorly filled out”* (Interview, Nurse PPC). In addition, expanding on theme one, disconnection, nurses sometimes felt there was not much point in completing the form because by the time the sedation hold had finished, the ward round would also be finished. As a result, nurses felt there was no point completing the form as *“they’re [doctors] not even going to look at it”* (Interview, Nurse PPC). This perception frequently frustrated other health care professionals who often looked to this form to inform their ongoing practice and decision-making. During observations, I witnessed on doctor access the *‘sedation hold summary form’*, only to have found it incomplete. I remarked in my observation notes that I had perceived the doctor to have been *‘let down by the nurses’* (Observations, Day 37, ICU A, Doctor 9M7). On another occasion, I observed a pharmacist to have found an uncompleted sedation hold summary form and reported out loud that it was *‘annoying’* (Observations, Day 17, ICU B, Pharmacist 9VV) when this element of standardised practice was not completed.

6.6 Theme Four: Controlling Sedation Practice

The theme of controlling sedation practice draws upon the concept that doctors and pharmacists set boundaries for sedation practice. As previously discussed in theme three, an art and a science, nurses often viewed themselves as taking an autonomous lead with sedation practice. To control some of this autonomy, doctors and pharmacists set boundaries. This theme explores some of that boundary setting and the involvement of mechanical restraints and is split into two subthemes.

Subtheme: Boundary Setting

Boundary setting was seen through doctors' and pharmacists' instructions and negotiation techniques with nurses, which covered several aspects of sedation management. One common negotiation was the titration rate of infusions, as nurses regularly had instructions such as *"don't go above 10ml"* (Focus Group, Nurse RUP). As nurses were responsible for these finer points of sedation practice, this was how other health care professionals managed the actions of the bedside nurse while not needing to be physically present.

This subtheme had close links with theme one, disconnection, as doctors were not frequently visible or available. When nurses had these instructions, it left nurses with negative feelings about the doctors. One nurse told me, *'Doctors say 'don't increase', but they aren't here experiencing the distress'* (Observations, Day 25, ICU B, Nurse ESU). Nurses were aware of the boundaries they had to adhere to but often found that the limits set were physically, emotionally, and logistically challenging. The nursing staff felt that the doctors did not consistently recognise the challenges and lacked appreciation for the balancing act of sedation they had requested. One nurse expressed, *"I think it's really difficult because the doctors are always really keen to get them [...] breathing for themselves, but they are very keen as well to have kind of minimal sedation on board, but keep them comfortable [...] it's not always easy to achieve"* (Interview, Nurse 2Y3).

The boundaries other health care professionals put in place limited some of the moral distress decision-making from nurses, as discussed in theme two, decision-making. Again, doctors had less time around the bed space, so they could make detached decision-making with

boundaries that did not usually affect them. Boundary setting was given via verbal commands or within documentation during the daily review or the ward round. Often, within the medical notes, I saw instructions such as *'not to keep escalating sedation [...]. Oxycodone prescribed for pain'* (Document Review, Daily Review, Day 25, ICU B, Patient TFS).

In addition, sometimes boundary setting was seen when prescribing certain medications, and often, medications were withheld. This created additional challenges for the nursing staff to keep the patient safe and *'settled'* (Observations, Day 25, ICU B, Nurse CFU, Patient P95). Setting this boundary created conflict within the team as they perceived the medical and pharmacy teams did not *"understand"* (Interviews, Nurse PPC). The pharmacy and medical staff often perceived that the nurses only wanted medications that were *"going to work quickly"* (Interview, Doctor 25U). Nurses were happy to acknowledge that they would *"kick the can down the road"* (Interviews, Nurse PPC) in the name of patient and staff *"safety"* (Interview, Nurse PPC). Other health care professionals recognised that the different roles created a misalignment of priorities among the professions, which was challenging to balance with the different workloads of the professions. It was understood that medics and pharmacists have a *"longer term view of sedation practice"* (Interview, Doctor 25U), in contrast to nursing staff, who focused on the short-term goals of the patient.

Moreover, boundary confusion existed as medical and pharmacy staff had different opinions. For example, one doctor disliked the *"stopping of Propofol but not stopping of Alfentanil"* (Interview, Doctor YHK). On the other hand, in some situations, another doctor reported that this practice was acceptable and did not mind *"stopping the Propofol but leaving the Alfentanil either fully on or at a half level"* (Interview, Doctor ZCK). In addition, boundary setting was put in place regarding seeking support and input from the doctors. Nurses sought out the doctors' consent for the decision-making process, and sometimes, boundary setting was established for when nurses sought support. During observations, I observed this boundary setting when a nurse asked when they could re-contact the doctor for support. They replied that they can be called in the event of *'desaturation, [or] if patient's going for the tube.'* (Observations, Day 36, ICU A, Doctor 9M7, Nurse 43S, Patient KVE).

If boundaries were broken, this equally caused frustration among the other health care professionals who put them in place, leaving them feeling “disappointed” (Interview, Doctor 25U). They believed they had set a reasonable plan for the patient, which allowed the nurse to work up an escalation ladder. Nursing staff often disregarded this stepwise approach and went straight to the top of the escalation ladder as they perceived the previous steps would not ‘cut it’ (Observations, Day 37, ICU A, Nurse N7C, Patient KVE). Equally, if there were oppressive boundaries on the nursing staff or no reasonable alternative plan, the nursing staff often introduced mechanical restraint to cope and compensate.

Subtheme: Mechanical Restraint and its Role in Sedation Practice

To begin with, I have provided a reflexive account before I detail my findings from this subtheme:

Before I started data collection, I knew that mechanical restraints were something that I would most likely observe and witness in Australia from previous clinical experience. However, I never thought that it was something that I would observe in the UK for sedated and mechanically ventilated patients. In the UK, the mechanical restraints used were called Posey Mitts™. They looked like white boxing gloves made from soft padding material and had the feel of a polyester-filled pillow. The mechanical restraints went over the whole patient’s hand with a strap to tighten them in place at the wrist. Using a Posey Mitt™ reduced a patient’s ability to have gripping capabilities or use of individual fingers. They were thought to reduce the likelihood of unwanted line removal when patients suffer from delirium. From this point onwards, they will be addressed as ‘restraint’.

I first became aware of the use of restraint at the UK case study in the focus group when using vignettes to generate discussion around sedation practice. One of the participants highlighted their concern about the patient’s airway safety and the fact that they have “no gloves on” (Focus Group, Pharmacist 9VV). I asked for further clarification in the focus group around the use of restraints in sedated and mechanically ventilated patients. However, the topic quickly moved on with no additional input from the other participants. I initially assumed it was a practice account that may have been misconstrued with other patient groups not sedated and ventilated, despite using the vignette depicting a sedated and ventilated patient in the

discussion. However, when I began my observation period, I saw the regular use of restraint in the sedation practices of health care professionals. This practice differed significantly from my clinical practice and what I perceived as best practice in the UK. For this reason, I took a greater interest in discovering if restraint played a role in the sedation practices of health care professionals, and I specifically asked a question about its use during the interviews.

This subtheme examined the role of restraint in sedation practice, following the subtheme of boundary setting. Restraint was there to support various aspects of sedation management with opposing views on the acceptability of using restraint and the varying involvement of different health care professionals. I considered that the role of the restraint had a close link with boundary setting as often they were introduced when boundaries were set. Health care professionals expressed that they were often introduced when the patient transitioned from more profound sedation to light sedation. The restraints were a tool that helped bridge the transition to facilitate extubation as it allowed for *“less sedation”* (Interview, Nurse TTR). There were reports that restraints supported the *“bigger picture”* (Interview, Nurse 2Y3) and supported *“moving them forwards, of progressing the patient forward in their ICU admission”* (Interview, Nurse 2Y3). Nurses initiated restraints as they looked for a practical solution to keeping the sedation to a minimum level or entirely off as the other health care professionals wanted *“to get them extubated soon”* (Interview, Nurse 2Y3). In these instances, restraints were considered helpful in sedation management and were seen as *“necessary”* (Interview, Nurse 2Y3).

During data collection, restraints required no pre-approval from other health care professionals. The application of restraints was seen as a *“nursing decision”* (Interview, Doctor YHK). Other health care professionals had a detached relationship with this practice, with reports from one doctor that they have *“never been asked about it, they’re usually on before I get involved”* (Interviews, Doctor 25U). The use of restraints allowed nurses to exercise their control outside of the boundaries put in place on other aspects of sedation management and support. However, there were reports that restraints became a recent addition to the electronic system, and doctors needed to document in the daily plan if the *“restraints or restrictions in place [are] proportional to the patient”* (Interview, Doctor 25U). This placed more of the decision-making regarding their use back in the hands of doctors.

This transitioning period from deeper to lighter sedation was often a turbulent time for the bedside nurse, and like with most accounts of sedation practice, safety played a role in the decision-making process to use restraints. The use of restraints was no different, and health care professionals continually quoted that safety played a paramount role in the use of restraints. Again, this was often specifically for the airway safety of the patient as they tried to negate the risk of patients who moved *“their hands towards their tube”* (Focus Group, Pharmacist 9VV). In addition to using restraints, I witnessed how positioning the patient in the bed became a form of restraint as patients were not sat up in the bed and were *‘laid quite flat’* (Observations, Day 9, ICU A, Nurse EYB, Patient ER2). Often, chemical restraint was also used, but this often had a dependency factor as nurses were reliant on other health care professionals to prescribe, with additional restrictions from boundary setting.

In addition to patient safety, the use of restraint also had elements of supporting limited staffing resources. Applying the Posey Mitts™ restraints reassured staff that they could safely leave their patient to *“go and help somebody else”* (Interview, Nurse TTR). The use of restraints divided the opinion of the health care professions regarding the suitability of using the restraint. Many expressed that restraints were unnecessary if the bedside nurse could provide verbal and physical reassurance by *“sitting and holding their [patient’s] hand”* (Interview, Nurse 2Y3). The use of restraint was often seen only to antagonise and worsen the behaviour and safety of patients, and many felt that the use was often a *“vicious circle”* (Interview, Nurse TTR). Nonetheless, restraints continued to appear frequently in the sedation practices of health care professionals at the UK case study.

6.7 Summary of Findings from the UK

Four themes and 14 subthemes were explored through the UK findings. Through the themes, I examined the different influences on the sedation practices in the UK case study and how these influences were multi-layered and complex. I will now present the findings of the Australia case study before summarising the findings from both case studies (p. 191).

Australia Case Study Findings

6.8 Introduction to Australia Findings

The Australia case study findings are reported as three themes and 11 subthemes. I will take the reader through each theme and explore the accounts of sedation practices from health care professionals. The three themes are 'Control and Comfort', 'Balancing the Priorities between Nurses, Doctors and Patients', and 'The Shaping of a Culture'. Figure 11 below highlights the themes and subthemes.

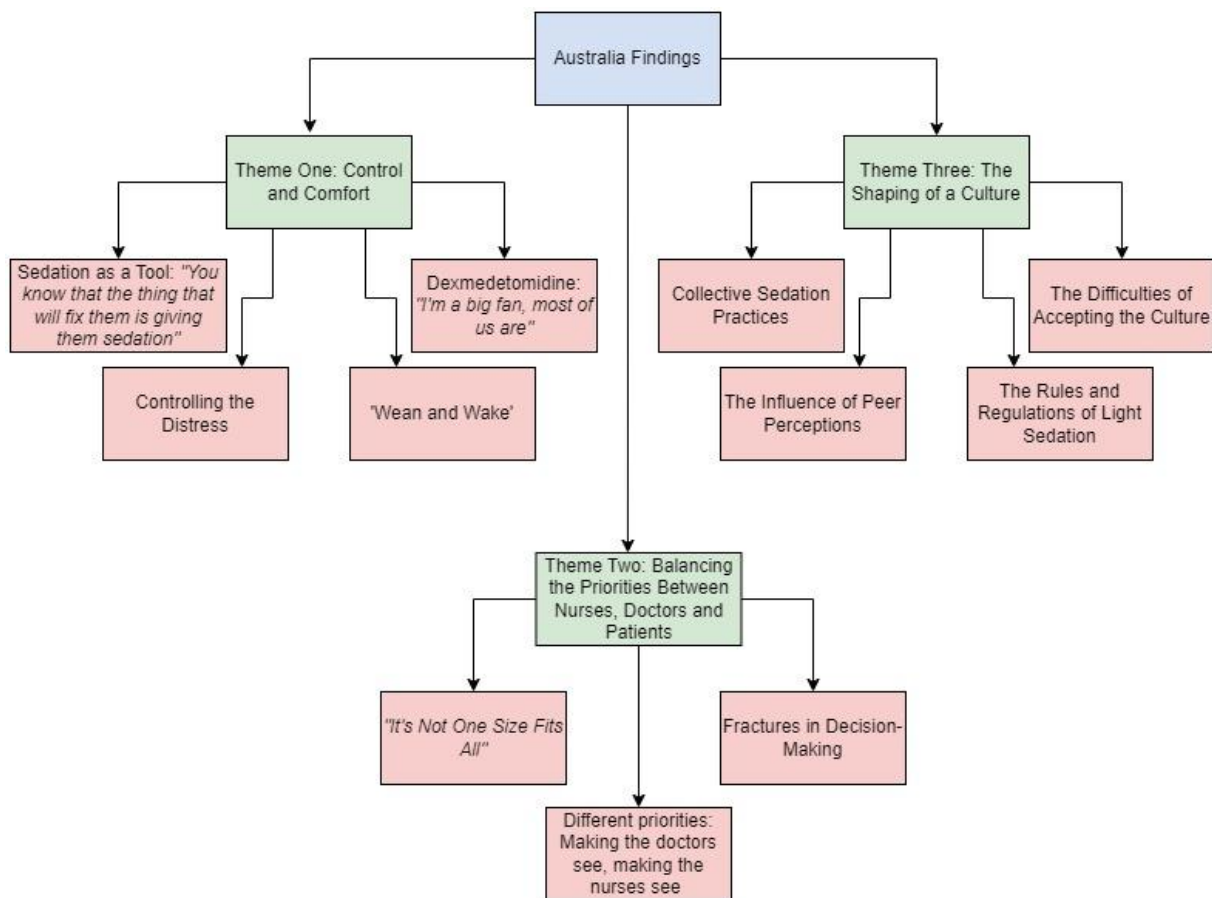


Figure 11- Overview of themes and subthemes for the Australian Case Study.

6.9 Theme One: Control and Comfort

This theme examined how health care professionals use sedation to gain control and comfort with mechanically ventilated patients. The theme explores why control and comfort were sought and how health care professionals achieved them through sedation practice. The theme comprises four subthemes, 'Sedation as a Tool: "You know that the thing that will fix

them is giving them sedation", 'Controlling the distress', *"Wean and Wake"* and 'Dexmedetomidine: *"I'm a big fan, most of us are"*.

Subtheme: Sedation as a Tool: "You know that the thing that will fix them is giving them sedation."

Sedation has many uses. This subtheme explores how health care professionals used sedation as a tool to achieve desired goals. In this subtheme, I provided accounts of and understanding of the sedation practices of health care professionals.

One of the primary uses of sedation for health care professionals was sedation as a tool for patient *"comfort"* (Interview, Nurse XRLD). Sedation for patient comfort was evident and emphasised in patient documentation where you could read *'Plan: Sedation for comfort'* (Document Review, Patient 6USB) or *'Requiring boluses for comfort and vent[ilation] compliance'* (Document Review, Patient H8XB). This desire for patient comfort was frequently aligned with the achievement of patient control, such as *'ventilation compliance'* (Document Review, Patient H8XB). One nurse expressed that sedation offered them control because if a patient became uncomfortable or unstable during a sedation pause, they could *"be pretty quick to turn it [sedation] back on"* (Interview, Nurse ZE4Z). Health care professionals highlighted their dependence on the comfort and control element of sedation, as one nurse reflected that sometimes they could only keep a patient comfortable or settled by *"increasing the sedation"* (Interview, Nurse XRLD). Nursing staff further highlighted their dependence on sedation, as one nurse commented that *"nobody wants a patient that's tubed and only lightly sedated [...], that's not what it's about"* (Interview, Nurse 95M2). When a patient was only lightly sedated, you often lost some of the control and comfort that sedation supplied. One nurse reported that *"a little bit of Propofol, a little bit of Fentanyl does wonders for everyone"* (Interview, Nurse XRLD). This comment highlighted that sedation provided them with a tool for comfort and control, both for the patient and themselves.

Along with patient comfort and control, health care professionals have expressed how sedation was used in other ways. Sedation was reportedly a tool to support seizure control, pain management, ventilation compliance, patient stability, and nurses' workload. Aiding

nurses with their workload was regularly seen as delivering '*boluses for cares*' (Observations, Nurse 7E58, Patient SJ7B). 'Bolusing for cares' was a new term I was unfamiliar with, and therefore, I rechecked for clarification in the interviews. Bolusing for cares was giving a sedation bolus so that nursing staff could facilitate pressure area care, changing endotracheal tube tapes and ties, or re-stocking the bedside draws. When sedation was used to help facilitate care, it had elements of an unconscious reflex, with staff often pre-emptively bolusing before delivering the care or intervention. The use of sedation in this context provided an understanding of sedation as a supportive tool for the patient and staff to facilitate other priorities.

Organisational influences were among the factors contributing to why sedation was used as a supporting tool. One nurse highlighted that sedation was used as a supportive tool because of "*staffing difficulties*" (Interview, Nurse UT5Y) and reported that sedation was an aid when "*managing a lack of staff*" (Interview, Nurse UT5Y) as nurses sometimes looked "*after three ventilated patients*" (Interview, Doctor 2PG5). They further emphasised that it supported health care professionals by acting as a tool for patient "*restraint.*" (Interview, Nurse UT5Y). When sedation was used as a chemical restraint, this often meant that sedation was used more liberally. Staff reported that liberal sedation meant that staff could facilitate their priorities and "*get stuff done*" (Focus Group, Nurse 95M2). One nurse remarked that "*we all like to go to work sometimes and have a patient that's a GCS 3*¹¹" (Focus Group, Nurse 95M2), and another nurse further emphasised that the use of sedation helped them to manage their workload and stated:

"I think sedation sometimes takes a back seat, where it's like I've I've got so many things to do, I've got that... you know... probably a bit more sedated than what would be considered lightly and it just enables me to do a lot more tasks [...]. Patients still need cares, and you sometimes... to be able to step away for a moment and still have that patient be safe"

(Interview, Nurse UT5Y)

¹¹ 'A GCS of 3' is the lowest possible score that can be generated from the Glasgow Coma Scale which measures a person's level of consciousness. A GCS of 3 is a patient that is completely unresponsive (eye, verbal or motor) to any form of stimulation (Jain and Iverson, 2023).

An alternative use for sedation was for physiological stability. Often, sedation was used for high blood pressure management, as one nurse commented that sometimes it is "*your first line cover*" (Interview, Nurse ZE4Z). Further documentation would reveal that sedation used as an anti-hypertensive was a frequent habit of nursing staff, as doctors needed to document in the medical notes that an anti-hypertensive should be used '*rather than Propofol*' (Document Review, Patient H8XB). However, this urge and practice to use sedation as a first-line treatment to get blood pressure under control had its reasonings. Firstly, Propofol was commonly recognised to be able to produce a response to blood pressure that was "*hypotensive*" (Interview, Nurse XRLD). Furthermore, the rapid availability of Propofol at the bedside meant that nursing staff were familiar with its action and frequently delivered "*nurse initiated boluses*" (Interview, Nurse ZE4Z).

Additionally, sedation was seen as a transient tool that wore off, leaving very little, long-lasting harm, so it did not matter "*If you overcook it*" (Interview, Doctor 2PG5). This view disregarded the sedation boluses delivered by health care professionals and reduced any importance or significance to sedation boluses. Health care professionals frequently agreed that delivering a bolus was "*not the end of the world, because it's so-short acting*" (Interview, Nurse Y9WA). As boluses were not viewed as harmful, they were frequently missed off fluid balance documentation. I frequently found in the patient documentation that there were '*No boluses documented*' (Observations, Patient SJ7B) despite witnessing sedation boluses being given.

This transient tool of sedation practices played a much more significant role in the wellbeing of health care professionals as it was a tool that could provide patient safety. One nurse reported that sedation allowed them to "*feel safe, 'cos any issues you just control, you have the autonomy to just bolus it if you need to*" (Interview, Nurse Y9WA). The feeling of wanting to be safe was explored further in theme two, balancing the priorities between nurses, doctors and patients. The want and need to feel 'safe' had multiple reasons attached to it, but one of the reasons came from a place of health care professionals not wanting to "*get in trouble*" (Focus Group, Nurse 95M2). This feeling was more common among the nursing workforce, particularly junior nurses. Junior nurses reported that they utilised sedation when they lacked confidence, and it helped them control their anxieties. One nurse reported that

in their *"first couple of months [they] would probably have them on like higher sedation just because [they were] quite scared"* (Interview, Nurse ZE4Z). The use of liberal sedation controlled anxieties for both patient and staff, and it allowed health care professionals to feel safe as they could *"keep everyone settled and drama free"* (Interview, Nurse 9W9A).

Throughout this subtheme, sedation has been recognised as a tool that provided staff and patient comfort and control, provided support, provided the ability to restrain, provided physiological support and was a transient tool that provided safety. As nurses found many uses within sedation, they often carried the mindset of *"you know the thing that will fix them is giving them sedation and analgesia."* (Interview, Nurse XRLD). Over the next three subthemes, I explored how staff used sedation through 'Controlling the Distress', *"Wean and Wake"* and 'Dexmedetomidine-*"I'm a big fan, most of us are"*.

Subtheme: Controlling the Distress

This subtheme continued with the ongoing findings that health care professionals used sedation as a tool but with a specific focus on how it was used to control distress in patients, families, and distress in health care professionals. I finally focused on how organisational factors may have also contributed to the distress and how sedation was used again to help control this distress.

Health care professionals used sedation to prevent or control distress in patients. For patients, distress was seen as something that could be both visual and vital sign changes. For vital sign changes, this was commonly seen in patients as getting *"tachycardic, hypertensive"* (Interview, Nurse ZE4Z). Health care professionals often witnessed the vital signs of distress and believed that they could be *"settled with increase in sedation"* (Document Review, Patient SJ7B). As previously discussed, the sedation used in this way helped health care professionals to gain control of physiologically abnormal vital signs. As well as physiological signs of distress, patients were reported to show visual signs of distress such as *"rolling around in bed"* (Interview, Nurse 95M2) or *'coughing and gagging'* (Observations, Day 2, ICU A, Patient FJUK), or *"scrunching up their face"* (Interview, Nurse UT5Y). Again, this distress was frequently *'settled with Propofol boluses'* (Document Review, Patient 5JRT). Nurses reported that they wanted to minimise and control any distress because they worried that if they did not, the

patient could develop *“PTSD when they leave ICU [...] and remember being agitated and like uncomfortable”* (Interview, Nurse Y9WA).

As well as the worries of distress for patients, health care professionals often aimed to control patient distress because they worried it also impacted the psychological wellbeing of relatives. Health care professionals believed that if the patients showed signs of distress, this would upset the family members as they believed *“it can be quite distressing for them [relatives]”* (Interview, Doctor 2PG5). Health care professionals reported that if patients were distressed, for the family members, it could look *“like you're torturing them.”* (Focus Group, Nurse 95M2) and *“you don't want a family member to sort of witness their loved one like in pain or looking distressed”* (Focus Group, Nurse EPEA). To control or prevent any family distress, health care professionals reported that they *“might go up and give them a little bit extra [sedation]”* (Interview, Nurse ZE4Z), and one doctor agreed that they *“would keep patients a little bit more sedated when their family are there”* (Interview, Doctor 2PG5). One nurse further expanded and said, *“you're trying to keep the family happy as well”* (interview, Nurse Y9WA) and recognised that the caring responsibility extended to incorporate the family members. Health care professionals reported that families often found it distressing due to a lack of knowledge because *“They don't really understand”* (Interview, Nurse Y9WA). During participant observations, I witnessed distressed relatives when a patient looked uncomfortable and observed how the nurse utilised a sedation bolus to settle the patient.

‘Patient biting on tube, desaturating, ventilator alarming. Sedation bolus. With 1ml Propofol. Dexmedetomidine increased to 7.5ml. Propofol at 2ml/hr.

Nurse explaining to relative that this is the hardest time waking up. Grey area to balance and don't have all the answers.

Relative getting distressed’

(Observations, Day 2, ICU A, Nurse 95M2, Patient FJUK)

In addition to health care professionals using sedation to manage distressed relatives, they also used sedation to manage and control their moral distress of seeing a patient agitated.

Health care professionals would report that they *“really hate”* (Interview, Nurse XRLD) seeing patients distressed and that *“there’s nothing worse than when your patient’s agitated”* (Interview, Nurse XRLD). Another nurse reported that if their patient was *“agitated and [...] looking frazzled, then I’m not really comfortable”* (Interview, Nurse ZE4Z). During participant observations, one nurse reported to me that, in their *‘Personal opinion. [they would] Want to be knocked out. [They find it] Morally distressing when seeing a patient who is perceived to struggle. [and are] Much more likely to give a bolus.’* (Observations, Day 19, Nurse JLKB, Patient 6USB). Health care professionals felt *“really cruel to the patient”* (Australia, Nurse XRLD) and therefore managed their moral distress with the *“use [of] Fentanyl”* (Interview, Nurse UT5Y). There was a view amongst health care professionals that they were much happier when *“patients visually look more comfortable”* (Interview, Nurse UT5Y).

In addition to the visual component of a patient being distressed, health care professionals' distress was caused by other organisational factors, and sedation was also used to remedy this distress. Nurses expressed that they struggled to carry out daily tasks due to staffing and poor *“design of [the] intensive care”* (Australia, Nurse 95M2). Within ICU A, one area was called the *“hallway of isolation”* (Interview, Nurse XRLD). This hallway was comprised of only single-sided rooms, and health care professionals reported that *“nobody can hear you. Nobody can see you. It’s closed doors.”* (Interview, Nurse 95M2). The back hallway was described as causing significant distress in health care professionals, with reports that junior staff often expressed that the *“back wall made me wanna quit.”* (Interview, Nurse 95M2). Another nurse reported that if they were looking after a mechanically ventilated and sedated patient, then they would only want to be *“Around [the] nursing station where everybody can see [GSPM Laughs]”* (Interview, Nurse GSPM). They then described a time when they had a patient in the ‘hallway of isolation’ who suddenly became agitated. They struggled to protect the patient from pulling out their lines and needed to deliver a sedation *“bolus”* (Interview, Nurse GSPM). Side rooms limited the accessibility to other bed spaces for support from other health care professionals, as one nurse found that *“it’s really hard to run between the 2 patients if something happens”* (Interview, Nurse XRLD). They further reported that fewer people were around for support when you nursed in this area, with fewer opportunities to *“call for help”* (Interview, Nurse GSPM) with *“not too many people around”* (Interview, Nurse GSPM). Whilst observing sedation practices, I witnessed a *‘Nurse struggling to get a doctor to*

review, shouting from the side room at the back of the unit, calling another nurse to get the doctor.' (Observations, Day 15, ICU A, Patient 5TR7, Nurse UQKC). While the nurse struggled to get support from other colleagues, I observed the nurse give a *'2ml Propofol bolus'* (Observations, Day 15, ICU A, Patient 5TR7, Nurse UQKC) followed by an increase in the sedation infusion rate. The challenging ICU layout created opportunities for more sedation to be given but also increased the likelihood of restraints as one nurse reported, *"you've physically got a wall [...], it's not open plan like it used to be. So it's a lot harder to get to patients quicker if they're waking up or at risk of self-extubating. So, I think probably, ICU A facilitates or uses physical restraints maybe a little bit more"* (Interview, Nurse XRLD).

This subtheme captured how sedation was used to help manage the distress of patients, families, and health care professionals. In the following two subthemes, I look at different sedation practices and report how they fit into the overall theme of control and comfort.

Subtheme: "Wean and Wake"

This subtheme captured the practice of sedation weaning and how this related to comfort and control for health care professionals. Sedation weaning was the process of reducing sedation infusion rates of patients to inform assessments. The assessments could include assessing the level of consciousness, readiness for extubation, lessening infusion rates, increased patient interaction and eligibility for spontaneous ventilation modes. A sedation hold/pause also aimed to achieve similar outcomes, but with a sedation hold/pause, the sedation was completely turned off or put into standby mode.

When collecting data at the ICU in Australia, I reflected that *'I really struggled understanding the sedation practice here'* (Research Diary, Day 23). On reflection, this could have been due to my experiences in sedation practice and the clinical environment where I trained as an ICU nurse, as typically, we practiced sedation holds. Therefore, the concept of sedation weaning was new and abstract to me. Even after collecting participant observation data and spending four weeks at the case study, I had not fully grasped the concept of *"we definitely don't ever do sedation holds in general intensive care"* (Focus Group, Nurse 95M2). I found myself asking questions about sedation holds that were met with a 6-second-long pause and looks of confusion from the participants:

"Sarah: Is there a point in the patient's journey as an intubated, sedated patient, where the sedation will be stopped?"

[6 second pause 00:47:20-00:47:26]

Sarah: If that makes sense. I don't know if I've just confused [you].

95M2: I think routine-like maybe on the medical round. But I don't-I don't know if I've being doing it wrong, but I would never just in the middle of my day, or night, just turn off the sedation. Like I think you turn it down of course, and you get a bit of an idea, but I don't-I don't know. Do you ever just turn it off? [directed to Nurse EPEA]"

(Focus Group, Nurse 95M2)

Throughout data collection, it was evident that "very rarely" (Interview, Nurse ZE4Z) would a sedation hold be done and that they 'don't really do that' (Observations, Day 4, Patient FJUK, Nurse 95M2). Furthermore, they would often be referred to as a sedation pause rather than a sedation hold. Often, a sedation pause was used as a quick assessment to ascertain the neurology status of the patient, and 'then it goes back on' (Observations, Patient FJUK, Nurse 95M2). Both nurses and doctors carried out these types of sedation pauses. For example, patient documentation could read, "Turned sedation off @0900 to assess Neuro status" (Document Review, Patient 858S, Nursing Assessment). The neuro assessments would typically be part of the medical ward round assessments.

'Consultant asked the junior to review the patient and pause the sedation to assess the neurology during the examination. [...] The reviewing doctor turned off the Propofol while in the room. This appeared to be minutes, but I think this is what they class as a sedation hold.'

(Observations, Day 16, Patient H8XB, Ward Round)

Again, I initially struggled to understand this way of working and provided reflections on my thoughts about how they practise sedation. 'They do these weird neuro assessments where

they stop the sedation to assess neurology, but not an actual sedation hold.' (Reflection-Document Review, Patient CQJ5).

As the Australian case study did not practice sedation holds how I recognised them, I had to begin to learn and understand their sedation practices. What finally became apparent to me was that most health care professionals practiced a process of '*wean and wake*' (Observations, Day 13, Patient 858S). Most health care professionals were much more enthusiastic about a sedation wean over a sedation hold/pause, as one participant commented, "*For nurses, we prefer just weaning*" (Interview, Nurse Y9WA). Another concluded, "*I must admit, I'm more of a sedation wean kind of person than a sedation pause.*" (Interview, Nurse XRLD). Often, sedation weaning was the route that patients would follow before they were assessed for "*either extubate or re-sedate*" (Focus group, Nurse EPEA).

Gathering this insight into sedation weaning revealed the comfort and control that health care professionals gained from weaning sedation over a sedation pause. Several participants reported that sedation weaning prevented their patients from waking up with a "*bang*" (Interviews, Nurse XRLD, Nurse UT5Y, Nurse ZE4Z, Nurse GSPM, Nurse Y9WA). Through sedation weaning, nurses held control over the patient as they allowed them to "*gradually*" (Interview, Nurse UT5Y) emerge from deeper sedation. They could "*just slowly take it [sedation] down in chunks*" (Interview, Nurse XRLD). It was the control that nurses gained with a sedation wean that they appreciated. They reported that with a sedation pause, patients often emerged from deeper sedation, "*quite agitated*" (Interview, Nurse GSPM). Often, agitated patients were given more sedation, and this re-sedation brought additional issues for the nurse as they then had "*to deal with side effects of bolusing them a lot*" (Interview Nurse XRLD). Side effects were usually cardiovascular and respiratory instability for the patient.

Moreover, patients who had their sedation weaned often emerged from deeper sedation more relaxed, and this offered health care professionals a more visually appealing patient who looked comfortable and not distressed. This resulted in nurses having "*a preference to seeing someone wake up gradually*" (Interview, Nurse UT5Y), as they believed weaning sedation felt "*a little bit less aggressive*" (Interview, Nurse UT5Y). During participant observations, I observed that a sedation wean appeared to give more control to health care professionals. I

witnessed the extubation of a patient who had their sedation weaned to a very low rate. The sedation was then left on during the extubation and was only stopped post-removal of the endotracheal tube. I remarked how *'very calm'* (Observations, Patient 5XQU, Nurse GSPM) the extubation appeared.

This subtheme of 'Wean and Wake' showed how this sedation practice gave comfort and control to health care professionals. Further practices of control and comfort were found in other aspects of sedation practice, and I will now discuss the use of Dexmedetomidine in sedation practice.

Subtheme: Dexmedetomidine: "I'm a big fan, most of us are"

Dexmedetomidine, commonly referred to as Precedex™ as its trade name, was found to be frequently used in the case study and would be predominately viewed as an anti-anxiety and sedative agent, but also had analgesic properties to complement its use. This subtheme looked at the use of Dexmedetomidine in the sedation practices of health care professionals in the Australian case study and how it supported the comfort and control of health care professionals.

What was highly evident in the case study was how frequently Dexmedetomidine was used in the sedation management of patients. I often saw the documentation about the commencement of *'Precedex'* (Document Review, Patient JZG4, Patient FJUK, Patient S7JB, Patient H8XB, Patient CQJ5, Patient 6USB). However, what was interesting about the use of Dexmedetomidine was the warm reception it received from both nursing and medical staff. During participant observations, I often heard positive comments regarding its use, such as *"I really like Dexmedetomidine"* (Observations, Day 2, Patient FJUK, Nurse 95M2) or *'there is a really clear Dexmedetomidine protocol'* (Observations, Day 8, Patient 5JRT, Nurse SA6M). This positivity continued in the interviews, where one nurse reported, *"I'm a big fan, most of us are"* (Interview, Nurse 95M2), and another reported that they really *"love using Precedex"* (Interview, Nurse XRLD).

The main reasons for the positivity and comfort in Dexmedetomidine could be seen in the context of the patients for whom it was typically used and how it was used. Dexmedetomidine

was typically introduced for patients when they displayed signs of agitation, delirium, and distress. Typically, when patients became agitated, nursing and medical staff selected sedation practices that helped them to control the distress, as discussed in an earlier subtheme. The introduction of Dexmedetomidine often created an effect that was *"less sedating, more calming [...] and it just evens patients out."* (Interview, Nurse 95M2). When patients were agitated or distressed, nursing staff had the flexibility to *"up titrate"* (Interview, Nurse XRLD) the Dexmedetomidine to achieve the desired effects. Patients considered unmanageable and uncontrollable were now *"manageable"* (Interview, Nurse GSPM). Furthermore, patients were often viewed as *"more stable on Dexmedetomidine."* (Document Review, Patient JZG4 PM Ward Round). The manageability achieved through Dexmedetomidine was recognised as greater control for health care professionals, providing them with comfort.

In addition, Dexmedetomidine could be introduced when struggling to wean conventional sedation agents such as Propofol and Fentanyl. The introduction of Dexmedetomidine allowed staff to *"Wean Propofol once Precedex started"* (Document Review, Patient CQJ5, Night WR). Nurses particularly loved Dexmedetomidine as it had a calming effect on delirious patients whilst also not being as sedating as sedatives such as Propofol and Midazolam. Many recognised the introduction of Dexmedetomidine as beneficial as it was not going to *"knock you [patients] out"* (Focus Group, Nurse EPEA) or *"snow you [patients] out"* (Interview, Nurse UT5Y). Furthermore, patients were still seen as being really *"comfortable"* (Interview, Nurse UT5Y) whilst they *"get away with a lot less Propofol"* (Interview, Nurse UT5Y). For these additional reasons, Dexmedetomidine was viewed as *"a really good agent"* (Interview, Nurse UT5Y). Another benefit of Dexmedetomidine was that it could act as a sedative *"bridge"* (Interview, Nurse UTSY). This bridge was between patients who were still intubated and ventilated but who were moving towards extubation. Dexmedetomidine was unique in the fact that you could *"keep them [patients] on that [Dexmedetomidine] while they're extubated"* (Interview, Nurse 9YWA). The ability to keep patients on Dexmedetomidine was thought to be impactful at reducing the number of mechanically ventilated days, with one doctor hypothesising that they felt they *"extubate patients a lot sooner when we [doctors] put them on Dexmedetomidine because we can often extubate them on Dexmed"* (Interview, Doctor 2PG5).

Finally, I also reflected that patients were much calmer when Dexmedetomidine was introduced. I often made reflections such as *"Patient does seem a lot more settled now that the Dexmedetomidine has been started."* (Observations, Day 16, Patient CQJ5). Furthermore, I felt it added to the control of the nursing staff. I witnessed its benefits leading up to a patient extubation scenario and commented that the patient *"remains so calm and comfortable"* (Observations, Day 15, Patient 5TR7). Lastly, I often took greater note of my distress levels when observing sedation practices during participant observations in Australia. In my reflections, I made the following entry and queried whether this calm feeling was attributed to using Dexmedetomidine.

'I don't feel as distressed as I did in the UK when watching nurses comfort and support their patient. Even though the doctors aren't necessarily here at the bedside, they are around, but I also feel like it's being managed and the patient isn't too distressed. Maybe that's the Dexmedetomidine.'

(Observations, Day 4, Patient FJUK)

Throughout this theme, the control and comfort of health care professionals have been explored through sedation. Gaining control of patients was an aspect of sedation practice embedded in patient comfort but was highlighted to have multiple uses and tools for health care professionals. I identified novel ways in which health care professionals used sedation in the Australian case study to maintain patient control and comfort through weaning sedation and the introduction of Dexmedetomidine.

6.10 Theme Two: Balancing the Priorities Between Nurses, Doctors and Patients

This theme explored how nurses and doctors prioritised and balanced sedation practice with the uniqueness of each patient. I explored why the differing priorities of nurses and doctors can sometimes be viewed as competing, the challenges created for decision-making in sedation practice, and the working relationship between doctors and nurses. This theme is comprised of three subthemes, *"Its Not One Size Fits All"*, 'Different Priorities- Making the doctors see, making the nurses see' and 'Fractures in Decision-Making'.

Subtheme: “It’s Not One Size Fits All”

To understand the complexities attached to sedation practice and decision-making for health care professionals, I focused on the views of health care professionals regarding how patient differences influenced sedation practices. This subtheme sets the scene and context for the next two subthemes.

How health care professionals practised sedation is complicated because there was a view that every patient was *“so different”* (Focus Group, Nurse EPEA, Interviews, Nurse 95M2, Nurse Y9WA), and sedation practice was thought to highly depend *“on the patient”* (Interview, Doctor 2PG5, Nurse GSPM, Nurse Y9WA). Due to the recognition of a lack of homogeneity among patients, this often meant that sedation practice needed to be *“patient-centred”* (Interview, Nurse ZE4Z). Usually, the centring of patient care was based upon several details and information about the patient such as *“their background, and what medications that they’re on, [...] age, comorbidities”* (Interview, Doctor 2PG5). A patient's medical history and presenting complaint often indicated what a patient needed from sedation. Amongst the staff, there was a recognition that if a patient had a history of substance misuse or mental health disorders, then this could complicate sedation practice for health care professionals as they might have required *“more adjuncts”* (Interview, Nurse ZE4Z). This subgroup of patients was thought to often *“wake up pretty poor”* (Focus Group, Nurse 95M2) and could *“become quite combative”* (Interview, Nurse GSPM). This often changed how sedation was managed for these patients as they were highlighted to often *“need a lot of sedation”* (Interview, Doctor 2PG5). Usually, this need for high amounts of sedation was required in order to keep them safe and prevent them from *“thrashing around the bed”* (Focus Group, Nurse 95M2).

Other elements of a patient’s presenting complaint also factored into sedation practice and continued the view that sedation practice was *“not one size fits all”* (Interview, Nurse 95M2). There was recognition amongst health care professionals that patients who usually presented with liver problems often ended up encephalopathic. This encephalopathy sometimes meant that patients did not *‘need a lot of sedation’* (Observations, Day 4, Patient SJ7B, Nurse 7E58). Furthermore, due to the presenting liver problems, nurses perceived that doctors gave sedation orders that were much *“clearer”* (Interview, Nurse XRLD), which provided a more cohesive approach to sedation practice.

In addition, health care professionals who had a surgical patient often perceived that sedation practice was more straightforward compared to medical patients who were thought to be more complicated. Post-operative patients were mostly elective admissions, meaning they were reasonably fit and well before admission to the ICU. As a result, sometimes these patients were viewed as routine and would often be kept *“settled overnight, and then extubate at like 6:30 in the morning before the day staff arrive”* (Interview, nurse Y9WA). Another nurse emphasised that sedation for these patients was often kept at higher infusion rates as they are not patients who are *“long-term, de-conditioned”* (Focus Group, Nurse 95M2). The nurses viewed that there was less risk attached to keeping a post-operative surgical patient more deeply sedated, and this, therefore, influenced how they practised sedation based on their presenting complaint.

Even though there were clear reports and emphasis that no two patients were the same, one nurse commented that *“every patient is different, but a lot of patients are the same.”* (Focus Group, Nurse EPEA). This comment highlighted that although patients differed, they were similar in how they presented and what support they needed from an ICU and sedation practice. It was recognised that often it was a case of just gathering more *“experience”* (Focus Group, Nurse EPEA) with the recognition that, in general, a lot of the sedation practice was routine. This routine practice was evident in how patients were commenced on to sedation. I often witnessed that if there were no other direction from doctors, most patients would be commenced onto *“Propofol and Fentanyl”* (Interview, Nurse Y9WA), and this was the initial sedation of choice as it was a *“very easy stock standard thing”* (Interview, Doctor 2PG5).

Having patients who presented differently and reacted differently to sedation was where many of the decision-making challenges came from with sedation practice. The lack of homogeneity among patients added complexities to the decision-making for health care professionals and sometimes resulted in difficulties in balancing the priorities for all involved. During data collection, sometimes health care professionals reported that they wished *“there was a guideline or a rule book”* (Interview, nurse XRLD) or they hoped for a more *“unified approach”* (Focus Group, Nurse EPEA). Health care professionals ultimately recognised that a rule book approach was *“not gonna work”* (Focus Group, Nurse 95M2) and that it was *“not*

realistic" (Interview, Nurse XRLD) due to how each patient differed. However, the wish for a guideline or a more unified approach highlighted that there were fractures in decision-making amongst health care professionals, which made sedation practice challenging.

One way sedation practice in the Australian case study attempted to be more unified was by using a sedation tool. In the case study, they used the RASS sedation tool to capture *"how sedated or agitated"* (Interview, Nurse UT5Y) a patient was. This sedation tool supported *"centralising everyone's view"* (Focus Group, Nurse 95M2). However, even though health care professionals captured this score *"four hourly"* (Interview, Nurse XRLD), it was seen as a sedation tool that was difficult to use with varying degrees of understanding amongst health care professionals. Participants reported that *"everyone's interpretation of patient sedation is different."* (Focus Group, Nurse 95M2). This resulted in the RASS sedation tool becoming a tick box exercise that was only ever used to its full potential when a patient was *"agitated"* (Focus Group, Nurse 95M2). For agitated patients, the use of the RASS sedation tool was optimised to give *"evidence of why they'd increase sedation, or why they've given someone so many boluses"* (Interview, Nurse XRLD). In addition, it was primarily a tool used by nurses with little engagement by the doctors. One doctor reported that *'The nurses do the RASS'* (Participant Observation, Doctor 2UEV). Another followed this up, stating, *"I don't actually use the RASS a lot"* (Interview, Doctor 2PG5). The one sedation tool available to centralise the sedation practices of health care professionals did not appear to be well utilised by doctors or nurses.

Throughout this subtheme, I have highlighted how the lack of homogeneity amongst patients can challenge sedation practice, as no two patients are the same. I will now highlight the different priorities amongst health care professionals and how these created fractures in decision-making.

Subtheme: Different Priorities-Making the nurses see, making the doctors see

Sedation practice was the responsibility of medical and nursing professionals, but each profession had different pressures and priorities. The different priorities of each profession sometimes created competing needs in managing a sedated and ventilated patient and produced a mentality that was *"us [nurses] versus the medical team"* (Focus Group, Nurse

95M2). This subtheme focused on emphasising the priorities of each profession and reflecting on how they practised sedation.

Each profession's different pressures and priorities could first be understood by their contact time with patients. Nurses were recognised as being "*there 24/7*" (Focus Group, Nurse EPEA), placing them in a unique position to learn, know and understand the patients they cared for. Getting to know a patient was achieved through several avenues, such as how they visually looked, their neurology, and their respiratory and cardiovascular function, all of which fluctuated. Nurses' unique understanding of the patient often needed time to develop. It sometimes took the first "*2 or 3 hours*" (Nurse, Interview ZE4Z) of a shift, but once nurses had spent this one-on-one time with the patient, they developed a unique ability of "*reading the patient*" (Interview, Nurse 95M2). This distinctive skill allowed them to establish and assess what was appropriate and needed from sedation. One doctor recognised the unique insight of nurses and stated during participant observations that they often left '*the sedation management to the nurse. [As] They are the ones at the bedside.*' (Observations, Day 9, Doctor 2UEV).

The uniqueness of ICU nurses and their practical sedation knowledge placed them in a position to be heavily involved in sedation practice. Nurses carried a high level of responsibility to ensure that the sedation management was appropriate and suitable for the patient. Often, nurses were the *doers* of sedation and did a lot of "*the process*" (Interview, Doctor 2PG5), which often included "*weaning and titration*" (Focus Group, Nurse EPEA). Weaning and titrating of sedation was the process of continually assessing and judging what was appropriate for the patient, which was different from 'wean and wake'. The nurse often made these decisions based on direct patient feedback all day. Often, the patient feedback was interconnected with a significant responsibility of the nurse, patient safety. Patient safety was viewed as a vitally important and dominating part of the nurse's identity as they were responsible for keeping "*the patient safe*" (Nurse, Interview 95M2). One nurse commented, "*you're always thinking about it, you're always conscious of your sedation, partly for safety you know*" (Interview, Nurse XRLD). In addition, as nurses cared for ICU patients on a one-to-one ratio, patient safety was an expected part of their role from their medical colleagues. Doctors were observed to place this responsibility on the nurse through verbal discussion

such as *'Aiming for extubating, but only if safe'* (Observations, Day 9, Patient C3RQ, Doctor 2UEV) and through patient documentation *'try and get [patient] a bit more awake if safe to do so'* (Document Review, Patient SJ7B). Nurses had to balance their responsibilities throughout their shifts and sometimes struggled to maintain balance when their medical counterparts had a different *"focus"* (Focus Group, Nurse EPEA).

Medical professionals' priorities were bound by how much capacity and support they could offer each patient and bedside nurse. Medics did not have the luxury of a one-to-one ratio and, therefore, prioritised differently. Each morning, they were expected to *"examine all [their] our patients"* (Interviews, Doctor 2PG5), and they would do this for seven days straight as per their roster. As a result, medics often thought differently about the sedation management of the patient as they reported having greater oversight of the patient's needs and a much *"bigger focus"* (Interview, Nurse 95M2). Doctors had this 'bigger focus' because they perceived they had the advantage of looking *"after them every single day"* (Interviews, Doctor 2PG5). As a result, doctors were thought to have a greater understanding of the patient when making decisions because they knew *"the trajectory of the patient"* (Interviews, Doctor 2PG5). Knowing the patient's trajectory allowed doctors to make decisions that focused on setting goals that supported the long-term progress of the patient. Nurses were, however, rostered differently and did not have the same continuity as doctors. This often gave them a different focus. In addition, nurses were rarely re-assigned to the same patient, meaning they lacked patient continuity compared to the doctors. Therefore, as a result, nurses and doctors had different priorities. One nurse summed up the different priorities of the medical and nursing staff and stated that the doctor's priority *"is probably a bit more like removed, because it's like they have so many other patients to see whereas we [nurses] only have one, so they'll like will just see from a distance whereas ours is very microscopic sort of thing"* (Focus Group, Nurse EPEA). One doctor proposed a limitation of their working methods and stated, *'Don't think it's right to tell them what to do if only seeing the patient for a few minutes while walking around.'* (Observations, Day 9, Doctor 2UEV).

Despite mutual understanding about the different priorities of each profession, it was not easy for either profession to accept. For nurses, they emphasised that it was *"very hard for someone [medical] to walk in for 10 minutes, and actually understand"* (Focus Group, Nurse

95M2). For doctors, they found that with sedation practice, sometimes the nurses were unable to *"quite get it right"* (Interview, Doctor 2PG5). Sometimes, these conflicting perceptions resulted in each profession trying to make the other profession understand where their priorities were. Trying to make the other professions see was more evident in the nursing workforce. Nurses believed that sedation practice was ultimately *"up to the medical team"* (Focus Group, Nurse 95M2) and doctors also concurred that sedation practice was *"more doctor-led"* (Interview, Doctor 2PG5). For nurses, the medical professionals were seen as having the ultimate say because they held the responsibility to *"prescribe the sedation"* (Focus Group, Nurse EPEA), and you *"had to do what they [doctors] say"* (Focus Group, Nurse EPEA). This gave them leverage to set boundaries with *"specific instructions"* (Interview, Nurse XRLD). Nurses reported, *"the medical team might be like turn everything off, and then you've got no option but to turn off everything"* (Interview, Nurse XRLD). Some perceived the doctors were *"on a bit of a power trip"* (Interview, Nurse Y9WA), where decisions were made for patients *"without discussion"* (Focus Group, Nurse 95M2). The hierarchy pyramid was visible with nurses having to escalate up to *"talk to the more senior doctor"* (Interview, Nurse ZE4Z), with a deeply ingrained view that you would need to escalate in the correct order as you *"wouldn't necessarily approach a consultant with a problem"* (Interview, Nurse XRLD).

As a result, nurses needed to encourage doctors to become more aligned with what they prioritised. For example, nurses reported that they often needed to highlight the severity of an agitated patient to the doctors. To do this, they might have allowed the patient to be *"thrashing around the bed... if the medical team was coming to review"* (Focus Group, Nurse 95M2). This technique allowed nurses to emphasise to the doctors how agitated and unmanageable the patient was. In doing so, they hoped that more sedation would be prescribed or they would be granted approval to up titrate the sedation. In addition, if the doctors saw how agitated the patient was, it could evoke emotional distress in doctors, as discussed in theme one, comfort and control. Nurses were often subjected to more emotional distress because of the greater amount of time they spent at the patient's bedside. To get the doctors to view sedation practice from the nurse's perspective and experience some of this emotional distress, the nurses sometimes asked the doctors to stand at the bedside *"for 10 minutes and have a look and see how this patient is unmanageable"* (Interview, Nurse 95M2). Furthermore, a highly agitated patient sometimes generated airway concerns for doctors

because the 'thrashing around' was thought to potentially *"traumatise the airway"* (Interview, Doctor 2PG5), and this created safety concerns.

Throughout this subtheme, I have highlighted why health care professionals had different priorities and how this influenced sedation practice. I have reported how each profession highlights its priority to the other profession and how it impacted sedation practice. Sometimes, the different priorities were observed to cause fractures in decision-making, which I explored further in the next subtheme.

Subtheme: Fractures in Decision-Making

This subtheme examined how decision-making was created and where it broke down, with a specific focus on how the priorities of each profession influenced sedation practice. Decision-making was fractured, which arose from unclear documentation from doctors that were left open to interpretation, along with pressures from time constraints, which resulted in a view that doctors were not always present to support sedation practice.

The medical team often made decisions and made plans for the day during the morning ward rounds. The decisions made were typically about sedation targets, the changing of sedation agents, or considering the suitability for extubation and how this related to sedation management. Sometimes, the documentation was *"very broad"* (Interview, Nurse XRLD). One nurse commented that they *"recently had a patient who's on Propofol, Fentanyl and Precedex, and they were getting Quetiapine down their NG [nasogastric tube] as well. Then the only note that was written was just 'wean sedation'"* (Interview, Nurse UT5Y). Often, this broad documentation of 'wean sedation' was opened up to incorrect interpretation as it *"could mean a lot of different things"* (Interview, Nurse XRLD). Sometimes, the lack of availability from doctors resulted in nurses chasing *"up the plan with the doctor"* (Interview, Nurse XRLD). When documentation was broad and left open to interpretation, this sometimes resulted in fractures of decision-making as nurses interpreted things differently from their medical counterparts.

Despite the decision-making role of doctors, some nurses questioned their role in the sedation management of patients altogether. One nurse commented that once the sedation

starts, *"there's not really much more they [doctors] can do"* (Interview, Nurse Y9WA). Another nurse felt that doctors *"don't have a good gauge on what's good for this patient"* (Interview, Nurse 95M2), which may have stemmed from different priorities as already explored. Nonetheless, this view created fractured decision-making between the two professions. One nurse commented, *"we get a bit pissed off when other members of the multi-disciplinary team touch our patient's sedation rates"* (Focus Group, Nurse 95M2). Another nurse then described how they questioned the doctor's decision-making and asked, *"is there a reason you turn it down so much? because they're just gonna wake up now and start coughing and thrashing around"* (Interview, Nurse Y9WA).

Part of this tension might be due to how available they perceived the doctors to be for support. Some nurses felt that *"unless you have your Propofol at like 25 [mls per hour]. They're probably not really caring what you're doing, and how much you're bolusing"* (Focus Group, Nurse 95M2). Nurses frequently perceived that the doctors *"don't really pay that much attention"* (Focus Group, Nurse 95M2) or *"actually say too much about the sedation"* (Interview, Nurse GSPM). They viewed doctors as sometimes disinterested in sedation practice, which is better understood when looking at the different priorities of each profession. Some nurses felt doctors were only intermittently interested in sedation practice, as one nurse expressed, *"they're there, and then they've gone"* (Interview Nurse 95M2) as *"they keep rounding"* (Interview, Nurse UT5Y). If a doctor asked for a reduction in sedation, one nurse expressed that this could be met by a nurse saying, *"oh I don't want to"* (Focus Group, Nurse EPEA). The nurse identified how the intermittent physical presence of doctors sometimes turned into refusal from the bedside nurse to take action on the requests from doctors as they perceived that they would not get the support they needed. This refusal or hesitancy from nurses to follow through with the decisions from doctors about sedation was observed during observations. I witnessed a doctor ask the nurse to extubate the patient prior to the computed tomography scan. The bedside nurse challenged this request, which resulted in the doctor needing to explicitly give the *'reasons why they wanted it this way'* (Observations, Day 24, Doctor P37K).

The perception that doctors were unavailable also created fractures in decision-making as it allowed nurses to practice sedation management in a way that they thought was most

appropriate for the patient and their needs. Often, nurses acted with sedation before informing or involving the doctor, as one nurse said, *"I would just go up on it [sedation], and then I'd flag it with [the doctors]. It happened the other day actually, I just flagged it being like, 'they kept coughing. I had to go back up'"* (Interview, Nurse Y9WA). As patient safety fell onto the responsibility of the bedside nurse, nurses often gave boluses of sedation *"until the doctors can come"* (Interview, Nurse UT5Y). Sometimes, bolusing sedation extended out of the realms of imminent patient safety, as nurses altered the decisions made by doctors for the patient. During observations, one nurse explained to me *'that the doctor asked them to start the Dexmedetomidine at 0.2 mcg/kg/hr, but because it takes time to prime the line, they started it a bit higher and then will wean it down a little bit later to what the doctors want it on'* (Observations, Day 2, Nurse XRLD, Patient FJUK). However, a short while later, the *'Nurse then said to me that because his RR [respiratory rate] has come down, and his BP [Blood Pressure] and HR [Heart Rate], might leave it on 0.3 mcg/kg/hr and will tell the doctors later'* (Observations, Day 2, Nurse XRLD, Patient FJUK).

Nurses frequently adjusted sedation in line with what they perceived as appropriate for the patient and often reported the need to continually adjust the sedation as they found that the *"plan can change very quickly"* (Interview, Nurse XRLD) and that you could never *"find the perfect sedation"* (Interview, Nurse XRLD). Nurses frequently reported that they struggled to carry out the goals and plans set by the doctor for the patient, which, again, resulted in changing the decisions made. Often, these struggles were documented in nursing documentation as they justified the decisions made for sedation practice. I often read in the documentation things like, *'Rates reduced as per ICU team round this AM. Increase [sedation] again with WOB [Work of Breathing]'* (Document Review, Nursing Progress Note, Patient H8XB).

Sometimes, these fractures in decision-making affected the harmony between nurses and doctors. Nurses reported that sometimes, they were questioned in an accusatory fashion by doctors if they perceived sedation practice was not appropriate for the needs of the patient. One nurse recounted how a doctor had approached the bedside of the patient and, with no prior conversation with the bedside nurse and automatically questioned the sedation practices as they commented, *"why's it so high?!"* (Interview, Nurse Y9WA). One nurse felt

this approach resulted from *“old school thinking”* (interview, Nurse ZE4Z). Nurses believed this ‘old school thinking’ had historical hierarchical influences, with doctors not seeing nurses as *“intelligent and qualified”* (Interview, Nurse ZE4Z). When nurses were challenged in this accusatory fashion, nurses found doctors were *“disrespectful of like our [nursing] role”* (Interview, Nurse Y9WA).

Throughout this subtheme, I have explored the fractures that lie in decision-making and have attempted to understand the reasons behind the fractures and their impact on the sedation practices of health care professionals and the relationship between the two professions. Throughout this theme, I have explained that the lack of homogeneity among patients adds challenges to sedation practice and how the different priorities of health care professionals influenced sedation practices and caused fractures in decision-making. I will now explore the final theme, the shaping of a culture.

6.11 Theme Three: The Shaping of a Culture

This theme explored how the power of collective sedation practices and peer perceptions could influence the sedation practices of nurses and doctors. Within this theme, I begin by looking at the collective sedation practices and the influence of peers. Then, I specifically focus on how light sedation practices are influenced by the rules and regulations set by health care professionals in the case study. The theme is finished with a discussion on how health care professionals sometimes struggle to accept the culture of sedation practices. This theme comprises four subthemes, ‘Collective Sedation Practices’, ‘The Influence of Peer Perceptions’, ‘The Rules and Regulations of Light Sedation’ and ‘The Difficulties of Accepting the Culture’.

Subtheme: Collective Sedation Practices’

This subtheme is about a shared awareness and understanding of health care professionals’ core beliefs and standards of sedation practice. The collective sedation practices were built upon core beliefs about how sedation should be practised, and the ideals were carried from generation to generation of health care professionals. These core beliefs often created a team approach and a collaborative work ethic. Some of the core beliefs and standards of practice

to be discussed were avoiding high Propofol infusion rates, an early sedation wean, opioid rotation, and increased sedation for night/break cover.

One of the central core beliefs I first identified was that the health care professionals attempted to keep the Propofol at less than 20mls an hour. Health care professionals worried that a high Propofol infusion rate would increase the *"risk of Propofol infusion syndrome"* (Interview, Doctor 2PG5). Therefore, there was a consensus that a *"high dose of Propofol"* (Interview, Nurse GSPM) was anything above *"20mls of Propofol"* (Interview, Nurse UT5Y). When Propofol infusion rates were at these higher doses, nurses reported that doctors took a greater interest in sedation practice and seemed to *"care"* (Focus Group, Nurse 95M2) as they considered introducing a third sedation agent such as a *'Midazolam'* (Document Review, Patient JZG4). When doctors took a greater interest in sedation practice, this influenced the perception and views of nursing colleagues regarding what constituted a high dose of sedation. One nurse commented that keeping Propofol infusion rates under 20mls/hr was *"The only real guideline"* (Interview, Nurse XRLD). Furthermore, an interaction between two nurses during observations highlighted the intensity of this core belief.

Nurse DA8F- '25 of Prop!'

Nurse Z6N3- 'Oh mate, you try pausing that Prop, they are strong'

(Observations, Day 16, Nurse Z6N3, Nurse DA8F, Patient CQJ5)

Another collective sedation practice in the Australian case study was the commencement of a sedation wean in the early morning hours on suitable patients. Often, patients would be deemed safe and suitable to have their sedation weaned during the night medical review, as doctors would document, *"Aim to wean and wake mane [in the morning]"* (Document Review, Patient 7SZB). The decision to commence a morning wean was a collaborative decision between nurses and doctors and was *"part of a conversation with the night round"* (Interview, Nurse XRLD). If a patient was heading towards extubation, then health care professionals reported that a sedation wean would begin approximately *"6/7am"* (Interview Nurse, XRLD) or after all nursing staff had finished their night shift *"break[s]"* (Interview, Nurse GSPM). Typically, starting a sedation wean at that time gave patients enough time to be *"ready for an extubation assessment by the day team"* (Interview, Doctor 2PG5) at around *"9 or 10 o'clock"*

(Interview, Nurse ZE4Z). There was a consensus that this way of working worked well because it reduced the workload and supported the morning medical and nursing teams who had to *"round on 18 patients"* (Focus Group, Nurse 95M2). This view highlighted the teamwork ethic of an early morning sedation wean within the collective sedation practice. Sometimes, nursing staff felt that if they had enough experience, they could *"anticipate"* (Focus Group, Nurse 95M2) when starting an early sedation wean was appropriate without prior permission.

One other core belief was the practice of an opioid rotation. Opioid rotation was the practice of switching from one analgesic to another, such as *'Fentanyl to Morphine'* (Document Review, Patient H8XB). This core belief was advocated more specifically by the doctors who *"rotate the opioids at their discretion"* (Interview, Nurse UT5Y). The decision to commence an opioid rotation was based on several assessments. One of those assessments was the feedback from nursing staff who reported on the ongoing helpfulness of *"Fentanyl boluses"* (Interview, Doctors 2PG5) and if nurses *"had trouble getting on top of the patient in terms of like agitation management"* (Interview, Doctors 2PG5). One nurse commented that patients could become challenging to sedate because they are *"so tolerant to what you're using"* (Interview, Nurse 95M2). In addition to this feedback, if the patient had been on an opioid for a *"long time"* (Interview, Doctor 2PG5), then an opiate rotation was also considered. One nurse recalled that a doctor might initiate a rotation if the patient had *"been on oxycodone for three weeks"* (Interview, Nurse 95M2). However, what was interesting about an opioid rotation was that health care professionals expressed that there was not much evidence to support this practice. One nurse confessed that they *"don't fully understand the evidence behind it"* (Interview, Nurse UT5Y), and one doctor was unsure if there was a *"definition for a long time"* (Interview, Doctor 2PG5). Despite unclear background knowledge, one nurse commented that some doctors were *"pretty religious about rotating them"* (Interview, Nurse UT5Y). This collective sedation practice highlighted that even if there were a perceived lack of evidence to support sedation practice, the strong culture would prevail and influence the sedation practices of health care professionals.

An additional collective sedation practice was the almost subconscious and expected practice of increasing sedation overnight. The increase in sedation overnight was often multifactorial but was routinely observed and discussed as a practice that accommodated staff *"breaks"*

(Interview, Nurse XRLD). Participants often reported that the increase in sedation for breaks and overnight was a practice that was *“set and standard”* (Interview, Nurse ZE4Z). One nurse reported that the increase is usually *“a 2-3hour block”* (Interview, Nurse XRLD) of increased sedation rates *“during our break”* (Interview, Nurse GSPM). After the break, nurses would then *“slowly wean it down”* (Interview, Nurse GSPM). This timing usually coincided with the early morning sedation weaning practice.

Additionally, sedation was increased overnight due to the belief that the night was *“a sleep time period”* (Interview, Nurse XRLD). Patients were given more sedation, which facilitated a restful period to not *“hinder their reserve”* (Interview, Nurse 95M2). Another nurse commented that it was typical to *“have them [patients] on a higher level sedation overnight, [... for] a normal sleep wake cycle”* (Interview, Nurse ZE4Z). During night observations, one nurse reported, *‘at night, [you’ve] just got to keep them asleep- keep them sedated.’* (Observations, Day 16, Nurse DA8F, Patient CQJ5).

Throughout this subtheme, I highlighted some core beliefs that created collective sedation practices in the Australian Case Study. Through these core beliefs, I evidenced how a team approach was taken towards sedation practice with a strong influence from culture.

Subtheme: The Influence of Peer Perceptions

As explored in the previous subtheme, the Australian ICU had collective sedation practices, which most health care professionals worked toward. As well as a collaborative influence working towards collective sedation practices, there were strong effects from peer influence. Peer influence placed an expectation on peers that sedation should be practised in a certain way. This subtheme explores how peers were influenced and how peer perceptions influenced sedation practice.

Peer influence could impact sedation practices through how the patient visually looked from the end of the bed. There was pressure from health care professionals to achieve a patient who was visually *‘settled with a RASS -2/-3’* (Observations, Day 10, Nurse NE4Z, Nurse DLB2, Patient SJ7B). Patients who were the opposite of settled were usually classed as *‘agitated’* (Document Review, Patient H8XB). When the patient was agitated, *“they’re biting on the tube,*

they can be tachycardiac, trying to self-extubate" (Interview, Nurse ZE4Z). There was a worry amongst health care professionals that if the patient did not look visually settled, then a snap judgment could be made on their ability to provide care for the patient, and other peers could think that *"this persons not looking after their patient properly"* (Focus Group, Nurse 95M2). Sometimes, this could lead to your colleagues seeing you *"as an inept clinician"* (Interview, Nurse UT5Y). If you were seen to *"struggle and flounder"* (Interview, Nurse 95M2) and not reach out, you could run the risk of being viewed as *"a dangerous nurse"* (Interview, Nurse ZE4Z). One nurse commented, *"you don't want to be the person everyone sees having this distressed, uncomfortable patient"* (Interview, Nurse UT5Y). As previously discussed, in theme one, control and comfort, sedation could help regain control. Peer perceptions could influence the practice of bolusing sedation as a way to regain control of their patient so that they avoided negative peer perceptions as they depicted a patient that was *"settled"* (Interview, Doctor 2PG5) and *"under control"* (Interview, Nurse UT5Y).

In addition, the amount of peer support you received often depended on having *"a good relationship with your colleagues"* (Interviews, Nurse XRLD). To get peer support and maintain positive perceptions, you needed to be a clinician who would *"ask for help"* (Interview, Nurse 95M2). One nurse reported that if you asked for help, it was *"the best way to make other senior staff know that you're safe. Otherwise they don't really trust you."* (Interview, Nurse ZE4Z). One nurse commented that *"senior staff are the ones that allocate the patient load"* (Interview, Nurse UT5Y), and if health care professionals did not trust you, you would not be given *"unwell patients"* (Interview, Nurse UT5Y). If a negative peer perception was obtained, this further impacted health care professionals *"on a social level"* (Interview, Nurse UT5Y) outside of the workplace, and questions would be raised about *"why they've come to [work in the] ICU"* (Interview, Nurse Y9WA).

If senior health care professionals were worried about the safety of sedation practices, they would *"pull you up on practice"* (Interview, Nurse UT5Y). One nurse commented that seniors would make comments on sedation practice such as *"ooooo, you might need a little bit more [sedation] than that"* (Interview, Nurse GSPM) or they would suggest that you spoke to the doctors *"to add on something else"* (Interview, Nurse GSPM). This often left health care professionals more inclined to deeply sedate patients because if *"the patient's happy and*

comfortable, you just leave it" (Interview, Nurse Y9WA) as *"you don't wanna ruin your day"* (Focus Group, Nurse 95M2). One nurse reported that *"it never feels good"* (Interview, Nurse UT5Y) to get pulled up on practice, and it was *"not a nice feeling"* (Interview, Nurse UT5Y). However, there was recognition that getting pulled up on practice was a part of being a senior health care professional's *"job"* (Interview, Nurse UT5Y).

Peer perceptions and their influence could be subtle, or they could be obvious. One of the obvious ways that peer perceptions could influence sedation practice was through sedation education. There were reports that when new nurses started working in the ICU, there were no teaching sessions on *"sedation weaning [...] and titration"* (Interview, Nurse 95M2). Another nurse further commented that there are no *"learning packages or education days about sedation practices"* (Interview, Nurse XRLD). Therefore, most of the learning about sedation comes from working in the ICU. One of the ways peer perceptions and collective sedation practices were maintained between generations of health care professionals was by *"learning through osmosis"* (Interview, Nurse XRLD). For sedation practices, most of the learning came from being *"thrown into it, and you just learn it on the job"* (Interview, Nurse Y9WA). By being 'thrown into it', nurses reported that *"you kinda just get used to it, and then you just realise what the sort of normal [sedation] level is, [and] what a normal bolus is."* (Interview, Nurse Y9WA). Often, the learning was *"ad hoc"* (Interview, Nurse XRLD) at the bedside and sometimes involved learning from an *"educator or senior staff member"* (Interview, Nurse ZE4Z). Other learning opportunities I observed were generated through *'the ward round, [where] teaching opportunities occurred'* (Observations, Day 16). Through the ward rounds, I found that health care professionals could participate in learning *'conversations or discussion'* (Observations, Day 24). Having the learning process occur primarily at the bedside maintained the status quo of sedation practices and maintained the ongoing influence of peers.

Subtheme: The Rules and Regulations of Light Sedation

This subtheme was generated by recognising that light sedation was, at times, an embedded practice in the Australian case study. Amongst staff, there was an awareness of the benefits of light sedation for the patient, family, and health care professionals. One nurse commented that *"everyone knows we want to keep a patient as lightly sedated"* (Focus Group, Nurse

95M2), and another commented that light sedation was the *“goal in mind”* (Interview, Nurse XRLD). However, light sedation often had specific unwritten rules and regulations upheld by the health care professionals working in the Australian case study. This subtheme examined the rules and regulations health care professionals set to achieve light sedation.

One of the rules and regulations of light sedation was that it was only suited for the daytime. One nurse commented that there was a stark difference between *“day and night”* (Focus Group, Nurse EPEA) sedation practices. During the day, health care professionals could *“be more willing to experiment with weaning and titration”* (Focus Group, Nurse EPEA). The rule of light sedation practice being only suitable for daytime hours was in keeping with the earlier subtheme where health care professionals emphasised the use of liberal sedation overnight. Another nurse backed this view and stated that health care professionals *“try to make day shift awake time, where like they’re much more awake and they’re interactive and then we usually increase the sedation overnight”* (Interview, Nurse XRLD). One given reason for light sedation during the day was that they *“don’t tend to extubate people overnight”* (Interview, Doctor 2PG5). Extubations overnight were less common because of organisational factors such as reduced senior medical *“staffing”* (Interview, Nurse GSPM). Therefore, nurses often had conversations with doctors such as the following-

“Hey the patient’s highly awake, its night time, we’re not going to extubate tonight, there’s no point keeping this patient super awake. Would you mind if we just..’ or we usually...’just to let you know we’ve increased the sedation just to keep them more comfortable overnight”

(Interview, Nurse XRLD)

In addition to the daytime hours for light sedation, there were certain expectations of where a patient needed to be physiologically in their critical care journey before thinking about lightening the sedation. Some felt that only certain patients fit the criteria for light sedation and were usually only deemed appropriate if they were classed as *“extubateable”* (Interview, Nurse UT5Y). If patients were in the acute phase of their illness, such as *“acute respiratory distress”* (Focus Group, Nurse EPEA), health care professionals viewed light sedation as inappropriate. This view was supported by the doctors who felt that sometimes there was

“no point” (Interview, Doctor 2PG5) in lightening sedation. Often, doctors would discuss *“with the nurses at the start of the shift to say, ‘look, you know, they’re not going to be extubated any time soon, don’t worry about weaning the sedation’”* (Interview, Doctor 2PG5).

If patients were labelled as extubateable and were out of the acute phase of their illness, they would still need to conform to the unwritten rules and regulations of health care professionals for light sedation. Light sedation was viewed as only acceptable if patients were *“obeying commands”* (Interview, Nurse ZE4Z), *“aware of their surroundings”* (Interview, Nurse XRLD) and *“if they’re safe and they’re not agitated at all”* (Interview, Nurse Y9WA). Nurses recognised that light sedation was *“great if they can handle it”* (Interview, Nurse Y9WA), but sometimes patients could not. When sedation was light, some reported that patients became *“really scrambled”* (Focus Group, Nurse 95M2) and *‘dyssynchronous with [the] ventilator’* (Documentation Review, Patient 6USB). If patients were *“super distressed”* (Interview, Nurse XRLD), they were viewed as not extubateable, and health care professionals would put *“the sedation back up”* (Interview, Nurse XRLD).

In addition to the rules and regulations set, health care professionals reported logistical challenges when looking after lightly sedated patients, as one nurse reported, *“my back never turns on them”* (Interview, Nurse ZE4Z). Lightly sedated patients often demanded closer observations because of the increased risk of patients *“self extubating”* (Focus Group, Nurse EPEA). Another logistical challenge was that lightly sedated patients usually needed a constant titration of sedation medications. Health care professionals found that it took time to find the *“sweet spot”* (Interview, Nurse Y9WA). Patients fluctuated with their sedation levels and would be *“in and out, in and out”* (Interview, Nurse GSPM). Another nurse reported that *“it’s hard to get the right level, [...] at a certain level it’s like too much, and then you go down one and it’s not enough, and you just can’t get it right”* (Interview, Nurse Y9WA). Sometimes, the sedation agents were considered unsuitable to achieve light sedation. One nurse explained that with Propofol, *“it’s quite a fine line between responsive and completely flat.”* (Interview, Nurse UT5Y). A review of a patient’s documentation revealed the constant titration of sedation medication. One nurse concluded, *“You’re always playing around with it, you’re always trying to find the right number and the right dose.”* (Interview, Nurse XRLD).

As a result, light sedation was viewed as extra work and risk, it created a space for mechanical restraints to be introduced to help manage the patient. The use of mechanical restraints was *“multifactorial”* (Interview, Doctor 2PG5) but often was initiated with *“lighter sedation”* (Document Review, Patient H8XB). One doctor reported that using restraints was affiliated with a *‘massive culture’* (Observations, Day 19, Doctor 2PG5), with elements of *‘safety’* (Document Review, Patient SJ7B) playing a part. Commonly, patients who were *‘Becoming more awake, Not following commands, [were] Restrained for safety’* (Document Review, Patient H8XB). During participant observations, one nurse detailed how they had experienced a patient who self-extubated, and *‘now [they] always make sure there are restraints’* (Observations, Day 16, Nurse DA8F, Patient CQJ5). As light sedation was thought to create a *“high risk of self extubation”* (Interview, nurse XRLD), health care professionals acknowledged that this was when *“physical restraints come in”* (Interview, nurse XRLD). Another nurse reported that *“in an extreme situation, we’ll use the restraint, because sometimes the patient when they wake up, they’re really agitated”* (Interview, Nurse GSPM). However, sometimes, nurses found practicality with the introduction of restraints because they believed they could facilitate light sedation. They expressed they could reduce sedation *“down because [...] they’re not gonna suddenly fling their arm up because they’ve got it restrained”* (Interview, Nurse Y9WA). Another nurse reported that introducing mechanical restraints helped them maintain light sedation and avoided *“increasing the sedation”* (Interview, nurse ZE4Z). Some viewed introducing mechanical restraints as a *“negative”* (Interview, Nurse XRLD) result of light sedation. They reported they did not *“ever like physically restraining someone [...] but it becomes much more of a necessity by having lighter sedation”* (Interview, Nurse XRLD).

This subtheme explored the rules and regulations regarding light sedation. It demarcated when it was not and when it was acceptable to have a lightly sedated patient based on health care professionals' perceptions. It then concluded with the view that restraints could be used as a resource to help facilitate light sedation and preserve the safety of patients.

Subtheme: The Difficulties of Accepting the Culture

The aspects of sedation practice discussed throughout earlier sections of this theme highlighted how culture could create synergism among sedation practices between health care professionals. The synergism of collective sedation practices was influenced by peer

influence against a backdrop of education in which rules and regulations were set. However, in this subtheme, I highlighted how the culture of accepted sedation practice created discontent in individuals regarding their practice. This subtheme investigated some of the perceptions staff held about their own sedation practice and the practice of others and how it could create conflict with what they believed was in the patient's best interests.

As discussed earlier, participants reported deeper sedation practices when covering staff breaks with increased sedation for night time sedation practices. One participant expressed that they found it *“hard”* (Focus Group, Nurse EPEA) when they needed to increase the sedation before going on their break as they believed that it was *“not the best thing to do”* (Focus Group, Nurse EPEA). They struggled with guilty feelings that arose from sedation practices that they believed were not in the patient's best interests. Another participant also struggled with the practice of increasing sedation overnight as they found it to be *“quite frustrating”* (Interview, Doctor 2PG5). They recognised that organisational factors and the lack of staff were mostly to blame for this sedation practice and attributed it to a *“post-COVID effect, [...] [as] a lot of the senior nurses have left”* (Interview, Doctor 2PG5). Nevertheless, they carried guilt about night time sedation practices *“on behalf of the patient”* (Interview, Doctor 2PG5) and recognised that their sedation practices prevented them from limiting *“ICU delirium”* (Interview, Doctor 2PG5) and time on the *“ventilator”* (Interview, Doctor 2PG5). I found that if health care professionals had a greater academic knowledge about sedation practices, they could carry a greater moral burden if they believed their sedation practices were suboptimal.

During the interview with participant 2PG5, I discussed whether they thought having lighter sedation practised overnight was possible, and they expressed that organisational factors were primarily to blame. They explained that *“realistically, I know that we just don't have the staff to do that at all, I mean the other night we were minus 11[staff], and we had our team leader in ICU B [who] was looking after 3 ventilated patients, like it's just not, it's just not feasible at all, you know, she was standing there like looking at all 3 in that one corner space, and I thought like what the heck like, and then they end up being bombed out [deeply sedated] completely”* (Interview, Doctor 2PG5).

In addition, the culture of the ICU was also found to be a compounding factor. Culture impacted future progress and change, creating a stagnation of sub-optimised sedation practice. One nurse expressed that their hands were tied and asked, *“what’s the alternative?”* (Focus Group, Nurse EPEA). Challenging the culture of sedation practice required going against the grain of their professional peers. One nurse reported that if health care professionals tried to change or influence sedation practice, it could be met with a shock response of *“‘what!’ and like ‘we don’t do that here’”* (Interview, nurse 95M2). Going against peers could be detrimental to peer acceptance within the clinical environment, as highlighted in the earlier subtheme, the influence of peer perceptions.

Overall, theme three explores how culture is shaped through collective sedation practices passed from generation to generation and how peers influence ongoing sedation practices. I then explored the practice of light sedation and how it is influenced by culture. I finally discussed how culture was not always perceived as a positive and could be detrimental to the wellbeing of health care professionals and the outcomes of patients.

6.12 Summary of Findings from Australia

Throughout the Australian findings, I have discussed three themes and 11 subthemes. Through the themes, I examined the different influences on the sedation practices at the Australian case study and how these influences were also multi-layered and complex, like the UK findings. I will now present a mind map (Figure 12) of the similarities and differences between the UK and Australian case studies before continuing a cross-case analysis in the discussion chapter.

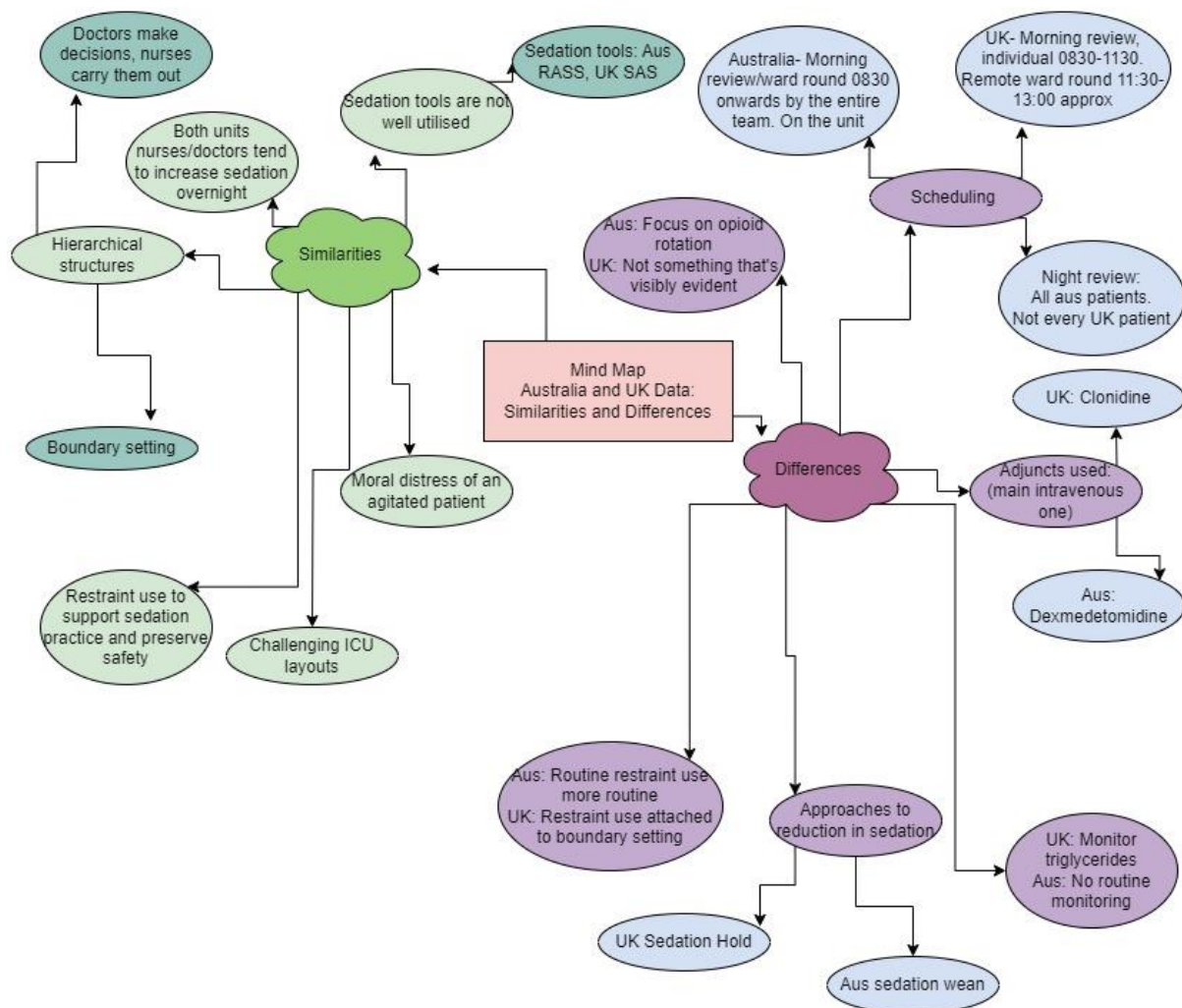


Figure 12- Mind Map of the differences and similarities between the case studies in the UK and Australia.

6.13 Summary of Findings from Australia and the UK

Throughout Chapter Six, findings, I have reported on the data collected in both Australia and the UK. As the data was analysed separately, I will now summarise the findings from both case studies. I hope this will start to bring together the findings before moving on to the discussion chapter, where these will be discussed in more depth.

From the findings, it is evident that sedation played a more significant role for the health care professionals and the patient, which extended out of the primary aims of maintaining patient comfort to tolerate ICU interventions. The findings illustrated how sedation was also used to facilitate a poor ICU layout, facilitate reduced observations, reduced staffing, and support staffing breaks. It also provided psychological support by reducing anxiety and psychological

distress and was a strategy used in providing patient care. Finally, I saw mechanical restraint being closely tied and linked with sedation practices across both case studies. Both case studies showed a reliance on restraints in support of health care professionals' sedation practices. Sometimes, this created additional conflict amongst health care professionals.

Sedation had multiple roles, and when health care professionals performed sedation weaning or a sedation hold, this directly removed greater control over the mechanically ventilated patient for other aspects of care and practice. Therefore, sedation weaning and sedation holds were linked to distress and anxiety amongst health care professionals, as there was reduced access to the comfort that sedation could provide for both patients and health care professionals. The comfort that sedation provided for health care professionals was further evident in how the Australian participants spoke about their preference for a sedation wean over a sedation hold and how they spoke about the introduction and use of Dexmedetomidine.

Furthermore, sedation practice was heavily influenced by the layout and context of the ICU's routine and schedule. Sometimes, the scheduling of the unit could influence when and how sedation was weaned or held. In Australia, I saw how an early review combined ward round of the doctors resulted in a night time practice of sedation weaning, and in the UK, I saw a strong culture of a daily sedation hold with outcomes influenced by the scheduling of the midday ward round. There were further impacts on sedation practice from influences on how accessible support from other colleagues was deemed or how visible other colleagues were. Moreover, the perception of peers was found to influence the sedation practices of health care professionals.

In addition, further challenges for sedation practice seemed to derive from the notion that each patient was different and that circumstances surrounding the patient were different. This often added complexities to sedation practice that had to be managed in the context of the ICU in which health care professionals worked.

Sedation practices were continually troubled by a lack of continuity or ineffective communication. Decision-making across both case studies was mostly doctor-led, but the

practice of sedation was nurse-led. The influence on decision-making sometimes created conflict between the different professional groups. In addition, the different roles created different views. Medical staff were often more observant of the longer-term picture, whereas nursing staff had a more day-to-day focus. This led to both case studies perceiving medical staff as having a detached view of sedation practice. Nurses were then left with more moral conflict that created distress.

In summary, the main findings were as follows:

- 1) Sedation practice was a tool interconnected with other aspects of nursing and medical practice, as well as restraint use.
- 2) Health care professionals were subjected to psychological distress when managing sedation, and sedation could be used to help lessen psychological distress.
- 3) Wider organisational factors can influence sedation practice, such as the ICU layout and the scheduling and structuring of an ICU.
- 4) Sedation practice management created friction between health care professionals.

CHAPTER 7

DISCUSSION: BRINGING IT ALL TOGETHER

7.1 Introduction

This chapter aims to bring together the findings from the UK and Australian case studies and then situate the findings within the broader literature regarding the sedation practices of health care professionals. Before I begin, I would like to remind the reader that in evaluating the case studies, the resulting “report is just one person’s encounter with a complex case” (Stake, 1995, p. 123). As a nurse researcher still working in an ICU at the time of writing, I have a unique and personal interpretation of the case studies, which I explore in this discussion chapter through “Experiential Understanding” (Stake, 1995, p. 37). Through experiential understanding, I have applied “empathetic understanding” to interpret sections of the data (Stake, 1995, p. 39). In doing so, I aim “to sharpen the search for understanding[...] with [...] [my] own direct interpretation and stories” (Stake, 1995, p. 40). Therefore, throughout this chapter, I will include my “own personal perspectives in the interpretation” (Stake, 1995, p. 135). By doing so, I seek to remain reflexive and provide support to the completed data analysis while acknowledging “that truth is relative; it is the result of perspective” (Boblin *et al.*, 2013, p. 1268).

This chapter is initially split into two key sections. In section one, I bring the findings of the UK and Australian case studies together, discussing some similarities and variations highlighted at the end of Chapter Six. In the second section, I discuss how the findings fit with the existing literature, focusing on the influence of ICU burnout and its impact on sedation practices, with reference to the COVID-19 pandemic. I then focus on nurse-protocolised sedation practices.

Following sections one and two, I then detail the contribution to knowledge made by the study. I then reflect on the quality of the study, detail its strengths and limitations, and then highlight the implications for practice, policy, and new research avenues.

Before continuing further with this chapter, I will now re-highlight the three questions that this thesis addressed:

1) To what extent are there variations in sedation practice for the mechanically ventilated patient between Australia and the UK in the intensive care unit, and how may we account for these?

2) What accounts do staff provide about their sedation practice for the mechanically ventilated patient, and what reasons do they give?

3) How do the perceptions and understandings of sedation practice for the mechanically ventilated patient vary between Australian and British ICU staff?

7.2 Section One: Comparing and Contrasting the Findings from the Two Case Studies

As already reflected in Chapter Six, I initially struggled to grasp the sedation practices in the Australian case study (Subtheme: Wean and Wake). However, as already noted, when I began analysing and writing the report of the Australian case study, the differences and similarities between each case study became more evident. Some of the differences and similarities can be attributed to wider historical, contextual, and cultural factors and local factors of each case study. Here, I explore potential explanations for these similarities and differences in practice, contribute further contextual understanding, and provide my own personal perceptions (Stake, 1995). I begin with the similarities.

The similarities between each case study were so profound that I experienced a sense of ‘Déjà vu’ episodes: at times, I was sure I had already examined parts of the transcript as the language was almost identical in both countries. However, I did not find the similarities within each case study overly surprising. I knew from experience from working in multiple ICUs that sedation practice can be something that is “*stock standard*” (Australia, Doctor 2PG5) or viewed as “*bog standard*” (UK, Nurse TTR). Similarities centred on the hierarchical structures, moral distress experienced by participants, and the challenges produced by the ICU environment. I will now explore these similarities.

7.2.1 Similarities- Hierarchical Structure and its Impact on Sedation Practices

Hierarchical structures surrounding decision-making attached to sedation practice can be proposed as one potential contextual factor influencing practice and operating similarly

across both case studies. The hierarchy reported in both case studies was similar and is observed mainly in section 6.4 for the UK and section 6.10 for Australia. Across both case studies, I understood that the doctors were responsible for sedation practice and viewed as the ultimate decision-makers. In the UK, pharmacists were seen as providing a supportive role for doctors and nurses. The nurses across both case studies were then seen as the *doers* of sedation practice and were responsible for the ongoing titration and maintenance of infusions but had little input and control into the overall decisions. Therefore, even though there was interprofessional working, it did not always feel collaborative or equal in venture. I attributed this way of working to hierarchical structures within each case study.

My perceptions of hierarchy will likely be deeply intertwined with my upbringing, gender, social class and educational experiences. In section 4.9.5, I include reflexive notes from my research diary, where I report on the internal conflict I faced with perceptions of imposter syndrome and hierarchical barriers that I perceived in the UK case study, the Australian case study, and in my own workplace.

The influence of hierarchical ways of working is deeply rooted in historical and cultural influences with further impacts from class, gender, race and education (Essex *et al.*, 2023). It is a complex phenomenon immersed in multiple influences that cannot be fully explored in this discussion chapter. However, it is recognised that medical hierarchical leadership continues to be very common in health care organisations despite being seen as an “antiquated practice” (Fernandopulle, 2021, p. 1; Essex *et al.*, 2023). Focusing on the relationship between nursing and medicine has been recognised as dynamic and complex. Historically, the complexities were recognised as the infamous “Doctor-Nurse Game”¹² (Stein, 1967, p. 700). There was a recognition that hierarchal ways of working began in medical and nurse training, with the belief that among doctors, “advice from non-physicians is highly threatening to his omnipotence” (Stein, 1967, p. 701). My findings evidence the continued presence of such hierarchical structures. Acknowledging that there is still a significant

¹² The doctor-nurse game is a type of dance between the two professions using both verbal and non-verbal methods of communication. Nurses must remain subordinate to the doctors but give subtle recommendations and suggestions that are made to seem like they are the doctor's ideas. In doing so, the nurse does not insult the doctor who has superior knowledge over the nurse and allows for harmonious working between the two professions. The doctor-nurse game is instilled in early medical and nursing training (Stein, 1967).

hierarchy within the ICU supports the narrative that interdisciplinary working is fraught with challenges that affect the outcomes of patients (Reeves *et al.*, 2017).

It is essential to acknowledge the impact that this could have. We only have to look at landmark reports such as The Gosport Independent Panel, The Francis Report, The Bristol Royal Infirmary Inquiry to discover the detrimental effects of hierarchical structures on the outcomes of patients (The Bristol Royal Infirmary Inquiry, 2001; Francis, 2013; Gosport Independent Panel, 2018). All three inquiries reflect on the hierarchical cultures not only between doctor and nurse but also a more general hierarchy divide between management and clinical staff that led to unnecessary patient deaths partly because health care professionals were too afraid to speak up, with concerns being disregarded and ignored. The Bristol Royal Infirmary Inquiry further observed, "Nursing staff were let down by a culture that excluded them" (The Bristol Royal Infirmary Inquiry, 2001, p. 176).

From the similar hierarchical structures seen across both case studies, we could observe how both ICUs have hierarchical structures that affect the decision-making surrounding sedation practices. Hierarchy can create conflict in the ICU, impacting the development of trust between professions and reducing the likelihood of shared and complementary decision-making, as evidenced by original research studies (Bjurling-Sjöberg *et al.*, 2017; Wising *et al.*, 2024). In addition, poor relationships between health care professionals and a steep hierarchy can contribute to ICU burnout (Embriaco *et al.*, 2007; Cotrau *et al.*, 2019). In addition, one original research study explored ICU burnout rates and found that ICU burnout was low when there was strong teamwork with collaborative decision-making and leadership that was receptive to change (LeClaire *et al.*, 2019). Further findings from a literature review suggest that conflict within the ICU "occurs with substantial frequency" (Maung *et al.*, 2015, p. 317). Furthermore, others account that the word 'teamwork' in the ICU is merely a disguise for traditional hierarchy, but given a more acceptable name, when in fact, there is little progress in breaking down any hierarchical structures (Rodriquez, 2015).

However, others would argue that interprofessional collaboration and the breaking down of hierarchies is achievable within the ICU with the right type of communication, interventions, trust and leadership (Ervin *et al.*, 2018). In addition, Stein, Watts and Howell (1990, p. 547)

reflect that in the ICU, doctors now depend on the specialist knowledge that ICU nurses possess, with nurses no longer wishing to play “that game” as they become autonomous practitioners with academic degrees. Furthermore, others have found evidence of good collaboration and coordination in the ICU (Alexanian *et al.*, 2015; Kruser *et al.*, 2023). Additionally, Xyrichis, Lowton, and Rafferty (2017) found that hierarchy in the ICU was not always consistent with the negative depiction in the literature, as they found flexibility within hierarchy with boundary setting that was not disadvantageous. They evidenced that hierarchy and boundaries moved and evolved depending on the presented situation and context. However, within their findings, they specifically reference Stein’s 1967 work as they report that there are still some “traces” of the doctor-nurse game (Xyrichis, Lowton and Rafferty, 2017, p. 106). In addition, each article (Alexanian *et al.*, 2015; Kruser *et al.*, 2023) that reported positive interprofessional collaboration also reported that hierarchies were present in the ICU and were a barrier to optimising interprofessional working. Similarly, a literature review examining the factors that impact interprofessional care still highlights the detrimental impact of hierarchy in the ICU on patient care and outcomes (Paradis *et al.*, 2013). Furthermore, there are very recent suggestions that power struggles between differing professionals are increasing in the ICU, stifling any suggestions of permanent progression away from harmful hierarchy and effective interprofessional collaboration (Xyrichis and Rose, 2024).

Using Stake’s (1995) experiential understanding, I reflect that my perceptions of how I see my position within the workforce were confronted with an alternative reality when addressing these findings. As a nurse, I want to believe that my voice is heard, acknowledged, and considered vital when making decisions for the patients I care for. However, it was confronting to realise that my nursing voice is not well regarded when it comes to the decision-making for patients. It was then confronting to accept how I had failed to acknowledge the possibility that hierarchical structures influence care despite being able to reflect and recall my own experiences. Others, too, express shock that the doctor/nurse hierarchy is still ongoing and not something we only know from history books (Darbyshire and Thompson, 2018). Darbyshire and Thompson (2018, p. 1) highlight that there are “too many contemporary studies” reporting the ongoing hierarchical struggles and too many personal reports from nursing colleagues to believe that we have progressed.

As alluded to in earlier paragraphs, the influence of hierarchical structures is a complex phenomenon. However, despite this appearing to be a widespread health care issues (Essex *et al.*, 2023), we must not shy away from tackling this complex phenomenon to improve the working environment for health care professionals and improve patient outcomes in the ICU and beyond. The wider literature can be a source of great comfort when considering the steps each ICU can take to address the hierarchical structures. In the ICU, “For true collaboration to occur, all disciplines within the health care team must be considered equal partners but with different roles and knowledge.” (Hartog and Benbenishty, 2015, p. 333). Promoting open, inclusive, questioning environments can reduce hierarchical structures (Darbyshire and Thompson, 2018). In addition, having integrated educational opportunities for nurses, doctors, and allied health professionals can be a great source of learning, promoting patient safety and can break down barriers to allow effective communication between health care professionals (Darbyshire and Thompson, 2018; Langford and Jain, 2023). I propose that each ICU must first reflect on the hierarchal influences as the first step forward in reducing the unforeseen consequences of hierarchical relationships to improve patient care and interprofessional collaboration.

7.2.2 Similarities- Moral Distress and its Impact on Sedation Practices

Across both case studies, moral distress was observed to be present for health care professionals when navigating sedation practice. Moral distress can be observed in sections 6.4 and 6.9. The term moral distress was coined and defined in 1984 by Jameton as: “when one knows the right thing to do, but institutional constraints make it nearly impossible to pursue the right course of action” (Morley *et al.*, 2019, p. 647). The ‘institutional constraints’ might be recognised as a lack of time, support, hierarchy, policy and legalities, but this list is not exhaustive (Morley *et al.*, 2019). Since this early definition, there have been iterations of the definition of moral distress. Recently, it was redefined as “one or more negative self-directed emotions or attitudes that arise in response to one’s perceived involvement in a situation that one perceives to be morally undesirable” (Campbell, Ulrich, and Grady, 2016, p. 6). This definition allows moral distress to encompass multiple feelings that are perceived and experienced by the individual and allows for varying degrees of involvement in the

distressing situation. For moral distress to occur, there is always an insult on the morals and values held by the individual.

The moral distress was particularly obvious in both case studies when there were perceptions of patient suffering. To control and combat this moral distress, sedation was used as health care professionals questioned the ethics and benefits of what and how they were practising. Moral distress was observed among all health care professionals. However, it was evident most within the nursing workforce. It might be speculated that this is because nurses spend more time with patients than any other professional group. Therefore, they were more exposed to the risk of moral distress from caring for the mechanically ventilated and sedated patient. The literature also suggests and found that nurses experienced increased moral distress compared to doctors (Whitehead *et al.*, 2015; Boulton *et al.*, 2023; Piquette *et al.*, 2023).

The ICU continues to be a workplace where distress is frequent due to the complex, stressful and ethically challenged environment, with a thin line between life and death (Mealer and Moss, 2018). Therefore, it is not surprising that moral distress was highlighted among health care professionals. Original research has reported moral distress amongst ICU health care professionals attributed to several reasons, such as providing care that is futile (Fumis *et al.*, 2017) or working with unsafe staffing levels (Whitehead *et al.*, 2015). However, to the best of my knowledge, there is no specific literature on moral distress in relation to the sedation practices of health care professionals when looking after mechanically ventilated patients. The literature regarding moral distress and the ICU mostly concerns decision-making, organisational issues, environmental factors, end-of-life practices, use of restraints and patient dignity (Choe, Kang and Park, 2015; McAndrew, Leske and Schroeter, 2018; Eddleman, Montz and Wocial, 2023). Furthermore, much of the literature specific to sedation practice that focuses on moral distress exists about palliative sedation outside of the ICU (Lokker *et al.*, 2018; Wright *et al.*, 2020).

As I observed moral distress to become more evident if health care professionals perceived the patient to be visually agitated or upon lightening the sedation, I looked at the literature regarding moral distress connected to the agitated patient and/or lighter sedation practices.

A literature review captured the experiences of ICU nurses caring for agitated patients in the ICU and found that it can be emotionally exhausting, with sedation sometimes used as a tool to care for agitated patients (Adams *et al.*, 2022). Likewise, I saw sedation being used as a tool within my findings. Another study looked at the challenges and barriers to optimising sedation in the ICU (Kydonaki *et al.*, 2019) and found that an agitated patient was a barrier to optimising sedation, which was attributed to patient safety, under sedation concerns and organisational issues. However, Kydonaki *et al.* (2019) did not associate moral distress in health care professionals as a barrier to optimising sedation in agitated patients, as was represented in my findings. Even though the ICU literature does not specifically focus on sedation practices and moral distress, there are some suggestions from the wider ICU literature that caring for agitated patients creates stress for health care professionals, with some suggesting that it could eventually result in moral distress (Freeman, Yorke and Dark, 2022). The findings from my research show that moral distress is indeed very much present for health care professionals when managing the sedation practices of mechanically ventilated patients.

When observing the sedation practices of health care professionals, I noted how the effect on moral distress reduced the health care professional's tolerance for lighter sedation practices. Moral distress sometimes resulted in the daily sedation hold or the sedation wean being much shorter in length of time, followed by increases in infusion rates or the delivery of extra boluses of sedation. If moral distress is not acknowledged, or addressed, then it can reduce the likelihood of implementing lighter sedation practices, promoted by key guidelines and key practices (Devlin *et al.*, 2018) as evidenced as being beneficial for the patient (Shehabi *et al.*, 2018). In addition, moral distress can lead to burnout, reduced quality of patient care, job dissatisfaction and loss of workforce as people leave the role and the profession (Boulton *et al.*, 2023; Rodriguez-Ruiz and Rodríguez-Núñez, 2023).

Using Stake's concept of experiential understanding, I introduce some of this interpretation. I remark that what stood out for me was the lack of acknowledgement, recognition or physical and psychological support that health care professionals received over the moral distress they experienced. Even for myself, up until I carried out this research project, I had not fully acknowledged how distressing sedation practice can be for health care professionals. I think

I was shocked when I recognised distress in myself when observing the sedation practices of health care professionals, as mentioned in section 6.4. When moral distress was connected to the sedation practices of health care professionals, I perceived there to be a mantra that this was *normal*. With patients who are waking from sedation while still mechanically ventilated, you do accept that some patients might show a degree of agitation perceived as *normal* based on their clinical presentation. However, the observed moral distress in health care professionals connected to sedation practice is deserving of greater acknowledgement. However, there was very little acknowledgement of the moral distress experienced, with almost no additional support offered as I perceived nurses having to fend for themselves. The experience of my own distress may have been heightened due to the researcher role that I had adopted, as I could not help or support *my* fellow nursing colleagues.

From this similarity across both case studies, we can see how moral distress can greatly influence health care professionals' sedation practices. Despite there being limited information on moral distress in relation to sedation practices, there is a pool of information available that discusses moral distress and other aspects of ICU practice, such as end-of-life care and COVID-19 (van Zuylen *et al.*, 2023; Tong *et al.*, 2024). Accessing this information might be helpful in supporting health care professionals when confronted with moral distress secondary to sedation practices. Expanding on my perception that there was little acknowledgement of the distressing sedation practices, one coping strategy for moral distress that has been thought to help is the “acknowledgement from a senior team member” (Boulton *et al.*, 2023, p. 5). Having acknowledgement that something was morally distressing is impactful for health care professionals as it can make them feel seen and heard, while giving them reassurance and recognition, allowing them to move forward with their experience (Boulton *et al.*, 2023). Therefore, creating a space that recognises sedation practice as morally distressing may result in greater support being offered to the nursing staff, such as doctors being more present during sedation holds/weans. In addition, as an expansion of section 7.2.1, having better collaboration and decision-making between nurses and doctors can help reduce or avoid moral distress (Browning and Cruz, 2018; Rodriguez-Ruiz and Rodríguez-Núñez, 2023). Therefore, having nurses involved in the decision-making of sedation practices may further support the reduction of moral distress. Through my findings, participants often felt that there were ethical concerns about their sedation practice, which heightened moral

distress. Evidence suggests that creating a space for ethical discussions within the workplace can promote and create “moral communities”, uniting the workforce and reducing moral distress (Eddleman, Montz, and Wocial, 2023, p. 71). I propose that each implements suggested strategies to reduce the likelihood of moral distress.

7.2.3 Similarities- Challenging ICU Environment and its Impact on Sedation Practices

A challenging ICU environment was found to impact the sedation practices within both case studies in Australia and the UK and was heavily discussed in sections 6.3 and 6.9. As previously mentioned, the UK case study had a ‘U’ shaped physical layout for both ICU A and ICU B. The main challenges from the UK case study came from the near-even split of side rooms and beds in a bay, which reduced patient visibility and created physical divisions between health care professionals. For Australia, within ICU A, there was one back corridor of side rooms where most of the challenges of the ICU environment occurred. Again, nursing participants mostly expressed these challenges as they were the professional group that seemed to be most affected by the physical space due to safety concerns.

The difficulties raised by health care professionals were often situated within and around the side rooms. Therefore, I examined the wider literature in relation to single side rooms. In relation to sedation practices, I could only find one piece of research that looked at the impact of single rooms on sedation practice. Murphy *et al.*, (2020) found that when moving from an open ICU to a single room only ICU, they found that there was higher administration of sedation in the first few months following the move, but the higher administration of sedation did appear to settle down after a few months. Other than this one study, to the best of my knowledge, no other studies focus on sedation practice from a single room ICU compared to an open ICU.

From my clinical experience, I know how important the physical space is and how it can impact relationships and communication between and within professions. Again, using Stake’s (1995) experiential understanding, I reflect that where I work, the ICU is a retrofit space in a 1960s building that was initially a general ward. I often find that the space is not ideal for ease of patient monitoring and is ever challenged by staffing difficulties. However, both ICUs where the case studies took place were newer and more technologically advanced units than where

I worked, and I had presumptions that they would have been spared some of these difficulties. However, the findings show that they face similar, if not more, challenges from their work environment. What I found interesting was that there were almost no additional provisions put in place to accommodate the challenges of the ICU environment (i.e., no extra staff to accommodate the side rooms-floaters or runners), and therefore, this resulted in health care professionals relying on sedation to help support ongoing practice.

Other research has focused on looking into the impact of ICU design on health care professionals. One scoping review found that side rooms were beneficial for delirium reduction and family privacy, but there were multiple negative effects on health care professionals, such as increased signs of ICU burnout and decreased well-being (Saha *et al.*, 2022). Furthermore, another study looked at the transition from a shared room setting to a single room ICU through the lens of a multicomponent intervention to help support the transition (Lin *et al.*, 2019). They found that the single room ICU reduced the chance for opportunistic education, reduced the flexibility of staff to observe patients, reduced the ability to support other team members, and increased the likelihood of missed breaks (Lin *et al.*, 2019).

We are in an era that readily and prolifically promotes and pushes the installation of side room only environments both in the ICU and in the wider hospital environment (Oliver, 2021; Verderber *et al.*, 2021). Part of this stems from the belief that patients experience a better hospital stay from side rooms, such as privacy, confidentiality, better patient flow and improved infection control (Jongerden *et al.*, 2013; Maben *et al.*, 2016; Oliver, 2021). However, the literature on side rooms would indicate that this assumption might be challenged. Side rooms reduce patient visibility and degrade teamwork, and patient safety, with limited and conflicting evidence to suggest improvements in infection prevention and control (van de Glind, de Roode and Goossensen, 2007; Shimose *et al.*, 2015; Maben *et al.*, 2016; Saha *et al.*, 2022; Wang, Xia and Zhao, 2023). For patients and families, the evidence is again conflicting, some report feeling isolated and neglected in side rooms, and others report improved satisfaction from being nursed in a side room (Jongerden *et al.*, 2013; Borgstrom, 2021). Further research has then highlighted that a single room ICU design leads to higher

stress among ICU staff (de Matos *et al.*, 2020). With so much conflicting evidence and no uniformity in the design of ICUs, it is difficult to determine what the correct answer is.

However, the similar challenges faced by each case study with the physical space suggest that the challenging ICU layout can contribute to ineffective patient monitoring, resulting in leaning on sedation to help facilitate safe practice. Therefore, if the challenges of an ICU physical environment are not appropriately addressed, it can result in deeper sedation practices for patients or the use of more restraint, which again, have been evidenced as having negative outcomes for patients (Bright *et al.*, 2021; Berger *et al.*, 2023).

If designing a new ICU, Saha *et al.*, (2022, p. 11) recommends:

Involvement of patients, their families and health care professionals in early design stages to facilitate identification of practical issues created by single rooms and to allow for identification of strategies to decrease health care professional stress and social isolation.

As much as I would like to imagine that each ICU could be rebuilt, I am also a realist and understand that cost and space pressures will prevent this from happening (although this rapidly happened during the COVID-19 pandemic (Arabi *et al.*, 2021)). One qualitative study found that a multicomponent intervention may help address the challenges regarding a difficult ICU layout (Lin *et al.*, 2019). In addition, Guidelines For The Provision of Intensive Care Services recommends additional registered nursing staff per shift to accommodate the layout of the ICU, including single rooms (Intensive Care Society and The Faculty of Intensive Care Medicine, 2022). However, it would appear that this policy recommendation is not being adhered to. I propose that each ICU review its individual and unique design to work out the challenges that it faces.

For the following two sections (7.2.4 and 7.2.5), I will begin to explore some of the differences in the case studies and their impact on sedation practices in relation to the wider literature. The differences focused on are the different sedation reduction techniques of each ICU and the differences in scheduling and structuring of each ICU and their impact on sedation practices.

7.2.4 Differences- Sedation Reduction Technique and its Impact on Sedation Practices

The findings evidenced that each case study practised different sedation reduction techniques. Sedation reduction techniques in the UK case study site involved a daily 'sedation hold', where all sedation for an individual patient would be paused, typically once or twice between 8 am and 4 pm. For Australia, I typically saw the protracted reduction of sedation, which was commonly referred to as a 'sedation wean'. The sedation wean was typically initiated by night staff for the morning staff to take over the process, and, as such, was a more extended withdrawal of sedation compared to the UK. The sedation wean was also combined with the introduction of Dexmedetomidine, which is primarily a sedative and an anxiolytic with some analgesic properties. The sedation reduction technique for both case studies was used to assess neurology, facilitate spontaneous ventilation, or assess their suitability for extubation. It was discussed primarily in sections 6.3, 6.4, 6.9 and 6.11, but continued to appear in the other sections.

The PADIS guidelines from the USA (translated into five languages) (Devlin *et al.*, 2018) suggest that a daily sedation interruption or a sedation wean to allow a spontaneous awakening trial are both acceptable daily practices, as long as there is a target for light over deep sedation. In the eyes of Manthous (2016), failure to implement a daily sedation interruption or a sedation wean is viewed as malpractice. In the UK case study, there was a practice of daily sedation hold for patients that fitted a certain clinical stability criterion, regardless of whether extubation was the primary objective. For Australia, the sedation wean I observed was akin to what the guideline refers to as a Nurse-Protocolised sedation regime (Devlin *et al.*, 2018). The Nurse Protocolised sedation regime is "implemented by nurses at the bedside to determine sedative choices and to titrate these medications to achieve prescription-targeted sedation scores" (Devlin *et al.*, 2018, p. 9). Although this seemed similar to the practice I witnessed, I was unaware of any established nurse-led sedation protocol. Therefore, I have reservations about labelling it as a Nurse-Protocolised sedation practice (Devlin *et al.*, 2018). However, both case studies followed other guideline recommendations, prescribed a target sedation score and used sedation assessment tools, and Propofol or Dexmedetomidine was the primary sedative agent (Devlin *et al.*, 2018). As already examined

in Chapter Two, there are wide variations globally regarding implementing a sedation protocol and the practice of daily disruption of sedation (section 2.5.1).

My findings align with the wider literature that there are variations in sedation practice, with no two ICUs practising the same way. However, I observed an interesting difference between the two case studies. Australian participants, where possible, attempted to avoid any form of sedation hold and opted for a sedation wean, and UK participants carried out the sedation hold daily as if it were an essential everyday ritual. However, both practices had a similar aim; therefore, these practices could be viewed as two versions of the same practice. This research study did not gather any outcome data for patients. Therefore, I cannot comment on whether either approach had any benefits for patients. However, what I observed was how staff responded to these two techniques of sedation practice.

Distress was observed to be more prevalent in the UK nurses when completing a sedation hold, compared to the Australian participants, who sometimes embraced a sedation wean because it still offered them control, especially when combined with Dexmedetomidine. While navigating and exploring the differences between the two case studies, I did reflect during participant observations that I did not *'feel as distressed as I did in the UK [...]'* (Australia, Week One). With a novel observation that maybe this was due to the use of *'Dexmedetomidine.'* (Australia, Week One). As the Australian practice was unfamiliar to me, it intrigued me, especially the introduction of Dexmedetomidine. On observing and discussing sedation practice, I often wondered whether Dexmedetomidine was the *liquid gold* of sedation practice because, at times, it demonstrated the possibility of a more stable approach to achieving sedation reduction.

I examined the wider literature about Dexmedetomidine and its influence on sedation practice as it was widely used in the Australia case study but not in the UK case study or my workplace. Dexmedetomidine is recognised as a sedation agent that works similarly to Clonidine (used in the UK case study and my workplace). However, it is more potent, has a shorter duration of action than Clonidine, and has analgesic properties (Motes, 2022). This makes Dexmedetomidine easier and quicker to titrate than Clonidine as an adjunct for sedation practices. The wider literature regarding the benefits for patients is conflicting. Some

research shows that Dexmedetomidine does not have significant benefits over using other sedation agents (Shehabi *et al.*, 2019; Hughes *et al.*, 2021). On the other hand, other research indicates improved outcomes for some patients, such as shorter times on the ventilator or a reduced LOS (Buckley *et al.*, 2021; Uusalo, Valtonen and Järvisalo, 2021). Focusing on the experiences of health care professionals when using Dexmedetomidine, one early 2002 study captured their experiences using a questionnaire (Smok-Pearsall, 2002). They found that when Dexmedetomidine was used compared to Propofol, nurses had more meaningful nurse-patient interactions with better communication (Smok-Pearsall, 2002). This finding is supported by more recent research that found Dexmedetomidine improved the communication between nurses and patients, with highlighted benefits being a calmer and more receptive patient when tolerating an endotracheal tube (Engström *et al.*, 2016). My research findings continue to illuminate the positive experiences health care professionals have when using Dexmedetomidine for the mechanically ventilated patient in the ICU. In addition, they go further and emphasise how they might have the potential to reduce moral distress amongst health care professionals. Often, it is these more meaningful interactions that health care professionals have with patients where effective communication brings positive influences for both patients and health care professionals alike (Kwame and Petrucka, 2021).

The introduction of Dexmedetomidine to facilitate the sedation practices of health care professionals may be of benefit to both patient and care giver of the mechanically ventilated ICU patient. The benefits may not be recognised in global metrics such as medical and economic outcomes but in the meaningful interactions between patients and health care professionals and reduced distress for nurses (psychological outcomes). Therefore, I propose that future research on Dexmedetomidine focuses on more meaningful outcome measures for patients, families and health care professionals in the ICU.

7.2.5 Differences- Scheduling and Structuring of ICU Ward Rounds and its Impact on Health Care Professional Conflict.

The way that ICUs were scheduled and structured was complex, with several elements of the scheduling and structuring influencing the sedation practices of health care professionals.

There were influences from logistical, practical, and sustainable processes, all intertwined with a multi-disciplinary team that aimed to educate the future workforce. Due to time constraints, I will focus solely on ward rounds and the implications that this had on the sedation practices of health care professionals, as this was a difference between each case study but was also a main source of conflict in the UK.

Before I begin, it is worth revisiting the setup for each ward round, as detailed in Chapter Five. For the Australian case study, there would usually be three doctors per ICU ward round. This would typically include a Consultant, a Registrar and one Resident, and they would begin daily at 08:00, and work around the patients in the ICU. For the UK, the larger medical workforce meant that each patient was reviewed by one doctor from 08:30. Then, all the doctors would meet at 11:30 in the seminar room for the remote ward round.

My findings showed how the differences in structuring and scheduling altered the sedation practices of health care professionals, and also became a source of conflict between nurses and doctors in the UK case study. The findings are further emphasised in sections 6.3, 6.9, 6.10 and 6.11.

Ward rounds are a daily process and practice where the patient's progress is reviewed, problems are solved, decisions are communicated, and management plans are set, all whilst existing as an opportunity for education (Royal College of Physicians and Royal College of Nursing, 2021). Ward rounds have been viewed as “complex social processes that demand clinical knowledge and acumen, alongside effective prioritisation and communication” (Merriman and Freeth, 2021, p. 1). To the best of my knowledge, I am unable to find any other wider literature that examines the effect and influence of ward rounds on the sedation practices of health care professionals.

My findings captured the implications of a remote ward round compared to a bedside ward round. The UK ward round taking place in a seminar room, away from the patient and away from the bedside nurse, impacted the sedation practices for patients and created relational difficulties between nurses and doctors. This I observed was in direct contrast to the Australian case study. My findings show that remote ward rounds reduced the tolerance for

lighter sedation practices or continuation of sedation holds, with early terminations when doctors were not perceived as being available. This resulted in sedation practices that could be harmful to the patient as opportunities to extubate patients are missed. As well as missed opportunities for the patient, the separate ward round created relational conflict for nurses and doctors that were already strained by the hierarchical structures in place. The separation was also viewed as hindering the learning of ICU nurses as they missed valuable educational discussions.

There is a pool of wider literature emphasising the importance of the ward round taking place at the bedside of the patient to improve patient-centred care while also including the bedside nurse (Howard, 2021; Royal College of Physicians and Royal College of Nursing, 2021). In addition, the ICU Liberation Bundle connected to the key PADIS guideline recommends that the ward round of patients in the ICU should occur at the bedside of patients to support and deliver evidence-based best practices (Stollings *et al.*, 2020). Further, research has also highlighted that including bedside nurses in the ICU is critical to developing a beneficial ward round for the patient, as well as communication and problem-solving, and without the nurse, these benefits are missed (Merriman and Freeth, 2021). The landmark report by Francis (2013) following the public inquiry into the failings of the Mid Staffordshire NHS hospital also highlights the importance of the ward nurse manager and the named nurse being present during ward rounds.

Having ward rounds occur at the patient's bedside helps to promote patient-centred care to be at the heart of decisions while involving nurses in that decision-making process. Therefore, I am an advocate for ICU ward rounds that take place at the bedside of the patient and include the bedside nurse. Ward rounds at the patient's bedside would also allow for the medical teams to be called upon for support with sedation practice decision-making. In addition, nurses will now be privy to the education that takes place during the ward round and should be encouraged to participate, and their voices should be acknowledged.

In section one, I highlighted some similarities and differences between the case studies and reflected these findings in the wider literature and sometimes my own experience.

7.3 Section Two: Examining the Findings in the Context of the Wider Literature

Throughout section two, I aim to examine the findings in the context of the wider literature. I have focused on findings or concepts that I believe warrant further exploration into the broader literature. Throughout this section, I focus on the influence of burnout among health care professionals and its impact on sedation practices with reference to the COVID-19 pandemic (with reasons highlighted in 7.3.1). I then focus on sedation and the concept of nurse-protocolised sedation practices, bringing in key guidelines with an examination of hierarchical influences.

7.3.1 Sedation Practices and the Influence of Burnout among Health Care Professionals, with Reference to the COVID-19 Pandemic

COVID-19 was classed as a global pandemic by the World Health Organisation in March 2020, and by the end of 2021, the UK had been subjected to four waves of COVID-19 (Cucinotta and Vanelli, 2020; Meenagh and Minford, 2023). Data was collected between November 2021 and February 2023. Therefore, situating the findings in the context of ICU burnout plus the effects of the COVID-19 pandemic is required. Data collection began in the UK, and therefore, there may have been a greater influence of COVID-19 on UK data regarding burnout than on data collected in Australia. Nonetheless, burnout was recognised as being prevalent among Australian and UK ICU health care professionals pre-COVID-19 (Vandevala *et al.*, 2017; Jakimowicz, Perry and Lewis, 2018).

During the data collection period and analysis, it became clear that the data needed to be understood and situated in the context of ICU burnout due to the influence that it appeared to have over sedation practices. Burnout amongst health care professionals was recognised as early as 1974 and has been characterised as “a state of emotional exhaustion caused by emotionally demanding work-related situations or the failure to achieve an expected goal or outcome for a client or patient” (Freudenberger, 1974; Mealer and Moss, 2018, p. 687). In 2016, it was reported that over half of ICU health care professionals displayed signs of burnout (The Lancet Respiratory Medicine, 2016). The effects of burnout were then found to be exacerbated by the COVID-19 pandemic (Saravanan *et al.*, 2023).

The health care professionals studied were positioned in a highly dynamic and stressful environment. It became visible that there were elements of moral distress that have been thought to contribute to burnout, amongst other factors (Kok *et al.*, 2021). The findings from this research project highlight how health care professionals were found to be subjected to stress and moral distress when managing sedation. Staff often reported that they found sedation practice “*Stressful*” (UK, Nurse PPC) and would sometimes “*hate*” (Australia, Nurse XRLD) how sedation practice was managed. One of the consequences of ICU burnout, amongst psychological distress for the health care professional, is reduced patient care quality (Shanafelt *et al.*, 2002). Similarly, this was expressed by participants in Australia who were upset with how sedation was being practised, as discussed in 6.11. Again, this recognition that care was sub-optimal added to the negative cycle of moral distress and burnout (Salari *et al.*, 2022). The result of moral distress contributed to liberal sedation or reduced the tolerance for lighter sedation practices, as highlighted in Chapter Six, Findings.

One of the main contributors to burnout in the literature is workforce shortages and a high workload (Deakin, 2022). There was a recognition that the impact of COVID-19 created both staff shortages and an additional workload, which further fuelled ICU burnout as it caused a mass exodus of senior nursing staff, resulting in a “*staffing crisis*” (UK, Doctor ZCK) in the UK. Additionally, participants from Australia reported that due to COVID-19, “*a lot of the senior nurses have left*” (Australia, Doctor 2PG5). In the wider literature, this ‘staffing crisis’ has been so profound that it has been referred to as the “*Great Resignation Era*” (Romano and Rodrigue, 2023, p. 295). The Intensive Care Society (2023, para. 3) have recognised that there continues to be “*inadequate staffing levels*” in the ICU, which places significant pressure on the workforce. Across both case studies, the workforce pressures have resulted in patients being frequently cared for outside the usual requirements for a sedated and mechanically ventilated patient of a 1:1 nurse-to-patient ratio. In a repetitive cycle, this staffing crisis contributes further to ICU burnout (Bae, 2020).

The following data extracts used in this section have not all been reported in the findings. This is due to the feeling that it would be more appropriate to examine the findings of burnout in the context of COVID-19 in the Discussion Chapter, which did not feel appropriate to bring into the Findings Chapter as it was mainly the voice of one participant (TTR).

ICU burnout in the UK was so significant that one nurse felt that the majority of their time was now spent “*nursing the nurses*” (UK, Nurse TTR), and another suggested that, at times, the workplace felt like “*hell on earth*” (UK, Nurse RUP). They continually felt hopeless and helpless as they deemed they could not change their situation and were “*powerless to do anything*” (UK, Nurse TTR). Within the wider literature, it has been recognised that nurses had higher “*emotional exhaustion*” levels than doctors (Vincent *et al.*, 2019, p. 367). Again, this is likely due to the time spent at the patient’s bedside by the nurses. The extract from one of the interviews below highlights the severity of ICU burnout amongst ICU health care professionals and its impact on sedation practices.

'[...] you know nursing is just burnout massively now. On a weekly basis I have some nurse having a panic attack or, you know, I've got one nurse here who regularly jokes that they've not killed themselves yet, and it breaks my heart [chokes up]..... and I think we need to support these nurses so that they can do their job as well as they want to, because they're all working like dogs, [...] they're stuck in the side rooms, they're not getting the support, they're not getting the education that they should be getting. I just think it's... and I can't see it getting better any time, [...] we are on our knees, I think this winter is going to be brutal, and I think as a result of that we use more restraint and more sedation and that breaks my heart.' (UK, Nurse TTR).

Overall, both case studies were subjected to factors that increased the risk of ICU health care professional burnout, such as ingrained hierarchical structures, moral distress, and challenging ICU environments, in a post-pandemic era. The findings from my research project suggest that ICU burnout may influence the sedation practises of ICU health care professionals.

7.3.2 Sedation Practices and the Concept of Nurse-Protocolised Practice.

One approach to addressing some of the issues observed might be through nurse protocolised practice. Such practices seek to break down historical hierarchical structures and restore some of the collaborative work between health care professionals, which may work towards improving patient outcomes.

As already expressed earlier in this chapter, negative outcomes are associated with hierarchical working methods. The traditional pyramid hierarchy points towards poor health care outcomes for patients and less job satisfaction for health care professionals, with evidence supporting flatter hierarchies to improve patient mortality (Fernandopulle, 2021). 'Magnet Hospitals' have been recognised as having reduced mortality rates and are known for having flat organisational structures with strong nursing leadership (Mchugh *et al.*, 2013; Friese *et al.*, 2015). In regards to the ICU setting, when teamwork and interdisciplinary work are improved, ICU mortality and LOS are reduced (Ersson *et al.*, 2018).

One proposal of how traditional hierarchy may be broken down while promoting nurse leadership is introducing a nurse-protocol for sedation practice. As discussed in Chapter One, a key guideline related to the management of sedation practices initially produced in 2002, with the latest update in 2018, advocated for nurse-protocolised sedation practices to help achieve lighter sedation (Devlin *et al.*, 2018). Nurse-protocolised sedation practice can be summarised as the practice of nurses adjusting and/or choosing sedation appropriate to the collaboratively defined sedation goal of the patient, usually against a sedation algorithm or as per the protocol (Qi *et al.*, 2021). Both case studies had senior medical participants who recognised the ICU nurses' worth, importance, and value in regard to sedation knowledge. The UK doctor and the Australian doctor both commented, *"they [nurses] probably know better than us [doctors]"* (UK, Doctor YHK), supported by a similar view in Australia that they didn't *'think it's right to tell them [nurses] what to do if only seeing the patient for a few minutes while walking around.'* (Australia, Doctor 2UEV). When looking specifically at nurse-led decision-making for sedation practices, this is generally found in nurse-protocolised sedation practices.

Enabling collaborative working through nurse-protocolised sedation and giving a sense of ownership to nurses can promote an improved sense of team membership. This may reduce negative hierarchal structures, thus reducing rates of ICU burnout as *"Collaborative decision-making [...] can also improve the ICU environment and potential mitigate moral distress"* (Kerlin, McPeake, and Mikkelsen, 2020, p. 4). In addition, nurse-led interventions have evidenced how they can improve patient outcomes (Qi *et al.*, 2021; Bulto *et al.*, 2023). One

recent research project showed that implementing nurse-protocolised sedation practices decreased days spent on the ventilator and lowered benzodiazepine dose (Kaplan *et al.*, 2019). A further study looking at nurse-protocolised sedation practices in a neurocritical care unit found that when implemented, sedative use decreased and analgesic use increased (Mahmoud *et al.*, 2018). In addition, a randomised controlled trial compared protocolised sedation practices against protocolised sedation practices combined with a daily sedation hold in mechanically ventilated patients in the ICU (Mehta *et al.*, 2012). They found no benefit of protocolised sedation combined with a daily sedation hold when reviewing outcome measures such as LOS and MV days, however, the nursing workload increased when patients had a daily sedation hold (Mehta *et al.*, 2012). This suggests that nurse-protocolised sedation practices without needing a daily sedation hold might provide enough benefits for the patient without creating any additional nursing workload and moral distress, as highlighted in this research project. Finally, a systematic review and meta-analysis examined nurse-protocolised sedation practices compared to medical-led care (Qi *et al.*, 2021). They found that nurse-protocolised sedation practices can improve ICU mortality, reduce ICU LOS, reduce ventilator-associated pneumonia incidence and improve delirium rates against medical-led care (Qi *et al.*, 2021).

Bringing in the findings from this research project, nurses often perceived that they had a good idea of what was needed from sedation. Therefore, introducing nurse-protocolised sedation practises may be an appropriate step in optimising sedation practises, breaking down hierarchal barriers, and improving collaboration between health care professionals.

In section two, I have addressed some of the findings from this research, placed them in context with the wider literature, and discussed how current practice may be improved. In doing so, it is hoped that this will provide greater clarity to my findings. I will go on to discuss my contributions to knowledge, reflections on the quality of the study, strengths and limitations, and implications for practice.

7.4 Contribution to Knowledge

Following the discussions in sections one and two, this PhD has made an original contribution to the knowledge about sedation practices in ICUs through several avenues. For ease and clarity, these points will be numbered below.

- 1) To the best of my knowledge, this is the first study to compare the sedation practices across two countries, with different health care systems through a qualitative lens.
- 2) I have delivered a methodological contribution to knowledge with unique insights into two ICUs using case study methodology to provide a deep exploration on the wider influences of sedation practices.
- 3) I have added new understanding to the conditions that impact the sedation practices of health care professionals caring for mechanically ventilated patients in the ICU. I have highlighted the importance of relational, hierarchical, physical and technological aspects of sedation practice.

7.5 Reflections on the Quality of the Study

As outlined in Chapter Four (section 4.12), to ensure the quality of this research project, I followed Lincoln and Guba's work on the trustworthiness criteria for qualitative research (Lincoln and Guba, 1985). As a reminder, the criteria comprise four pillars- Credibility, transferability, Dependability and Confirmability (Lincoln and Guba, 1985).

Triangulation has been used throughout to help and support the process of achieving credibility (Nowell *et al.*, 2017). In this research, I have used methodological triangulation to develop findings from several enquiry angles. By using three different methods, I could search for patterns of meaning across all three methods, which promoted agreement with the data and provided credibility to this research project. Another way to ensure credibility is through prolonged engagement with the cases. For both cases, prolonged engagement was attained through observational work and the time it took to complete recruitment and data collection.

For the UK, this was over one year of engagement from September 2021 to November 2022. For Australia, this was four months of engagement, from October 2022 to February 2023.

To achieve transferability, it is recommended that a thick description is utilised, including contextual information and a heavy description of methods and time frames (Nowell *et al.*, 2017; Stahl and King, 2020). Throughout this research project, I have opted for data collection methods that have allowed for thick description, as evidenced throughout the findings with the use of transcripts. I have given in-depth contextual information so each case can be clearly viewed. This has been followed up with in-depth descriptions of how each method was carried out, along with the time frames of data collection for each case. I have focused on all these areas so that transferability can be achieved.

To ensure that there is dependability, I needed to ensure that I had clear and logical processes for the research so that others could follow the decisions made to ensure trust within the work. This was achieved again by providing detailed descriptions of the accounts that happened. I have provided evidence that I have engaged as a reflexive researcher throughout the study. This was achieved by using my reflexive diary journal, and extracts from my journal were used to help further interpret my findings. Reflexivity has also been used to provide insights into my own relationship with the topic and case study contexts.

Confirmability is only achieved when the previous elements of trustworthiness are all realised (Nowell *et al.*, 2017). This is achieved by maintaining reflexivity and recognising my biases, assumptions, values and passions (Stahl and King, 2020). I achieved confirmability by bringing awareness to these areas through reflexive thematic analysis and attaining the other hallmarks of good-quality qualitative research.

Following Lincoln and Guba's (1985) four pillars of trustworthiness, it is hoped that this research will be trustworthy, useful and impactful for patients and health care professionals both inside and outside the cases in which it occurred.

7.6 Strengths and Limitations

The strengths and limitations of this research project will be bulleted for clarity.

Strengths:

- I gathered further qualitative research focusing on the sedation practices of health care professionals when caring for sedated and ventilated patients.
- My perspective of an ICU nurse for over nine years gave me a distinctive understanding of the case studies. In addition, my background would likely have allowed me to build rapport with the health care professionals more easily and quickly.
- Multiple case studies allowed me to evaluate each case study individually and in relation to each other, providing unique insights into the sedation practices of health care professionals.
- Whilst there is no option to generalise these findings to other ICUs, there is an opportunity for transferability of findings to other ICUs.

Limitations:

- I was a lone researcher in this research project. Therefore, there is likely to be a heavy influence from my own interpretation of the data.
- I spent fewer weeks in Australia than in the UK, which may have limited my opportunity to develop rapport with health care professionals and may have influenced the data I collected.
- No face-to-face recruitment occurred in the Australian ICU before the commencement of data collection, reducing the opportunity for recruitment and development of rapport and limiting my understanding of the case study compared to the UK ICU.
- There was limited recruitment to the focus group, and no medical professionals were recruited to either focus group. In the UK, only four participants participated in the focus group; in Australia, only two participants participated.
- I approached this research with my perspective as an ICU Nurse for over nine years. Therefore, despite being reflexive, it is likely that my experiences will have influenced the interpretations that were made.
- There were limited voices from medical health care professionals in Australia and Advanced Critical Care Practitioners in the UK for the interviews.
- There was no capturing of quantitative data on how the sedation practices influenced the outcomes of the patients observed. Therefore, I am unable to determine whether the differences and similarities observed have any impact on patients.

- The COVID-19 pandemic will have impacted and influenced what was observed and discussed.
- Each case study was subjected to two different ethical processes. Therefore, the participant observations for each study were subjected to different processes, which changed how participants were recruited and the data collected. (Discussed more thoroughly in Chapter Four, section 4.5 and section 4.9).

7.7 Implications for Practice

My implications for practice were interleaved into the earlier discussion texts, but I have listed my implications for practice below. I have divided the implications into three sections: Policy, Education and Further Research.

Policy:

-If an ICU has been identified as having a challenging layout where it is hard to promote constant patient monitoring or staff support to facilitate lighter sedation practices, additional staffing must be integrated into workforce numbers.

-Formal Nurse-Protocolised sedation practices should be considered when looking to improve the sedation practices of health care professionals and reduce historical hierarchical barriers between nurses and doctors.

-High rates of ICU burnout and moral distress occur within the ICU setting and have been demonstrated and associated with sedation practice. Each ICU should have psychological support for the workforce per ICU standards and guidance (Intensive Care Society and The Faculty of Intensive Care Medicine, 2022).

Education:

-Collaborative and interprofessional learning should be promoted regarding sedation practice with joint educational sessions and encouragement of full multidisciplinary team participation in educational spaces such as a ward round.

Future research:

-Future research should examine the effects of remote ward rounds on sedation practice and their benefits and disadvantages on a functioning ICU.

- Further research should look at the moral distress on ICU health care professionals caused by sedation practices.
- Future research should examine whether Dexmedetomidine influences the burnout rates of ICU health care professionals, particularly the nursing staff.
- Future research should look at how the layout of an ICU can impact sedation practices with a focus on what a better layout would look like.
- Further research is warranted into using a nurse-led protocol for sedation practice and developing this protocol.
- Further research should examine the different approaches to sedation reduction such as sedation wean versus sedation hold and the affects on both patients, health care professionals and relatives.

7.8 Summary

Throughout this discussion chapter, I have reflected on the similarities and differences of each case study while also bringing in the wider literature to help understand the impact these similarities and differences have on sedation practice. I then focused on the findings and concepts that I felt needed further exploration, namely ICU burnout and nurse-protocolised sedation practises. Finally, I focused on how this research project contributed to knowledge and the implications for practice while also examining its strengths and limitations, with reflections on the quality of the study.

CHAPTER 8

COVID-19 IMPACT

8.1 Introduction

COVID-19 was a turbulent time for all, and as mentioned in section 7.3, it was classed as a global pandemic by the World Health Organisation in March 2020. The global pandemic turned the world into a place very few recognised and impacted our daily lives. This chapter aims to inform the reader about how the pandemic impacted this research project.

8.2 Interruption of PhD Studies

As an ICU nurse, I was called back and wanted to return to full-time clinical work to support the NHS and my colleagues during the COVID-19 pandemic. I returned to clinical work after completing my Confirmation Review for the University of Sheffield, which is the process of confirming my suitability to undertake doctoral studies. My PhD studies were paused for two, three-month blocks during the deadliest COVID-19 waves in the UK. My first pause was on 16/04/2020, and I recommenced my studies on 16/07/2020. When I returned to my PhD studies in July, the infection rates of COVID-19 were low as the UK had been in its first lockdown. However, the infection rates quickly increased during the cooler months in an unvaccinated population. Again, my studies were paused from 09/11/2020 until 01/02/2021. The pausing of my PhD saw my clinical hours expand from 15 hours per week to at least 37.5 hours per week. On reflection, sometimes, I believe that it would have been more productive to have taken a full year off. The return to my PhD studies between July and November 2020 made for slow progress as there were no certainties about how I would eventually be able to carry out my research, and most UK hospitals had paused the acceptance of any research that was not COVID-19-related. However, this period allowed me to prepare my literature review for publication and my NHS ethics application for submission.

8.3 Changing the UK Case Study

While identifying a case study site in the UK in December 2019, I contacted a hospital in the Midlands to express an interest in enlisting it as a research site. I initially selected this hospital as it was a large ICU based in a public hospital and had a similar layout to the research site already identified in Australia. Additionally, I was familiar with this research site from my previous placement experience. I also knew they had a supportive research culture. I had

recently established contact with a clinical academic who worked at the ICU as a clinician and a researcher who could help with ease of access. The impact of COVID-19 on the research site in the Midlands, UK, meant that this particular research site could not accommodate my research for various reasons coupled with dwindling communication that made it challenging to achieve access or gatekeeper support. I needed to draw a 'line in the sand' and found another UK case that could accommodate the research.

In addition, I had also planned to use my area of clinical practice as a pilot site to practice and refine my skills as a qualitative researcher. As COVID-19 placed immense pressure on resources and time, I could not carry out this pilot work in the entirety that I had envisioned, which may have impacted the qualitative research skills I could develop.

8.4 An International Case Study in a Global Pandemic

Focusing on the Australian case study, there was uncertainty regarding whether the international case study would have been possible due to difficulty in achieving further gatekeeper support as discussed in section 4.3, and because the Australian borders were shut from the 20th of March 2020 to all non-citizens and non-residents. Both of these factors left me in a position where I seriously had to consider alternatives to the original plan, with my supervisors asking me to draw up a plan B if the Australian case study would not work.

There was much anxiety regarding the success of the Australian case study, as my research questions were drawn up around successful data collection at an Australian ICU. In addition, it had been just under four years of collaboration between myself and the supportive gatekeeper. I did not want to disappoint them as they had offered me considerable support.

Luckily, the borders were eventually opened on 21/02/2022, with two weeks of prior public knowledge of this date. When the borders opened, I had limited time to collect data, and I still needed to apply for a Temporary Activity Visa (subclass 408) for Research Activities. This visa was estimated to take between 27 days and five months for approval. In addition, I still needed to negotiate time off from my clinical work before the arrival of the UK winter period and the likelihood of increased ICU admissions. Luckily, the visa was granted not too long after

it was requested. I negotiated time off from my clinical work by completing additional clinical hours before I left, using four weeks of annual leave, and taking four weeks of unpaid leave.

8.5 Carrying Out Research in an ICU in a Pandemic Era

As the threat of the COVID-19 pandemic was still ever-present during data collection, I had to follow the COVID-19 guidance for each case study. The UK case study, at the time, was similar to the practices I followed in my clinical area. I needed to wear a blue surgical face mask in the clinical area, which I was already accustomed to wearing. However, for Australia, I had to wear a thick face mask called an FFP3 and eye goggles in the clinical area, regardless of the COVID-19 status of the patient. The FFP3 face mask was the face mask that I was used to wearing in a clinical area when directly caring for patients with COVID-19 in the ICU. The masks are hard to breathe through, making communication difficult as I struggled to catch my breath when talking. In addition, the elastic straps gave me a headache as they were tight on my skull. Additionally, the goggles fogged up each time I talked, making it difficult to see. I found these COVID-19 restrictions excessive compared to what I was used to and difficult to tolerate when carrying out participant observations. Luckily for me, this restriction eased one week into participant observations and was downgraded to just a blue surgical face mask, which I was much more comfortable wearing and could tolerate much better.

In Australia, to gain access to the hospital, I needed to give proof of my COVID-19 vaccination status and electronically check in to the hospital. Initially, they accepted my UK NHS proof of vaccination, but one day, early into participant observations, they decided that I needed to show my vaccination status on Medicare documentation that they were familiar with, otherwise, my entry was refused. Medicare is Australia's universal health insurance system and is similar to the NHS. Luckily, I still had access to my Medicare number from when I was in Australia between 2017-2018. Therefore, I could access my records at the local pharmacy and pay \$25AUS to add this proof of vaccination to my Medicare record and print it out. I was then allowed entry into the hospital again to complete my data collection.

8.6 Summary

In this chapter, and throughout other areas of this thesis, I have discussed the main impacts of COVID-19 on the research project. By including this small chapter, it is hoped that some of

the complexities of data collection and delivering a research project in a pandemic era are highlighted. Although, in the end, I carried out the research I had initially set out to do pre-pandemic, the COVID-19 pandemic added another layer of complexity and stress that I had not anticipated when first setting out to do this research. Reflecting on the impact that COVID-19 had on myself and the research has been cathartic and, at times, emotional.

Conclusion

This thesis has presented an in-depth exploration of the sedation practices of health care professionals working in an ICU in Australia and an ICU in the UK. It has addressed three research questions to provide insight into the sedation practices of mechanically ventilated patients between the two countries.

Through case study methodology, it has highlighted the perceptions, views and opinions that health care professionals have regarding the sedation practice they provide for mechanically ventilated patients. Each case study provided an opportunity for a deep dive into the sedation practises at each ICU, allowing for a greater understanding of the context surrounding how sedation is delivered and practised.

The findings have highlighted that sedation practice can be deeply affected by health care decision-making influenced by hierarchy, perceived control, ICU layout along with structuring and scheduling, perceptions of patient distress and personal moral distress, and perceptions of support and patient safety. I then examined the findings in relation to the wider literature and explored ways in which the findings could be addressed through sedation practice techniques such as nurse-protocolised sedation practice.

By illuminating these findings and through further discussion, it has provided a contribution of knowledge that can impact and shape the future sedation practices of health care professionals by supporting future guidance and policy. In addition, they can improve educational learning and focus future research. As there is little qualitative research about the sedation practices of health care professionals, this research shines a much needed light and focuses on how sedation is practiced. Without this contribution to knowledge, we will struggle to change and adapt the sedation practices of health care professionals needed to improve the outcomes of patients admitted to the ICU. Hopefully, by carrying out this research, we can begin to work through the challenges and barriers exposed regarding sedation practice for the mechanically ventilated and sedated patient.

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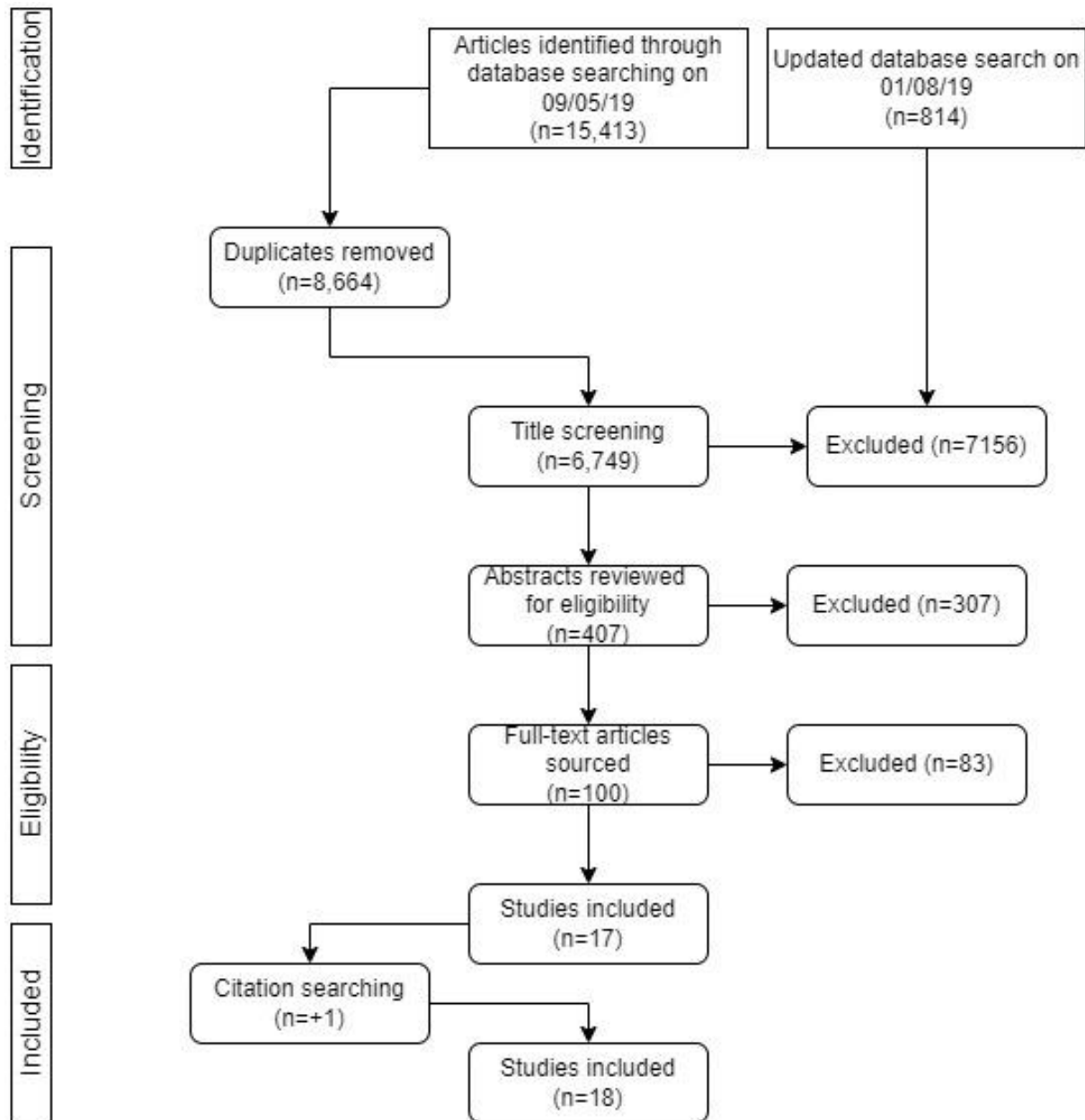
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Appendices

Appendix A: Screening flow diagram- Literature Review



Adapted from Varga *et al.* (2022).

Appendix B: Study Demographics and Characteristics

Included Papers	Source of data (n=4728)	Focus	Main Findings	Strengths and Limitations
2009 Egerod (Denmark), Qualitative	Semi-structured Interviews, Physicians (n=7), male 4, female 3. Multicentre- One participant from 7 different ICUs.	Focus: To explore views and perceptions of sedation practice.	A general consensus across the ICUs involved is that the sedation strategy goal is to keep the patient comfortable with analgesia and light sedation. Some intensive care units have a “no” sedation policy. Several different sedation assessment tools were used, or none at all. Varying opinions on daily sedation interruption. Sedation agents varied across the intensive care units. Some followed sedation protocols, whereas others had banned certain agents (Midazolam) that others regularly used. There were reports of conflicting roles in sedation practice between nurses and doctors.	Physicians with less experience were not included. Nurses views were reported indirectly by physicians. Only one author analysed the data which may have led to interpretation bias. Preconceptions were addressed to remain transparent. One participant refused to have the interview digitally recorded which may have led to recall bias.
2009 Salluh <i>et al.</i> (Brazil), Quantitative	Survey, Physicians (n=1015) Survey emailed to several relevant intensive care unit networks.	Focus: To describe sedation and delirium practices.	Over 50% of physicians reported that daily interruption of sedation was practised in their intensive care unit. However, those who estimated the practice of daily interruption of sedation reported that daily interruption of sedation was usually completed less than half of the time.	No reply from the author- only able to include one question related to a mechanically ventilated patient. Questionnaire piloted. Sampling bias and reporting bias possible: only involved physicians in an intensive care society. However, the survey link was put on the website. Represented all geographical locations in Brazil.
2009 Tanios <i>et al.</i> (USA), Quantitative	Survey, Physicians, Pharmacists and Nurses (n=916) Survey emailed to members from the Society of Critical Care Medicine.	Focus: Barriers to sedation specific protocols and tools.	The majority of respondents practised in an intensive care unit where sedation protocols were used. Several barriers to using sedation protocols were given. The majority of respondents preferred using a benzodiazepine. Daily sedation interruption varied widely between respondents and several barriers were reported for daily sedation interruption.	The survey was tested. Participants were representative of the sample group, however high physician to nurse ratio. Sampling bias is present due to the use of an intensive care society only.
2010 Randen and Bjork (Norway), Quantitative	Questionnaire, Nurses (n=86) Multicentre questionnaire delivered to three different ICUs across three different	Focus: To explore perceptions of sedation practice.	The majority said that their sedation practices were a collaborative approach between nurses and doctors. The study reported on which sedation agents were most commonly used in sedation practice. It was reported that daily sedation interruption rarely happened and sedation	High non response rate. Reporting bias as with most self-reporting surveys.

	hospitals.		protocols were not often used. Sedation assessment tools were used. A very high majority reported that they were aware of the short and long term consequences of long and short term sedation. Over half reported that they often give too much sedation. Most participants reported giving a bolus of sedation before care.	
2010 Roberts <i>et al.</i> (USA), Quantitative	Quantitative Interview, Nurses (n=130) Interviews with nurses were conducted at the bedside of mechanically ventilated patients, across two research sites, involving 5 ICUs.	Focus: Exploring perceived sedation practice and actual practice with sedation specific protocols (data on perceived practice only included).	Fewer than half said they would be willing to perform daily interruption of sedation on the patient they were looking after. Nurses who were willing to perform a sedation hold had more training on sedation and had perceived the patient to be comfortable and stable.	The survey went through several steps of development. The sample was relevant for the study. However, staff with less experience were under represented. Reporting bias as the interviewer was either a pharmacist or a physician. This may have resulted in feelings of pressure.
2010 Guttormson <i>et al.</i> (USA), Quantitative	Survey, Nurses (n=423) The survey was mailed to members of the American Association of Critical Care.	Focus: To explore factors that influence sedation practice.	Most nurses reported sedation was necessary for patient comfort and to help minimise the memory patients had of their intensive care admission. The majority thought that the knowledge and attitudes of nurses influenced sedation practices and many reported that if they were to be mechanically ventilated they would want to be sedated. The majority of nurses thought that there was good communication between nurses and physicians in regards to sedation practice. A high majority of nurses agreed that no cough or response following a painful stimulus meant that the patient was over sedated. A majority also reported that any movement indicated under sedation.	The response rate was less than half creating a potential nonresponse bias. Only representative of nurses who are members of the American Association of Critical Care Nurses and may not reflect the majority of ICU nurses. However, a suitable way to recruit a large population. The scale used to measure self-reported sedation practices underwent several steps of development and was piloted.
2012 Gill <i>et al.</i> (USA), Quantitative	Survey, Pharmacists (n=85) Multicentre survey conducted online and sent to several ICUs across	Focus: Comparing perceived and actual practice (data on perceived practice only included).	The study reported on which sedation agents were used the most and reasons were provided. Just over half report using a sedation protocol and a high majority used a sedation assessment tool Daily interruption of sedation was often reported as a routine practice. Decisions about sedation were reported to	Only the perceived sedation practices were included in this review. Non-probability sampling: recruited from members of The Society of Critical Care Medicine Response rate not reported. Survey well developed and piloted- but inter-rater reliability was not formally

	the USA.		be taken collaboratively. Barriers that were reported were a lack of direction and a high nursing turnover with a lack of education.	tested. Reporting bias is possible.
2012 Woein <i>et al.</i> (Norway), Quantitative	Survey, Nurse and Physicians (n=100) Postal survey sent to several ICUs across Norway.	Focus: To evaluate sedation practices.	Sedation assessment tools were reported to be used often, but there was little use of sedation protocols, and daily interruption of sedation was often not completed. A high majority reported that sedation practice was a collaborative decision. The study reported on which sedation agents were most commonly used.	The response rate was high and all ICUs in Norway were represented. Survey was not available to all nurses and physicians- Possible biased data. The majority (91%) have 5 years or more experience. The survey was piloted.
2013 SRLF Group (France), Quantitative	Questionnaire, Physicians (n=195) Multicentre questionnaire emailed to several ICUs across France.	Focus: To evaluate sedation practices.	The respondents reported on the most common sedation agents that were used and how they were given. A high majority reported using a sedation scale. Just over half reported using a sedation protocol, but only half of those who said they used a sedation protocol reported using it routinely. The majority think that spontaneous eye-opening and eye-opening after light physical stimuli is acceptable level sedation.	No pilot testing, but had several stages of development. Low response rate: non-response bias possible. Half of the ICU's included were represented. Sedation practices were based on clinicians' perceptions only. Difficult to tell if the aim of the study was met, as only representative of intensivists only.
2013 Tingsvik <i>et al.</i> (Sweden), Qualitative	Semi-structured interviews, Nurses (n=9), female 9 Nurses from three different ICUs in Sweden took part in this study.	Focus: Sedation practices and experiences of caring for lightly sedated patients.	The study reported that nurses often felt challenged when looking after lightly sedated patients compared to deeply sedation patients. Nurses reported they found it difficult to achieve optimal levels of sedation. Several nurses reported not being able to leave patients, and the need for the environment to be safe. Nurses also reported needing more knowledge, creativity and experience to look after lightly sedation patients.	Nurses were recruited if they had more than 2 years of ICU experience. The mean years of experience was 13 years. Less experienced nurses were underrepresented. Nurses voluntarily signed up. Sampling bias is possible. Small sample size from each ICU. Two pilot interviews were included in the main findings. All investigators took part in the analysis reducing possible interpreter bias. A robust framework was used for analysis.
2014 Freilich and Shaw (UK), Quantitative	Telephone-based questionnaire, Nurses (n=160) Multicentre study using telephone-based questionnaires speaking to the senior nurse on the intensive care unit that shift	Focus: Sedation practice and monitoring practices.	A very high majority had a sedation hold policy but only a very small amount applied this to all patients with most completing sedation holds for as many as possible. Some said that they would only do sedation holds if the patient was able to come off the ventilator that day.	Only a small amount of data about the mechanically ventilated patient. Only the senior nurse responded to the telephone survey. The survey was piloted. High response rate. Potential reporting bias.

	across the UK.			
2014 Sneyers <i>et al.</i> (Belgium), Quantitative	Survey, Nurse and Physicians (n=898) A multicentre study across several ICUs across Belgium.	Focus: Sedation practices and analgesia based sedation specific protocols.	More nurses than physicians felt that daily interruption of sedation was traumatic for the intubated patient and that it affected their comfort. A high majority of nurses and physicians thought that interruption of sedation should only be performed on physicians' orders. A high majority of nurses thought that daily interruption of sedation increased the risk of complications and organisational factors made it difficult to stop sedation daily. The majority of participants thought it was easier to look after a sedated patient than a patient who is awake.	No email response from the author if participants responded with a mechanically ventilated patient in mind. Therefore limited to certain data. Clear sampling strategy targeting all physicians and nurses in Belgian hospitals. Reporting bias is possible. The minimum sample size was achieved and covered 94% of all hospitals in Belgium. Survey well developed and piloted.
2015 Karlsson and Bergbom (Sweden), Qualitative	Semi-Structured Interviews, Physician, Nurses and Nursing assistants (n=9) Single centre study completing face to face interviews.	Focus: Sedation practice and caring for lightly or non sedated patients.	6 themes were developed in this study. 1) <i>It is distressing to witness the patients' stress and suffering</i> – Staff perceived that patients who were lightly sedated suffered. 2) <i>Feeling frustration due to not being in control of the situation</i> - Staff felt that at times care was chaotic. 3) <i>Receiving and losing trust and confidence</i> - Staff expressed the feelings that patients put all their trust in them and this could often break. 4) <i>Being there for the patient</i> - This was translated as being proximately close to the patient and also in a sense that meant you can accurately assess the patient's needs. 5) <i>Needing time to learn a new way of caring</i> -. The nursing staff felt their thoughts and opinions were disregarded in regards to sedation practice. 6) <i>Allowing time for rest, sleep and privacy</i> - Sleep was deemed as critical to the recovery of the patient.	The study recruited participants who had a minimum of 3 year's experience, but the experience of participants ranged from 9- 25years. This would have resulted in those with less experience being unrepresented. A nonresponse bias is possible. Selection bias is possible as staff put themselves forward if they were interested in the study. The authors of the study were employed by the ICU that participated in the study, which may have led to interpreter bias. Only three ICUs were involved, and selection bias is possible as they chose units that had a longstanding no-sedation strategy.
2015 Yassin <i>et al.</i> (UK), Quantitative	Survey, Pharmacists (n=178) Web-based survey posted online to the UK Clinical Pharmacy	Focus: Sedation practice overview.	The study reported on the implementation of sedation guidelines, sedation assessment tools and sedation holds was reported on. The study reported on the sedation agents that were most commonly used.	Only involved pharmacists and may not be representative of perceived sedation practices. Survey was posted to a UK national group and pharmacists were contacted. 60% of UK ICUs were represented. The survey was designed with health care professionals and was reviewed. No

	Association on the Critical Care Group.			description of test-re-test reliability.
2017 Kotfis <i>et al.</i> (Poland), Quantitative	Survey, Physicians (n=165) Multicentre survey posted to ICUs in Poland.	Focus: To evaluate sedation and delirium practices.	Less than half of respondents report the use of sedation scales. Sedation protocols were hardly ever implemented but daily interruption of sedation was frequent The sedative choice was reported for different patient groups.	Only included physicians and may be biased towards the physicians' view. The survey was well developed and underwent testing. Low response rate: potential non-response bias. Responder bias is possible.
2017 Priyankara <i>et al.</i> (Sri Lanka), Quantitative	Questionnaire, Physicians (n=?) A questionnaire was sent to several intensive care units in one hospital in Sri Lanka.	Focus: To evaluate sedation practices.	The majority reported using a sedation assessment tool. The majority had a no-sedation protocol. Most stated that they practised daily sedation interruption but this was reported as not being audited. The preferred sedation agents were reported and rationales for decisions about choices of sedation agents were provided.	No information about how the survey was developed or if it was piloted. Only 7 ICUS responded. Non-response bias may be high. Responder bias is possible and may not be reflective of perceived practices by others.
2018 Borkowska <i>et al.</i> (Belgium) Quantitative	Questionnaire, Nurses (n=342), male 25.9%, female 74.1% Questionnaires were given to those who were members of the Flemish Society of Critical Care Nurses.	Focus: To evaluate sedation practices and the use of sedation specific protocols.	Nurses reported that sedation practices were dependent on how long the patient was to be mechanically ventilated for. Nurses reported on how and why sedation was administered to mechanically ventilated patients giving insight into the clinical decisions made. Fewer than half of nurses reported use of a sedation protocol. More than half said they would only use a sedation protocol if physicians directed its use. Just over half said that sedation was monitored every 2 hours with most respondents reporting that a sedation assessment tool was used. Most respondents reported never or rarely practising daily interruption of sedation. The main concern was that patients would be uncomfortable. A % of respondents reported that if sedation was to be reduced then this increased the need for physical restraints.	Unaware of how the questionnaire was developed but, content validity was assessed by independent ICU experts. Sample selection bias as questionnaire only open to the nurse who attended the congress from a critical care society. Further selection bias from the authors as unclear as to what was deemed a bedside nurse— 81 nurses excluded with no justification. Responder bias is possible.
2019 Mortensen <i>et al.</i> (Denmark) Qualitative	Semi-structured dyadic interviews, Nurses (n=10), male 1, female 9	Focus: Comparing light sedation practice of junior and senior	Four themes were developed in this study. 1) <i>Managing frustration</i> - Frustration in both competent and expert nurses was seen when there was ineffective communication, also reduced staffing caused frustrations as they weren't able	Selection bias possible— The nurse manager at each ICU selected who was to be interviewed. Clear definition of expert and competent nurses which may have limited selection bias.

	A multicentre study was conducted at 5 different ICUs.	nurses.	to give the care they wanted. 2) <i>Attempting Dialogue</i>- The nurses reported that there was a lack of available resources to communicate with patients. 3) <i>Negotiating reality</i>-This theme transpired from nurses' concerns of a delirious awake intubated patient- They never fully understood how much the patient was understanding of their environment. 4) <i>Alleviating discomfort</i>-Nurses found it difficult to see a patient struggling from the discomfort they perceived the patient to be having from the tube.	Rigour of data analysis enhanced by involving several researches and use of a qualitative checklist. Dyadic interviews offered several different perspectives on caring for a non-sedated mechanically ventilated patient.
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Appendix C: Quality Assessment Tool

			Screening Questions		Qualitative Studies				
First Author	Year	Citation	S1. Are there clear research questions?	S2. Do the collected data allow to address the research questions?	1.1. Is the qualitative approach appropriate to answer the research question?	1.2. Are the qualitative data collection methods adequate to address the research question?	1.2. Are the qualitative data collection methods adequate to address the research question?	1.4. Is the interpretation of results sufficiently substantiated by data?	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?
Egerod	2009	Egerod, I. (2009). "Cultural Changes in ICU Sedation Management." <i>Qual Health Res</i> 19(5): 687-696.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tingsvik	2013	Tingsvik, C., <i>et al.</i> (2013). "Meeting the challenge: ICU-nurses' experiences of lightly sedated patients." <i>Australian Critical Care</i> 26(3): 124-129.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Karlsson	2015	Karlsson, V. and I. Bergbom (2015). "ICU professionals' experiences of caring for conscious patients receiving MVT." <i>West J Nurs Res</i> 37(3): 360-375.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mortensen	2019	Mortensen, C.M., <i>et al.</i> (2019). "Caring for non-sedated mechanically ventilated patients in ICU: A qualitative study comparing perspectives of expert and competent nurses." <i>Intensive & Critical Care</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes

		Nursing 52: 35-41.							
			Screening Questions		Quantitative Studies				
First Author	Year	Citation	S1. Are there clear research questions?	S2. Do the collected data allow to address the research questions?	4.1. Is the sampling strategy relevant to address the research question?	4.2. Is the sample representative of the target population?	4.3. Are the measurements appropriate?	4.4. Is the risk of nonresponse bias low?	4.5. Is the statistical analysis appropriate to answer the research question?
Tanios	2009	Tanios, M. A., <i>et al.</i> (2009). "Perceived barriers to the use of sedation protocols and daily sedation interruption: a multidisciplinary survey." <i>Journal of Critical Care</i> 24(1): 66-73.	Yes	Yes	Yes	Yes	Yes	No	Yes
Salluh	2009	Salluh, J., <i>et al.</i> (2009). "Brazilian Research in Intensive Care Network Delirium recognition and sedation practices in critically ill patients: a survey on the attitudes of 1015 Brazilian critical care physicians." <i>24(4): 556-562.</i>	Yes	Yes	Yes	Yes	Can't Tell	No	Yes
Roberts	2010	Roberts, R. J., <i>et al.</i> (2010). "Predictors for daily interruption of sedation therapy by nurses: A prospective, multicenter study." <i>Journal of Critical Care</i> 25(4): 660.	Yes	Yes	Yes	Can't tell	Yes	No	Yes
Randen	2010	Randen, I. and I. T. Bjørk (2010). "Sedation practice in three Norwegian ICUs: A survey of intensive care nurses' perceptions of personal and unit practice."	Yes	Yes	Yes	Yes	Yes	Yes	Yes

		Intensive & Critical Care Nursing 26(5): 270-277.							
Guttormson	2010	Guttormson, J. L., <i>et al.</i> (2010). "Factors influencing nurse sedation practices with mechanically ventilated patients: a U.S. national survey." Intensive & Critical Care Nursing 26(1): 44-50.	Yes	Yes	Yes	Can't tell	Can't tell	Can't tell	Yes
Gill	2012	Gill, K. V., <i>et al.</i> (2012). "Perceived versus actual sedation practices in adult intensive care unit patients receiving mechanical ventilation." Annals of Pharmacotherapy 46(10): 1331-1339.	Yes	Yes	Yes	Can't tell	Can't tell	Can't tell	Yes
Wøien	2012	Wøien, H., <i>et al.</i> (2012). "Analgesia and sedation of mechanically ventilated patients - a national survey of clinical practice." Acta Anaesthesiologica Scandinavica 56(1): 23-29.	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes
SRLF	2013	The SRLF Trial Group, (2013). "Sedation in French intensive care units: a survey of clinical practice." Annals of Intensive Care 3(1): 24.	Yes	Yes	Yes	Can't tell	Can't tell	Can't tell	Yes
Freilich	2014	Freilich, S. and M. J. Shaw (2014). "A census of current sedation monitoring practices in adult general intensive care units in England." Journal of the Intensive	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes

		Care Society 15(2): 127-130.							
Sneyers	2014	Sneyers, B., <i>et al.</i> (2014). "What stops us from following sedation recommendations in intensive care units? A multicentric qualitative study." <i>Journal of Critical Care</i> 29(2): 291-297.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yassin	2015	Yassin, S. M., <i>et al.</i> (2015). "A web-based survey of United Kingdom sedation practice in the intensive care unit." <i>Journal of Critical Care</i> 30(2): 436.e431-436.e436.	Yes	Yes	Can't tell	Yes	Can't tell	Can't tell	Yes
Priyankara	2017	Priyankara, D., <i>et al.</i> (2017). "Sedation practices in intensive care units at National Hospital of Sri Lanka." <i>Sri Lankan Journal of Anaesthesiology</i> 25(2): 94-98.	Yes	Yes	Yes	Yes	Can't tell	No	Yes
Kotfis	2017	Kotfis, K., <i>et al.</i> (2017). "Multicenter assessment of sedation and delirium practices in the intensive care units in Poland - is this common practice in Eastern Europe?" <i>BMC Anesthesiology</i> 17(1).	Yes	Yes	Cant tell	Yes	Yes	No	Yes
Borkowska	2018	Borkowska, M., <i>et al.</i> (2018). "Nurses' sedation practices during weaning of adults from mechanical ventilation in an intensive care unit." <i>American Journal of Critical Care</i> 27(1): 32-42.	Yes	Yes	Yes	Yes	Cant tell	No	Yes

Appendix D: UK Ethics Amendments

Amendment	Submitted	Approved	Justification
1. Change of NHS research site.	19/05/2021	26/05/2021	Due to the COVID-19 Pandemic, the original research site highlighted could no longer accommodate this study. A new study site in England agreed that they could accommodate this research.
2. Change to the recruitment for the Focus Group.	08/09/2021	20/09/2021	Due to recruitment difficulties, we sought to amend how potential participants were approached and recruited for the focus group. This amendment introduced face-to-face recruitment for the focus group.
3. Change to the analysis software.	22/12/2021	24/12/2021	The change relates to the software we are using for analysis. We initially decided to use NVivo™ is but requested to change to Quirkos™ as it was recognised as a more user-friendly and intuitive software to help with analysis.
4. Change of inclusion and exclusion criteria.	15/02/2022	15/02/2022	Changes to the inclusion and exclusion criteria will allow the researcher (Sarah Varga) to have a more significant opportunity to observe health care professionals around the patient's bedside. The inclusion and exclusion criteria change did not affect the safety and scientific value of the study. Therefore this change was a non-substantial amendment and did not require a study-wide review.
5. Introduction of the semi-structured interview guide and changes to the online consenting process.	15/06/2022	06/07/2022	Following some analysis of the focus group and the observation period, a semi-structured interview guide was developed and shared with the REC. We also introduced verbal consent if the interviews take place on Zoom, following previous learning from the other two data collection methods.
6. Adding of a transcription service to help transcribe the UK interviews.	17/01/2023	15/02/2023	This amendment introduces the use of a transcription service to support the transcribing of the interviews completed with participants.

Appendix E: Australian Ethics Amendments

Amendment	Submitted	Approved	Justification
1) Update to the protocol to reflect changes made in the UK and the introduction of new recruitment measures.	10/08/2022	30/09/2022	- Use of engagement techniques and gatekeeper support to help improve the recruitment of health care professionals as very few health care professionals were recruited using e-mails alone. - Introducing flexibility to the order in which the data collection methods are carried out and how they are carried out. So that the observations can be conducted before the focus group due to the time constraints on the researcher's visa. -Update to the inclusion and exclusion criteria for the patients that are to be included in the participant observation period as per UK changes. -Focus group topic guide has been updated as per UK learning. -Data analysing software has been changed from Nvivo to Quirkos™ as per UK changes. -Online verbal consent has been added for the focus group and interviews per UK changes. This led to the ethics committee requesting that we use the software REDCap to capture consent. -Typographical changes.
2) Introducing the semi-structured interview guide, changing the demographic form to online, and additional recruitment emails.	20/11/22	08/12/22	- Following the collection of the focus group data and the participant observation data, the semi-structured interview guide was developed. It was submitted to HREC for a review. -Since the introduction of REDCap for consent in the last amendment, it had made the consenting process easier. In this amendment, we sought permission to add an additional optional survey to collect the optional demographic data. -To ensure that enough participants can be recruited for the semi-structured interviews, we introduced an additional recruitment email script that may be used.

Appendix F: UK Patient Letter



Health Care Professionals Perspective On Sedation: Australia & The UK

Patient Letter- **PRIVATE AND CONFIDENTIAL**

My name is Sarah Varga, and I am a PhD student from the University of Sheffield and an intensive care nurse. While you were a patient in intensive care, I conducted a study that looked at the sedation practices of the nurses and doctors. Sedation is the medication that they used to keep you asleep while you were on the breathing machine known as the ventilator.

My focus for this section of the study was understanding what influences sedation practice in real life by watching the nurses and doctors. My role was only observation, no practice or treatment has been changed.

This study has been formally approved and permission was given by one of your close relatives/friends to include you in this research, or by the healthcare team responsible for your care. They believed that you would have wanted to be included in this research.

What data was collected about me?

I was given permission to find out why you came to the ICU, your age, your sex and your past medical history. I also got to see what the nurses and doctors were documenting in your patient notes about sedation practice. All this data is de-identified and will be presented in a way so that no one will know it is you.

When or before you woke up from sedation, the data collection was stopped, and no more data was collected.

What will happen with the data?

I will use this data within my research project to improve our understanding of sedation practice. This study will be published, and de-identified quotes from your medical notes may be published. Again, they will be published in a way so that no one will know it is you. The data will be kept extremely secure using password encrypted devices and will be archived as de-identified anonymous data permanently within the University of Sheffield.

What to do now?

If you are happy with the research team having this data, there is nothing you need to do. If you are unhappy with the research team having this data and want it removed, please contact the researcher by any means by the __/__/__ (2 months after you were discharged from the ICU). We can remove your personal data (why you came to ICU, age, sex and past medical history). A 2-month limit has been set because we need to start processing the data.

If you have any questions or want some more information about this study, then please find my email contact details on the bottom of the page.

Thank you for taking the time to read this letter and being a part of the study. I wish you a speedy recovery.

Best Wishes

Sarah Varga

Sarah.varga@nhs.net / savarga1@sheffield.ac.uk

Miss Sarah Varga

The University of Sheffield, Barber House,

3 Clarkehouse Road

Sheffield

Post Code S10 2LA

[The study number is 288309.](#)

Appendix G: UK Email script

Email Script:

Dear Health Care Professional,

My name is Sarah and I am a PhD student from the University of Sheffield. My clinical background is working as a nurse in the intensive care unit and my research project is looking at the sedation practices of health care professionals. I would like to invite you to be a participant in this qualitative study.

Attached is the Participant Information Sheet which provides more information about the study and an expression of interest form.

If possible, can you return a completed expression of interest form to the following email address XXXX.

Thank you,

Sarah Varga

Health Care Professionals' Participant Information Sheet

Short Research Title

Health Care Professionals' Perspective on Sedation: Australia & The UK

Researcher

Miss Sarah Varga (Intensive Care Nurse Completing PhD)

Health Sciences School, Division of Nursing and Midwifery

Supervisors

Professor Tony Ryan, Professor Tracey Moore and Professor Jane Seymour

Invitation

My name is Sarah Varga, and I am a PhD student from the University of Sheffield and an intensive care nurse. I would like to invite you to take part in a research study that looks at health care professionals' perspectives on their sedation practices. Data collection will take place through focus groups, participant observations and interviews- you may want to take part in all three types of data collection or just one.

- In this research study we will use information from the information that you provide. We will only use information that we need for the research study. We will let very few people know your name or contact details, and only if they really need it for this study.
- Everyone involved in this study will keep your data safe and secure. We will also follow all privacy rules.
- At the end of the study we will save some of the data in case we need to check it AND for future research.
- We will make sure no-one can work out who you are from the reports we write.

This information sheet will explain what is involved in being a participant and why this research is taking place.

What is the purpose of this study?

I am exploring health care professionals' perspectives of sedation practices when looking after mechanically ventilated patients. I am doing this because research has shown that sedation can contribute positively and negatively to a patient's outcome. Up until now, many quantitative studies have collected data about our sedation practices. The studies tell us that across different countries, everyone is managing their patients in slightly different ways when it comes to sedation. With this study, I am hoping to gather qualitative data that can contribute to understanding why these variations occur. To do this, I am comparing sedation practice in Australia and the UK.

Why are you comparing Australia and the UK?

My experience working in both countries as an ICU nurse has led me to believe there are similarities and differences that we can learn from to improve sedation practice. Having different countries may make these similarities and differences in practice more transparent when gathering data on sedation practice. Other reasons for this comparison are practical: both countries speak the same language, have similar public healthcare systems, and research connections have been established.

[Why have I been invited to participate in this study?](#)

You have been invited to take part in this study because you are an ICU health care professional who understands sedation practice.

[Do I need to take part in this study?](#)

No. It is up to you whether you take part in this study or not, and all participation is voluntary. Discuss the study with your colleagues, family, and friends should you wish before deciding. If you decide to take part, you will be required to sign a consent form before starting the study, either online or in person.

[What if I don't want to take part in this study, or if I want to withdraw later?](#)

If you choose not to take part in this study or want to withdraw at any time, you can do without giving any reason.

If you withdraw consent after initially agreeing to take part, any data that was previously collected will still be kept, but no further data will be collected.

We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.

[What does this study involve?](#)

The study is split into three sections of data collection- Focus Groups, Participant Observations and Interviews. You can take part in as many or as little methods of data collection as you would like. The following paragraphs will give a more in-depth explanation of what each method of data collection will involve if you were to take part in that section.

Focus Group- The focus group will involve discussing sedation practices when looking after mechanically ventilated patients in a group setting at your workplace. The focus group will be in a room where no one else can overhear the groups discussion. The focus group will have a maximum 8 participants. The group will involve different health care professionals' such as nurses, doctors and pharmacists who understand sedation practice. The focus group will last 1.5-2hours long. Refreshments will be provided, and travel costs up to the value of £15 will be reimbursed. You will also be given an eVoucher of £20 after the focus group has taken part to say thank you for participating via your work email. The focus group will be audio recorded to capture our discussion and the researcher (Sarah Varga) will be making notes.

Participant Observation- This section of the study involves the researcher (Sarah) observing health care practitioners' sedation practices when looking after mechanically ventilated patients. I will be collecting data from observing patient care and from reviewing patients' medical notes. If you agree to participate, I will observe you looking after a mechanically ventilated patient who fits the study criteria. Permission will also be gained from the patients next of kin (NOK). I will ask you to introduce me to the NOK so that I can explain the study. Some relatives may not want an additional

person stood at their loved one's bedside when it is not needed for their care. If the NOK makes this decision, that is ok. If that happens, I will not observe you when you are looking after that patient.

If the family agree to observations around their loved one's bedside, at the same time I will also be asking for permission to review the medical and nursing notes of the patient to see what is documented about sedation practice. As patients are unlikely to have the capacity to consent to the access of their medical notes, the research will comply with the Mental Capacity Act 2005 when involving participants who lack capacity in research. The information sheet provided to the relatives gives more information on how to consent patients who lack capacity in research, and I can provide a copy to yourself should you wish to read it. The family will have time to think about this decision, and I will communicate with you about what they decide. If the NOK agrees that the patient would want to be part of the research, I will have access to the patients' medical and nursing notes to see what has been documented about sedation practice. To ensure that I only have access to the data that I need, I will review the medical and nursing notes with you at the bedside when you have some free time. If you don't have any free time, this is okay. This research should impact very little on your working day as I am not trying to change any practice, only observe the practice.

Interviews- The study involves an interview with the researcher (Sarah Varga) at your place of work on your day off. The interview will be around sedation practices and will take up to 1.5 hours. The interview will have some pre-set questions, and you may be shown some simple illustrations about sedation practice. The interview will take place in a room where no one else can hear our discussion. I may also discuss scenarios from participant observations. I will be recording the interview and making notes. You will be reimbursed up to £15 for travel costs.

Coronavirus Contingency Plan for Focus Groups and Interviews- If the Focus Group or Interview cannot be completed face to face, it will be completed using an online video platform known as 'Zoom'. You will be asked to download 'Zoom' which is recognised as safe and secure with password access to the online discussion. After the discussion has taken place, you can remove the download. I will ask that you find a quiet area when taking part to ensure that the discussion stays private. The discussion will be recorded which will generate both visual and audio data. No travel costs will be reimbursed if the discussion happens online but you will still receive your evoucher if you are taking part in the Focus Group.

What will the researcher's role be in this study?

The researcher Sarah Varga will conduct the focus group, observations and the interviews. I will be available to answer any questions in person when available or using my contact details in this information sheet. I will be taking consent from health care professionals and from the patients NOK.

Are there risks to me in taking part in this study?

There are no direct risks to you taking part in this study. The discussions are not designed to evoke any significant emotions. However, you may find it upsetting at times, discussing past experiences. In the focus group/interviews you don't have to answer anything you don't feel comfortable answering and can say pass. No questions will purposely be asked that make you feel uncomfortable. There are no right or wrong answers and we are interested in what you think and have to say and want to hear your views.

Some people may find it uncomfortable being observed in participant observations. Please know that this is not a test, but if you find my presence too stressful in the participant observations, you can ask me to leave for a period of time, and I can come back later, or you can withdraw from the study. I will work with you to ensure that I don't put any additional stress on your day.

[Will I benefit from the study?](#)

There will be no direct benefits from taking part in this study. However, the aim of the study is that practice will be influenced following the results of the study in a positive way to improve sedation practices.

[Will taking part in this study cost me anything, and will I be paid?](#)

For the **Focus Group** you be given a £20 eVoucher for taking part and up to £15 reimbursed if travel costs are incurred.

For **Participant Observations**, as you will already be at work, no additional payments will be made for taking part in this section of the research.

For the **Interview**, up to £15 will be reimbursed if travel costs are incurred.

[Will my taking part in the study be kept confidential?](#)

Yes. All data collected will comply with the General Data Protection Regulation. You will initially be assigned a study number which will make the data pseudonymised. This means that the data collected will be de-identified. Before storage and publication of the data, these study numbers will be removed, and the data will be fully anonymised. This means that no one will be able to connect you with the research data collected. Additionally, the research locations will be disguised making them unlocatable.

I also ask that anything discussed in the focus group, interview or during participant observations is kept confidential. This means not repeating what was discussed outside of the research.

On the rare occasion confidentiality may need to be broken by the researcher (Sarah Varga) if I believe that yourself or others may be in harm. If I believe yourself or others are at risk of being harmed, then the appropriate steps will be taken in reporting this in line with my professional standards of practice by which I am bound. In this instance, confidentiality will be broken for these reasons only.

[What personal data will be collected about me, and how will it be used?](#)

I will collect personal data about your sex, age (no date of birth), years of ICU experience, your profession and grade (i.e. junior nurse vs senior nurse). This data will be pseudonymised, and you will be given a study number instead of your name. Only the University of Sheffield research team will have access to this information. When all this data has been analysed, this study number will be removed, and the data will be made anonymous. All reasonable steps will be taken to make the research site unlocatable to protect your identity, and all identifiable information will be removed or presented in a way that protects your identity.

For the Focus Group and Interview, we will ask for a preferred contact method so that we can send TWO reminders about the date and time of the focus group/interview. This contact method will be

securely stored and will be permanently deleted after the focus group/interview has taken place (unless you provided your work email address).

[What will the research data be used for?](#)

We will need to use information from you for this research project. The research data will be used to answer the research questions of the research project. The data will be published in a thesis for the students PhD study and may also be published in a research journal. Anonymised quoted text may also be used in the publication of the study results. The data may also be used for teaching and training purposes in the future. Further to this, the data may be used for future secondary analysis.

The information collected will include your age, sex, years of ICU experience and job role. People will use this information to do the research. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

[What will happen with the audio recordings taken from the focus group and from the interviews?](#)

If conducted face to face, we will use an audio recorder from The University of Sheffield to capture your thoughts and opinions. After the focus group or interview has taken place these audio recordings will be securely uploaded onto the University of Sheffield's Filestore. Once here, they will be deleted from the audio recorder. These recordings will then be listened to by primarily Sarah Varga but may also be listened to by other members of the university research team. The discussion will be typed up as soon as possible into a secure password-protected Microsoft Word document and your assigned study number will be used to de-identify the data. Once this data has been transcribed (written up), any audio recordings will be permanently deleted from The University of Sheffield Filestore.

If conducted online using Zoom, I will use the record function established within the software and the process described above will be the same.

[Who will see the data?](#)

The pseudonymised (de-identified) data will be seen by myself (Sarah Varga) and my academic supervisors. The video and/or audio recording will only be seen by the researchers involved in this study. The audio and/or video data will be transcribed into Word format and will be de-identified with your study number. The original audio and/or video data will then be deleted permanently.

The de-identified transcribed data will be seen by myself and my academic supervisors. It additionally may need to be seen by professional organisations such as journals who may need to look at the data for clarification of findings only. However, they will only have access to anonymised transcribed data collected and no identifiable information will be on this and your study number will be removed.

[Where will the data be stored?](#)

During the study the data will be stored securely in The University of Sheffield filestore. The filestore is password protected and has multi-factor authentication. Only the researchers involved in this study will have access to the data.

When the study has finished, and all data has been analysed it will be archived permanently in restricted storage provided by The University of Sheffield. The study will finish when all three methods of data collection have stopped. It will be stored in the research data management system repository known as ORDA. All participant identifiers will be removed and only fully anonymised data will be stored. This is expected to be in September 2023 but may be delayed depending on the timeline of the study. No audio or visual data will be kept. Only take part in this study if you are happy with the way data will be stored.

[Where can you find out more about how your information is used?](#)

You can find out more about how we use your information

- at www.hra.nhs.uk/information-about-patients/
- www.hra.nhs.uk/patientdataandresearch
- by asking one of the research team
- by sending an email to the data protection officer at: dataprotection@sheffield.ac.uk

[What if there is a problem?](#)

If there is a problem, you can contact the patient advice liaison service (PALS) in the UK on ***text removed for anonymity***. Furthermore, you can contact my academic supervisor Tony Ryan who is the Chief Investigator for this study on tony.ryan@sheffield.ac.uk. If you have any concerns about any research conduct, please do not hesitate to speak to the researcher (Sarah Varga) or to Tony Ryan.

[Who is organising and funding the research?](#)

The University of Sheffield has organised this PhD project and they are the study sponsors, the use of 'we' refers to them. This PhD project has been funded by Doncaster and Bassetlaw Teaching Hospital in partnership with NIHR Yorkshire and Humber.

[Who has reviewed the study?](#)

This study has been reviewed by NHS London- Camden and Kings Cross Research Ethics Committee (288309) on the 22nd March 2021. Thank you for taking the time to read this information sheet and considering whether to take part in this study.

If you would like:

- more information about the research
- to confirm that you would like to participate
- to withdraw from the study
- or have any other queries about the study

Please contact me on sarah.varga@nhs.net or savarga1@sheffield.ac.uk, or ask me questions directly when I am available on the unit.

Appendix I: Australia Health Care Professional- Participant Information Sheet



Health Care Professionals' Perspectives on Sedation Practices When Caring For Mechanically Ventilated Patients: A Comparison In Australia And The UK

INFORMATION SHEET

Title	<i>Health Care Professionals' Perspectives on Sedation Practices When Caring For Mechanically Ventilated Patients: A Comparison In Australia And The UK</i>
Short Title	<i>Health Care Professionals Perspectives on Sedation: Australia and The UK</i>
Protocol Number	X21-0174
Project Sponsor	The University of Sheffield, United Kingdom
Coordinating Principal Investigator/ Principal Investigator	Tony Ryan/ <i>*name removed*</i>
PhD Student	Sarah Varga
Location	<i>*location removed*</i>

1. Introduction

You are invited to take part in a research study looking at health care professionals' perspectives on their sedation practices. We are doing this because research has shown that sedation can contribute positively and negatively to a patient's outcome. Up until now, many quantitative studies have collected data about sedation practices. The studies tell us that across different countries, everyone is managing their patients in slightly different ways when it comes to sedation. The aim of the study is to gather qualitative data that can help us understand why variations in sedation practice occur.

We are comparing Australia and the UK because we believe that there are similarities and differences that we can learn from to improve sedation practice. Having different countries may make these similarities and differences more transparent when gathering data on sedation practice. Other reasons for having this comparison are practical: both countries speak the same language, have similar public healthcare systems, and research connections have been established.

The study is being conducted by Sarah Varga as part of the requirements for a doctoral degree from The University of Sheffield, UK, under the supervision of Professor Tony Ryan, The University of Sheffield, UK, Professor Tracey Moore, The University of Sheffield, UK and Professor Jane Seymour, The University of Sheffield, UK. Additionally, it is being supported within the **text removed for anonymity**.

The study is part of an international collaborative study coordinated by UK researchers: Professor Tony Ryan, Professor Tracey Moore and Professor Jane Seymour.

The study is being sponsored by The University of Sheffield.

This Information Sheet will tell you what is involved in the study and help you decide whether or not you wish to take part. Please read this information carefully. If there is anything you do not understand or if you feel you need more information about anything, please ask. Before you make a decision, please feel free to talk things over with a relative, a friend or your colleagues.

2. Study Procedures

If you agree to participate in this study, you will be asked to sign the Participant Consent Form either a hard copy, or by providing eConsent using REDCap. The study is split into three sections of data collection- Focus Groups, Participant Observations and Interviews. You can take part in as many or as little methods of data collection as you would like. The following paragraphs will give a more in-depth explanation of what each method of data collection will involve if you were to take part in that section.

Focus Group- The focus group will involve discussing sedation practices when looking after mechanically ventilated patients in a group setting at your workplace. The focus group will be in a room where no one else can overhear the groups discussion. The focus group will have a maximum 8 participants. The group will involve different health care professionals such as nurses, doctors, pharmacists and assistants in nursing who understand sedation practice. The focus group will last 120minutes maximum. Refreshments will be provided, and travel costs up to the value of \$30AUD will be reimbursed. You will also be given an eVoucher of \$40AUD after the focus group has taken part to say thank you for participating via your work email. The focus group will be audio recorded to capture the discussion and will be conducted by the PhD student Sarah Varga. This audio-recording will then be transcribed by Sarah Varga as soon as possible and will not contain any details that will identify you.

Participant Observation- This section of the study involves the PhD student (Sarah Varga) observing health care practitioners' sedation practices when looking after mechanically ventilated patients. She will be collecting data from observing patient care and from reviewing patients' medical notes. If you agree to participate, she will observe you and others who are looking after a mechanically ventilated patient who fit the study criteria over one period of 4-6weeks. The data that she collects from observing you will be in relation to sedation practice only. Additionally, she will also review the medical and nursing notes to collect data that is related to documented sedation practice. To ensure that she only has access to the data that she needs, she will review the medical and nursing notes with you at the bedside when you have some free time. If you don't have any free time, this is okay. This research should impact very little on your working day as she is not trying to change any practice, only observe the practice.

Over this 4-6 week period, the amount that you will be observed will vary from participant to participant. This is because the observations will depend on your shift pattern, the researchers' availability, and the patient you are looking after. It is hoped that you will be involved in the observations over the 4-6 week period, but we cannot guarantee this. At each end of the spectrum, you may be observed at most shifts that you work for the full duration (unlikely), or you may not be observed at all during the 4-6 week period (unlikely).

Due to the coronavirus pandemic, if participant observations cannot take place, up to a further five focus groups will take place. They will follow the same structure as detailed above for the focus group, but the topic guide will be slightly different (it will still be about

sedation practices). These additional focus groups will take place after interviews have taken place, and participants will only have to take part in one focus group. You will only be contacted to take part in a focus group if your expression of interest form indicates you are happy to be contacted about taking part in a focus group. A further recruitment email may also be sent.

Interviews- The study involves an interview with the PhD student (Sarah Varga) at your place of work on your day off. The interview will be around sedation practices and will take up to 90 minutes maximum. The interview will have some pre-set questions, and you may be shown some simple illustrations about sedation practice. The interview will take place in a room where no one else can hear the discussion. The interviewer may also discuss scenarios from participant observations. The interview will be recorded and the interviewer will be making notes. This audio-recording will then be transcribed by Sarah Varga as soon as possible and will not contain any details that will identify you. You will be reimbursed up to \$30AUD for travel costs.

Online Focus Groups and Interviews- For ease of access, the Focus Group and Interview may be completed using an online video platform known as 'Zoom'. You will be asked to download 'Zoom' which is recognised as safe and secure with password access to the online discussion. After the discussion has taken place, you can remove the download. We ask that you find a quiet area when taking part to ensure that the discussion stays private. The discussion will be recorded using the Zoom record function which will generate both visual and audio data. No travel costs will be reimbursed if the discussion happens online, but you will still receive your evoucher for the Focus Group. If you have been unable to return a consent form via email or by using REDCap for eConsent, you will be able to give verbal consent before the recording starts.

If the study data is used for future research purposes and / or shared with national and international collaborators, Ethics Approval will be required and will be sought prior to access any non-identifiable data.

3. Risks

There may be risks associated with this study, all attempts have been made to minimise the risk.

The discussions in the Focus Group and Interviews are not designed to evoke any significant emotions. However, you may find it upsetting at times, discussing past experiences. In the focus group/interviews you don't have to answer anything you don't feel comfortable answering and can say pass. No questions will purposely be asked to make you feel uncomfortable. There are no right or wrong answers and we are interested in what you think and have to say and want to hear your views.

Some people may find it uncomfortable being observed in participant observations. Please know that this is not a test, but if you find the presence of the researcher Sarah Varga too stressful in the participant observations, you can ask her to leave for a period of time, and she can come back later, or you can withdraw from the study. She will work with you to ensure that she doesn't put any additional stress on your day.

Additional risks are inconvenience- The focus group and interview will take place in your own time on your day off. It might also require you coming into your area of work so that you can take part.

A further risk is data breaches. While all attempts are made to keep the data secure as possible with passwords, encryption and multi-factor authentication, data breaches are not

impossible. The data will be transferred electronically outside the research site and overseas to The University of Sheffield, UK where it will be securely stored.

If you wish to talk to someone outside the research team due to any distress caused to you by any of the data collection (Focus Group, Participant Observation and Interviews), you can contact ***text removed for anonymity***.

4. Benefits

While we intend that this research study furthers medical knowledge and may improve the care of sedated mechanically ventilated patients in the future, it may not be of direct benefit to you.

5. Costs

Participation in this study will not cost you anything, nor will you be paid. However, you will be reimbursed up to \$30AUD for your travel expenses if you take part in either the Focus Group and/or the Interview with refreshments provided. Additionally, if you take part in the Focus Group you will be thanked with an eVoucher at the value of \$40AUD.

6. Voluntary Participation

Participation in this study is entirely voluntary. You do not have to take part in it. If you do take part, you can withdraw at any time without having to give a reason by contacting Sarah Varga on savarga1@sheffield.ac.uk and emailing to say you withdraw from the study, including your name. Whatever your decision, please be assured that it will not affect your working environment.

If you decide to withdraw from the study, we will not collect any more study-related information from you. If you want to withdraw please let us know and tell us what you would like us to do with the information we have collected from you up until then. If you wish, your personal information (age, gender, years of ICU experience, profession and grade of profession) can be removed from our study records. It will not be included in the study results, unless we have transcribed, analysed or published the results.

7. Confidentiality

All the information collected from you for the study will be treated confidentially and will be stored on a research database at the University of Sheffield. Only the researchers from the PhD students' supervisory panel from The University of Sheffield will have access to it once stored here. The principal investigator ***text removed for anonymity*** may also see some of the information collected- but again confidentiality will be maintained.

The data will be analysed by the PhD student Sarah Varga at The University of Sheffield. All data for use in journal publications and presentations will be de-identified*. The data collected for the research project will be kept permanently in the University of Sheffield data repository known as ORDA (Online Research Data) after the Doctoral Programme has finished- Expected to be September 2023. Personal data collected regarding age, gender, profession, grade of profession and years of ICU experience will be stored in a way that makes it impossible to work out individuals. Additionally, individual consent forms will be permanently deleted after the data has been published. You should only take part in this study if you are happy that de-identified data will be retained permanently when the study is completed.

You are free to withdraw at any point of this study. Any data collected up until the time you withdraw may be included in the study. If you do not want your personal data (age, gender, profession, grade and years of ICU experience) including in this study, you must tell the researchers at the time of your withdrawal. The study results may be presented at a conference or in a scientific publication, but individual participants will not be identifiable in such a presentation.

To ensure privacy and confidentiality is maintained in the focus group, participant observations and interviews the data will be recorded using a unique ID code which only the researchers at the University of Sheffield will have access to. The information regarding unique ID codes will be kept securely in password protected multi-factor authentication research drives at The University of Sheffield. To ensure privacy and confidentiality is maintained, please keep anything that is discussed in the focus group, interview or during participant observations confidential. This means not repeating what was discussed outside of the research discussions.

De-identified quotes may be used in the doctoral thesis or in journal publications. The de-identified transcribed data will be seen by myself and my academic supervisors. It additionally may need to be seen by professional organisations such as journals who may need to look at the data for clarification of findings only. However, they will only have access to de-identified transcribed data collected and no identifiable information will be on this and your unique ID code will be removed.

The data custodian for this research project is Luke Thompson from The University of Sheffield and is available at dataprotection@sheffield.ac.uk

On the rare occasion confidentiality may need to be broken by the researcher (Sarah Varga) if they believe that yourself or others may be in harm. If they believe yourself or others are at risk of being harmed, then the appropriate steps will be taken in reporting this in line with the professional standards of practice by which they are bound. In this instance, confidentiality will be broken for these reasons only.

*de-identified data means that you/your information will not be identifiable.

De-identified data will be stored on an online secure password protected research database accessed within the research department at The University of Sheffield supported by The University of Sheffield Data Protection and Legal Services. Any identifiable hardcopy data will be stored on either a secure, password protected shared drive (supported by the University of Sheffield) or in a locked cabinet in a locked office of ***text removed for anonymity***.

The study results will be used in a higher research degree project. Your data will also be stored at The University of Sheffield.

8. Storage of Data

As the University of Sheffield are the sponsors for this study, all data collected will need to be stored within The University filestore (X:drive). The X:drive provides shared storage to researchers based at The University of Sheffield which is secure and accessible on and off campus. It is backed up several times each day and gives the option to restore earlier versions. The University of Sheffield filestore is password protected and has multi factor authentication. All data will be sent to The University of Sheffield via a Virtual Private Network which provides privacy, anonymity and security.

At the end of recruitment, all expression of interests forms will be permanently deleted by the researchers. At the end of the study, the consent forms and demographic data collection forms will be permanently deleted on completion of the doctorate programme of Sarah Varga, again by the researchers. On final publication and storage of the data, all data will be de-identified. Only de-identified data will be permanently stored

9. Future use of Data

The results of this study and de-identified data may be shared in the future with national and international collaborators. The data collected in this project may be used in future research studies or secondary analysis. If the data is used for future studies or secondary analysis it will continue to be stored within The University of Sheffield secure filestores. If the data is used for future studies or secondary analysis it will only be used for the time that it is necessary to answer the new research aims/questions. If the data collected is used for future research studies or secondary analysis it will only be de-identified data. The data may also be used for teaching and training purposes in the future.

Any stored data that is used for related or future research, will first be reviewed and approved by an appropriately constituted Ethics Committee. You can indicate your agreement to this on the Participant Consent Form.

10. Further Information

When you have read this information, Sarah Varga can discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact them on savarga1@sheffield.ac.uk. Or alternatively contact *text removed for anonymity*.

This information sheet is for you to keep.

11. Ethics Approval and Complaints

This study has been approved by the Ethics Review Committee *text removed for anonymity*.

Appendix J: UK Expression of Interest Form



Short Research Title

Health Care Professionals Perceptive on Sedation: Australia and The UK

Expressions of Interest Form

On reading the Participant Information Sheet (PIS) for the study titled above, please make a cross (X) next to which parts of data collection you are happy to have further contact about. Please then provide your work email address and send this form back to sarah.varga@nhs.net or savarga1@sheffield.ac.uk. Please note that due to limited numbers, you will be contacted to confirm which parts of data collection you will be apart of.

<u>Data Collection</u>	
Focus Group	
Participant Observation	
Interview	

Work email address:

Appendix K: Australia Expression of Interest Form



Health Care Professionals' Perspectives on Sedation Practices When Caring For Mechanically Ventilated Patients: A Comparison In Australia And The UK

EXPRESSION OF INTEREST

I, _____ [name],

of _____ [address]

_____ [email address]

am interested in participating in (please put a X on which parts of data collection you are interested in),

Data Collection
Focus Group
Participant Observation
Interview

for the above study, and I understand a member of the research team will contact me directly using the details I have provided below.

Optional Additionally, to help with the recruitment of participants, I have indicated my profession and my years of practice (please put an X on which parts you associate with. Please note that this is optional). I am aware that this data will NOT be used for data collection and will only be used for recruitment purposes. I am aware that this 'expressions of interest' form will be permanently deleted following the close of recruitment.

Profession	Years of practice
Nurse	0-3 years
Doctor	3-7 years
Pharmacist	7-12 years
Assistant in Nursing	>15 years

I would be grateful if you would contact me to discuss the study further.

My work email address is _____

Alternatively my other preferred method of contact is (personal email address or telephone no.)

I understand that the study is being conducted by Sarah Varga as part of the requirements for a doctoral degree under the supervision of Tony Ryan, Tracey Moore and Jane Seymour.

[signature / date]

Please email this form back to savarga1@sheffield.ac.uk

Would you like to take part in a Focus Group to discuss the sedation practices when caring for Mechanically Ventilated patients?

Recruiting Nurses, Doctors, Pharmacists and other healthcare professionals.

The Focus group will take place in person or online using 'Zoom', it will be 1.5 to 2 hours long and you will receive a thankyou eVoucher of £20 for taking part.

Please contact Sarah on: sarah.varga@nhs.net or savarga1@sheffield.ac.uk using your work email address if you are interested.

Appendix M: UK- Health Care Professional Consent Form

Health Care Professionals Consent Form

Short Research Title: Health Care Professionals Perspective on Sedation: Australia & The UK

I am consenting for (Please Initial ONE only) Focus Group ☐ Participant Observation ☐ Interview ☐

	Initial
1. I can confirm that I have read and understood the participant information sheet version XX and have had the opportunity to ask questions.	
2. I agree that I know how the data will be used in line with the participant information sheet.	
3. I agree that data will be recorded for research and educational purposes.	
4. I agree that confidentiality will be broken if I or others are at risk of harm.	
5. I agree that the data collected may be used for future research and may be seen by other professional organisations, or other authorised researchers.	
6. I agree that the data collected may be used for future secondary analysis.	
7. I agree that anonymised quoted text may be used in publications.	
8. I agree that the data gathered will be pseudo-anonymised and eventually anonymised.	
9. I agree that anonymised data will be stored <u>permanently</u> in the University of Sheffield data repository.	
10. I can confirm that I voluntarily give my consent to take part.	
11. I agree that I can withdraw my consent at any time and give no reason.	
12. I agree that if I withdraw, the data that was collected up until the time will still be kept, but no other data will be collected.	
13. I agree that I will keep any discussions confidential.	
14. I agree to take part in this study.	
15. Focus Group and Interviews ONLY: I agree that audio and/or video recording equipment is in use to capture the data.	
16. Focus Group and Interview ONLY: I agree that my preferred contact will be used as a reminder of the focus group/interview, and it will be deleted afterwards (unless a work email address is given). Please give preferred contact:	
17. Participant Observation ONLY (Optional): I agree to be contacted for a follow-up interview.	
Optional: I would like to have a summary of the results and will provide my email address for this purpose only:	

Date:

Date

Signature:

Researcher Signature:

Print Name:

Print Name:

Participant Age:	
Identified Gender:	
Profession:	
Profession grade: (i.e. sister or staff nurse)	
Years of ICU Experience:	

Appendix N: Australia- Health Care Professionals Consent Form (Paper Version)



Health Care Professionals' Perspectives on Sedation Practices When Caring For Mechanically Ventilated Patients: A Comparison In Australia And The UK

I am consenting for
(Please initial ONE
only)

Focus
Group

☐

Participant
Observation

☐

Interview

☐

PARTICIPANT CONSENT FORM

I, _____ [full name]

Of _____ [address]

have read and understood the Participant Information Sheet on the above named research study

and have discussed the study with _____
[investigator responsible for conducting informed consent].

- I have been made aware of the procedures involved in the study, including any known or expected inconvenience, risk, discomfort and of their implications as far as they are currently known by the researchers.
- I understand that if taking part in the **interview / focus group** discussion will be audio-recorded OR video-recorded (if taking place on Zoom), and will then be transcribed and be kept in a manner in which I cannot be identified for analysis and I agree to this.
- **Focus Group and Interview ONLY:** I agree that my preferred contact will be used as a reminder of the focus group/interview, and it will be deleted afterwards (unless a work email address is given).

Please give preferred contact:

- I understand that anonymised quoted text may be used in publications and I agree to this.
- I understand that de-identified data will be stored permanently in the University of Sheffield data repository, and I agree to this.
- I understand that my de-identified data may be used for future research and I agree to this.
- I understand that confidentiality will be broken if I or others are at risk of harm and I agree to this.

- I would like to receive a copy of the study results when they become available. My email address is: _____
- I understand that The University of Sheffield research drives will be used to manage the collection and storage of my research data and that data will be sent and kept in the UK.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- **Participant Observation ONLY:** I agree to be contacted for a follow-up interview. YES/NO
- I freely choose to participate in this study and understand that I can withdraw at any time.
- I consent to the future use of any data I provide for research purposes. I understand that before they can use any data I provide, they must seek additional ethics approval. YES/ NO*
 *If NO is selected unfortunately you cannot participate in this study as data is collated and de-identified in a way that makes it impossible to guarantee your data isn't used for future research purposes.
- I also understand that the research study is strictly confidential and I agree to keep any discussions confidential.
- I hereby agree to participate in this research study.
- I consent to the storage and use of my information collected from me for use, as described in the relevant section of the Participant Information Sheet, for:
 - This specific research project
 - Other research that is closely related to this research project
 - Any future research

Participant Name: _____

Participant Signature: _____

Date: _____

Name of Person conducting informed consent: _____

Signature of Person conducting informed consent: _____

Date: _____

Appendix O: Focus Group Topic Guide for Australia and the UK

Focus Group Topic Guide

Check consent forms- signed consent and all questions are answered

Check Zoom is recording- if online

Deep breath, speak slowly

Introduction

Hello everyone and welcome to the sedation practice focus group, the Zoom recording has now started ***Switch on the recording function***. My name is Sarah Varga, and I am a PhD student from the university of Sheffield who is responsible for this research project and I'm really pleased you could all join me! For our focus group we've invited you to join our discussion on a sedation practice. We're going to be talking about experiences that you've had with sedation practice, and we're going to be talking about things that work well with sedation as well as things that don't go so well. This focus group is part of a number of data collection methods that are being used to get a good overview of sedation practice to support my doctorate. You may know that sedation practice varies across the country and across the globe, there is an emphasis on trying to reduce the amount of sedation we give to patients and improve the way we use sedation. At the end of the study, we hope to be able to inform policy makers of the experiences staff have with sedation in order to support future sedation practice. You were asked to take part in this study because you were among a group of people who have knowledge and an interest in sedation practice and I'm glad you've been able to join us. During the discussion I'll be taking notes, and the conversation will be recorded using the ZOOM record function.

There's just a couple ground rules that might help us. If you have a mobile phone we'd appreciate if you could make sure its on silent, but if you do need to respond to it please do. There are no wrong answers today in our conversation, many people have different experiences with sedation and so feel free to comment even if your thoughts and ideas or experiences are different from what others have to say. What is discussed in this focus group should be kept confidential. Confidentiality is of utmost importance, but it may be broken if I believe you, or others, are at risk of harm, in line with my nursing registration. My job is to guide the conversation and to keep us on time, I may interrupt, or I may push us along a little bit faster that's so that we can finish our conversation on time. If at any point you feel uncomfortable, you can say 'pass'.

In a moment, we're going to go around the Zoom call and find out who everyone is. ***Check Zoom is recording***

Introductions of participants

- Tell us who you are, what your role is in the ICU, and what you most enjoy doing when you're not at work.

Ice Breaker

- 'In a short sentence, why do you think sedation is used?'

Topic Guide 10-12 questions max. short and sweet, no why questions

1. So a patient has just been admitted, you're getting ready to tube and put them on a ventilator. Can you describe the usual process that now take place in regards to sedation practice?
2. Following these initial decisions of sedation practice, can you describe the ongoing and usual sedation practices that follow?
3. Can you describe the roles that different health care professionals have in the practice of sedation?
4. Would you say that sedation practice is a collaborative approach, and do family influence sedation practice?
5. Who makes most of the decisions?
6. What do you find difficult about sedation practice?
7. What do you find easy about sedation practice?
8. From the health care professionals perspective, what do you want from sedation?
9. What is classed as optimum sedation?

10. In recent years, there has been a focus on reducing the amount of sedation that we give to patients.

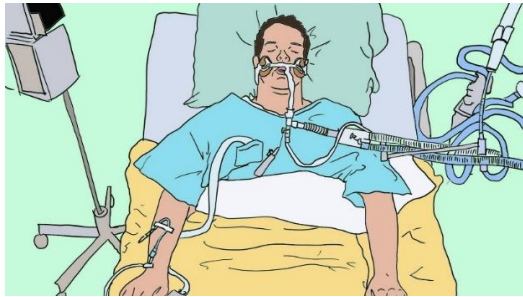
How do you feel about the move to less sedation?

11. Tell me about the process of performing a sedation hold on the unit.

12. Is there any difference between night and day sedation?

13. I am now going to show you two vignettes.

-The first is a gentleman who was sedated and ventilated due to agitation and confusion secondary to encephalitis. He has been on the unit for 3 days now, oxygen requirements are low and his inflammatory markers are reducing. What do you believe the unit's next steps would be in regards to the sedation management of this gentleman?



-The second is a woman who was originally admitted for T1RF secondary to pancreatitis. You walk past the bed space and look over to see her, she appears to be grimacing and trying to push the tube out using her tongue. She's not your assigned patient, and you haven't reviewed her that morning. She remains on sedation, and on a reasonable amount of ventilatory support as well as vasopressors. Do you have any particular thoughts about what you would do, or what you advise are the nurse or doctor whose looking after the patient to do. There are no right or wrong answers.



14. Are there any things that cause frustration with sedation practice

15. Have I missed anything that you think is worth mentioning about the sedation practices at your unit?

Closing Statement

- Ask participants for one for a closing hashtag on the topic of sedation practice.
- Thank the participants for attending.
- Reiterate confidentiality.
- Say that you can e-mail if you have any questions.
- Remind participants that an e-mail will be sent with an Egiftcard.

Moderator pointers

- Use participants own language back.
- Take an objective stance with minimal input from yourself *melt into background*.
- Make sure it stays focused, and you get what you need out of the focus group.
- Make conversation involve everyone.
- Visuals- look for body language, tone, dominance, appearance, and atmosphere.

Appendix P: Justification for the Criteria set for Patients Included in Participant Observation

<u>Inclusion Criterion</u>	<u>Justification</u>
>18 years of age.	This research focused on health care professionals' sedation practice in the adult population.
Mechanically ventilated using an endotracheal tube.	This research project focused on sedation practices for mechanically ventilated patients through an endotracheal tube. Sometimes, the sedation practices can be different if the patient is ventilated via another type of airway, e.g., a tracheostomy. This limit was set to ensure that the case study had appropriate boundaries.
Patients are being administered sedation at recruitment.	The study looked at the sedation practices of health care professionals. Therefore, to ensure sedation practices can be observed, the patient will be under the administration of sedation at recruitment.
An intensive care patient.	The study is focused on the sedation practices of health care professionals looking after intensive care patients.
<u>Exclusion Criterion</u>	<u>Justification</u>
Patients who are receiving neuromuscular blockades at recruitment.	The use of neuromuscular blockades heavily influences how sedation medication is utilised. Using neuromuscular blockades will often require a patient to be heavily sedated to reduce the risk of having the patient paralysed with ineffective sedation.
Patients who are pregnant.	Pregnant patients have been excluded as sedation may differ with this sub-type of patients.
Patients who are being actively cooled.	The use of cooling aids in the ICU would often result in patients requiring deep sedation to prevent the physiological response of shivering and reduce any awareness that the patient may have of the cooling aids to avoid discomfort.
Patients who are end of life or if treatment is being withdrawn.	End-of-life sedation practices differ from patients receiving full active treatment. Additionally, the researcher's presence at the bedside may have posed additional stress on health care professionals and the patient's family, which would be unethical. Note: If the doctors decided to withdraw treatment, I ceased any further data collection for that patient at that point, but all data collected until that point was retained.
Patients who have limited English.	Due to the patient being sedated and ventilated, in Australia, it would be difficult to determine if the patient can understand English when the study is explained to them if they are lightly sedated. The patient's language understanding can be disclosed in the UK through personal consultee support. Suppose it is believed that

	the patient has limited English. In that case, patients would be excluded due to limited funding in which the patient's letter can be translated.
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Appendix Q: UK-Personal Consultee Information Sheet



Personal Consultee Information Sheet for an observation study

Short Research Title- Health Care Professionals Perspective on Sedation: Australia & The UK

My name is Sarah Varga, and I am a PhD student from the University of Sheffield and an intensive care nurse. I'm currently undertaking a research project where I am observing how the nurses and doctors keep your relative/friend asleep with the medication called sedation.

- This research project will be about understanding the way in which nurses and doctors work with sedation. The information I collect will contribute to helping improve sedation practice.
- As your relative/friend is sedated I cannot seek their permission to observe the nurses and doctors looking after them. I also cannot ask your relative/friends' permission to look at their medical records. Therefore, I am asking you to consider whether you believe they would want to be in this study if they were not sedated.
- We will only use information that we need for the research study. We will let very few people know your relative/friends name, and only if they really need it for this study.
- Everyone involved in this study will keep their data safe and secure. We will also follow all privacy rules.
- At the end of the study we will save some of the data in case we need to check it AND for future research.
- We will make sure no-one can work out who your relative/friend is from the reports we write.
- This information sheet explains more about the research and what you are being asked to decide on behalf of the patient.

What is your research project about?

My study seeks to observe doctors and nurses when they are providing care to patients who are sedated and on the ventilator. From doing observations, I aim to contribute to understanding about how best to provide care for patients who require ventilation and understand the educational and support needs of health care staff. This study will take place in the UK and Australia. There will be no change in your relative/friends' treatment as a result of your consenting, and my observation period will last 4 to 6 weeks.

In a moment I'm going to ask if you are happy to give your permission on two different things to include your relative/friend in my study. The first thing I am seeking permission for is to watch the nurses and doctors look after your relative/friend. The second is having access to your relative/friend's medical notes to see what the nurses and doctors' document about sedation. Both are optional, but for the first, I only need verbal permission, and the second, I need written permission. Over the next five pages, I will discuss this more thoroughly.

[Why are you comparing Australia and the UK?](#)

My experience of working in both countries has shown me that there are similarities and differences that we could learn from. Having different countries to compare may make it easier finding out the similarities and differences about sedation practice and what factors influence this practice in each ICU. Other reasons are practical ones, both countries speak the same language, have similar healthcare systems, and research connections have been made. All these points make it a lot easier to draw comparisons.

[Why have I been asked for my permission?](#)

Your relative/friend is sedated and ventilated and fits the inclusion criteria to take part in this study. As they are sedated and ventilated it's likely that your relative/friend cannot make this decision themselves- we call this a lack of capacity. To include people in research who lack the capacity to consent we follow the Mental Capacity Act 2005. In line with the Mental Capacity Act 2005, you have been approached because you are regarded as someone who is interested in the welfare of your relative/friend. I want you to consider whether you believe you know your relative/friend's wishes and feelings towards taking part in research as detailed in this leaflet.

[What permission do I need to give?](#)

For the observation part of the study, you just need to give verbal permission. Simply saying "I'm happy for you to observe the nurses and doctors" is enough. This will then be documented in the medical notes.

For access to your relative/friend's medical notes and collection of some personal data, I need you to agree to be a personal consultee and sign a form signing called a "record of consultation".

[What is a personal consultee?](#)

In line with the Mental Capacity Act 2005, a personal consultee must know the relative/friend well enough to give advice regarding their wishes and feelings towards taking part in research, considering any advance decisions. If you think they would want to be involved in the research, and you are prepared to be consulted, then we need a form signed called a “record of consultation”.

To sign this form, you can be a family member, carer or friend. What we ask is that you keep the feelings and wishes of your relative/friend in mind when you make the decision.

[Do I have to give my permission?](#)

No. It's entirely up to what you think is best for your relative/friend. You can give permission for me to watch the nurses and doctors only, or you can decline both. Discuss the study with friends, family, or other nurses and doctors should you wish before deciding. If you choose not to give permission, or if you change your mind, you can do without giving any reason and data collection will stop. This decision will NOT affect the care of your relative/friend.

Please be aware that if permission is given but then withdrawn after data collection has started, any data previously collected will still be kept and used, but no further data will be collected. However, if your relative/friend decide later, they don't want their personal data included in the study, they will have the opportunity to remove it.

[What personal information will be collected about my relative/friend, and how will it be used?](#)

If consented for, I will collect personal information about your relative/friend's age, sex, the reason for admission and past medical history. I will also collect data from the medical and nursing notes about sedation practice. This data will be de-identified with a study number assigned to your relative/friend.

We need to manage the data we collect in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about your relative/friend.

[If I give my permission, what will happen?](#)

I will begin making observations of the nurses and doctors looking after your relative/friend, making notes on my handheld device and collect data from the medical notes. There will be no change in this patient's treatment as a result of your consenting.

[Are there any risks or costs to me giving permission and will I benefit from giving permission?](#)

There are no direct risks to you giving permission. You may find it upsetting having someone else standing around the bedside of your relative/friend. If you want to discuss the study before, during or after the study has taken place, my contact details will be available.

Giving permission won't cost you anything; you also won't be paid for giving your permission. Giving permission will be entirely voluntary.

There will be no direct benefits from giving permission, but you may be interested in being part of the research process.

[Will my relative/friend's data collected in the study be kept confidential?](#)

Yes. All data collected will comply with the General Data Protection Regulation 2018 law. The data collected will be processed and stored correctly in a de-identified format. This means that the data collected will be de-identified so that the data collected will not be linked with your relative/friend. In the unlikely event that what I observe, I consider to be unsafe practice, or if I believe yourself or others are at risk of being harmed, then this will be reported in line with the professional standards of practice by which I am bound. As a result of this, confidentiality will be broken for these reasons only.

[Will you tell my relative/friend about the data you have collected from the medical and nursing notes?](#)

Yes. The ICU team will give a letter to your relative/friend when they have properly woken up from the sedation and can understand and process the information. This letter will tell your relative/friend about the study that they were in, and the data that was collected. We will give you a copy of this letter. If you relative/friend decide later on that they don't want their personal data included in the study, they will have the opportunity to remove it.

[What will the research data be used for?](#)

We will need to use information from their medical records for this research project. The research data will be used to answer the research questions of the study. The data will be published in a thesis for the students PhD study and may also be published in research journals. The data may also be published with anonymised quotes. The data may also be used for teaching and training purposes in the future. Further to this, the data may be used for future secondary analysis.

This information will include their age, sex, reason for admission, past medical history and notes taken about sedation practice. People who do not need to know this information will not be able to see the data collected. The data will have a code number instead.

We will keep all the information safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out who took part in the study.

[Who will see the data?](#)

The data will be seen by myself and my academic supervisors. It additionally may need to be seen by professional organisations such as journals who may need to look at the data for

clarification of findings only. They will only be able to see anonymous data and will not have access to any identifiable information.

Where will the data be stored?

During the study the data will be stored securely in The University of Sheffield filestore. The filestore is password protected and has multi-factor authentication. Only the researchers involved in this study will have access to the data. The research team consist of my senior supervisors.

This part of the study will finish when the six weeks of observations have stopped. When the study has finished, and all data has been analysed it will be archived permanently in restricted storage provided by The University of Sheffield as anonymous data. It will be stored in the research data management system repository known as ORDA. All participant identifiers will be removed, and only fully anonymised data will be stored. This is expected to be in September 2023 but may be delayed depending on the timeline of the study. Only give personal consultee advice to take part in this study if you think that the patient would be happy with the way data will be stored.

Where can you find out more about how your relative/friends' information is used?

- at www.hra.nhs.uk/information-about-patients/
- www.hra.nhs.uk/patientdataandresearch
- by asking one of the research team
- by sending an email to the data protection officer at: dataprotection@sheffield.ac.uk

What if there is a problem?

If there is a problem, and if you are comfortable with doing so, you can always speak to me (Sarah-The researcher). Or, you can contact the patient advice liaison service (PALS) ~~*text removed for anonymity*~~. Furthermore, you can contact the Principal Investigator Tony Ryan on Tony.Ryan@Sheffield.ac.uk if you have any concerns about my conduct.

Who is organising and funding the research?

The study was organised by the University of Sheffield and they are the study sponsors, any reference to 'we' is in relation to the study sponsor. This PhD project has been funded by Doncaster and Bassetlaw Teaching Hospital in partnership with the National Institute for Health Research Yorkshire and Humber.

Who has reviewed the study?

This study has been reviewed to make sure that it is ethical by the NHS Research Ethics Committee Camden and Kings Cross Research Ethics Committee (288309) on the 22nd March 2021.

Thank you for taking the time to read this information sheet and considering whether to take part in this study.

If you would like:

- more information about the research
- or have any other queries about the study

Please contact me on sarah.varga@nhs.net / savarga1@sheffield.ac.uk or ask me questions directly when I am on the unit collecting data.

Appendix R: Record of Consultation Form for a Personal Consultee



Health Care Professionals Perspective on Sedation: Australia & The UK

Record of Consultation Form for a Personal Consultee

Introduction

- We feel that your relative/friend is unable to make a decision about whether to join this study or not. Under the Mental Capacity Act 2005, we would like you to consider becoming a personal consultee for the purpose of this research.
- To be a personal consultee, you must feel that you know your relative/friend well enough to give advice regarding their wishes and feelings towards taking part in research, you must also be happy with being consulted. We want to ask your advice on whether you think your relative/friend would want to take part in this part of the study.
- We want your advice on their feelings and wishes to having access to their personal data and access to their medical notes to collect data for this study. You should know your relative/friend well enough to be able to comment on this.
- When you make this decision, we want you to think about what your relative/friend wishes and feelings would be. If they have a pre-documented opinion about whether to take part in research, this should be highlighted.
- After reading the Personal Consultee Information sheet version 1.9 and the Record of Consultation form, should you wish to take on this role, we will ask you to sign this form.

Name of my relative/friend	
----------------------------	--

I _____ (Name of consultee) have been consulted about
_____ (Name of Relative/Friend) taking part in this study, with
the collection of personal data and access to his/her medical notes.

	Initial
1. I can confirm that I have been given a Personal Consultee Information Sheet version 1.9.	
2. I can confirm that I have read and understood the Personal Consultee Information Sheet.	
3. I can confirm I have had the opportunity to ask questions, and they have been answered satisfactorily.	
4. I agree to the role of a Personal Consultee, and I am willing to take on this role for my relative/friend who lacks the capacity to give consent.	
5. I know how the data will be used and what data will be collected about my relative/friend.	
6. I agree that confidentiality will be broken if I or others are at risk of harm.	
7. I agree that anonymised data will be permanently and securely archived at The University of Sheffield.	
8. I agree that the data collected may be used for future research and may be seen by other researchers.	
9. I agree that the data collected may be used for future secondary analysis and it may be used for teaching and training purposes.	
10. I agree that anonymised quoted text may be used in publications.	
11. I agree that the personal consultee role is voluntary. I agree that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.	
12. I agree that if I withdraw personal consultee, the data collected up until the time will still be kept. Unless personal data is later withdrawn by your relative/friend.	
13. My advice is that my relative/friend would be happy to take part in the study.	
Optional: I would like to have a summary of the results and will provide my email address for this purpose only:	

Name of Personal Consultee

Signature of Personal Consultee

Date

Name of Researcher

Signature of Researcher

Date

Name of Witness

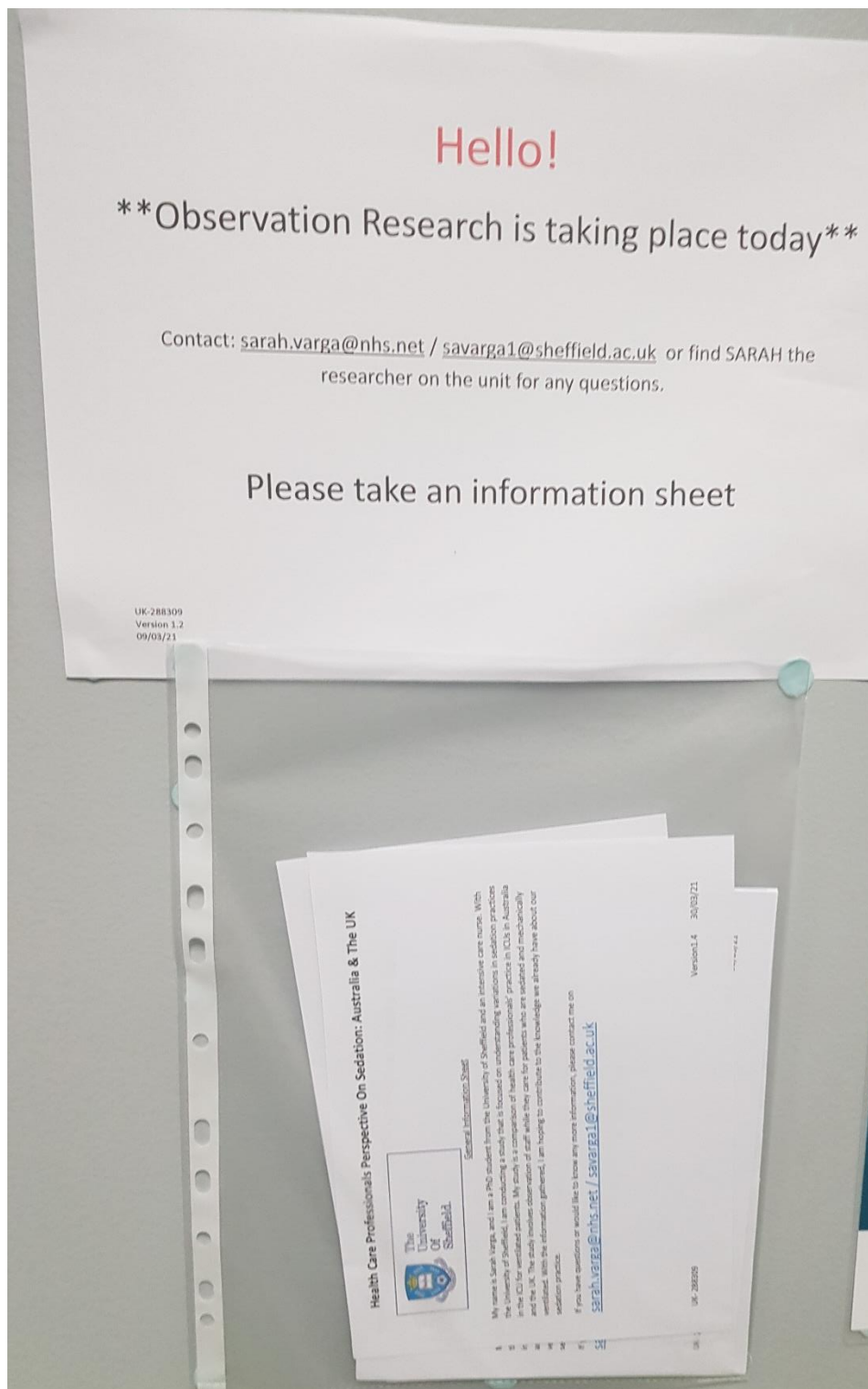
Signature of Witness

Date

Appendix S: Australia Participant Observation Data Collection Form

HCP(s) Study Number	Patient Study Number	Time of observation	What was observed? (In relation to sedation practice)	What was said? (In relation to sedation practice)	Additional context	Other	Self- reflection (reflexive diary)

Appendix T: UK Observation Poster



Appendix U: UK Observations-Overview of each week

Week 1	Total Hours 28.5	Total Days: 6	
<u>Additional notes (Extracts from my reflexive diary)</u> The first week in the research setting was spent navigating the research site, navigating the consenting process, submitting an ethics amendment and navigating my feelings in the observer-as-participant role. I became aware of the rhythm of each day of my observations, how I could position myself, where I might write up observations, and how I should portray myself. This week also made me aware of how my original inclusion and exclusion criteria limited my opportunity to observe sedation practice. I had to act quickly to avoid jeopardising the rest of my observation weeks and sought to amend the inclusion and exclusion criteria. Additionally, this first week gave me an insight into the difficulties I would face in recruiting health care professionals. <i>"Reflecting on it, maybe I should have just got verbal consent from the nurses, doctors and pharmacists, it feels so formal getting written consent like they are signing their life away, for what is not much at all"</i>-Reflective Research Diary. The health care professionals often struggled with the concept of formal written consent and viewed it as unnecessary. However, as detailed in my ethics application, I followed the plan. The recruitment difficulties of patients and health care professionals also fed into my struggle with identity and balancing the boundaries between nurse and observer. I had to navigate feelings of not belonging, the craving for reassurance and approval from the health care professionals with whom I was around <i>"M8T this morning was very welcoming and almost took me under their wing which made me feel supported and welcome to be there. This is what I am struggling with at the moment, not feeling like I belong."</i>-Reflective Research Diary. Towards the end of the week, I had exposure to two patients who fit the criteria. It made me feel that I would now be grounded with my observations and stop me from feeling <i>"like such a lost limb."</i>- Reflective Research Diary. Patient X was recruited for observations only, and patient ER2 was recruited for observations and access to medical and nursing records. I eventually felt like I could breathe slightly more. I had one 12-hour clinical shift this week that I felt interrupted the flow of my observations.			
Week 2	Total Hours 19	Total Days: 4	
<u>Additional notes (Extracts from my reflexive diary)</u> This week, I continued to navigate recruitment, researcher/nurse boundaries, health care professionals' perceptions about my research project, and how to manage my time. This week started quite challenging as I didn't recognise the doctors due to the shift rota. Therefore, it felt like I was starting from scratch with recruiting health care professionals, specifically doctors. In addition, I also had to navigate the preconceptions that health care professionals had begun to develop about the research project I conducted. A belief had developed that it was only focused on sedation holds <i>"when I explain I'm here to look at the entirety of sedation practice, and they realise that I can observe, it's almost like I've let them down or upset them as I feel like they don't want me there. It's hard. I don't want to be a burden to anyone, I also don't want to make them feel uncomfortable."</i>-Reflective Research Diary. These feelings fed into the sense of not belonging; at times, it felt like I was rejected. It again made me realise that the consent process was formal and continued to be difficult to manage. I also had to learn how best to manage my time. I could feel myself becoming quite tired but then felt very responsible for the data I collected and didn't want to miss anything <i>"Unsure when to give myself a day off as there is work to be done and data to collect"</i>-Reflective Research Diary. I was encouraged by my supervisors to take a day off. Additionally, the navigation of the nurse vs observer-as-participant role was a constant. This week I found myself in a position where the nurse brought me			

into a discussion regarding the neurological improvement of the patient. It was directed to me because the health care professional was aware that I had been present consecutively for the past few days *"The nurse (EYB) asked me how ER2 was yesterday on a sedation hold"* -Reflective Research Diary. Not being quite sure if I could/should answer, how not to answer, but not ruin any rapport between participant and researcher.

This week, no patients were recruited, so I continued to observe patients recruited from the first week of observations. This week I had two clinical shifts that totalled 24 hours and, therefore, could not spend much time completing participant observations.

Week 3	Total Hours 29.5	Total Days: 4	
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Additional notes (Extracts from my reflexive diary)

The hospital approved my ethics amendment this week to change patients' inclusion and exclusion criteria. This week I recruited three patients (5QT, 6WD, TFS).

This week I began to spend a bit more time both in ICU B and ICU A, which resulted in me noticing more about the sedation practice and the approaches in both areas. Additionally, I noticed more of the sedation practice in general and often reflected on what I was seeing *"if it is high [triglycerides], then they go onto using a lipid-free sedative such as Midazolam. This practice surprises me as it's not something that we do in my clinical practice"* - Reflective Research Diary. I finally perceived myself to begin to collect valuable data regarding sedation practice, to the point that I became worried and considered that I might have too much data by the end of my data collection period *"...worried I'm not getting enough data, worried I am getting too much data"*-. Reflective Research Diary. I also witnessed different dynamics between health care professionals within the same professional groups and with other professional groups. I continued to spend time reflecting on the consent process and what I would have done differently if I had to re-write my ethics application. I also reflected on what I thought I had learnt in the focus group that I carried out before the observations. The observation period was very insightful, and I noticed this mainly from the third week onwards *"In the focus group I was finding that there seemed to be a bit of disconnection between the doctors and sedation, but I don't feel like I am really seeing that in practice. I think there are different focuses...."* -Reflective Research Diary. I continued to struggle with wanting reassurance and the lack of identity I held as a researcher, the ethical dilemmas and giving myself a break *"A lot of people are surprised that I am here on the weekend. They say that I am dedicated. I like that they say this and see this."* Reflective Research Diary.

This week I had one administration day and one clinical shift.

Week 4	Total Hours 31.25	Total Days: 4	
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Additional notes (Extracts from my reflexive diary)

This week I began to do more night-time observations. I focused my efforts on data collection to capture this period of sedation practice. I started to recognise patterns of sedation practices more associated with the night-time sedation practices that I found interesting *"A pattern that I think I am seeing is how staff on a night shift, if the sedation is going to go up it will usually be before midnight, and quite often within the first 30mins of the staff taking handover."* -Reflective Research Diary. In my fourth week staff were friendly and often asked me questions about my research project. I wondered whether I had become a familiar face. I developed a rapport with some staff, which made my observation experience a lot easier *"Everyone is friendly, we are ordering in pizza, and people are talking to me about the study."* -Reflective Research Diary. I continued to notice what I perceived as a conflict between ICU B and ICU A not in regards to sedation practice, but more around the context and culture of the environment and hierarchical structures, *"that was very awkward. A nurse being spoke to quite rudely by one of the other nurses about breaks and delegation. Felt very hierarchical..."* -

Reflective Research Diary. Completing the observations often made me reflect on my practice and had already impacted how I carried out sedation practice in my own practice. On my clinical shift, I used the pause function on the infusion pumps when doing a sedation hold instead of turning off the pump. I had witnessed this practice in the case study and one that I began teaching to my peers in my clinical environment.

This week I recruited one patient (P9S), I had one clinical shift.

Week 5	Total Hours 20	Total Days: 3	
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Additional notes (Extracts from my reflexive diary)

This week allowed me to reflect on how practice can be vividly different between the side rooms and the bays of patients and how this can influence care and practice *"...happy to walk out and leave patient as in a bay with support of other staff. Reflection-different from what I witnessed in the side room."* -*Reflective Research Diary.* Week five continued to see challenges with consent, and I still hadn't mastered how to make health care professionals feel comfortable about the formality of signing a consent form *"...didn't understand why had to sign name, I explained it was for the consent, and explained most consent forms are signed this way"* -*Reflective Research Diary.* The formality of the process is what health care professionals appeared to struggle with the most. I found myself having preconceptions and judgements about how I thought staff might act *"I am surprised G4K has kept the sedation off for as long as they have, because I imagine other nurses would have been quicker at turning it on."* -*Reflective Research Diary.* I reflected on these thoughts so that I could be aware of the biases that I have. To prevent me from communicating my voice in the findings and help ensure that I keep focused on expressing the multiple realities of my participants. I continued to discover more and learn about the sedation practices of health care professionals, especially their use of adjunct analgesia during sedation holds. During my participant observation period, I was asked by one of the health care professionals if I would achieve data saturation which made me reflect on my time spent during participant observations and what this meant for the data that I collected *"sedation practice is so different for each patient, that its hard to achieve saturation with understanding sedation practice because it is so context and patient dependent and changes all the time."* -*Reflective Research Diary.* I found that my clinical shifts impacted quite heavily my opportunity to carry out observations *"I'm also on nights tonight at my clinical place of work, and therefore I didn't want to come in too early and tire myself out for my clinical shift."* -*Reflective Research Diary.* This week was much waiting to see relatives again, but when I did, patients no longer met the inclusion and exclusion criteria.

This week I had three clinical shifts and had a day at the university to complete administration tasks. This week one patient (KVE) was recruited for the study. This patient was the last patient to be recruited.

Week 6	Total Hours 13.75	Total Days: 3	
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Additional notes (Extracts from my reflexive diary)

This week I found myself winding down. I knew it was the last week, so I didn't attempt to recruit new patients, as I would have struggled to follow them up to give them the patient letter. I also had two clinical shifts that took up 23 hours which would have impacted the time I would have to commit to completing observations. This week was one of the first times where I perceived that my presence may have influenced sedation practice *"I don't know if my presence has influenced sedation practice, initially for keeping it off and then when spoke about usual practice on my unit..."* -*Reflective Research Diary.* I also believed that I may have influenced a conversation I had with one of the participants and reflected on this. I didn't remain objective and spoke about how I perceived sedation practice here: *"We then discussed sedation holds and how doctors just come in and say continue and then just walk*

out again. During this conversation, I was probably projecting my views into the conversation about how doctors just come and go, but RAC said "no its an ICU nurse to ICU nurse conversation"...."- Reflective Research Diary. Maybe these experiences were a sign that I became too comfortable, or maybe I felt like I had finally been accepted?. I reflected on this situation and scenario so that, again, I could highlight my biases. This week I completed hours that would see that I covered a full 24-hour clock during the six weeks of observations. Towards the end of my reflections, I reflected on my experience of doing participant observations "I feel that I found the observation period quite challenging. Everyone said that I would enjoy the data collection part of my PhD, but I don't know if I am. It's a lot of hard work." -Reflective Research Diary.

Appendix V: Australia Observations- Overview of each week

Week 1	Total Hours 37	Total Days: 4	
<u>Additional notes (Extracts from my reflexive diary)</u> My first week in the research setting was similar to my first week in the UK. I was becoming familiar with my surroundings, the ICU, the unit's routine, and my research routine. My routine as a researcher was also tied with the routine of the gatekeeper that would help facilitate recruitment. I needed to be aware of their working times, their schedule of meetings and when they would be able to facilitate speaking to health care professionals to help facilitate recruitment. I was also getting familiar with knowing how to use REDCap (online consent) and getting participants to complete the demographic form. I often felt quite uncomfortable getting participants to fill out this demographic form- <i>"This was because it felt like an extra step to the consenting process.....I am actually not too sure what I will be doing with the demographic data"</i>-Reflexive Research Diary. Additionally, in the first week, I began to recognise how my data may look different to the UK data due to the different ethical approaches of each country <i>"The observation period is mostly ruled by the health care professionals, whereas in the UK, it was fuelled by the patient. As a result of this, my opportunities to follow a patient all the way through is not the same as what I had in the UK. Therefore, I may end up observing multiple patients, but maybe not as many health care professionals"</i>. One day I had no observations and was unsuccessful in getting any recruits due to how busy they were. Again, I was frustrated with how long I made the information sheet and thought that this contributed to the difficulty in recruitment <i>"Timed myself reading the PIS: 10minutes 58 seconds."</i>- Reflexive Research Diary. One of the bigger things I noticed was the COVID-19 restrictions compared to the UK. Each day I arrived at the hospital, I had to check in and show them my COVID-19 vaccination certificate. Following this, I received a sticker to show that I had been checked. In addition to this, when I was on the unit, I needed to wear a COVID-19 FFP3 mask and goggles (for context- in the UK, we only ever had to wear these when directly working with COVID-19 patients, we never had to wear them for just being in the ICU). I found it difficult moving back to this level of personal protective equipment- <i>"I think I am going to struggle with wearing these masks- they really hurt my head and the goggles too"</i>- Reflexive research diary. Luckily, this was the last week I needed to wear the goggles as they removed this protection, but they kept the mask. I also noticed differences between the practice I witnessed in the UK and in Australia. Patients JZG4, FJUK, 5XQU, C3RQ were involved in observations this week			
Week 2	Total Hours 59.7	Total Days: 6	
<u>Additional notes (Extracts from my reflexive diary)</u> This week I continued to become familiar with the shift patterns of the nurse and how this influenced different staffing at different times of the day. <i>"Context late shift staff arrive about 1 pm until 10 pm. So sometimes there is cross over of late staff/early staff then late staff and night staff. Having the cover allows for departmental training."</i>-Reflexive Research Diary. I also learnt more about the shift patterns of the doctors and what medical cover is provided throughout the 24 hours. I also learned more about the routine medical routine as I observed during the weekday and weekend (first weekend). During this time, I observed medical handovers and medical ward rounds. I developed a good rapport with the doctors due to our shared knowledge of my hometown <i>"Bonding with the</i>			

doctor over Doncaster and Doncaster Dome and the two level ice rink, feel like this an improvement on gaining doctor support”- Reflective research diary. This was my first real exposure to having the doctors involved in the research project, and they were happy to have me for observations. This week, I continued to expand my knowledge of the sedation practice specific to the case study.

Additionally, this week I found myself attending a teaching session called an ‘in-service’ that was delivered to the nurses. I used this session to engage staff and tell them about my research, providing them with information sheets and expression of interest forms.

This week I got asked to watch a patient. This request was like the UK, so I had already had practice in learning how to effectively manage this request without feeling like I was going to let the nurse down *“Got asked to observe the patient, I think this came about because rapport has been developed and we have established my practice as a nurse, asked if someone else was around, to which the nurse responded they would ask X to keep a look out.”-Reflexive Research Diary.*

This week patients FJUK, C3RQ, SJ7B, 5JRT, H8XB, 7SZB, 858S were involved in the observations of health care professionals.

Week 3	Total Hours 54:16	Total Days: 5	
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Additional notes (Extracts from my reflexive diary)

This week I had a range of different patients whom I conducted my observations around: XYMM, 5TR7, CQJ5, NGGL, B5ZK, 6USB, SJ7B, H8XB. This week I also successfully managed to cover night shift hours to complete an entire 24-hour clock of observations occur *“So lucky that my night shift has got a vented sedated patient with participants who are happy to have me observe. Only one person available though, the others haven’t consented, so can’t approach.”-Reflexive Research Diary.*

I still needed help recognising the best time to approach the doctors and often felt that I was burdening the gatekeeper who had to support me with recruitment. At times it was difficult to marry up the availability of the gatekeeper with the best time to approach the doctors for recruitment *“I asked the gatekeeper if we could do afternoon introductions today, but they don’t have the time to facilitate them before they go, so now I need to wait until tomorrow...I asked about morning introductions to the night doctors at 06:45- but they mentioned about doing their screening first. Lets see how it goes tomorrow.”-Reflexive Research Diary.*

Throughout this week, I did get good exposure to the sedation practices of health care professionals. I continued to recognise the uniqueness of the sedation practice here over the UK research site. I also had been slightly immersed in the culture and context in which the sedation practice takes place and what situations influence it. I began documenting my early thoughts about the data and what I thought I might find during my analysis and findings.

This week I also encountered a problem with the University of Sheffield X:Drive, where I stored all of my research data. The X:Drive went down for several hours, and I could not use the folder securely. This issue had never been thought about pre-data collection, and therefore I had to think of the least risky way to manage the data that I had open on my computer.

Week 4	Total Hours 37.75	Total Days: 5	
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Additional notes (Extracts from my reflexive diary)

This week was my final week of observations- I was unable to do much more due to visa and time restrictions. Additionally, I knew I had completed an entire 24-hour clock and had managed to spend as much time in the field as I did in the UK. Therefore, the pressure was off *"I am viewing this week as extra data week. Now that I have done my 24-hour clock. Whatever I can get is a bonus."*-Reflective Research Diary.

The more time I spent in the field in Australia contributed to my understanding of sedation practice in the UK and Australia. I would often wake up throughout the night with thoughts about my analysis and findings *"What I realised this morning at 3am, is that the UK research site are very much focused with sedation holds, and maybe that's why when I walked round that's what they would say to me "oh were not doing a sedation hold today", however, as its not in the culture to do a daily sedation hold here, its never really mentioned- so interesting."*- Reflective Research Diary.

I still struggled to navigate recruitment into the study with the gatekeeper. Our approach was not always consistent depending on what time we walked around, who was on shift, the acuity of the unit and how the gatekeeper wanted to approach recruitment *"With the research nurse, sometimes we would first head to the nurse in charge to find out which patients were tubed and for introductions, other times we would just do a walk around and see which patients were tubed. I prefer going to see the nurse in charge first, but I often just followed the lead of the research nurse."*- Reflective Research Diary.

On one of the days this week, no observations around the bed space occurred due to the patient's quickly changing status or the staff not having the time to read the information sheet. I was flitting between sitting in the research office and the staff room when this happened. I wasn't comfortable placing myself on the unit here when I wasn't doing observations (like the UK), because I needed the gatekeeper for recruitment to speak to health care professionals.

This week two patients were included in the observations: 6USB, LW2B.

Appendix W: UK Semi-Structured Interview Guide

Health Care Professionals' Perspectives on Sedation Practices when Caring for Mechanically Ventilated Patients: A Comparison in Australia and the UK - Semi Structured Interview Guide

Questions to read out are in bold. Prompts are provided if needed (for example, if participants do not understand a question, or to help encourage further discussion).

Before starting the interview, ensure the participant has understood the information sheet, has had an opportunity to ask questions and has signed the consent form-Verbal consent to be taken if the consent form hasn't been returned at the start of the interview if the interview is taking place online.

Verbal consent process:

-Ask the participants to take five minutes reading the consent form.

-Ask them if they have any questions. Answer all questions.

*-Ask participants if they are happy for consent to be recorded. If they are, **turn on the recorder**, if not apologise but state that the interview can no longer continue.*

-Read each statement on the consent form and ask them to verbally say "I agree" after each statement.

Switch the recorder on.

If the participant has given consent via e-mail (eConsent), ask them to confirm they are still happy to give consent.

Introduction

I'm very grateful to you for sparing the time to talk to me today. This is the last part of data collection, for the study that has been looking into the sedation practices of health care professionals. The aim of today's interview, is to understand more about your perspective of caring for a mechanically ventilated patient who is sedated with questions that may relate back to the observation period and the original focus group that took place. There are no right, or wrong answers and I would like you to feel comfortable saying what you really think and how you really feel. As you know, this interview is part of a research study that will help us to understand more about the sedation practices of health care professionals, this interview should last no longer than an hour and a half. Anything you tell me will be anonymous. The sound recording, and transcript of this interview will be stored securely and won't be accessible to anyone outside of the research team. Please don't feel you have to answer anything you don't want to and let me know if wish to stop at any point. If any of the questions that I ask you are unclear, then please feel free to ask me to explain at any point. Before we start, is there anything you'd like to ask me?

Original Study Questions

- 1) To what extent are there variations in sedation practice for the mechanically ventilated patient between Australia and the UK in the intensive care unit, and how may we account for these?
- 2) What accounts do staff give about their sedation practice for the mechanically ventilated patient, and what reasons do they provide?
- 3) How do the perceptions and understandings of sedation practice for the mechanically ventilated patient vary between Australian and British ICU staff?

Introductory

Could you just start off by telling me your profession and how long you have worked in the ICU?

Core Questions:

Q1. Could you tell me about a typical day and night on the unit in relation to sedation practice?

- I. From the perspective of your profession in relation to sedation management.

Q2. Do you think it is difficult to manage sedation?

- I. Do you seek support from any colleagues? Nurses, doctors, pharmacists?
- II. What are your worries with not getting sedation right?
- III. What are the challenges of sedation management?
- IV. Different patients, different needs, experience?
- V. How can these challenges be overcome?
- VI. Daily sedation holds.

Q3 How do you work out the SAS (sedation agitation scale) score?

- I. Is an assessment used to help you work out the SAS score?
- II. If the SAS is too high, or too low what steps do you take?
- III. Are any patient cues used to aid the assessment?
- IV. What are your experiences of setting, recording and documenting this score?
- V. Does the SAS score influence your sedation practice?
- VI. SAS and daily sedation holds- do they feed into one another?

Q4 Have you ever worked in a different environment where there is a different practice/approach to sedation practice?

- I. Other areas, other trusts?
- II. Rotation of staff.
- III. Why may there be difficulties to developing a practice of light sedation?
- IV. What would make sedation practice easier?
- V. How does light sedation have an impact (if any) on your day?
- VI. Do you perceive there to be a practice of light sedation on the unit?

Q5. Have you experienced any conflict between other clinical environments or other health care professionals in relation to the care and sedation management of a ventilated patient?

- I. From colleagues, doctors, nurses, pharmacists
- II. Why (if any), do you think this conflict is present?
- III. Does this affect the relationship with upstairs and downstairs?
- IV. How does the conflict (if any) affect the care of patients?

Profession Specific Questions (Nurse):

Q6 What do you see as the main responsibilities when working with a patient who is sedated or ventilated?

- I. Roles and responsibilities.
- II. Sedation holds.
- III. Working with other professions.
- IV. Rotation of staff.
- V. Decision-making.
- VI. Family present.

Q7 How do you feel about the use of physical restraint for sedated patients?

- I. Boxing gloves restraint.
- II. Bed restraint (Tilting of the bed to restrict patients movement).

- III. Decision-making to use.
- IV. How often is it done in practice?
- V. The perspective of other health care professionals- Doctors, pharmacists.

Q8 What considerations are taken in relation to night-time sedation?

- I. Staffing impact?
- II. Staff breaks and the impact?
- III. Perceptions of sleep being associated with deeper sedation?
- IV. Who controls night sedation?
- V. Fears and worries with night sedation?
- VI. Is there a struggle to keep the patient lightly sedated at night?

Q9 What are your experiences of working with Trainee Doctors and Consultant Doctors on the unit in relation to sedation management?

- I. Is the experience different between one group and the other?
- II. If so how?
- III. If so why do you think?
- IV. What makes a positive experience?
- V. What makes a negative experience?
- VI. Does the pharmacy team play any role in the experience that you have of working with the doctors?

Q10 Do you have learning opportunities in relation to sedation management?

- I. What opportunities do you have?
- II. How does this vary from other professions?
- III. Is sedation practice something that you can teach?
- IV. Does sedation practice come from experience?
- V. How can learning opportunities be improved?
- VI. Culture of learning?

Profession Specific Questions (Pharmacist):

Q6 What level of involvement do pharmacy services have?

- I. How long has it been set up?
- II. How many people make up your team?
- III. What works well within the pharmacy team?
- IV. What doesn't work so well in the pharmacy team?
- V. Does rotating to other units influence your sedation practices?

Q7 How is the balance of high triglycerides and use of Midazolam managed?

- I. How is the need for reducing and monitoring of triglycerides, balanced with the use of Midazolam?
- II. What level of triglycerides is deemed too high?
- III. What level of triglycerides is tolerated?
- IV. How long would a patient remain on Midazolam? Would you switch back to Propofol?
- V. Is there a set guidance that is followed?
- VI. Fears and worries (if any)?

Q8 Where do pharmacists see their role in sedation management?

- I. Is this input verbal, documenting or active changes?
- II. Do you believe your input is valued?
- III. What frustrations (if any) do you have with sedation management?

- IV. What satisfies you about your role in sedation management?
- V. Are there any competing needs of other health care providers that you need to manage?

Q9 How do you feel about the night time sedation management of patients?

- I. Staffing impact?
- II. Staff breaks and the impact?
- III. Perceptions of sleep being associated with deeper sedation?
- IV. Who controls night sedation?
- V. Fears and worries with night sedation?
- VI. Is there a struggle to keep the patient lightly sedated at night?

Q10 If you could change anything about the sedation management of ventilated patients, what would it be?

- I. Why would you (or not) want to change this?
- II. What's important to the pharmacy team?
- III. How easy (or difficult) do you think this would be to change?
- IV. How would this change be received by the nurses and the doctors?

Profession Specific Questions (Doctor) :

Q6 Where do doctors see their role in sedation management?

- I. What do you think is expected of you?
- II. What frustrations (if any) do you have with sedation management?
- III. What satisfies you about your role in sedation management?
- IV. Do you believe your input is valued?
- V. Are there any competing needs of other health care providers that you need to manage?

Q7 How do you feel about the night time sedation management of patients?

- I. Staffing impact?
- II. Staff breaks and the impact?
- III. Perceptions of sleep being associated with deeper sedation?
- IV. Who controls night sedation?
- V. Any fears and worries with night sedation?
- VI. Is there a struggle to keep the patient lightly sedated at night?
- VII. Culture?

Q8 Do you have any experience of using physical restraints on sedated patients?

- I. Boxing gloves restraint.
- II. Bed restraint (Tilting of the bed to restrict patients movement).
- III. Decision-making to use.
- IV. How often is it done in practice?
- V. The perspective of other health care professionals- Doctors, pharmacists.
- VI. Culture

Q9 Do you have learning opportunities in relation to sedation management?

- I. What learning opportunities do you have?
- II. Do you feel that enough training is provided?
- III. How do you feel about looking patients who were/are on sedation?
- IV. Is sedation practice something that you can teach?
- V. Does sedation practice come from experience?
- VI. Culture of learning?

Q10 How do you balance the care of the patient, with the needs of the nurses and the needs of the pharmacist?

- I. Balancing the need of the nurse and the care of the patient.
- II. Balancing the need of the pharmacist and the care of the patient?
- III. Any worries? Any fears?
- IV. What are the challenges?
- V. What are the satisfactions?
- VI. Decision-making.

Rounding up:

Q11. This interview has been very helpful to us. Thank you. Is there anything that you think we haven't covered that you would like to cover?

Q12. Do you have any questions for me?

Aide memoir

Can you tell me more about this?

Please Explain.

Feelings and thoughts?

The researcher follows up with the words of the participant

The skilled interviewer is non-judgemental, flexible, listens rather than talk.

Ambiguous questions lead to ambiguous answers. Frame the question carefully

Appendix X: Australia Semi-Structured Interview Guide

Health Care Professionals' Perspectives on Sedation Practices when Caring for Mechanically Ventilated Patients: A Comparison in Australia and the UK

- Semi Structured Interview Guide

Questions to read out are in bold. Prompts are provided if needed (for example, if participants do not understand a question, or to help encourage further discussion).

Before starting the interview, ensure the participant has understood the information sheet, has had an opportunity to ask questions and has signed the consent form-Verbal consent to be taken if the consent form hasn't been returned at the start of the interview if the interview is taking place online.

Introduction

'Hello, my name is Sarah Varga and I am undertaking a doctoral degree from The University of Sheffield, UK, under the supervision of Professor Tony Ryan, Professor Tracey Moore, Professor Jane Seymour, with support within [deleted for confidentiality]

Introduce the project:

The purpose of this study is to look at health care professionals' perspectives on their sedation practices. We are doing this because research has shown that sedation can contribute positively and negatively to a patient's outcome. The aim of the study is to gather qualitative data that can help us understand why variations in sedation practice occur.

Is this an appropriate time to interview you?

Yes CONTINUE / No SET UP A TIME LATER

Explain the purpose of the interview:

We will be interviewing other health care professionals such as nurses and doctors to gain multiple perspectives. We are really interested in learning more about your experiences of sedation practice at ***removed for anonymity***. There are no right or wrong answers.

Describe the audio recording and how we will assure confidentiality and answer any questions

This interview will be approximately 60 minutes, but no more than 90 minutes. It will be audio recorded and transcribed so that we have an accurate record of your response. Please be assured that the recording and your transcript will be kept confidential. Only researchers involved in the study will have access to your responses. Our study does have ethics approval. Once your interview has been transcribed, only a site identifier will be linked to the transcripts, while any information linking you to the transcript will be destroyed. The audio recording will be destroyed as soon as the transcript is verified and analysed by research staff.

If you need to contact me at any time after the interview to ask any questions, my contact details are available on the PIS and my email address is savarga1@sheffield.ac.uk.

You will not be given the opportunity to review the transcript prior to publication and analysis due to limited time to complete this research project.

If, at any time, you feel that the questions are too sensitive, I would be happy to turn off the recorder during that portion of questioning. You may also skip any questions you wish during the interview.

Do you have any questions for me? [Answer any questions]

Switch the recorder on

Original Study Questions

- 1) To what extent are there variations in sedation practice for the mechanically ventilated patient between Australia and the UK in the intensive care unit, and how may we account for these?
- 2) What accounts do staff give about their sedation practice for the mechanically ventilated patient, and what reasons do they provide?
- 3) How do the perceptions and understandings of sedation practice for the mechanically ventilated patient vary between Australian and British ICU staff?

Introductory

Could you just start off by telling me your profession and how long you have worked in the ICU?

Core Questions:

Q1. Could you tell me about a typical day and night on the unit in relation to sedation practice?

- II. From the perspective of your profession in relation to sedation management.
- III. What sedation agents are used.
- IV. Decision-making around the different agents.

Q2. Do you find sedation difficult or easy to manage?

- VII. What support do you get from your colleagues? Nurses, doctors
- VIII. Do you have any worries with not getting sedation right?
- IX. How do you manage different patients, different needs?
- X. How do you manage the experience of staff?
- XI. How can these challenges be overcome?

Q3 How is the RASS (Richmond Agitation Sedation Score) worked out?

- VII. Is an assessment used to help you work out the RASS score?
- VIII. If the RASS is too high, or too low what steps do you take?
- IX. Are any patient cues used to aid the assessment?
- X. What are your experiences of recording and documenting this score?
- XI. Does the RASS score influence your sedation practice?
- XII. GCS and RASS sedation interplay.
- XIII. BPS sedation interplay

Q4 Have you ever worked in a different environment where there is a different practice/approach to sedation practice?

- VII. Is it different across [deleted for confidentiality], other ICUs
- VIII. Rotation of staff.
- IX. Why may there be difficulties to developing a practice of light sedation?
- X. What would make sedation practice easier?
- XI. How does light sedation have an impact (if any) on your day?

- XII. Do you perceive there to be a practice of light sedation on the unit?

Q5. Can you talk me through the process of weaning the sedation or sedation holds?

- I. When is the decision made to wean/hold?
- II. I often observed more sedation weaning rather than sedation holds- Can you explain this?
- III. Who manages this side of sedation practice?
- IV. Has the practice always been like this?
- V. What's the relationship between neurology assessments and sedation?
- VI. Introduction of Dexmedetomidine.

Profession Specific Questions (Nurse):

Q6 What do you see as the main responsibilities when working with a patient who is sedated or ventilated?

- VII. Roles and responsibilities.
- VIII. Weaning sedation
- IX. Working with other professions.
- X. Rotation of staff.
- XI. Decision-making.
- XII. Family present.

Q7 How do you feel about the use of physical restraint for sedated patients?

- VI. Wrist restraint.
- VII. Decision-making to use. (Who makes the decision, thought process)
- VIII. How often is it done in practice?
- IX. The perspective of other health care professionals- Doctors
- X. Culture.
- XI. How does restraint assist sedation practice?

Q8 What considerations are taken in relation to night-time sedation?

- VII. Staffing impact?
- VIII. Staff breaks and the impact.
- IX. Perceptions of sleep being associated with deeper sedation.
- X. Who controls night sedation?
- XI. Fears and worries with night sedation.
- XII. Is there a struggle to keep the patient lightly sedated at night?

Q9 What are your experiences of working with the rotational doctors and Consultant Doctors on the unit in relation to sedation management?

- VII. Is the experience different between one group and the other?
- VIII. If so, how?
- IX. Every week there is a new consultant overseeing the patients- Does practice vary with different consultants?
- X. If so, how do you manage this?
- XI. What makes a positive experience with the doctors?
- XII. What makes a negative experience with the doctors?

Q10 Do you have learning opportunities available to you in relation to sedation management?

- VII. What opportunities do you have?

- VIII. How does this vary from other professions?
- IX. Is sedation practice something that you can teach?
- X. Does sedation practice come from experience?
- XI. How can learning opportunities be improved?
- XII. Culture of learning?

Profession Specific Questions (Doctor) :

Q6 Where do doctors see their role in sedation management?

- VI. What do you think is expected of you?
- VII. What frustrations (if any) do you have with sedation management?
- VIII. What satisfies you about your role in sedation management?
- IX. Are there any competing needs of other health care providers that you need to manage?
- X. How do you manage the rotation of the doctors? And does this influence sedation practice?
- XI. What decisions influence changes from the default norm of Propofol and Fentanyl?
- XII. How is the decision made to start Dexmedetomidine?

Q7 How do you feel about the nighttime sedation management of patients?

- VIII. Staffing impact?
- IX. Staff breaks and the impact.
- X. Perceptions of sleep being associated with deeper sedation.
- XI. Who controls night sedation?
- XII. Any fears and worries with night sedation?
- XIII. Is there a struggle to keep the patient lightly sedated at night?
- XIV. Culture?

Q8 What experience do you have of using physical restraints on sedated patients?

- VII. Wrist restraint.
- VIII. Decision-making to use.
- IX. How often is it done in practice?
- X. The perspective of other health care professionals- Nurses
- XI. Culture
- XII. How does restraint assist sedation practice?

Q9 Do you have learning opportunities in relation to sedation management?

- VII. What learning opportunities do you have?
- VIII. Do you feel that enough training is provided?
- IX. How do you feel about looking patients who were/are on sedation?
- X. Is sedation practice something that you can teach?
- XI. Does sedation practice come from experience?
- XII. Culture of learning?

Q10 What sources of information are you using to make decisions concerning sedation practice?

- I. Information from the nurse
- II. Information from the patient/family
- III. What are the challenges?
- IV. Any worries? Any fears?

Rounding up:

Q11 If you could change anything about the sedation management of ventilated patients, what would it be?

Q12. This interview has been very helpful to us. Thank you. Overall, what would you say is the culture of sedation practice?

Q13. Is there anything that you think we haven't covered that you would like to cover?

Q14. Do you have any questions for me?

Aide memoir

Can you tell me more about this?

Please Explain.

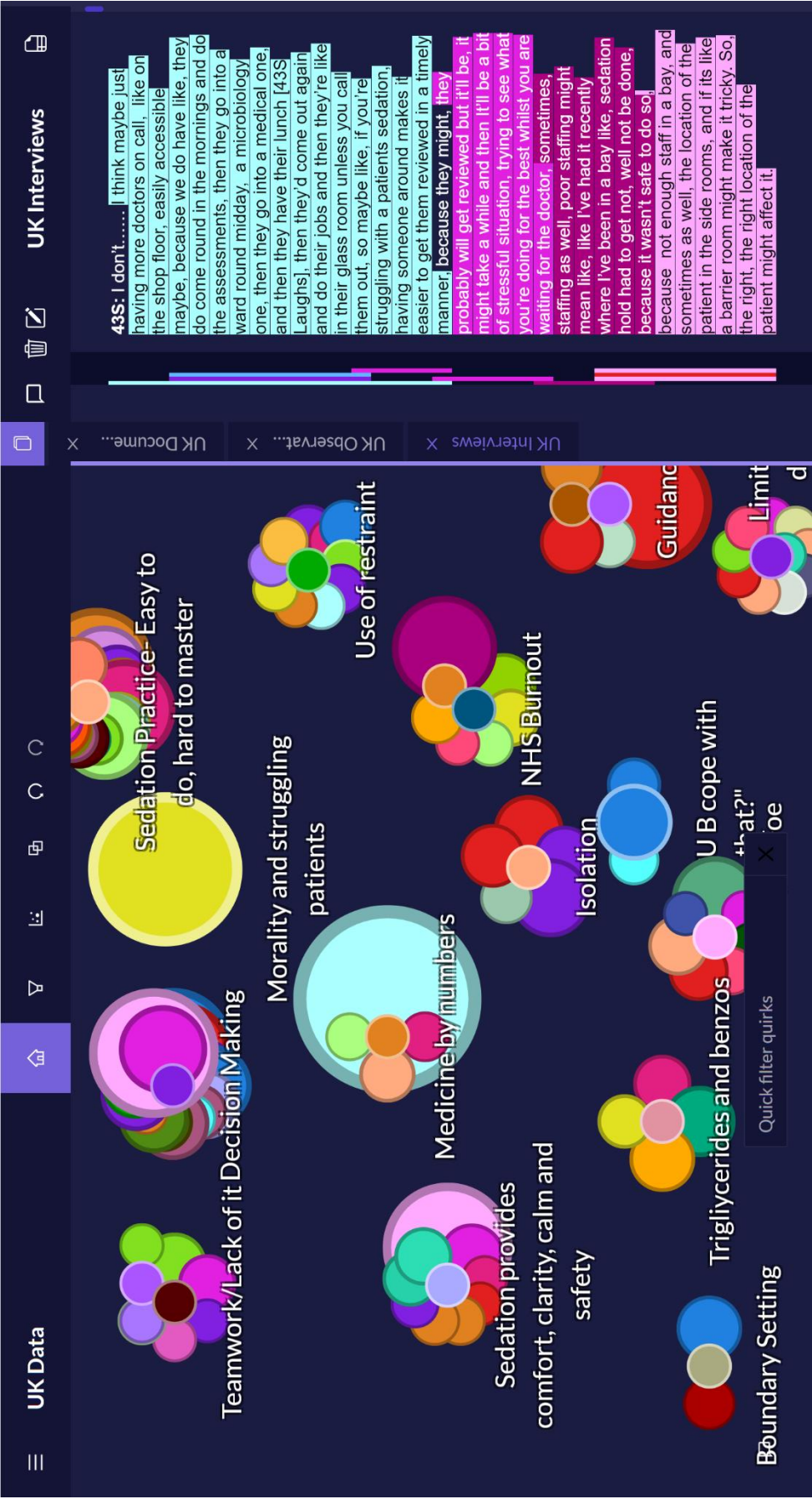
Feelings and thoughts?

The researcher follows up with the words of the participant

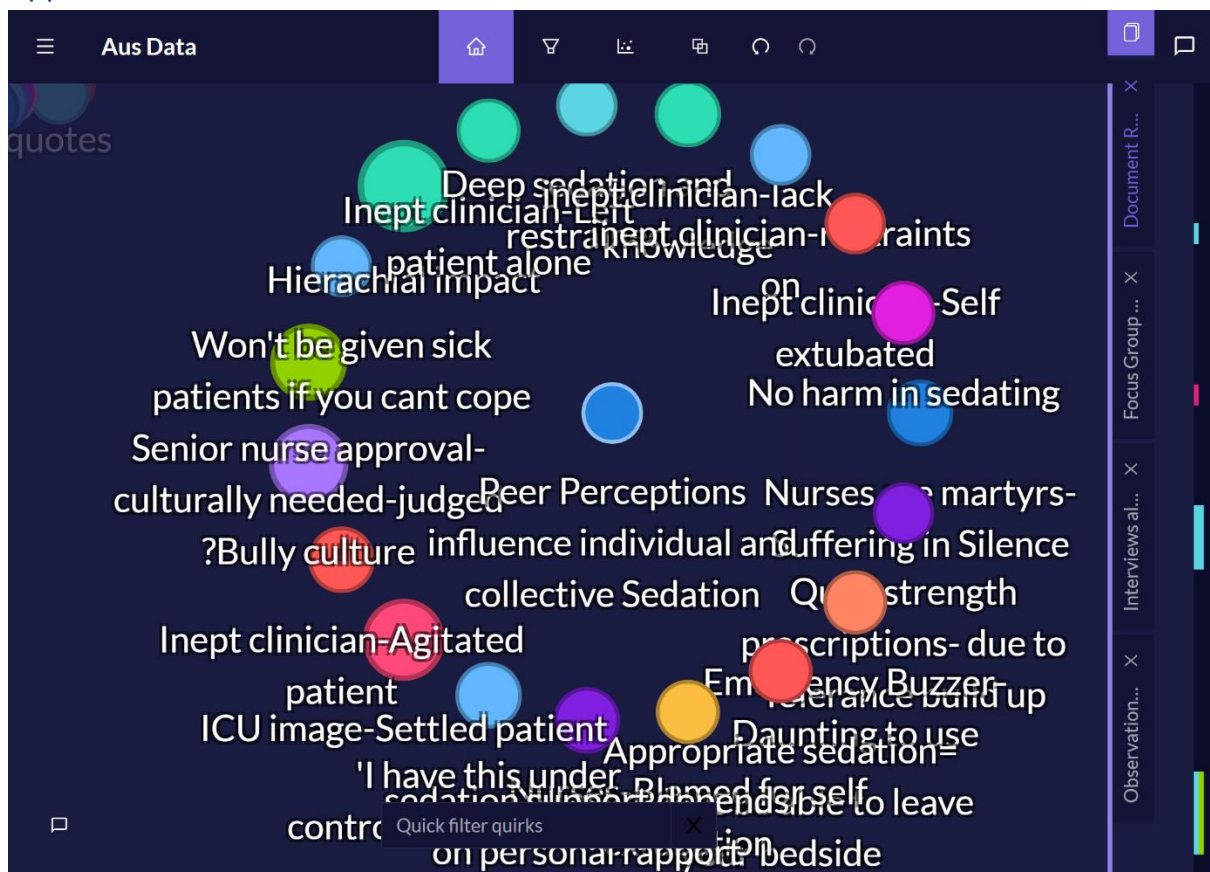
The skilled interviewer is non-judgemental, flexible, listens rather than talk.

Ambiguous questions lead to ambiguous answers. Frame the question carefully

Appendix Y: Screenshot of UK data in Quirkos



Appendix Z: Screenshot of Australian data in Quirkos



Appendix AA: Name Badge Used for Observations



Appendix BB: Description of the Different Job Roles

<u>Australia</u>	<u>Description</u>	<u>UK</u>	<u>Description</u>
Nurse	The nurse is responsible for overseeing the direct care of one or two patients depending on acuity level. Nurse ratios of 1:1 for level 3, and 1:2 for level 2 patients were strived for, but on the odd occasion, it wasn't maintained.	Nurse	The nurse is responsible for overseeing the direct care of one or two patients depending on acuity level. Nurse ratios of 1:1 for level 3, and 1:2 for level 2 patients were strived for, but on the odd occasion, it wasn't maintained.
Nurse Educator	Each ICU had at least one nurse educator. They would work with those on the rotation programme completing their workbooks, marking work and providing education and training opportunities throughout the shift, but also on Monday and Wednesday teaching opportunities. The educators also had to chase up individuals who were not up to date with their training. At times that called to cover staffing shortfalls.	Nurse Educator	There were several ICU educators that worked both upstairs and downstairs with new starters. They worked with individuals who were completing their competencies. At times they were called to cover staffing shortfalls.
Access Nurse	The nurse who is in charge of overseeing the staffing and patient flow. They support nurses with the care of all of the patients on the unit. Usually, they won't have a patient, but this can't always be accommodated.	Nurse in charge	The nurse who is in charge of overseeing the staffing and patient flow. They support nurses with the care of all of the patients on the unit. They attend medical handover and the medical ward round and relay information back to the nurse at the bedside.
Nursing unit manager (NUM)	The NUM works Monday to Friday. They were visible and present on the unit for most of the clinical shift supporting the Access Nurse and other nursing staff. Often if the Access Nurse had to take a patient,		

	then they would take over the role of the Access Nurse. There was one NUM for ICU A and ICU B.		
Nursing Manager	The nursing manager oversaw all four units and would be present Monday-Friday. They completed managerial activities.	Matron	The matron oversaw both general ICUs. The matron would join the staffing meeting that took place after the medical handover. The matron was not visible on the unit for clinical practice but was responsible for managerial activities and staffing issues.
		Advanced Critical Care Practitioners (ACCPs)	An ACCP is a nurse who has completed additional training to be able to support doctors with their medical cover. ACCPs are responsible for reviewing patients, creating plans and prescribing medication. They work predominantly with the medical team. They only work in the upstairs ICU (previous HDU).
Resident	After completing one year as an Intern, the doctor moves onto Resident. A Resident is an equivalent of what you might expect in the UK from a junior doctor foundation year 2. Their role included reviewing patients, ordering tests and scans, and prescribing medications. They were present for the ward round and would help create the plan for the patient's care.	Junior doctor (Foundation Year 2)	In the UK, a Foundation Year 2 doctor would support the upstairs ICU. This is a doctor who is two years out of university medical training. Their role in the ICU is reviewing patients, creating a plan for patients, prescribing medication, and inserting lines. They are supported by the more senior medical cover or the ACCPs. Occasionally they were asked to support the doctors downstairs with medical cover. They typically rotate for 4 months only.
Registrar	This doctor follows on from the resident years of training, and doctors can now begin further speciality training programmes in	Trainee/ Acute Care Common Stem (ACCS)/ Core Training/	This doctor follows on from the foundation years of training, and doctors can now begin further speciality training programmes in the

	the field of medical practice they want to pursue. These doctors supported reviewing the patients, making a plan of care, prescribing medication and advising in ward rounds. They would seek support and advice from the consultants when they needed it. They would also be responsible for putting in lines depending on experience, intubating patients, and may have experience and knowledge of ICU care and practice. The doctors rotate throughout their training, and ICU placements can last between 4-6months.	Internal medicine Training	field of medical practice they want to pursue. These doctors supported reviewing the patients, making a plan of care, prescribing medication and advising in ward rounds. They would seek support and advice from the consultants when they needed it. Some would also be responsible for putting in lines for patients with support, and depending on their training, may have knowledge of ICU care and practice. The doctors rotate throughout their training and ICU placements can last between 4-6months.
Consultant	The consultants oversaw all the care of the patients and were the individual who was primarily responsible for all decisions made for the patients. The consultants supported the medical cover in the ICU through guidance, advice, education and training.	Consultant	The consultants oversaw all the care of the patients and were the individual who was primarily responsible for all decisions made for the patients. The consultants supported the medical cover in the ICU through guidance, advice, education and training.

Appendix CC: Demographic Data of Patients in the UK

Patient Study No.	Demographic data
ER2	Age: 30-39 Sex: Female PMH: Psoriasis Reason for admission: possible central nervous system infection, found collapsed on the floor.
5QT	Age: 70-79 Sex: Male PMH: Normally fit and well, smokes 10/day, triple vaccinated. Reason for admission: Out of Hospital Cardiac Arrest
6WD	Age: 70-79 Sex: Female PMH: Asthma, laparotomy cholecystectomy, total hysterectomy Reason for admission: Laparoscopic washout for removal of haematoma. Haematoma compressing portal vein risk ischemia to the liver and acute kidney injury post-op.
TFS	Age: 30-39 Sex: Male PMH: Fit and well Reason for admission: Unstable cervical and upper thoracic spinal fracture/dislocations, left elbow fracture dislocation, right distal radius fracture
P9S	Age: 80-89 Sex: Male PMH: Gastro-Oesophageal Reflux Disorder. Chronic Kidney Disease stage 3, Hypertension, Psoriasis Reason for admission: Ruptured 16cm Aortic Abdominal Aneurysm repair
KVE	Age: 70-79 Sex: Male PMH: Angina, Hypertension, Pulmonary Embolism (On warfarin), Chronic Obstructive Pulmonary Disease, Non-Alcoholic Fatty Liver Disease. Reason for admission: Upper Gastro-Intestinal Bleed

Appendix DD: Demographic Data of Patients in Australia

Patient Study No.	Demographic data
JZG4	Age: 60-69 Sex: Male PMH: Coronary Artery Bypass Graft, Chronic Obstructive Pulmonary Disease, Type 2 Diabetes Mellitus, Dyslipidaemia, Hypertension, Smoker, ?psoriasis or Rheumatoid Arthritis on methotrexate Reason for admission: Retrieved from another hospital after having a Out Of Hospital Cardiac Arrest
FJUK	Age:40-49 Sex: Male PMH: Nil Known. Reason for admission: Ventricular Fibrillation Out Of Hospital Cardiac Arrest
5XQU	Age: 50-59 Sex: Female PMH: Pseudomyxoma peritonei, recurrent metastatic ureteric obstructions, Chronic Kidney Disease, previous severe post-operative delirium with ketamine. Reason for admission: Elective abdominal surgery with chemotherapy.
C3RQ	Age: 60-69 Sex: Female PMH: Ethanol (ETOH) dependence, possible Chronic Obstructive Pulmonary Disease, smoker Reason for admission: Brought in by ambulance with shortness of breath and jaundice likely encephalopathic
SJ7B	Age: 40-49 Sex: Female PMH: Ethanol (ETOH) dependence, Smoker. Reason for admission: Decompensated acute (likely on chronic) liver failure, most likely secondary to alcohol misuse. Grade 1 encephalopathy, oliguric renal failure, profound metabolic derangements.
5JRT	Age: 70-79 Sex: Female PMH: Type 2 Diabetes Mellitus Tablet controlled. Reason for admission: severe anaemia (hb23), thrombocytopenia (plt 11), hyperactive delirium, hyperglycaemia. metabolic acidosis.
H8XB	Age: 70-79 Sex: Female PMH: MSSA Bacteraemia July with multifocal osteoarticular seeding AF with RVR, Peri membranous ventricular septal defect, anaemia, vitamin D, Hypertension, hypercholesterolaemia Reason for admission: Peri arrest on presentation (hypoxic, hypotensive, bradycardia, obtunded). Recent discharge after 6 weeks admission for MSSA bacteraemia.
7SZB	Age: 70-79 Sex: Female PMH: Dilated cardiomyopathy with non-compaction, cardiorenal syndrome, moderate MR, Chronic Atrial Fibrillation, Supraventricular Tachycardia with unsuccessful ablation, mild aortic dilation, Non-Insulin Dependent Diabetes Mellitus, chronic kidney disease, left breast ca, cellulitis, cataracts. Reason for admission: Unplanned admission post left hip hemiarthroplasty with failed extubation in recovery due to Type 2 Respiratory Failure.

858S	Age: 50-59 Sex: Female PMH: Hepatitis C Virus, Chronic leg pain- after rhabdomyolysis, complex psych history. Reason for admission: Unintentional Tapentadol overdose and ?unintentional overdose in the context of complex psychiatric history and chronic pain
XYMM	Age: 40-49 Sex: Female PMH: Intravenous drug user, Ethanol (ETOH), Peripheral neuropathy, intentional overdoses and suicidal idealisation. Reason for admission: Intentional overdose quetiapine 4g, paracetamol 15g
5TR7	Age: 40-49 Sex: Male PMH: Severe intellectual disability. Childhood seizure disorder. Reason for admission: Status Epilepticus
CQJ5	Age: 50-59 Sex: Male PMH: Dupuytren's contracture bilaterally, Ethanol (ETOH), smoker Reason for admission: Post Traumatic Facial Fractures
NGGL	Age: 50-59 Sex: Male PMH: Peritoneal mesothelioma, 6 cans/day. Reason for admission: Elective abdominal surgery with chemotherapy.
B5ZK	Age: 70-79 Sex: Male PMH: Obstructive Sleep Apnea, Hypertension, obesity, Type 2 Diabetes Mellitus Reason for admission: Transfer for management of pancreatic bed collection on a background of a recent pancreatectomy and splenectomy for pancreatic neuroendocrine tumour.
6USB	Age: 50-59 Sex: Male PMH: Hypertension, asthma, Obstructive Sleep Apnoea, ?diabetes mellitus, Covid eight months ago. Reason for admission: Guillain-Barré Syndrome
LW2B	Age: 70-79 Sex: Male PMH: Myeloma, prostatectomy, Hypertension Reason for admission: Type 1 Respiratory Failure, increasing oxygen and work of breathing on ward. Admitted to hospital with new cord compression on background of myeloma.

Appendix EE: Mind Map Process to Support Theme Generation

