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Enhancing Interprofessional Collaboration in the Intensive Care Unit: Reviewing Influential Factors Impacting Nurse-Physician Dynamics

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Abstract

Background: In the intensive care unit, interprofessional collaboration is essential due to the rising complexity of patient cases and the continuous evolution of healthcare. Research suggests that the collaboration between nurses and physicians in the ICU enhances team dynamics and optimises patient-centred care. Previous research also highlights the importance of continuously investigating the factors influencing this collaboration, given the increasing volume of patients and complexity in Norwegian hospitals. Thus, further exploration is needed to better understand interprofessional collaboration dynamics in this context.

Aim: To review the factors influencing interprofessional collaboration dynamics within the ICU, as described in the literature, focusing on understanding nurse-physician dynamics. By uncovering these factors, this thesis sought to offer valuable insights into how positive interprofessional collaboration could enhance the ICU environment.

Methods: The authors adopted a rapid review methodology to synthesise evidence efficiently. The thesis reviewed 11 articles comprising qualitative, mixed-method, and cross-sectional studies to enhance the depth of the analysis. The data material was analysed using thematic analysis.

Results: The findings that emerged from the literature revealed three themes concerning interprofessional dynamics within the intensive care unit setting: (1) A culture of mutual respect, (2) Acknowledging each other's competence, and (3) Acknowledging interprofessional team dynamics. The findings revealed that physicians perceive the intensive care unit team as familial, stressing the significance of personal relationships. Furthermore, nurses often felt undervalued, underscoring the need for mutual trust and respect. The literature emphasises that positive collaboration fosters effective communication, with simulation studies highlighting the importance of leadership. It was also stressed that the hospital administration should actively promote relationship-building opportunities, recognising the correlation between job satisfaction and a healthy work environment.

Conclusion: Mutual respect among nurses and physicians is central to effective collaboration within the intensive care unit. The hospital administration and individual healthcare professionals must collaboratively take initiatives, which include clear leadership, team building efforts and psychological safety. These elements are essential for fostering mutual trust and respect. Importantly, all identified enablers for improving interprofessional collaboration are accessible and arguably cost-effective, offering practical solutions for enhancing organisational success and patient-centred care within the intensive care unit.

Abstrakt

Bakgrunn: På intensivavdelingen er tverrfaglig samarbeid avgjørende på grunn av økende kompleksitet i pasientcaser og kontinuerlig utvikling innen helsevesenet. Samarbeidet mellom sykepleier og leger på en intensivavdeling er betydningsfullt, da det forbedrer teamdynamikken og optimaliserer pasientsentrert omsorg. Tidligere forskning understreker viktigheten av å kontinuerlig undersøke faktorene som påvirker dette samarbeidet, gitt den økende mengden pasienter og kompleksitet i norske sykehus. Dermed er ytterligere forskning nødvendig for å bedre forstå tverrfaglig samarbeid innenfor denne konteksten.

Hensikt: Å gjennomgå faktorene som påvirker dynamikken i tverrfaglig samarbeid på intensivavdelingen, slik den beskrives i litteraturen, med fokus på sykepleie-legedynamikken. Ved å avdekke disse faktorene søkte vi i denne masteroppgaven å tilby verdifulle innsikter i hvordan positivt tverrfaglig samarbeid kunne forbedre miljøet på intensivavdelinger.

Metode: Vi har benyttet oss av en begrenset systematisk oversikt (rapid review), for å syntetisere evidens effektivt. Studien vår gjennomgikk 11 artikler som omfatter kvalitativ, mixed-method og tverrsnitts studier for å forbedre dybden i analysen vår. Datamaterialet ble analysert ved hjelp av tematisk analyse.

Resultater: Ut ifra litteraturen avdekket vi tre temaer angående dynamikken i tverrfaglig samarbeid innenfor intensivavdelingen: (1) En kultur preget av gjensidig respekt, (2) Å anerkjenne hverandres kompetanse, (3) Å anerkjenne tverrfaglig teamdynamikk. Resultatene avdekker at leger oppfatter intensivteamet som en familie, og understreker betydningen av personlige relasjoner. På en annen side følte sykepleierne seg ofte undervurdert, noe som fremhevet behovet for gjensidig tillit og respekt. Litteraturen legger vekt på at positivt samarbeid fremmer effektiv kommunikasjon, med simuleringsstudier som påpeker betydningen av tydelig lederskap. Det ble også fremhevet at sykehusadministrasjonen aktivt bør fremme muligheter for teambuilding, og anerkjenne dens sammenheng med jobbtilfredshet og et sunt arbeidsmiljø.

Konklusjon: Gjensidig respekt blant sykepleier og lege fremstår som sentralt for effektivt samarbeid på intensivavdelingen. Sykehusadministrasjonen og det enkelte individet innen helsevesenet må samarbeide om å ta initiativ, som inkluderer tydelig lederskap, teambuilding og psykologisk trygghet. Disse elementene er essensielle for å fremme gjensidig tillitt og respekt. Viktigst av alt er at alle identifiserte faktorer for å forbedre tverrfaglig samarbeid er tilgjengelige og kan være kostnadseffektive, og tilbyr praktiske løsninger for å forbedre organisatorisk suksess og pasientsentrert omsorg på intensivavdelingen.

Table of content

List of Abbreviations

ICU – Intensive Care Unit

MMAT – Mixed Methods Appraisal Tool

PICo – Population, Intervention, Context

SBTT – Simulation-Based Team Training

SUS – Stavanger University Hospital

WHO – World Health Organisation

1.0 Introduction

Within the high-stakes environment of the intensive care unit (ICU), the collaboration between nurses and physicians is crucial for delivering optimal patient care. This interprofessional relationship is influenced by several key factors that can either foster or impede effective collaboration. These factors include communication styles, mutual respect and trust, clarity of roles, organisational support, and training (Ervin et al., 2018; Rose, 2011; Thomas et al., 2003). By exploring these significant influences, the authors will review how positive interprofessional collaboration between nurses and physicians can enhance the ICU environment.

Interprofessional collaboration involving healthcare professionals from various fields is fundamental to providing comprehensive, patient-centred care. Rooted in principles of shared decision-making, transparent communication, and mutual respect, this approach not only optimises patient outcomes but also enhances the safety and quality of healthcare delivery (Bosch & Mansell, 2015; WHO, 2010). Healthcare professionals from diverse fields, working together in practice and education, hold significant importance for nurses and physicians. In the ICU, collaboration between nurses and physicians is vital due to the complex nature of the environment and patient cases. This approach fosters clear communication and information convergence, aiming for optimal health outcomes (D'Amour et al., 2005; Prentice et al., 2015). Improved communication and understanding enhance care coordination, benefiting patients. This model enhances healthcare effectiveness and safety, improving patient satisfaction and outcomes (Aghamohammadi et al., 2019; Prentice et al., 2015). Integrating interprofessional collaboration into global initiatives and governmental policies is becoming a subject matter in shaping the future of healthcare (WHO, 2010).

As observed in Norwegian hospitals, increased patient volumes and complex cases underscore the urgency of fostering robust interprofessional teams. Over the past decade (2012-2022), the total number of patients treated in Norwegian hospitals has surged by 17.2% (SSB, 2023). This notable increase in patient volumes, coupled with the growing complexity of cases within an ageing population, drives the urgent need to implement measures to ensure the delivery of the highest quality care while promoting job satisfaction (WHO, 2022). Job satisfaction hinges greatly on recognition and feeling valued, fostered through good communication among colleagues. With technological advancements enabling the treatment of more patients, including those who are severely ill and complex, the demand for specialised care has become

even more pressing. Staying relevant with these advancements is crucial not only for effectively meeting the evolving needs of patient care but also for underscoring the necessity of ongoing research within the medical field (Thimbleby, 2013). This is because such advancements increase the number of patients seeking treatment and elevate expectations for tailored, high-quality care that can effectively address their specific needs (Frafjord, 2011; Thimbleby, 2013). Central to achieving these goals is the critical role played by interprofessional collaboration. The ICU is a focus point for interprofessional collaboration, driven by the imperative to provide specialised care for the hospital's most critically ill patients (Ervin et al., 2018). The breakdown of effective interprofessional collaboration not only jeopardises the quality of care but also poses risks to patient safety, the work environment, professional development, and the progression of the medical field (Busari et al., 2017). Interprofessional collaboration is essential in navigating the patient volumes and complexity surge within Norwegian hospitals (Kvilhaugsvik & Husøy, 2017). Cultivating this among healthcare professionals from diverse backgrounds improves coordination of care delivery, enhances communication, builds job satisfaction, ultimately migrates risks, and improves care quality (Busari et al., 2017; WHO, 2010).

Within this collaborative team, experts with distinct roles and specialised knowledge unite to undertake interdependent tasks, all with a common objective: safeguarding patient well-being (Rose, 2011). This approach gains importance within the ICU, where the delivery of critical care services holds significant consequences for patients and healthcare professionals (Busari et al., 2017). The World Health Organization (WHO) stresses the policy advantages of collaborative practices, encompassing enhanced patient safety, boosted staff morale, better patient outcomes, and refined workplace procedures (WHO, 2010). Moreover, recent research has identified substantial differences in the perception of collaboration among professionals in the ICU, pointing to promising areas for research and improvement in ICU practices (Daheshi et al., 2023; Thomas et al., 2003).

Throughout this thesis, the authors underscore a notable distinction in Norway, where intensive care nurses must possess a postgraduate degree, a requirement absent in other countries referenced in this literature review. Consequently, this review will encompass nurses working in ICUs in general, recognising that they may not uniformly hold a postgraduate degree. This study reviews the various factors that shape nurse-physician collaboration, examining facilitating factors to provide insights for reviewing interprofessional collaboration in ICU

settings. This is important because effective collaboration between nurses and physicians ensures seamless communication, coordinated care delivery, and timely decision-making, ultimately reducing the likelihood of medical errors, adverse events, and complications, thus promoting better patient outcomes and overall safety in the ICU (Ervin et al., 2018; Thomas et al., 2003; WHO, 2010).

1.1 Background

The background behind selecting the theme for this master's thesis is rooted in our shared background as nurses with first-hand experience with interprofessional teamwork within hospital settings. Having worked in various units, including specialised units and an ICU in a Norwegian Hospital, we have gained practical knowledge regarding this. However, we recognise the ongoing necessity of continuing to learn and gain further understanding of the complexities of interprofessional collaboration. Our experiences have highlighted the importance of this collaboration in ICU settings, sparking interest as we pursue our master's studies, specialising in intensive care nursing.

The decision to focus on interprofessional collaboration in the ICU was driven by the increasing complexity of patient cases and the evolving healthcare system. As the global population ages, with estimates suggesting that individuals over the age of 60 will comprise 16% by 2030, the need for healthcare professionals possessing advanced competencies to manage complex patient needs is on the rise (WHO, 2022). This growing demographic shift is a cause for increased demands within the involvement of various specialities, the number of bed spaces, and advanced medical technologies (Frafjord, 2011). At Stavanger University Hospital (SUS), attending anaesthesiologist Kristian Strand raises concerns about the technological advancements that can potentially prolong patients' lives. However, Strand notes that these advancements also challenge the effective allocation of treatments (Frafjord, 2011). Interprofessional collaboration is crucial in meeting the heightened demand resulting from these advancements (Reader & Cuthbertson, 2011). As the population ages and medical technologies evolve, seamless coordination among specialities becomes imperative for addressing complex patient needs and optimising resource allocation, ultimately leading to enhanced patient outcomes (Busari et al., 2017).

Rapid decision-making is imperative in the ICU's demanding setting, given the patients' lives are at stake (Ceballos-Vásquez et al., 2015; Ervin et al., 2018; Hind et al., 1999). Error prevention and continuity of care are vital aspects that should not be disregarded. Intensive care nurses, functioning independently and dependently in patient care, rely on a well-coordinated interprofessional team to effectively navigate acute and critical scenarios (Gurses & Carayon, 2007; Hind et al., 1999). However, constant staff turnover and shift work hinder the establishment of a cohesive team structure, underscoring the necessity of shared understanding and effective teamwork (Ball & McElligot, 2003; Rose, 2011).

1.2 Research Foundation

Drawing from previous research, the research foundation examines different aspects of interprofessional collaboration within an ICU. To offer context and insights that inform this research, we will review the dynamics of the ICU environment and the composition of ICU teams, emphasising nurse-physician collaboration and effective collaboration.

1.2.1 ICU Environment

The ICU constitutes a fundamental healthcare environment that administers essential care to patients facing acute illnesses and injuries (Backes et al., 2015; Wenham & Pittard, 2009). It offers specialised interventions tailored to individual patient needs through the expertise of skilled physicians, nurses and other health professionals (Tronstad et al., 2021). The unit is characterised by meticulous organisation, featuring advanced medical technologies, such as mechanical ventilators and continuous monitoring systems, alongside stringent infection control measures to ensure patient safety (Backes et al., 2015). Beds in the ICU are carefully designed to accommodate patients' individual needs, and lighting is adjustable to support circadian rhythms (Wenham & Pittard, 2009). The design of the ICU environment maintains a balance between ensuring privacy and facilitating accessibility to optimise patient care. Within this environment, an interprofessional team of healthcare professionals prioritises collaboration by adapting interventions to patient-centred care (Alsohime et al., 2021; Ervin et al., 2018).

Understanding the workplace environment is crucial for optimal interprofessional collaboration. This entails a mutual understanding of colleagues' roles and functions within the team, which is essential for effective communication and decision-making (Orgambídez & Almeida, 2020). Health professionals must also be attuned to the ICU's physical and emotional

environmental influences to collaborate effectively, including an isolated environment, advanced technical equipment, continuous monitoring sounds, and temperature-regulated rooms (Wenham & Pittard, 2009). These conditions physically and emotionally influence health professionals and can ultimately influence collaboration, communication and decision-making (Alsohime et al., 2021; Ball & McElligot, 2003; Ervin et al., 2018). Although ICUs may present varying environments influenced by each hospital's cultural and geographical contexts, it is noteworthy that several common traits unite them. These include the implementation of infection control protocols, the utilisation of advanced medical equipment, and the continuous monitoring of critically ill patients. Despite their differences, these shared characteristics underscore the universal commitment to providing high-quality care and ensuring patient safety across diverse healthcare settings (Prin & Wunsch, 2012).

1.2.2 ICU Team Composition, with Emphasis on Nurse-Physician Collaboration

The composition and structure of ICU teams can vary significantly from country to country, influenced by factors such as the healthcare system, cultural norms and resource availability (Ervin et al., 2018). The varying structures across countries, such as hierarchy and economy, also affect how teams are structured within the different ICUs. These structural differences contribute to the diverse approaches to patient care and decision-making. For example, ICU teams might be smaller and less specialised in countries with limited resources (Prin & Wunsch, 2012). Additionally, hierarchical and economic factors shape team dynamics within different ICUs. In some cultures, a strong hierarchy may limit junior staff's participation in decision-making, potentially impacting the agility and diversity of patient care approaches. These structural differences contribute to the diverse approaches to patient care and decision-making across various settings (Prin & Wunsch, 2012).

Not only do the structures vary, but the literature also employs diverse terminology to describe different professions. For instance, some studies may use terms such as clinician, intensivist, or anaesthesiologist when referring to physicians. To maintain consistency, this review will refer to the intensivist as a physician. In some countries, the primary and extended ICU team comprises a physician (intensivist or anaesthesiologist), a bedside nurse or nurse specialist, respiratory therapists, physiotherapists, dietitians, clinical pharmacists, chaplains, occupational therapists, and consulting physician specialists (Ervin et al., 2018; Li & Lighthall, 2022). The roles and functions of the different professions within the ICU team can also vary from country

to country. This extensive list of providers caring for an ICU patient depends on the patient's specific care needs and will, therefore, vary (Ervin et al., 2018; Li & Lighthall, 2022).

A universally recognised practice is the structured leadership within a team. In the ICU, the leader is typically the physician (Ervin et al., 2018; Li & Lighthall, 2022). The prevailing perspective suggests that physician specialists in intensive care contribute unique experience and expertise in treating critically ill patients, distinguishing them from non-intensivist physicians. Research suggests that this distinction may enhance leadership abilities and team performance (Cook & Rocker, 2014; Kahn et al., 2007).

In Norway, the composition of the ICU team typically encompasses a team led by the physician, with members including a nurse or intensive care nurse, a physiotherapist, a dietitian, a clinical pharmacist, a chaplain, an occupational therapist, and consulting specialist physicians (Legeforeningen, 2021). The responsibility for managing the ventilator lies primarily with the nurse or intensive care nurse, thus eliminating the need for a respiratory therapist (Legeforeningen, 2021). Nurses who specialise in Norway have the option to pursue a postgraduate degree. Ideally, per 'The guidelines of Norwegian Intensive Care Units, nurses employed in Norwegian ICUs should hold qualifications as intensive care nurses, often achieved through a postgraduate degree with at least 90 credits in intensive care nursing (Legeforeningen, 2021). The intensive care nurse always remains by the patient's bedside, requiring close collaboration with the attending physician. The nurse and the attending physician form a team with independent responsibilities under the 'Health Personnel Act' but collaborate closely to coordinate further diagnosis, treatment and care for each patient (Legeforeningen, 2021). Interprofessional collaboration encompasses all professions engaged in the patient's care, but this thesis preliminary reviews the collaboration between nurses and physicians.

Studies suggest that the primary aspect considered when evaluating ICU teamwork is the assessment of patient outcomes, with a specific emphasis on mortality rates, which serves as the predominant measure of determining the effectiveness of ICU teams (Cook & Rocker, 2014; Ervin et al., 2018; Nancarrow et al., 2013). Variations in approaches and perspectives among clinicians can result in ineffective interprofessional exchanges and disagreements within the healthcare team (Cook & Rocker, 2014; Kahn et al., 2007). Resolving these interprofessional conflicts can be challenging, as they often have multiple underlying factors, such as difficult

team dynamics, conflict management and other psychosocial implications (Ervin et al., 2018; Nancarrow et al., 2013).

1.2.3 Collaboration in the ICU

Collaboration encompasses the dynamic process of multiple individuals working together to achieve a common objective (Morley & Cashell, 2017). It involves integrating social and task inputs, fostering partnerships among professionals with diverse backgrounds, and embracing key elements such as coordination, cooperation, shared decision-making, and teamwork. Effective collaboration relies on mutual respect, trust, and a shared sense of responsibility, resulting in a cohesive partnership that optimises every participant's contributions (Morley & Cashell, 2017). In the ICU, effective collaboration entails diverse professionals sharing responsibilities for problem-solving and decision-making to create patient care plans. This collaboration also correlates with increased job satisfaction, lower turnover rates and more effective stress management in ethically complex situations among nurses (Busari et al., 2017).

It is challenging to assess effective collaboration in the ICU due to its subjectivity and multidimensionality (Ervin et al., 2018; Nancarrow et al., 2013). For example, focusing solely on patient mortality measures is just one aspect of broader collaborative teamwork (Cook & Rocker, 2014; Ervin et al., 2018; Nancarrow et al., 2013). The absence of standardised tools exacerbates the assessment complexity and the context-dependent nature of collaboration, compounded by resource constraints in healthcare and ethical considerations (Ervin et al., 2018; Nancarrow et al., 2013). The presence of various professionals within the ICU team dynamic makes it intricate to assess their interactions effectively (Ervin et al., 2018). Therefore, emphasising the importance of reviewing factors that promote collaboration among these professionals through literature can positively impact the future formulation of guidelines, educational strategies, and other healthcare practices, ultimately facilitating the advancement of standards in healthcare.

Collaborative healthcare practices vary across countries due to differing hierarchical structures and cultures (Mickan et al., 2010). For example, in Canada, primary healthcare teams led by physicians often include various professionals contributing to patient management (Mickan et al., 2010). In England, the teams practice regular meetings and clear roles to facilitate collaborative care (Mickan et al., 2010). Meanwhile, in Sweden, structured protocols and governance models promote interprofessional healthcare. This showcases the diverse

approaches to collaborative practice observed within these specific countries. Focusing on Norway and the collaboration within ICUs reveals a comprehensive approach centred on establishing standards, particularly concerning patient-to-nurse and physician-to-nurse ratios, educational qualifications, such as the expectation for most nurses to have a post-graduate education, as well as the implementation of simulations (Helsedirektoratet, 2020). However, while Norwegian hospitals mainly prioritise these structural standards, there may be an absence of established norms regarding socialisation and interpersonal relationships among staff members. Despite this gap, existing literature underscores the significant correlation between effective collaboration, cultivating personal relationships within healthcare teams, and motivating departmental culture. Hence, it is plausible to suggest that the hospital's cultural environment, interpersonal dynamics, and role clarity directly influence collaborative practices in ICUs (Kvilhaugsvik & Husøy, 2017; Rønbeck, 2007).

The emphasis on profession-oriented education nationwide is outlined in Meld. St. 19 (2023-2024) holds significant implications for collaboration within the ICU. This standard ensures that healthcare professionals receive specialised training relevant to their roles within ICU teams, fostering a shared understanding and effective interprofessional teamwork. Such targeted education enhances competence levels, improves team communication, and ultimately contributes to developing a more cohesive and efficient ICU profession (Meld. St. 19, (2023-2024)).

1.3 Research Aim

This master thesis aims to review the factors influencing interprofessional collaboration dynamics within the ICU, as described in the literature, focusing on understanding nurse-physician dynamics. By uncovering these factors, this thesis seeks to offer valuable insights into how positive interprofessional collaboration can enhance the ICU environment.

1.4 Research Question

RQ: What factors shape interprofessional collaboration dynamics within the ICU environment?

2.0 Theoretical Framework

The theoretical framework of this thesis provides a structured frame for exploring essential topics. It covers the role of intensive care nurses, understanding the terminology of interprofessional collaboration, teamwork and communication in the ICU, the organisational significance of these elements and psychological safety. This comprehensive framework provides the structure for understanding how these elements work together, helping us grasp the complexities of our research.

2.1 The Role of Intensive Care Nurses

An intensive care nurse working within the ICU plays a central role in the care of critically ill patients. The responsibilities of an intensive care nurse encompass continuous monitoring, evaluation of the patient's condition, and administering life-sustaining treatments and medications using advanced medical equipment such as ventilators (NSFLIS, 2017). They provide holistic nursing care as part of their comprehensive patient care, actively restoring the patient's health or facilitating a dignified passing. The principal objective of intensive care nursing involves cultivating a therapeutic connection with patients and their families, strengthening the patient's physical, emotional, social and spiritual resilience through a spectrum of preventive, treatment-focused, palliative, and rehabilitative measures (NSFLIS, 2017).

The intensive care nurse strives to cultivate a patient- and family-centred care environment while addressing the care-related needs of the patient's relatives (NSFLIS, 2017; Weatherburn & Greenwood, 2023). This is also regulated by the 'Care Act' governing healthcare professionals, specifically in Chapter 1, section 3, where healthcare is defined as "any action that has preventive, diagnostic, therapeutic, health-preserving, rehabilitative or nursing purposes and which is carried out by health personnel" (Helsepersonelloven, 1999). Simultaneously, while providing comprehensive care, they collaborate with various healthcare professionals involved in the patient treatment. Due to the complexity of the patient's condition, various disciplines participate in making treatment decisions. Interaction within the treatment team occurs within and across different units throughout the patient's care process (NSFLIS, 2017). Personal perceptions such as religious or personal beliefs, cultural norms and power dynamics of healthcare professionals influence this interprofessional collaboration. Despite

differences in personal morals and beliefs, they must ultimately adhere to established guidelines and laws, such as the 'Care Act' in Norway, governed by section 2 §4 of the Health Personnel Act (helsepersonelloven), which prioritises the provision of care and treatment services that are safe, appropriate, and of high quality (Helsepersonelloven, 1999).

In critical situations, such as when a patient's condition deteriorates, the intensive care nurse adeptly manages crises in a safe and well-coordinated manner (Weatherburn & Greenwood, 2023). This necessitates collaborative teamwork with a diverse group of healthcare professionals, allowing them to coordinate treatment plans and provide guidance to less experienced nurses. A significant aspect of the responsibilities of intensive care nurses involves providing mentorship and guidance to fellow nurses or students specialising in intensive care nursing (NSFLIS, 2017). They are responsible for actively participating in professional development and research to stay current with the latest treatment methods and technologies. The intensive care nurse skilfully balances technical expertise, empathy, and sound decision-making under pressure, making them indispensable for the patient's well-being (Buckley & Andrews, 2011). With the increasing societal demand for treating individuals facing acute and critical illnesses, intensive care nursing has emerged as a significant and indispensable speciality (Meld. St. 7, (2019-2020)). Future healthcare services require intensive care nurses to be capable of addressing the needs of patients who are in need of intricate care (Meld. St. 7, (2019-2020)).

2.2 Defining Interprofessional Collaboration

Interprofessional collaboration in healthcare arises from recognising that addressing patients' complex needs requires a collective effort from professionals with diverse expertise (WHO, 2010). With the principles of shared decision-making, transparent communication, and mutual respect, this approach aims to optimise patient outcomes and ensure their safety while improving healthcare delivery's overall quality and efficiency (Bosch & Mansell, 2015; WHO, 2010). Within this context, the collaboration between nurses and physicians, which has evolved in response to changing healthcare practices, holds particular significance, especially in environments like the ICU. Close collaboration between these essential healthcare professionals is vital for the timely assessment, intervention, and monitoring of critically ill patients (D'Amour et al., 2005; Prentice et al., 2015). Their collaborative efforts facilitate

prompt decision-making, tailored care plans, and effective treatment strategies, ultimately enhancing patient outcomes and minimising the risk of medical errors (Bosch & Mansell, 2015). Additionally, nurse-physician collaboration fosters a supportive and cohesive work environment within the ICU setting, contributing to enhanced job satisfaction and staff retention. Overall, interprofessional collaboration, particularly between nurses and physicians in the ICU, is crucial in ensuring optimal patient care and cultivating a culture of safety, excellence, and professionalism within healthcare teams (Aghamohammadi et al., 2019; Prentice et al., 2015).

Interprofessional collaboration in healthcare sets itself apart from interdisciplinary collaboration by emphasising professionals from diverse fields uniting to meet patients' needs collectively. While interdisciplinary collaboration sees professionals from various disciplines pooling their expertise to solve common issues, interprofessional collaboration prioritises teamwork, shared decision-making, and mutual respect among professionals with varying skill sets (Mahler et al., 2014). This distinction proves vital in healthcare settings where patients' needs are multifaceted and demand a coordinated response. Interprofessional collaboration ensures that each professional's unique insights and skills contribute to delivering comprehensive, patient-centred care. In contrast, interdisciplinary collaboration may need more attention to integrating different disciplines into a unified team approach. Therefore, opting for interprofessional collaboration enables healthcare teams to navigate the intricacies of patient care more effectively, optimise outcomes, and foster a culture of collaboration and collective responsibility (Donovan et al., 2018; Nancarrow et al., 2013). After reviewing the differences, we have chosen to utilise interprofessional collaboration throughout this thesis.

It is crucial to note that articles are often inconsistent with differing the collaboration terminology utilised. Some articles refer to this collaboration as interdisciplinary (Lancaster et al., 2015; Nancarrow et al., 2013; O'Leary et al., 2012), while others label it as interprofessional (Busari et al., 2017; Donovan et al., 2018; Prentice et al., 2015). Furthermore, there are instances where the collaboration between nurses, physicians and other health professionals is described as both interdisciplinary and interprofessional within the same article.

2.3 Teamwork in the ICU

Effective teamwork in the ICU is essential for delivering high-quality patient care and ensuring positive outcomes (Reader & Cuthbertson, 2011). In an ICU, teamwork exhibits unique characteristics. The team structure often changes daily due to the high personnel turnover associated with shifts (Husebø, 2021). Team compositions vary, involving intensive care nurses, physicians, and other professions, while specific patient cases influence the nature of teamwork. According to the Norwegian guidelines for ICUs, intensive care nurses and physicians constitute a team, each with independent responsibilities under the Health Personnel Act (Helsepersonelloven, 1999). However, they are responsible for coordinating further diagnostics, treatment and care for their assigned patients (Legeforeningen, 2014). Similarly to collaboration, this teamwork extends to ICU patients' primary ward physicians and specialists with the required expertise (Husebø, 2021).

Teamwork in the ICU is primarily guided by quality and patient safety initiatives. Examples that ensure patient safety are physician rounds with patient assessments, patient transition checklists, the ABCDE bundle, well-planned transport of the ICU patients and the inclusion of the next of kin in the team (Husebø, 2021). Beyond the mere utilisation of communication tools, successful teamwork encompasses several vital components that contribute to a cohesive and efficient care delivery system. One crucial aspect is shared decision-making among team members, including nurses, physicians, and other healthcare professionals (Reader & Cuthbertson, 2011). By involving all relevant members in decision-making, teams benefit from diverse perspectives and expertise.

Effective coordination and teamwork ensure seamless care transitions and treatment continuity for ICU patients (Husebø, 2021). Team members must work together cohesively, sharing information and responsibilities to optimise patient outcomes and avoid errors in care delivery. Ongoing training and simulation exercises reinforce teamwork skills and prepare team members to handle challenging situations (Husebø, 2021; Reader & Cuthbertson, 2011). By practising communication, coordination, and decision-making in simulated scenarios, healthcare professionals enhance their ability to work effectively as a team in clinical settings (Rayner & Wadhwa, 2023).

2.4 Communication in the ICU

Effective communication is paramount in the ICU, where patient conditions are critically fragile; thus, timely and structured communication among healthcare professionals is central. Without it, healthcare quality would decline, leading to adverse patient outcomes (Gauntlett & Laws, 2008; Ratna, 2019). In the ICU, all team members share the common goal of providing optimal medical care. Clear communication is essential for successful teamwork, helping to prevent misunderstandings, exchange vital patient information, and ensure alignment in treatment plans. Open dialogue minimises errors, enhances clinical decision-making, and fosters team cohesion (Nancarrow et al., 2013). Moreover, effective communication extends beyond the healthcare team to patients' families, overcoming potential cultural or language barriers. It is crucial to tailor messages for comprehension and convey them with respect for recipients' backgrounds (Ratna, 2019).

Emphasising communication strategies that enhance intra-team communication and collaborative decision-making is vital for a high-functioning interprofessional team (Nancarrow et al., 2013). Therefore, communication holds a significant role within the ICU. Effective communication in healthcare encompasses essential elements such as timeliness, precision, collaboration, promptness, accuracy, and relevance. Healthcare professionals convey information promptly and accurately, promoting collaboration and ensuring information is relevant to patients' specific needs (Chichirez & Purcărea, 2018).

Diligent communication involves the conscientious exchange of information, active listening, and clear expression of ideas (Gauntlett & Laws, 2008). It fosters effective collaboration and decision-making, particularly in the context of patient safety (Ratna, 2019). In terms of patient safety, good communication during handovers is vital. Precise communication helps identify disease progression promptly, reducing the risk of missing vital information that could lead to incorrect decisions (Loefgren Vretare & Anderzén-Carlsson, 2020).

2.5 The Organisational Impact of Interprofessional Collaboration

The significance of interprofessional collaboration within an ICU extends its influence beyond the critical care context, potentially influencing the entire hospital ecosystem (Van Der Sluijs et al., 2017). This collaborative approach, characterised by teamwork and open communication,

has a profound impact on various dimensions, contributing to both the success of the ICU and the hospital's overall success (O'Leary et al., 2012).

The study by Pihlainen et al. (2016) identifies three main categories of leadership and management competence: healthcare context-related, operational, and general. Healthcare context-related competence includes understanding social, organisational, business, and financial aspects, emphasising political and legislative systems. Operational competence involves proficiency in process, operation, clinical, and development skills, addressing quality improvement and resource management. General management and leadership competence cover time management, interpersonal skills, strategic mindset, thinking and application skills, and human resource management, emphasising communication and personnel development (Pihlainen et al., 2016). Recognising these leadership and management competence categories is crucial for healthcare professionals and organisations to ensure effective leadership, efficient operations, and quality patient care. Developing skills in social understanding, organisational proficiency, strategic thinking, and personnel management helps leaders navigate complex healthcare environments, optimise resources, and foster excellence within teams and organisations. This understanding ultimately leads to improved patient outcomes and healthcare system performance (Pihlainen et al., 2016; Van Der Sluijs et al., 2017).

The ICU's commitment to interprofessional collaboration creates a culture of job satisfaction among healthcare professionals. Within these high-stress environments, nurses, physicians, specialists, and support staff find fulfilment in working together to provide the best care for critically ill patients (Busari et al., 2017). This infuses positivity throughout the hospital, where staff members become engaged contributors to the hospital's overarching culture (Mitchell et al., 2014). Furthermore, interprofessional collaboration promotes professional development. In the ICU, healthcare professionals share their specialised knowledge and insights, fostering a continuous learning environment. Nurses find themselves at the crossroads of diverse disciplines, absorbing knowledge from physicians, specialists, and fellow nurses. The result is a versatile staff capable of addressing a wide range of patient needs and promoting staff engagement in teaching and learning (Babiker et al., 2014). Another critical dimension of interprofessional collaboration is its role in driving quality improvement. ICUs are often hotspots for quality enhancement initiatives (Van Der Sluijs et al., 2017). The collaborative culture serves as fertile ground for identifying areas needing improvement and implementing innovative solutions. This commitment to quality does not remain confined to the ICU alone;

it extends to other hospital departments, triggering system-wide enhancements (O'Leary et al., 2012).

The interprofessional ICU teams are also catalysts for innovation, and the interplay of different disciplines and perspectives often leads to developing solutions and treatment approaches (Ervin et al., 2018). These innovative practices have a ripple effect, benefiting the entire hospital by enhancing patient care and organisational efficiency (Mitchell et al., 2014). The organisational significance of interprofessional collaboration in an ICU goes beyond the boundaries of critical care. When considering the external factors that can harm interprofessional collaboration in the ICU, such as staff shortages, hospital bed space, work environment and competency, it is vital to mention the influencing factors from the hospital ecosystem (Babiker et al., 2014). Other influential factors that may negatively impact collaboration within the hospital and ICUs include healthcare hierarchies, evolving roles and environments and instances of disagreement and conflict (Babiker et al., 2014). It aims to create a more positive, innovative, and quality-driven hospital environment. This collaborative spirit embodies the principles of job satisfaction, professional growth, quality enhancement, and innovation, ultimately positioning the hospital as a leader in providing high-quality care and staying relevant in healthcare advancements (O'Leary et al., 2012; Van Der Sluijs et al., 2017).

2.6 Psychological Safety

Edmondson (1999) defines psychological safety as a critical aspect of team dynamics in healthcare settings, particularly in interprofessional collaboration, where professionals from various backgrounds work together to deliver patient care. It refers to the shared belief among team members that they can voice opinions, pose questions, and make mistakes without fear of reprimand or embarrassment (Greene et al., 2020; O'donovan & Mcauliffe, 2020; Wanless, 2016). Psychological safety is crucial in healthcare, where patient safety is paramount, and work environments are complex. It fosters teamwork, creativity, and performance by allowing individuals to take interpersonal risks, contributing to improved learning and outcomes (Greene et al., 2020; O'donovan & Mcauliffe, 2020; Wanless, 2016). When healthcare professionals feel psychologically safe, they can collaborate effectively, navigate the complexities of their roles, and deliver safe care to patient's (Newman et al., 2017; O'donovan & Mcauliffe, 2020).

Within healthcare teams, which often comprise individuals with diverse expertise and roles, psychological safety sets the stage for open dialogue, honest feedback, and mutual respect (O'Donovan & McAuliffe, 2020). This sense of safety encourages participation, innovation and constructive engagement, ultimately benefiting individuals and the team (Greene et al., 2020; O'donovan & Mcauliffe, 2020). This enables team members to feel comfortable expressing their ideas, concerns, and questions. This open communication increases teamwork, as individuals are more willing to take risks and explore new approaches (Newman et al., 2017; O'donovan & Mcauliffe, 2020). Conversely, in the absence of psychological safety, team performance suffers as individuals may hesitate to share their insights or take necessary risks (Greene et al., 2020; Newman et al., 2017). Instances such as hierarchical structures within healthcare organisations can pose challenges to psychological safety (O'Donovan & McAuliffe, 2020). Power differentials and rigid hierarchies may inhibit open communication and information sharing, particularly among junior members of the team. Addressing these barriers requires a cultural shift towards fostering psychological safety, where all team members feel valued, respected, and empowered to contribute (Nembhard & Edmondson, 2006).

Understanding the dynamics of psychological safety in healthcare interprofessional collaboration is crucial for improving team performance, patient safety, and workforce well-being. By promoting a culture of psychological safety, healthcare organisations can enhance communication, reduce errors, and ultimately improve patient outcomes (Ito et al., 2022). Psychological safety, a recently emphasised aspect of organisational culture, has emerged as a crucial determinant of healthcare team performance. It is defined as the condition in which team members feel safe to take risks, explore new ideas, and challenge controversial practices (Diabes et al., 2021; Nembhard & Edmondson, 2006). Within the ICU, psychological safety could be observed when team members, regardless of their hierarchical position, feel empowered to challenge treatment plans or voice concerns about failures in delivering evidence-based care (Diabes et al., 2021). Leaders can establish psychological safety by actively listening to their team members' concerns and valuing diverse perspectives (Newman et al., 2017; O'donovan & Mcauliffe, 2020; Wanless, 2016). Additionally, they can model vulnerability by openly sharing their own challenges and encouraging others to do the same without fear of judgment. By consistently demonstrating support for psychological safety, leaders cultivate an environment where individuals feel empowered to express themselves authentically and contribute their best work (Newman et al., 2017; O'donovan & Mcauliffe, 2020; Wanless, 2016).

Early research on psychological safety in healthcare indicates its association with greater engagement in quality improvement initiatives (Ito et al., 2022). However, despite its recognised importance, the specific factors influencing psychological safety in critical care settings and its impact on ICU team performance remain poorly understood (Diabes et al., 2021). In the environment of the ICU, where rapid decision-making and effective teamwork are essential for patient outcomes, psychological safety becomes particularly crucial (Ervin et al., 2018). Addressing the factors influencing psychological safety in the ICU requires a deeper understanding of critical care settings' unique dynamics and challenges (Diabes et al., 2021; O'donovan & Mcauliffe, 2020). By fostering a culture of psychological safety, healthcare organisations can promote open communication, encourage innovation, and ultimately enhance team performance and patient care outcomes (Diabes et al., 2021).

3.0 Methods

3.1 Design

In this section, we outline the methodology utilised to carry out the literature review for this thesis. We have opted to utilise a rapid review methodology, as outlined by Plüdderman et al. (2018), due to its recognition of offering distinct advantages in specific contexts. For this master thesis, time is of the essence, and as such, the rapid methodology presents an ideal approach for efficiently synthesising evidence within our timeframe. This methodology provides valuable insights compared to full systematic reviews, making them essential tools for evidence synthesis across various clinical domains, including healthcare (Plüddemann et al., 2018). Furthermore, rapid reviews aim to improve methodological integrity while remaining efficient in evidence synthesis, incorporating measures to minimise bias (Plüddemann et al., 2018). Here, we outline the steps taken to carry out the rapid review, including the development of the search strategy, establishment of inclusion and exclusion criteria, extraction of data, assessment of quality, and the subsequent synthesis of data.

3.2 Search Strategy

Within the methodology section of this thesis, an initial search was conducted with the aim of laying a comprehensive groundwork for the forthcoming literature review. This was primarily to gain an overview of our chosen topic, understand the characteristics of relevant literature,

and better prepare ourselves before meeting with the librarian to refine our search terms. The initial search paved the path for a deliberate and well-informed rapid review, shaping the subsequent phases of this thesis. Numerous databases, including CINAHL, MEDLINE and Google Scholar, were utilised in the initial search. This search strategy confirmed the existence of a substantial amount of reliable research related to the selected topic. As illustrated in Table 1 (search process), the initial search produced many results, and a quick examination of the headings further reinforces the fundamental basis for proceeding with a more thorough exploration of the primary literature. We subsequently consulted a librarian who assisted in refining our search terms (See Table 1), ensuring that we were better prepared for conducting the primary search.

Following the steps outlined by Pludderman et al. (2018), we conducted our main literature search by employing a comprehensive approach utilising prominent databases tailored to our research focus. Specifically, we used CINAHL with full text, MEDLINE, and Google Scholar. We also employed a combination of two major scientific databases and an additional database. Pludderman et al. (2018) describe that additional steps can be taken to reduce bias, such as having no search date or language limit. In this master's thesis, our focus was gathering recent research, aligning with our preferences, and following the guidelines outlined by the University of Stavanger, which included avoiding research older than ten years. We also excluded studies that were not written in English or Norwegian to maintain consistency and facilitate comprehension during our analysis. Prior to initiating the search, we meticulously crafted search terms informed by a preliminary PICo (Population, Intervention, Context) process, adhering to guidelines provided by 'Helsebiblioteket' (Helsebiblioteket, 2022). A visual illustration of PICo is presented in Table 2.

Following a systematic application of our search strategy, we documented key information, including database sources, date of search, employed search terms, initial number of results, and subsequent results post-duplicate removal, as seen in Table 1 and Figure 1.

Table 1: Search process

Search 1 *Initial search*	Databases	CINAHL with full text
	Date of search	01.11.23
	Search terms	(intensive care unit or icu or critical care or critical care unit) AND (interdisciplinary team or multidisciplinary team or interprofessional team) AND (intensive care nurses or critical care nurses)
	Number of Results	403
	Screened	403
	Related	16
Search 2	Databases	MEDLINE
	Date of search	01.11.23
	Search terms	(intensive care unit or icu or critical care or critical care unit) AND (interdisciplinary team or multidisciplinary team or interprofessional team) AND (intensive care nurses or critical care nurses)
	Number of Results	275
	Screened	275
	Related	23
Search 3	Databases	CINAHL with full text
	Date of search	01.11.23
	Search terms	(‘interprofessional collaboration’ or ‘teamwork’ or ‘multi-disciplinary’) AND (‘icu’ or ‘intensive care unit’ or ‘critical care unit’)
	Number of Results	727
	Screened	727
	Related	30
Search 4	Databases	Google Scholar
	Date of search	01.11.23
	Search terms	(intensive care unit or icu or critical care or critical care unit) AND (interdisciplinary team or multidisciplinary team or interprofessional team) AND (intensive care nurses or critical care nurses)
	Number of Results	8490
	Screened	47, only from page 1 – 5.
	Related	13
Search 5	Databases	CINAHL and MEDLINE
	Date of search	23.01.24
	Search terms	(Interdisciplinary collaboration or interprofessional collaboration or teamwork or interdisciplinary) AND (ICU or intensive care unit or critical care)
	Number of Results	5459
	Screened	24, only from page 1 – 3
	Related	13

Table 2: PICo

	P: Population	**I:** Intervention	**Co:** Context
Initial search terminology	Intensive care nurses	Interprofessional collaboration	Intensive Care Unit
Final search terminology	(Intensive care nurses OR critical care nurses)	(Interdisciplinary team or multidisciplinary team or interprofessional team) (Interprofessional collaboration OR teamwork OR multi-disciplinary)	(Intensive care unit OR icu or critical care OR critical care unit)

3.3 Study Selection

Pludderman et al. (2018) describe that having one researcher review the titles, abstracts, and full-text versions of articles is sufficient. However, it is beneficial to have two researchers going through this process to reduce bias. Therefore, we carried out this process together, ensuring alignment with our eligibility criteria; we screened through the search results across the specified databases.

As illustrated in the Prisma flowchart (See Figure 1), the total number of articles identified from our search amounted to 15,354. However, as illustrated in the search process (See Table 1), it is worth noting that this total is derived from multiple searches, thereby making the screening process manageable. During this screening phase, both authors diligently assessed the titles and abstracts, individually evaluating their relevance and potential eligibility for inclusion in the study after the screening process. Additionally, we removed 13,878 articles before screening using the inclusion and exclusion criteria (See Table 3) and removed 44 duplicates. This left us with a total of 1,476 articles for screening (See Figure 1). We followed specific inclusion and exclusion criteria when screening, as illustrated in the visual representation provided below, to ensure the relevance and quality of the retrieved literature (See Table 3).

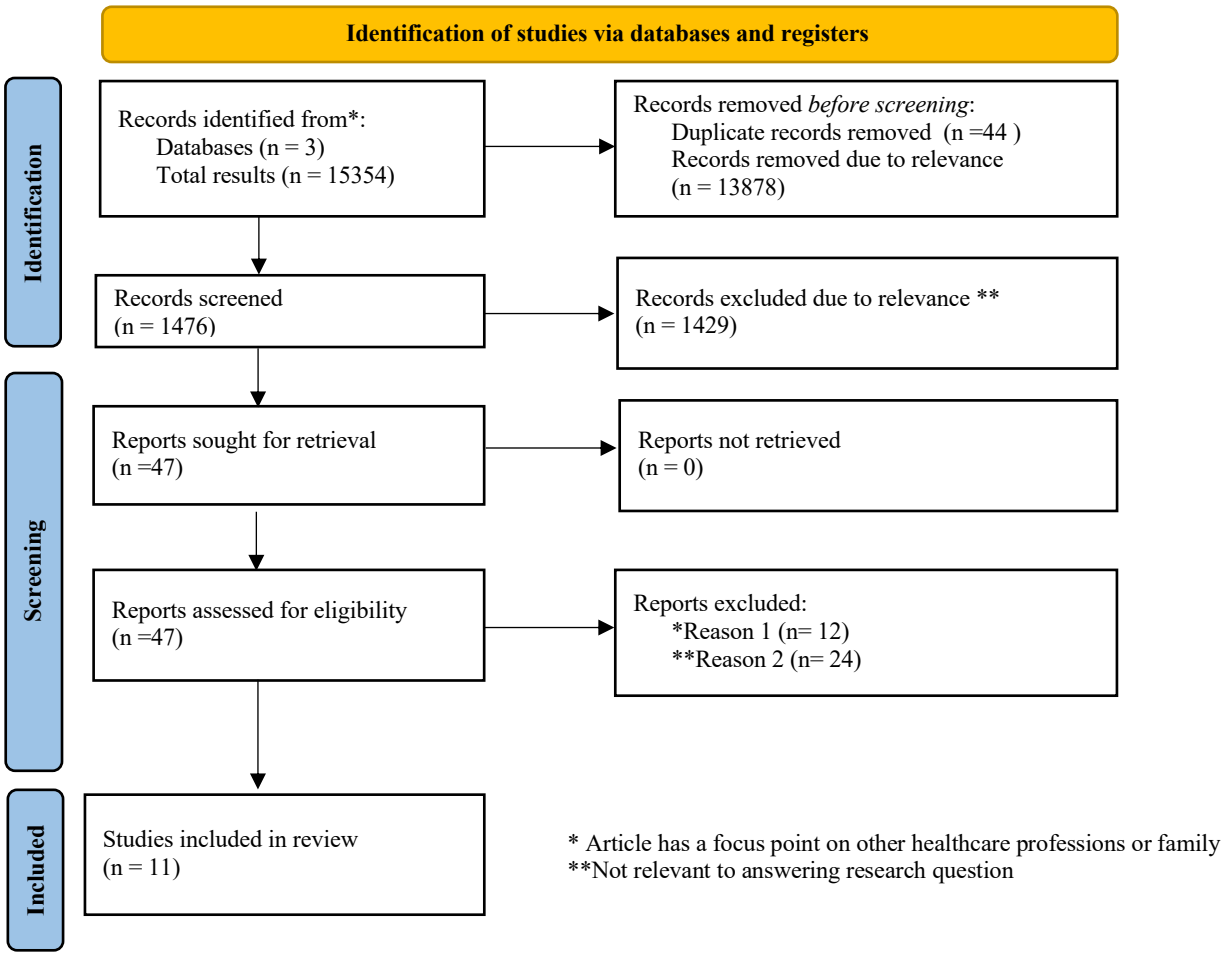
Table 3: Main literature search inclusion and exclusion criteria

	Inclusion criteria	Exclusion criteria
Article classification	• Studies from 2013 and later • English or other Scandinavian language • Peer reviewed • Studies reporting self-produced research findings • Relevant to the topic of the thesis • Availability of full text for review • Qualitative articles	• Studies published before 2013 • Studies not published in English or Scandinavian languages • Systematic reviews or scoping reviews • Non-peer reviewed sources • Dissertations, thesis, and conference abstracts • Studies lacking full text availability • Not qualitative studies
Article content	• Set in an ICU, CCU • Study participants: ICU nurses OR nurses AND physicians • Western countries • Perceptions of inter/ intradisciplinary collaborations OR multidisciplinary team OR interprofessional collaboration OR teamwork OR multi-disciplinary	• Eastern countries • Other healthcare professionals • Simulation based training studies • Covid 19 based studies • Family's or others' perceptions
Article content after revision	• Simulation based training studies • Covid 19 based studies • Eastern countries • Mixed methods and cross-sectional studies	

Upon individually reviewing the 47 articles assessed for eligibility in full text, we engaged in discussion to determine if they truly aligned with our inclusion criteria (See Table 3). While many studies initially met the eligibility criteria, they did not meet the necessary standards upon closer examination. Consequently, we identified eight articles that met our criteria, but we were unsatisfied with the limited number. During a master seminar, we presented our dilemma and sought input from fellow students and teachers, in addition to consulting with our supervisors. These discussions showed us that our inclusion and exclusion criteria had been too rigorous. As a result, we revisited the articles assessed for eligibility, employing the revised criteria. The same procedure was applied in re-screening for additional articles, followed by comprehensive readings of the newly included ones in full text. We then discovered four more articles that we deemed appropriate for inclusion, thus achieving a satisfactory number of 11 articles included in our review (See Figure 1).

When screening for articles, our primary focus was on qualitative articles characterised by in-depth exploration, as we sought to gain insight into nurses' perspectives on collaboration with physicians and articles that aligned with our research question. Over time, the research question evolved, shaped by the selected articles and their corresponding findings. We found seven qualitative studies that provided rich insights into our topic. Additionally, we incorporated two cross-sectional and two mixed-method articles to supplement our understanding. This decision was driven by recognising the complementary nature of these methodologies in capturing diverse perspectives and enriching our analysis.

Figure 1: PRISMA flow diagram (Page et al., 2021)



The following Table (4) presents an overview of the 11 articles selected for inclusion in this study. This compilation provides essential details and a snapshot of the literature gathered for the analysis.

Table 4: Overview of included articles

	Authors	Articles included to our study	Method	Year	Country
1	Akbal E. Y., Akinci F., Yildirim K. A. And Wagner J.	Collaboration among Physicians and Nurses in Intensive Care Units: A Qualitative Study	Qualitative	2017	Turkey
2	Alexanian J. A., Kitto S., Rak K. J. and Reeves S.	Beyond the Team: Understanding Interprofessional Work in Two North American ICUs*	Qualitative	2015	US
3	Ballangrud R., Hall-Lord M. L., Persenius M. And Hedelin B.	Intensive care nurses' perceptions of simulation-based team training for building patient safety in intensive care: A descriptive qualitative study	Qualitative	2014	Norway
4	Boev C., Tydings D. And Critchlow C.	A qualitative exploration of nurse-physician collaboration in intensive care units	Qualitative	2022	US
5	Boltey E., Iwashyna T., Cohn A. and Costa D.	Identifying the unique behaviors embedded in the process of interprofessional collaboration in the ICU	Qualitative	2023	US
6	Hasanabadi M., Taebi M. And Masoudi Al N.	The Nurses' Perspectives About Barriers of Nurse-Physician Collaboration in Intensive Care Units: A Q-Methodology Study	Cross-sectional	2023	Iran
7	Kendall-Gallagher D., Reeves S., Alexanian J. A. And Kitto S.	A nursing perspective of interprofessional work in critical care: Findings from a secondary analysis	Qualitative	2017	US and Canada
8	Kruser J. M., Solomon D., Moy J. X., Holl J. L., Viglianti E. M., Detsky M. E. And Wiegmann D. A.	Impact of Interprofessional Teamwork on Aligning Intensive Care Unit Care with Patient Goals: A Qualitative Study of Transactive Memory Systems	Qualitative	2023	US
9	Matusov Y., Matthews A., Rue	Perception of interdisciplinary collaboration between ICU nurses and	Cross-sectional	2022	US

	M., Sheffield L. And Pedraza I. F.	resident physicians during the COVID-19 pandemic			
10	Meurling L., Hedman L., Sandahl C., Felländer-Tsai L. And Wallin C.	Systematic simulation-based team training in a Swedish intensive care unit: a diverse response among critical care professions	Mixed-methods	2013	Sweden
11	Wising J., Ström M., Hallgren J. And Rambaree K.	Certified Registered Nurse Anaesthetists' and Critical Care Registered Nurses' perception of knowledge/power in teamwork with Anaesthesiologists in Sweden: a mixed-method study	Mixed-methods	2024	Sweden

Within the framework of our research question, "What factors shape interprofessional collaboration dynamics within the ICU environment?" the inclusion of a visual representation illustrating the geographic distribution of the included articles is significant (See Figure 5). Mapping out the geographic locations of the studies incorporated in our research provides valuable insights into the global landscape of interprofessional collaboration within ICU settings. This depiction underscores the diversity of countries covered in the study, offering a broader perspective on the various factors influencing collaboration dynamics across different cultural and geographical contexts. Understanding the geographic distribution of included articles enables us to contextualise our findings within diverse healthcare systems, facilitating the identification of commonalities, differences, and regional variations in interprofessional collaboration dynamics (Irajpour & Alavi, 2015; WHO, 2010). The visual representation of Figure 2 enhances the comprehensiveness and applicability of our research findings, reinforcing the relevance of our study within the broader context of ICU interprofessional collaboration.

Figure 2: Geographic distribution of included articles

3.4 Quality Assessment

As we explored the articles collected for our study, we aimed to evaluate their quality based on study design, bias, and overall rigour (Plüddemann et al., 2018). Both authors meticulously assessed the studies using the 2018 version of the MMAT (Mixed Methods Appraisal Tool), which facilitates the evaluation of methodological quality across various study methodologies (Hong et al., 2018). Specifically, for qualitative and mixed-methods studies, we employed the MMAT. For our cross-sectional studies, we employed the JBI Critical Appraisal Checklist (JBI, 2020). Our assessment is illustrated in Table 5 and the corresponding questions detailed below.

Table 5: Quality assessment

Author/Year/Method	Clear research question?	Suitable data collection?	Question	Question	Question	Question	Question
(Akbal Ergun et al., 2017) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Alexanian et al., 2015) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Ballangrud et al., 2014) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Boev et al., 2022) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Boltey et al., 2023) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Kendall-Gallagher et al., 2017) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Kruser et al., 2023) Qualitative	✓	✓	1.1✓	1.2✓	1.3✓	1.4✓	1.5✓
(Wising et al., 2024) Mixed-methods	✓	✓	5.1✓	5.2✓	5.3✓	5.4✓	5.5✓
(Hasanabadi et al., 2023) Cross-sectional	1✓	2✓	3✓	4✓ 5✓	6✓	7✓	8✓
(Matusov et al., 2022) Cross-sectional	1✓	2✓	3✓	4✓ 5✓	6✓	7✓	8✓
(Meurling et al., 2013) Mixed-methods	1✓	2✓	3✓	4✓ 5✓	6✓	7✓	8✓

Abbreviations: Yes: ✓ Unclear: - No: ✕

Mixed Methods Appraisal Tool (MMAT), version 2018 1. Qualitative: 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? 1.3. Are the findings adequately derived from the data? 1.4. Is the interpretation of results sufficiently substantiated by data? 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? 5. Mixed methods: 5.1. Is there an adequate rationale for using a mixed methods design to address the research question? 5.2. Are the different components of the study effectively integrated to answer the research question? 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? Joanna Briggs Institute Critical Appraisal Cross-Sectional Studies, 2020.1. Were the criteria for inclusion in the sample clearly defined? 2. Were the study subjects and the setting described in detail? 3. Was the exposure measured in a valid and reliable way? 4. Were objective, standard criteria used for measurement of the condition? 5. Were confounding factors identified? 6. Were strategies to deal with confounding factors stated? 7. Were the outcomes measured in a valid and reliable way? 8. Was appropriate statistical analysis used?

Ensuring minimal bias was central to us; therefore, we followed the additional steps outlined by Plüdderman et al. (2018), where both researchers used detailed appraisal tools. We placed great importance on ethical considerations within the articles. Initially, some studies lacked these considerations, prompting us to consider excluding them. However, after consulting with our supervisors, we decided to include them again because they provided valuable insight relevant to our research question. It is worth noting, however, that this absence of ethical considerations is considered a weakness in some of the studies.

3.5 Six Phases of Thematic Analysis

In this study, Braun and Clarke's six phases of thematic analysis were employed as a standardised method for analysing the data (Braun & Clarke, 2006). The process began with (1) familiarising oneself with the data, followed by (2) generating initial codes to identify key concepts and patterns. Subsequently, (3) themes were identified through a systematic search within the data, and these (4) themes were thoroughly reviewed to ensure accuracy and coherence. Once the themes were established, they were (5) defined and named to encapsulate their essence effectively. Finally, the (6) findings were synthesised and reported comprehensively, following the structured approach outlined by Braun and Clark's thematic analysis framework (Braun & Clarke, 2006). These phases were carried out with a specific focus on addressing the research question: "What factors influence the dynamics of interprofessional collaboration within the ICU environment?".

3.5.1 Phase 1: Familiarisation with the Data

Following Braun & Clarke's (2006) phase 1, we began by familiarising ourselves with our data. This step is crucial as it lays the groundwork for the subsequent analysis, informing how the data will be organised and interpreted. Once we sorted our articles, we aimed to grasp their essence. Both authors reviewed all the articles independently, giving them a thorough read multiple times. We aimed to truly understand the material, discerning differences, and emerging themes (Braun & Clarke, 2006). We then set the layout for the matrix (See Table 7) to encapsulate the codes explored in the literature. This matrix originally covered various aspects, such as the literature overview, perspectives on interprofessional collaboration amongst nurses and physicians, and the factors influencing collaborative dynamics. As we delved deeper into the articles, the matrix grew to accommodate new insights but was also adjusted to new codes as they emerged from reviewing the literature.

Both authors reached a consensus on the selection process and the evolving matrix, ensuring a unified approach to the data. This teamwork did not just make our analysis stronger; it also led to valuable discussions, enhancing our interpretation of the data. In essence, this familiarisation phase laid the foundation for our research, paving the way for further analysis. By immersing ourselves in the data and documenting our insights, we prepared ourselves for the formal, thematic coding and categorisation phase, wherein our thorough understanding would shape the development of thematic interpretations (Braun & Clarke, 2006).

3.5.2 Phase 2: Generating Initial Codes

Braun & Clarke (2006) phase 2 involves generating initial codes from the data, building on our prior familiarity and initial ideas. After familiarising ourselves with the data, we began generating initial codes. These initial codes are fundamental in identifying features within the data in terms of semantic content. The codes serve as the most basic units of analysis, representing distinct segments of the raw data that hold significance for the phenomenon under investigation (Braun & Clarke, 2006). Our approach to coding was informed by the nature of our research questions and the data from articles at hand, including codes such as 'Personal Relations', 'Culture', 'Trust', 'Patriarchy', 'Profession Hierarchy', 'Communication Strategies', 'Team Building/Strengthening Education', 'Role Clarity', 'Leadership/Management Practices', 'Team Turnover', 'Job Satisfaction', 'Nurses perceptions of interprofessional collaboration' and 'Physicians perceptions of interprofessional collaboration'. Our goal was to identify interesting aspects within the results of the articles that could potentially form the basis of recurring patterns or themes across the dataset. We manually coded extracts of data in the matrix (See Table 7), retaining relevant contextual information to prevent the loss of meaning. We recognised that individual data extracts fit into multiple codes; thus, they were placed into relevant areas. Results that fell into multiple codes were identified as areas requiring careful consideration, acknowledging their relevance to several factors simultaneously (Braun & Clarke, 2006).

3.5.3 Phase 3, 4 & 5: Searching, Reviewing, and Defining Themes

Phase 3 involves sorting initial codes into potential themes, forming the basis for broader analysis. We systematically organised codes into themes, considering relationships between codes and themes, and used a thematic map as a visual aid (See Appendix 1). By the end, we had a collection of candidate sub-themes with coded data extracts, paving the way for deeper analysis in the next phase. When reviewing the initial codes, we referred to the research question to ensure that our codes accurately reflected the scope, enabling us to provide a comprehensive answer. Consequently, we excluded the code 'Physicians' perceptions of interprofessional collaboration' as we found that it was adequately addressed within other codes and did not directly align with our research question. We merged certain codes during this phase to create more common and relevant sub-themes. For instance, 'Patriarchy', 'Professional hierarchy', and 'Culture' were combined, as shown in Appendix 1. This consolidation led to the

emergence of the ‘Fostering equality and mutual understanding within the ICU team’ sub-theme.

In Phase 4, we refine candidate sub-themes to ensure they align closely with the data. Authors review and adjust themes based on how accurately they represent the coded data extracts. The goal is to achieve consistency within themes while maintaining clear distinctions, resulting in a clear thematic map (Braun & Clarke, 2006). Referring back to our research question, "What factors shape interprofessional collaboration dynamics within the ICU environment?" the final sub-themes included were 'Fostering equality and mutual understanding within the ICU team', 'Recognising colleagues as multifaceted human beings', 'Uncertainty regarding which orders to follow in an interprofessional team', 'Nurses feel underestimated in their role', 'Team building to strengthen mutual trust', 'ICU administration acknowledging the importance of relationship-building', and 'Disrupt team cohesion between nurses and physicians' (See Table 7). These sub-themes directly contribute to addressing our research question by shedding light on the various factors influencing interprofessional collaboration dynamics within the ICU environment.

Phase 5 involves defining and naming themes and refining their essence to represent the data accurately. We coded data extracts within each theme, crafting concise and descriptive names that fully capture the theme's content for the final analysis. During this phase, sub-themes are combined to form cohesive overarching themes. For instance, 'Fostering equality and mutual understanding within the ICU team' and 'Recognising colleagues as multifaceted human beings' were combined to create the theme of 'A culture of mutual respect in the ICU'. This process resulted in identifying three main themes: 'A culture of mutual respect in the ICU', 'To acknowledge each other’s competence', and 'To acknowledge the interprofessional team dynamics in the ICU'.

3.5.4 Phase 6: Producing the Report

Following the thematic analysis, the subsequent phase involved synthesising the identified themes and subthemes to construct the results section. This commenced with a thorough review and finalisation of the themes and subthemes extracted from the analysis matrix (See Table 7) with the guidance of our supervisors. Each theme underwent refinement and clarification to precisely encapsulate the essence of the data, aligning with our research question (Braun & Clarke, 2006). With the themes solidified, the focus shifted towards structuring the results section of the thesis. The objective was to present the thematic findings in a lucid, coherent

manner that addressed each aspect of our research question comprehensively. This entailed organising the findings according to the identified themes and subthemes, ensuring a logical flow and coherence throughout the section (See Table 6) (Braun & Clarke, 2006).

In crafting the results section, significant emphasis was placed on exploring each theme and subtheme in-depth. Supporting evidence from the data, including relevant quotes and examples, was seamlessly integrated to substantiate the findings and offer context for interpretation. An example of this extraction is seen in Table 6, which outlines the phases and thematic analysis process. With guidance from our supervisors, the results section underwent revision and refinement to guarantee accuracy, completeness, and alignment with the research aim. Ultimately, the results section serves as a robust and insightful narrative contributing to the existing literature on interprofessional collaboration within the ICU setting, as outlined by Braun & Clarke (2006).

Table 6: An extract example of thematic analysis, following the Braun & Clarke (2006) six phases of analysis with theme identification.

Generating initial codes to identify key concepts and patterns (Phase 2)	Searching for themes (Phase 3)	Reviewing themes (Phase 4)	Defining and naming (sub)themes (Phase 5)	Defining and naming themes (Phase 5)
"Every physician spent a good deal of time highlighting the **importance of relationships** and investing time getting to know the nurses."	Personal relations,	Interpersonal relationships	Recognising colleagues as multifaceted human beings	A culture of mutual respect in the ICU
"…level of **trust** and respect provided the foundation for positive interprofessional interactions."	Trust between nurses and physicians,			
"Nurses described numerous scenarios where **communication** breakdown was the root cause of ineffective nurse-physician collaboration."	Communication between nurses and physicians			

Table 7: Matrix

Literature overview				**A culture of mutual respect in the ICU**		**To acknowledge each other's competence**			**To acknowledge the interprofessional team dynamics in the ICU**	
Author/ year/ location	Study design/ Methods	Aim/ Purpose	Setting/ Sample	Fostering equality and mutual understanding within the ICU team	Recognising colleagues as multifaceted human beings	Uncertainty regarding which orders to follow in an interprofessional team	Nurses feel underestimated in their role	Team building to strengthen mutual trust	ICU administration acknowledging the importance of relationship-building	Disrupt team cohesion between nurses and physicians
(Akbal Ergun et al., 2017) Turkey	Qualitative	To determine the factors influencing the collaborative experiences of nurses and physicians at intensive care units (ICUs).	Physicians (n=18), Nurses (n=18), Total 36 participants. Istanbul University has two affiliated hospitals with five ICUs. Marmara University has one affiliated hospital	"Because of the patriarchal structure of society, women tend to obey men." "Even though I notice a patient problem, I do not have the right to declare my opinions." "Nurses' manners are very important in the collaboration process."	"...the physician does not know our name and only gives orders calling us 'sister.' Even though we know their names..." "...nurses build a relationship of mutual respect the longer they work together..."	x	"They think of themselves as the physicians' servants"	x	x	x

			with four ICUs		"But nurses' body language is more important to us."					
(Alexanian et al., 2015) USA	Qualitative	Exploring how healthcare professionals collaborate within the ICU environment, considering the contextual, organizational, procedural, and interpersonal elements influencing their interprofessional teamwork.	Site 1 (Staff intensivists (n=3), Medical trainees (n=6), Nurses (n=5), Other health professionals (=7) Site 2 (Staff intensivists (n=2), Medical trainees (n=2), Nurses (n=5), Other health professionals (=6)	"...analogies such as "a family," "a 20 well-oiled machine," or "a ship" with the lead physician as the captain..." "...being left out or not heard by other professionals..." "...I did put them at the top of the circle. But I wouldn't put them on the top of a pyramid..." "...hierarchy is complicated by the merging of care under two teams or specialties..."	"... those that avoid being part of the team." "...and sometimes they forget or they just go ahead and do something that we assume they know isn't proper protocol and we were trying to prevent that from happening..." "...with a preference for face-to-face communication."	"...when there is good collaboration from that perspective, good leadership, good team members, the messages goes in the right direction and being understood by all the team." "...I don't know whose orders to follow."	x	"...clinicians who are "not team players." This marks the boundaries of the ideal expressions of an all-inclusive team..." "There are people that are willing to be part of the team, and those that avoid being part of the team."	x	x
(Ballangrud et al., 2014) Norway	Qualitative.	To describe intensive care nurses' perceptions of simulation-based team	The data collection took place from May to December	x	"...the advantage of SBTT was that it provided a safe arena	"I think that training is important, because if no one assumes	"The different roles in the scenario reflected the division of	"...We are practising on living people, and some of them die because we are	x	"...an awareness of the team's performance will be increased,

		training for building patient safety in the ICU.	2009. The individual interviews were conducted by the first author three-four weeks after the RNs had completed the SBTT programme, and took place accordingly. The interview took the form of a dialogue in which follow-up questions were used, lasted from 26 to 47 minutes (mean = 39 minutes).		for training that facilitated learning...” “...could make intensive care nurses more prepared and confident to handle different emergency situations.” “Both verbal- and non-verbal communication were perceived by the participants as being most important to teamwork in the ICU...” “Inadequate communication was perceived as causing a lowering in team performance.” “...It is actually not so easy to	leadership in a situation [. . .] it gets very disorganised.”	responsibility in their daily work.” “...creating an awareness of the importance of clarifying roles and responsibility within a team. The nurses expressed that they had limited knowledge of structured teamwork prior to the SBTT...” “...and then you think that someone did something that he/she actually did not do after all.”	not prepared well enough. So it is absolutely crucial” “...was thought to provide an even greater degree of realism and transferability.” “...saw things from a different angle and had a different focus...”		thereby strengthening the team's preparedness.”

					correct [people], or somehow give them feedback..."					
(Boev et al., 2022) USA	Qualitative	How nurses and physicians in critical care describe nurse-physician collaboration. Exploring factors that contribute to nurse-physician collaboration in critical care.	ICU nurses (RN) (n=6), ICU Intensivists, Medical doctors (MD) (n=4). Total 4 hospitals.	"You should be like that to anybody that's above you, below you, equal to you..." "...small gestures that value the expertise of the bedside nurse go a long way to improving the work environment." "...I don't feel nurses have a voice in guiding, in sharing the plan of care. It's very patriarchal." "...there was this clear divide between physicians and the rest of the world has clearly passed. It's good that it's past because it was always wrong."	"They discussed the need to recognise each other as multifaceted human beings that need to be understood beyond simply their role as "nurse" or "doctor"." "[I]t is a process where just being able to build the trust.....I think building those relationships and mending those relationships that are sometimes broken is very important." "...having	x	"...all members of the team clearly understanding their role and working together with a shared outcome in mind. Nurses and physicians cannot exist in silos."	"I think educating people about communication that has the highest chance of yielding a positive." "Everybody is a part of our team, from the cleaning person to the cardiac surgeon..." "...collaboration and communication were optimised with resulting favourable outcomes."	"...there was also consensus that it is not a priority for hospital administration." "It is clear that hospital administrators need to create opportunities to allow nurses and physicians the chance to build stronger relationships."	"I think everything is communication so anything that lacks communication to the bedside nurse I think can result invariably to increase stress of the job and dissatisfaction." "...collaboration was linked to job satisfaction for both nurses and physicians."

					that communication and that clear 'this is how we're going to handle this situation' made it go that much smoother."					
(Boltey et al., 2023) USA	Qualitative	To develop a data-driven enumeration of distinct behaviours that demonstrate engagement in the interprofessional collaboration in the intensive care unit	Two medical ICUs (MICUS) in two separate hospitals in Southeastern Michigan – the first a 20-bed MICU in a large urban academic hospital and the second a 20-bed MICU in a community hospital.	"We found clinicians engaged in socializing relatively frequently, observing this behaviour in both ICUs in multiple shadowing and observations." "...we saw a physician ask his nursing colleague to provide information..."	"...observed engaging in nonwork related discussions and joking with one another." "...I trust them 100%..." "If clinicans anticipated a need from their colleagues, they enabled an encounter by conveying their accessibility. This was demonstrated by 1) verbal accessibility - explicitly	x	"...In this scenario, the RN is acutely aware of a gap in knowledge from her interprofessional cauleague and supplements the information-delivery."	"...By validating the nurse's input, the Resident physician is establishing a reciprocal relationship..." "...open-ended asks for participation, at times, clinicians intentionally asked their colleagues to explain their rationale behind a decision." "...The RN uses active listening to expand his own clinical knowledge and understanding..." "...the Attending physician teaching a nurse	x	x

					stating they were avaliable and 2) nonverbal accesability - purposefully standing...”			colleague about a physiological response to a ventilator setting.”		
(Hasanabadi et al., 2023) Iran	Cross-sectional	To determine the different viewpoints of nurses working in intensive care units about the barriers to nurse-physician collaboration in Kashan/Iran by 2020.	30 nurses and nursing faculty members work- ing or providing education in ICUs were invited to sort the statements. Single hospital with 4 ICUs.	“…income is considerably different…” “These differences lead to personal conflicts…” “…most doctors dislike collaborating with nurses.” “…nurses and physicians have different professional interests…”“…the hierarchical culture in hospitals that physicians are at the top of that hierarchy…”	“…both professions are not interested in collaboration and do not trust each other.” “…professions have mutual respect for each other … both believe that teamwork is important.”	x	“…physicians not pay adequate attention to the nurses’ …”“…physicians do not know the objectives of nursing.”	“…lack of collaborative culture in ICUs … and the physicians and nurses didn’t receive education for teamwork .”“Each profession does its tasks separately…” “…physicians stay in ICUs for a very short time, and they hardly see each other…”	“…physicians receive more support from the system…”	x
(Kendall-Gallagher et al., 2017) USA and Canada	Qualitative	ICU nurses’ perspective of factors that enhance or impede their interprofessional work.	15 anonymized transcribed interviews from the primary study, all	“…My team members will come in behind me and they'll be like, do this…““…doctors don't look down on the	“…we're always constantly talking.” “…listen to everything all the time ... you're	x	“…where we don't look to be acknowledged or recognized… but we look	“…When [intensivist] came, they did a lot of bedside teaching with the nurses…” “...there's no formal ongoing	“…manager doesn't work with us…works with management …” “…inbred	“…minus downfall is we are in an environment that is very critical. And to be so high stressed all

		Research questions: (1) Who do ICU nurses identify as being on their team? (2) What are ICU nurses' patterns of interprofes-sional work? and (3) What factors enhance or impede ICU nurses' interpro-fessional work?	participants ICU nurses. Gathered from 8 ICUs, 6 US and 2 Canadian.	nurses, the nurses don't look down on housekeeping…" "It is a coordinated effort…""…relational factors…such as level of nurse experience, professional power, and hierarchy, impacted quality and efficiency..."	kind of the one 24/7 with the patient...." "…willingness to help, level of trust and respect provided the foundation for positive interprofessional interactions."		to be respected…"	nurse educator..." "…rounds as an opportunity to engage in interprofessional dialogue…" "…when the intensivist…educate the residents…that is a huge place where I got a lot of my education…"	conflict between the staff nurse that is giving the care …and the manager who is trying to manage the budget…"	the time…" "Everything has to be done so quickly now."
(Kruser et al., 2023)	Qualitative	Characterize how interprofessional collaboration takes place within ICU teams and to identify modifiable factors that influence its effectiveness.	10 focus group interviews and 8 semi structured interviews with a total of 70 participants. Nine different healthcare professions, surrogates of ICU patients and patient survivors.	"The attending doctor…his presence was never in the room… really." "…this coordination process is informal, it is strongly influenced by culture within the ICU team." "…ICU team members consider the professional role of the person offering	"Psychological safety… promotes … informal coordination within ICU teams. " "… some ICU team members have a reputation…"	"…dispersed knowledge was described as an untapped resource that is not always shared." "…rotation of ICU physicians was seen as especially disruptive, because of their specialized leadership	x	"Some physicians….actively seeking out knowledge… held by other members of the ICU team." "ICU physician…teaching new interns the importance of seeking out…knowledge held by nurses…"	x	"…rotation of ICU physicians was seen as especially disruptive, because of their specialized leadership role in guiding the care plan." "… participants … described choosing to withhold knowledge…

				knowledge, when determining its credibility…" "Participants described being "bound by their license" and underscored the importance of "staying in your lane…" "The ICU team came. They left. They said some teaching points and they're on their way."Psychological safety also helps teams overcome the constraints of hierarchy and role-related boundaries."		role in guiding the care plan." "When a new physician takes over…. change abruptly according to the physician's perspective …." "… stronger attending ….They set the tone of how this is going to go."				from other team members …""Perceptions of credibility influence informal coordination within the ICU team."
(Matusov et al., 2022) USA	Cross-sectional	To assess the extent to which the pandemic affected interpersonal relationships between ICU clinicians.	ICU nurses (n=14), Resident physicians (n=13). Single hospital.	"The team seems disjointed…" "Residents felt somewhat less autonomous than did nurses…"	"…we work even better as a team because we have been through so much together…" "Communication openness, accuracy, and	x	x	"…the strain of the volume on the residents…stressed and stretched thin…affected team morale…caused us to be less focused and organized.."	x	"The lowest score among both groups was noted to be in the area of team stability…" "…job satisfaction was fairly high among both nurses and resident

					satisfactorin ess, as well as collaboration , planning, and plan execution, was rated by both resident physicians and nurses…"					physicians..." "…some residents aren't willing to come to bedside when nurses are asking them to evaluate the patient…" "…negative impact of the physical distance created by residents having to round and work at a separate open space outside of the ICU, rather than in the ICU among the nurses."
(Meurlin g et al., 2013) Sweden	Mixed-method	To investigate how simulation-based team training (SBTT) correlates with the self-efficacy, perceived quality of collaboration and	In total, 151 persons participate d in the study. Fifty-one phy-sicians, 75 nurses and 25 nurse assistants aged	x	x	x	x	"The experienced quality of collaboration and communication with professionals increased after SBTT."	x	"Nurses … were on sick leave 6–9% of the working time each year during the fiscal years 2006–10." "Between 14% and 24% of the nurses in the intervention

		communication, perceptions of teamwork and safety, and staff turnover across various professions.	between 20 and 62 years participated. The SBTT was carried out in a general ICU, at Karolinska University Hospital, Huddinge.							ICU left their jobs each year during the fiscal years 2006–10."
(Wising et al., 2024) Sweden	Mixed-method	To explore Critical Care Registered Nurses / Certified Registered Nurse Anaesthetists perception of knowledge/power in teamwork with Anaesthesiologists in Sweden by answering the following research questions: (1) 'how does power affect the CCRN/CRN	Participants were recruited through email to 21 hospitals across Sweden's regions with an online questionnaire link and sampling via social media. Data collection occurred over three weeks in October 2021, resulting in	"… nursing was less prioritised in favour of medicine…" "…knowledge of each other's different professions is important to highlight…" "How do we complement each other in a team, instead of the struggle of power that sometimes takes place…" "CCRN/CRNAs to … perceived that the ANES lacked knowledge about the	x	x	"…participants mentioned feeling their medical knowledge being underestimated by the ANES." "…an ANES said that "you are only a nurse"." "…the ANES to gain an increased understanding of nursing."	"…better cooperation with the ANES were significantly associated with the perception of existing teamwork…" "…participants wished for more shared activities…" "…medical lectures and medical training were mentioned." "…the CRNA/CCRNs should give lectures on nursing to the ANES."	"…effectiveness of leadership and management practices within the healthcare organization shapes the working environment and team dynamics."	"…turnover rates among healthcare professionals can disrupt team cohesion…"" The participants' age also showed significant correlations with how much decision right the ANES gave the CRNA/CCRNs…"

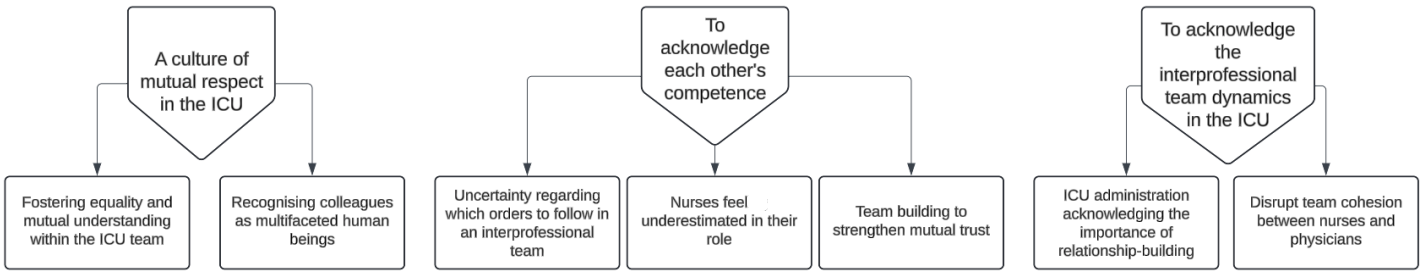
		A perception teamwork with the ANES?' and (2) 'how does knowledge affect CCRN/CRN A perception of teamwork with the ANES?' Provide a comprehensive understanding of the dynamics at play in nurse-physician collaboration	289 completed questionnaires, including 343 open responses considered as qualitative data. The distribution between CRNA and CCRN were fairly even.	CCRN/CRNAs profession… feeling their medical knowledge being underestimated …" "…the participants perceived the ANES as seeking control, displaying hierarchical power…" "…the female participants perceived that their male colleges were given more decision-rights…"				"…physicians should participate more in the department's work		

3.6 Ethical Consideration

In addressing ethical considerations, we uphold research ethical standards as Norwegian law dictates. 'The Health Research Act' governs medical and health research in Norway, according to section 5, mandating that such research must encompass ethical, health-related, scientific, and privacy considerations (Helseforskningsloven, 2009). With the guidance of two university supervisors serving as primary and secondary supervisors, the authors maintain transparency throughout the thesis. This transparency ensures the traceability of results and fosters accountability within our research process.

4.0 Results

In this section, we present the results of our article analysis, aligned with the aim of this master thesis: to explore the perceptions of interprofessional collaboration between nurses and physicians in ICUs. Following Braun and Clark's thematic analysis framework, we have identified key "themes" to organise our findings (Braun & Clarke, 2006). These themes offer a structured approach to understanding the factors that facilitate or hinder collaboration among healthcare professionals in ICU settings. Specifically, three themes have emerged: (1) A culture of mutual respect in the ICU; (2) To acknowledge each other's competence; (3) To acknowledge interprofessional team dynamics in the ICU. Within these themes, we have uncovered several subthemes, providing a comprehensive view of the dynamics of interprofessional teamwork.



4.1 A Culture of Mutual Respect in the ICU

This section covers the culture of mutual respect within the ICU, incorporating two subthemes: fostering equality and mutual understanding within the ICU team and recognising colleagues as multifaceted human beings.

4.1.1 Fostering equality and mutual understanding within the ICU team

In several articles, physicians described respect as essential for fostering equality and mutual understanding within the team, recognising the contributions of all members (Alexanian et al., 2015; Boev et al., 2022). Conversely, nurses shared instances of feeling undervalued and disrespected, citing experiences of disrespect as areas for improvement within their units (Boev et al., 2022; Kruser et al., 2023; Wising et al., 2024). Nurses expressed appreciation for physicians who actively seek their input and opinions, recognising the positive impact on team morale and confidence (Boev et al., 2022). Residents, however, perceived themselves as somewhat less autonomous compared to nurses, reflecting the hierarchical structure within the medical profession (Matusov et al., 2022).

Within the cultural environment of the ICU, the dynamics of professional hierarchy intertwine with cultural norms and practices, shaping team interactions and patient care outcomes. While physicians underscored the importance of relationships, nurses highlighted the significance of respect, particularly in how team members are treated (Boev et al., 2022). “You should be like that to anybody that’s above you, below you, equal to you. That level of respect, you gotta have that.” (Boev et al., 2022).

Nurses express a strong desire for mutual respect and recognition of their expertise, emphasising the importance of valuing contributions regardless of hierarchical position (Boev et al., 2022). Conversely, instances of disjointedness and reluctance to collaborate among healthcare professionals, particularly physicians and residents, hinder effective teamwork. The nurses highlighted, "The team seems disjointed... some residents aren’t willing to come to bedside when nurses are asking them to evaluate the patient." (Matusov et al., 2022). However, clinicians often perceive the ICU team as a unified team with a familial resemblance, highlighting the importance of interpersonal relationships in fostering a supportive work environment (Alexanian et al., 2015).

> *"Whether in informal interviews with clinicians, observations of conversations between healthcare providers, or in descriptions of how the ICU functions by clinicians, the notion of a team was articulated regularly... Analogies such as 'a family,' 'a well-oiled machine,' or 'a ship' with the lead physician as the captain, were often used to describe a team of equals."* (Alexanian et al., 2015)

Disparities in income and social status between healthcare professionals contribute to personal conflicts. At the same time, differences in patient care priorities between nurses and physicians underscore the need for improved role clarity and collaboration strategies (Hasanabadi et al., 2023). These disparities often lead to personal conflicts between different professional groups within the healthcare system. Additionally, these cultural factors contribute to a widespread reluctance among doctors to engage in collaborative efforts with nurses (Hasanabadi et al., 2023).

This hierarchical culture within hospitals, where physicians are often perceived at the top of the hierarchy, can sometimes complicate decision-making processes and interprofessional collaboration (Alexanian et al., 2015; Hasanabadi et al., 2023). The perceptions of nurses and physicians regarding the hierarchical structure and division of responsibilities underscore the need for enhanced communication and collaboration strategies within the ICU team (Wising et al., 2024).

> *"Nurses C and F said, 'The physician is not serious about there being a professional situation in the ICU. We who know each other seem to collaborate well, but the physician does not know our name and only gives orders calling us 'sister.' Even though we know their names, we call them 'sir.'"* (Akbal Ergun et al., 2017)

Various health professionals, including nurses, dietitians, and pharmacists, echoed frustrations about being left out or not heard by other professionals, particularly physicians, highlighting the challenges posed by profession-based power dynamics (Alexanian et al., 2015). Additionally, the boundaries imposed by professional licenses and scopes of practice constrain interactions between professions, influencing how team members relate to one another and contribute to patient care (Kruser et al., 2023). The perceptions of nurses and physicians regarding the hierarchical structure and division of responsibilities underscore the need for enhanced communication and collaboration strategies within the ICU team (Wising et al., 2024). Clinicians' observations and reflections further illustrate the importance of mutual

respect and recognition of expertise in fostering a collaborative healthcare environment (Boltey et al., 2023; Akbal Ergun et al., 2017). Patriarchal structures within the ICU were identified as barriers to inclusive decision-making processes, with nurses often feeling marginalised and excluded from shaping the care plan (Boltey et al., 2023). This sentiment reflects broader societal norms, as female participants perceived their male colleagues as being granted more decision-making rights by authority figures (Wising et al., 2024).

> *"Because of the patriarchal structure of society, women tend to obey men. This is wrong socialization! However, conflicts can also be seen within the same gender in professional life."* (Akbal Ergun et al., 2017)

The patriarchal structure of society was cited as contributing to obedience to male authority figures and conflicts within professional settings, highlighting the need for cultural shifts towards gender equality (Akbal Ergun et al., 2017).

4.1.2 Recognising colleagues as multifaceted human beings

A recurring theme highlighted in numerous studies is the significance of personal relationships (Akbal Ergun et al., 2017; Boev et al., 2022; Matusov et al., 2022). Acknowledging each other as multifaceted individuals necessitates understanding their colleagues beyond their mere titles as nurses or physicians (Boev et al., 2022).This aspect emerges as one of the fundamental factors essential for fostering effective interprofessional collaboration. Investing in these relationships cultivates mutual understanding, trust, and effective communication, thereby enhancing collaborative efforts among team members, especially when they share a personal connection.

> *"Every physician spent a good deal of time highlighting the importance of relationships and investing time getting to know the nurses. They discussed the need to recognise each other as multifaceted human beings that need to be understood beyond simply their role as "nurse" or "doctor". They commented on the importance of relationships and getting to know people on a more personal level and how building relationships will enhance teamwork and communication."* (Boev et al., 2022)

The duration of working together and nurturing relationships contributed to increased respect and effective communication between the professionals working in the ICU (Akbal Ergun et

al., 2017; Boev et al., 2022; Matusov et al., 2022). Becoming acquainted with each other's knowledge and capabilities elevated collaboration levels, proving mutually beneficial for nurses and physicians alike (Akbal Ergun et al., 2017; Boev et al., 2022; Boltey et al., 2023; Kendall-Gallagher et al., 2017). A nurse in the study from Matusov et al. (2022) said, "I think we work even better as a team because we have been through so much together."

In addition to the advantages of effective collaboration, fostering positive relationships with colleagues contributes to a favourable work environment (Akbal Ergun et al., 2017; Boltey et al., 2023). One study identified the existence of varied personalities and character types, while another noted colleagues participating in informal conversations and humour, classified as socialising, alongside clinical interactions (Akbal Ergun et al., 2017; Boltey et al., 2023).

Although the studies highlighted the importance of personal relationships within the team, they also found that nurses did not prioritise these relationships to the same extent as physicians (Boev et al., 2022). According to Hasanabadi et al. (2023), nurses perceive that factors such as self-esteem, personal conflicts between nurses and physicians, or differing religious beliefs do not pose significant barriers to collaboration between nurses and physicians. Instead, nurses primarily focused on tolerating interactions with physicians, while some individuals chose to avoid actively engaging in being a part of the team (Alexanian et al., 2015; Boev et al., 2022).

The connection between cultivating relationships and fostering trust was echoed consistently, with one participant expressing, "It is a process where just being able to build the trust.....I think building those relationships and mending those relationships that are sometimes broken is very important. I think we under-emphasise that" (Boev et al., 2022). Positive interprofessional collaboration was found to be established upon levels of trust, communication and respect (Boev et al., 2022; Boltey et al., 2023; Kendall-Gallagher et al., 2017). This sentiment was believed to apply universally across various interactions, whether between two nurses, a nurse and a physician, a nurse and management, or a nurse and family members (Kendall-Gallagher et al., 2017). Participants noted that SBTT provides a safe environment for learning and highlighted that this form of training could enhance trust among nurses (Ballangrud et al., 2014).

Despite numerous studies emphasising trust as essential for fostering effective collaboration, one study also noted instances where trust was lacking (Hasanabadi et al., 2023). According to

nurses' perceptions, there is a mutual lack of trust between nurses and physicians, and nurses generally exhibit reluctance to accept young and inexperienced physicians (Akbal Ergun et al., 2017; Hasanabadi et al., 2023). These perceptions of credibility and past experiences significantly influence team dynamics, leading nurses to withhold patient information from team members they deem inexperienced in interactions with patients and families and to refrain from consulting with physicians due to negative past experiences with their behaviour (Kruser et al., 2023; Wising et al., 2024).

Inadequate communication emerged as a barrier to collaboration, as nurses recounted various instances where ineffective nurse-physician collaboration stemmed from communication challenges (Alexanian et al., 2015; Ballangrud et al., 2014; Boev et al., 2022; Wising et al., 2024). Examples encompass clashes of personalities, different methods of contacting providers, inadequate time and the absence of interprofessional communication strategies (Boev et al., 2022; Hasanabadi et al., 2023).

> *"Having knowledge of structured and clear communication with regard to leadership was emphasised by the participants, in addition to having a follower in a team requiring training to communicate observations in a satisfactory manner. They emphasised the importance of open communication across the team. Nonetheless, the participants described some reservations about open communication when physicians were part of the team. This was found to be a typical phenomenon, which again supports the need for interdisciplinary team training."* (Ballangrud et al., 2014)

Several studies highlight the effectiveness of communication within their ICUs, exemplified by strong rapport, active listening, asking questions, verbal accessibility, nonverbal behaviour, continuous feedback, validating, reassessment, troubleshooting and negotiating for problem-solving (Boev et al., 2022; Boltey et al., 2023; Kendall-Gallagher et al., 2017; Kruser et al., 2023; Matusov et al., 2022) One noteworthy finding from Alexanian et al.'s (2015) study highlights the utilisation of consultations and information exchange when professionals are physically present, particularly favouring face-to-face communication. Furthermore, in another study, a physician acknowledged the importance of nurses' insights, stating, "...Nurses are with the patients for a longer time than us in the ICU. So if a nurse explains something reasonable to us, we accept it..." (Akbal Ergun et al., 2017). In three distinct studies, three separate nurses underscored the significance of communication during emergent situations, highlighting how

effective communication fosters teamwork and ultimately improves patient outcomes (Ballangrud et al., 2014; Boev et al., 2022; Kendall-Gallagher et al., 2017).

4.2 To Acknowledge Each Other's Competence

This section delves into the dynamics of interprofessional teamwork. It encompasses three subthemes: uncertainty regarding which orders to follow in an interprofessional team, nurses feel underestimated in their role, and team building to strengthen mutual trust.

4.2.1 Uncertainty regarding which orders to follow in an interprofessional team

The uncertainty surrounding which orders to follow within an interprofessional team Alexanian et al., (2015) and Kruser et al., (2023) presents a critical challenge in ICU dynamics. The constant rotation of team members can yield both positive and negative effects on team functionality. Notably, Kruser et al. (2023) highlight the disruptive nature of ICU physician rotations, given their specialised leadership role in care planning. Nurses emphasise the importance of a strong attending physician who sets the tone for patient care. However, when decision-making involves too many individuals, it can exacerbate uncertainty, further impacting patient care (Alexanian et al., 2015; Kruser et al., 2023).

One of the studies about simulation highlights the importance of training, as it emphasises that without someone assuming a leadership role in a situation, it becomes disorganised (Ballangrud et al., 2014). Therefore, it is beneficial for the team to engage in simulations of various scenarios to bolster teamwork under leadership (Ballangrud et al., 2014). One participant expressed, "I think that the more simulations one experiences, the better one can get" (Ballangrud et al., 2014).

Effective leadership within interprofessional teams is paramount, particularly during emergent situations, where the presence of a clear leader is indispensable (Alexanian et al., 2015). This sentiment is articulated by a fellow in the following segment:

> *"I really like to talk about when we have a crisis, and resuscitation, or, patient loses airway, and when there is good collaboration from that perspective, good leadership, good team members, the messages goes in the right direction and being understood by all the team. I think that's the most important, when you achieve your goal with all team,*

> *I think that's a good day for me, from that perspective, when you have an emergency, especially in the ICU, just because it's a multi professional event."* (Alexanian et al., 2015)

Alexanian et al. (2015) emphasises that the cohesive functioning of the team is crucial for effective patient care. The ability of the leader to guide and coordinate the efforts of diverse team members can significantly impact the outcome of emergent situations. Clear communication, mutual understanding, and collaboration among team members are essential elements that contribute to the successful resolution of crises in the ICU setting (Alexanian et al., 2015).

4.2.2 Nurses feel underestimated in their role

Several studies highlight the importance of enhancing collaboration through a deeper understanding of each other's professions, knowledge and skills (Akbal Ergun et al., 2017; Ballangrud et al., 2014; Wising et al., 2024). Nurses reported feeling underestimated by physicians, compounded by a lack of understanding of physicians' trends and objectives, while physicians similarly lack insight into the objectives of nurses (Akbal Ergun et al., 2017; Hasanabadi et al., 2023). In the study conducted by Wising et al. (2024), participants expressed feeling that their medical knowledge was underestimated and undermined by physicians.

Establishing clear role definitions forms the basis for effective collaboration and optimal performance in the ICU (Boev et al., 2022). As articulated by participants in the research conducted by Boev et al. (2022), the importance of every team member understanding their role and working towards a shared objective cannot be overstated, underscoring the need for nurses and physicians to work in collaboration rather than independently.

A well-defined role provides nurses with autonomy and flexibility, as well as the ability to recognize each other's weaknesses, thus facilitating collaboration by addressing knowledge gaps and filling them accordingly (Ballangrud et al., 2014; Boltey et al., 2023; Kendall-Gallagher et al., 2017). When there is a clear structure within the team, especially with a strong leader who sets the tone clearly and efficiently, the team's performance improves, and responsibilities are better defined among its members (Ballangrud et al., 2014; Kruser et al., 2023).

In one of the studies focused on simulation-based training, numerous participants expressed that engaging in simulation exercises raised awareness regarding the significance of clarifying roles and responsibilities within the team (Ballangrud et al., 2014). Highlighting the importance of interprofessional team training, it becomes evident that there is a need to jointly clarify roles and responsibilities with physicians, although nurses and physicians do not have a tradition of training together as a team (Ballangrud et al., 2014). One participant expressed:

> *"Simulations create consciousness about the role oneself and other people play. Since I was observing, I could see how the others functioned, which I can learn from too. I can see how I should not do things, as well as how I should do them. Moreover, I see that some [people] are very fit to be leaders while others are not; some create chaos."* (Ballangrud et al., 2014)

4.2.3 Team building to strengthen mutual trust

Team building emerges as a central focus in the literature, facilitating the development of trust among various professions (Boev et al., 2022; Matusov et al., 2022). Effective interprofessional collaboration hinges on team building and educational initiatives, with an emphasis on the transformative potential of simulation and communication education (Ballangrud et al., 2014; Boev et al., 2022). In an article by Boev et al. (2022), both a nurse and a physicians mutually endorsed the importance of communication education, stating: "I think educating people about communication that has the highest chance of yielding a positive. Not everybody knows how to communicate..." Participants in Ballangrud et al. (2014) study highlighted the invaluable educational aspect of communication when engaging in simulations with colleagues, noting its role in fostering trust among team members.

Matusov et al. (2022) further support this notion, emphasising the indispensable nature of teamwork dynamics and cooperation. In discussions regarding team dynamics, participants consistently highlighted the significance of group cooperation. They stressed the critical role of teamwork and acknowledged the invaluable contributions of every team member (Boev et al., 2022). Participants from both studies acknowledged the necessity of transitioning towards a more collaborative model, noting the evolving perceptions of teamwork over time (Boev et al.,

2022; Matusov et al., 2022). A direct correlation between collaboration and improved patient outcomes emerged as a recurring theme in the literature (Boev et al., 2022).

> *"It's very important and crucial to the patient and their outcome to have the physician and the nurse collaborating several times throughout the day..... because it's crucial to the patients and their families and the outcomes that we see in our patients"* (Boev et al., 2022).

Specific instances showcased how effective collaboration and communication led to favourable patient outcomes, underlining the vital role of interprofessional teamwork (Boev et al., 2022; Matusov et al., 2022). However, fostering a collaborative culture remains challenging, as Hasanabadi et al. (2023) illuminated. Their findings highlighted a lack of mutual trust and a shortage of shared educational activities between physicians and nurses, exacerbating existing barriers to collaboration: "Each profession does its tasks separately, so nurse-physician collaboration does not happen adequately" (Hasanabadi et al., 2023).

Kendall-Gallagher et al. (2017) identified a decline in formal education and mentorship programs, which have traditionally nurtured interprofessional collaboration. Despite these obstacles, enabling behaviours such as active listening, reflexive questioning, providing help, and education served as catalysts for enhanced collaboration among healthcare professionals (Boltey et al., 2023).

4.3 To Acknowledge the Interprofessional Team Dynamics in the ICU

The following section, covering the interprofessional team dynamics of the ICU, delves into two sub-themes: ICU administration acknowledging them importance of relationship-building and disrupt team cohesion between nurses and physicians.

4.3.1 ICU administration acknowledging the importance of relationship-building

Effective administration and management practices are crucial in any work environment, as they provide clear direction, foster unified teamwork, and maximise employee productivity, ultimately fostering relationship-building (Boev et al., 2022; Wising et al., 2024). Wising et al. (2024) underscore the impact of administrational leadership and management practises on healthcare settings' working environment and team dynamics. Boev et al. (2022) similarly

emphasise the importance of building relationships, nurturing trust and improving patient outcomes.

In light of the study conducted by Kendall-Gallagher et al. (2017), a nurse expressed frustration, stating:

> *"And she [manager] doesn't work with us. ... she only works with management and that's where it stays. And nursing is one of those professions where we don't look to be acknowledged or recognized. But we look to be respected. And sometimes, it just feels like you're not being respected at all."*

To foster collaboration, nurses and physicians have opportunities to nurture stronger relationships (Boev et al., 2022; Hasanabadi et al., 2023). Boev et al. (2022) underscore the need for hospital administration to proactively facilitate such opportunities. Despite acknowledging the importance of relationship-building, physicians unanimously agree that hospital administration does not prioritise this aspect (Boev et al., 2022). Hasanabadi et al. (2023) highlight this issue further, as participants in their study reported that physicians receive more support from management than nurses. This disparity "… limits the context of collaboration, and this might make physicians not pay adequate attention to the nurses' comments even when they are right" (Hasanabadi et al., 2023).

4.3.2 Disrupt team cohesion between nurses and physicians

Numerous studies explore factors that impact disrupted team cohesion, thereby influencing interprofessional collaboration (Matusov et al., 2022; Meurling et al., 2013; Wising et al., 2024). Disrupted team cohesion arises from shift work rotations involving different combinations of nurses and physicians, as well as high rates of sick leave and job satisfaction. In the study by Wising et al. (2024), the high turnover rates among healthcare professionals are identified as disruptive to team cohesion and the continuity of care, ultimately impacting collaboration and communication. Matusov et al. (2022) highlighted particularly low scores in team stability, with physicians mean scores slightly lower than those of other professionals, indicating potential concerns regarding shift turnover. The presence of sick leave contributes to disrupted team cohesion, exemplified by the nurses in the intervention ICU who experienced a notable sick leave rate, ranging from 6% to 9% during the fiscal years 2006-2010 (Meurling et al., 2013).

Job satisfaction emerges as factor influencing disrupted team cohesion, when healthcare professionals resign it leads to turnover within the team and instability. Linked to job satisfaction, participants in studies by Boev et al. (2022) and Kendall-Gallagher et al. (2017) highlight effective communication as a central factor. Nurses and physicians emphasised the importance of collaboration, associating it with job satisfaction and healthy work environment (Boev et al., 2022). Specifically, effective collaboration correlated with increased job satisfaction among nurses, as identified in the findings from Meurling et al. (2013), which also noted moderately high job satisfaction levels among ICU nurses and physicians. Despite these satisfaction levels, Meurling et al. (2013) reported annual turnover rates between 14% and 24% among nurses, suggesting a potential disparity between job satisfaction and retention. Moreover, perceived disrespect from physicians towards nurses and certified registered nurse anaesthetists contributed to workplace tension (Wising et al., 2024). The implementation of Simulation-Based Team Training (SBTT) was seen as a strategy to improve team stability (Ballangrud et al., 2014).

5.0 Discussion

This master thesis aims to review the factors influencing interprofessional collaboration dynamics within the ICU, as described in the literature, focusing on understanding nurse-physician dynamics. With this aim in mind, the forthcoming discussion will focus on interpreting the results from the literature analysis. We seek to offer valuable insights into how positive interprofessional collaboration can enhance the ICU environment. In the subsequent section, our discussion will explore the findings, guided by the research foundation and theoretical framework. The discussion aligns with our results, following the emerged themes: (1) A culture of mutual respect in the ICU; (2) To acknowledge each other's competence; (3) To acknowledge interprofessional team dynamics in the ICU.

5.1 A Culture of Mutual Respect in the ICU

From the literature, several common themes emerged, with the significance of mutual respect among professions standing out as a central recurring topic. The studies conducted by Akbal Ergun et al. (2017), Boev et al. (2022) and Matusov et al. (2022), shed light on the intricate dynamics within the ICU teams. The emphasis on promoting equality, recognising hierarchical positions, and acknowledging individuality reflects not only the complexities inherent in

healthcare teamwork but also the evolving nature of professional relationships. Intriguingly these themes intersect and influence one another: promoting equality can foster a more inclusive and collaborative environment, while recognising hierarchical positions ensures clear communication and accountability. Moreover, the acknowledgment of individuality emphasises the value of diverse perspectives and skill sets within the team, contributing to a richer and more effective care delivery process (Akbal Ergun et al., 2017; Boev et al., 2022; Matusov et al., 2022). Understanding these dynamics is crucial for fostering effective interprofessional collaboration, as it requires an appreciation of each team member's role and contribution. This understanding not only strengthens teamwork but also cultivates a culture of trust and respect, essential elements for delivering high-quality patient care (Orgambídez & Almeida, 2020). The ICU's unique cultural environment further complicates these dynamics, as professional hierarchies intersect with cultural norms, shaping team dynamics and impacting patient care.

As key members, physicians and nurses of the ICU team have distinct perspectives on the importance of relationships and respect, which significantly shape their interactions (Alexanian et al., 2015; Boev et al., 2022). Nurses, often at the forefront of patient care, consistently highlight the importance of respect in how team members interact and collaborate. Their voices resonate with a strong call for mutual respect and recognition of their expertise within the ICU team (Boev et al., 2022). They advocate for a workplace culture that values contributions irrespective of hierarchical positions, emphasising the need for all team members to be treated with dignity and appreciation. Overcoming these obstacles requires a cultural shift towards fostering psychological safety within the ICU team. As Nembhard & Edmondson (2006) described, psychological safety entails creating an environment where all team members feel valued, respected, and empowered to contribute without fear of retribution or judgment. It is about cultivating a sense of trust and openness that encourages individuals to speak up, share ideas, and collaborate towards common goals. This culture of mutual respect is shaped by various factors such as trust, the work environment, geographical influences, patriarchy and role clarity. Establishing a psychologically safe environment rooted in a culture of mutual respect requires proactive leadership from the administration, who must serve as both leaders and exemplars in fostering this transformative shift. However, achieving this goal emphasises the imperative of investing in comprehensive leadership training. Such training should incorporate robust structural frameworks alongside a pervasive culture of mutual accountability, integrity, resilience, and compassion (Pihlainen et al., 2016). This holistic

approach not only sets the foundation for creating a supportive work environment but also cultivates leaders capable of navigating complex challenges while fostering a culture of respect and collaboration among team members. In such an environment, nurses and physicians can fully harness their expertise and insights to improve patient outcomes. This cultural transformation towards psychological safety is not merely a theoretical ideal but a practical necessity for enhancing teamwork and patient care in the ICU. By prioritising respect, dignity, and empowerment for all team members, healthcare organisations can cultivate collaborative credibility that fosters innovation, continuous learning, and, ultimately, better patient outcomes (Grailey et al., 2023; O'Donovan & McAuliffe, 2020).

The study by Matusov et al. (2022) highlights how a lack of collaboration, termed as 'disjointedness', and reluctance to collaborate among healthcare professionals, particularly physicians and residents, present significant challenges to effective teamwork. The reluctance of some residents to engage with nurses' requests for patient evaluation illustrates a breakdown in communication and collaboration within the team, highlighting the need for improved interprofessional interaction (Matusov et al., 2022). Fostering mutual respect is foundational to overcoming these challenges. Recognising and valuing each other's contributions promotes open communication and trust, creating a supportive environment for collaboration. By overcoming hierarchical barriers, mutual respect encourages active participation from all team members, enhancing overall teamwork (Reader & Cuthbertson, 2011). Despite the inherent challenges within the ICU environment, physicians frequently perceive the ICU team as more than just a group of individuals working together. Instead, they often link it to a cohesive unit, with a familial resemblance that underscores the significance of interpersonal relationships in cultivating a supportive and efficient work atmosphere (Alexanian et al., 2015). This perception highlights the vital role of fellowship and mutual respect among team members. What we found particularly interesting was the depth of connection and unity described by physicians, suggesting that a profound sense of shared purpose and solidarity within the ICU team exists beyond professional roles.

Analogies such as comparing the ICU team to 'a family,' 'a well-oiled machine,' or 'a ship,' with the lead physician assuming the role of the captain, effectively capture the sense of unity and shared purpose within the team (Alexanian et al., 2015). These comparisons emphasise the collaborative spirit that runs through the team's functioning, where each member plays a crucial role in navigating the complexities of critical care. Viewing the ICU team as a familial unit or

a smoothly operating machine underscores its members' interconnectedness and their dependency on each other to achieve optimal patient outcomes. The lead physician's role as the captain symbolises not only their leadership but also their responsibility in guiding and coordinating the efforts of the entire team. This perception of unity within the ICU team not only enhances teamwork but also contributes to a sense of belonging and shared responsibility among its members. By fostering a familial atmosphere and promoting a collaborative mindset, physicians are better equipped to address the challenges that arise in the ICU. In essence, recognising and nurturing these interpersonal relationships is essential for creating a supportive and effective work culture where patients' and staff can thrive (Reader & Cuthbertson, 2011).

Physicians acknowledge the importance of respect in promoting equality and mutual understanding within the team, recognising everyone's contributions (Alexanian et al., 2015; Boev et al., 2022). The physicians acknowledging the importance of respect in fostering equality and mutual understanding within the team is not only significant but also intriguing. It underscores a fundamental shift towards recognising and valuing the contributions of all team members, regardless of their hierarchical positions. This recognition speaks to a broader cultural evolution within healthcare settings, where traditional power dynamics are being re-evaluated in favour of a more collaborative and inclusive approach. The studies by Alexanian et al. (2015) and Boev et al. (2022) further validate this perspective, emphasising the central role of respect in promoting a culture of equality and mutual appreciation among healthcare professionals. This shift not only enhances team cohesion and effectiveness but also cultivates an environment where every member feels valued and empowered to contribute their expertise towards achieving common goals. Thus, the acknowledgment of respect by physicians serves as a testament to the ongoing transformation towards more patient-centred, collaborative, and equitable healthcare practices.

Several studies described nurses as often feeling undervalued and disrespected, pointing to areas needing improvement within their units (Boev et al., 2022; Kruser et al., 2023; Wising et al., 2024). An intriguing aspect is the difference in perception between physicians and nurses regarding respect and recognition within the ICU team. While physicians may see mutual appreciation, nurses often express feeling side-lined or ignored, highlighting a significant gap in understanding and experience (Boev et al., 2022; Kruser et al., 2023; Wising et al., 2024). This discrepancy emphasises the complexities of interprofessional dynamics and underscores the need for an intricate approach to promoting mutual respect and understanding. Nurses value

physicians who actively seek their input and opinions, recognising the positive impact on team morale and confidence (Boev et al., 2022). This finding aligns with the broader idea of inclusive decision-making and collaborative problem-solving in healthcare teams.

Moreover, acknowledging nurses' expertise not only strengthens team unity but also builds a culture of trust and respect (Boev et al., 2022). Though essential team members, residents perceive themselves as less independent compared to nurses, reflecting the hierarchical nature of the medical field (Matusov et al., 2022). This insight sheds light on the complex power dynamics and professional hierarchies influencing team interactions in the ICU. Establishing a culture of mutual respect is crucial for effective teamwork in the ICU (Reader & Cuthbertson, 2011). Notably, the literature consistently emphasises mutual respect as a cornerstone for fostering collaboration and improving patient care outcomes. Recognising and appreciating each team member's contributions promotes open communication and trust, creating a supportive and psychologically safe environment that encourages collaboration.

5.2 To Acknowledge Each Other's Competencies

The findings of this research highlights the significance of acknowledging each other's competencies in cultivating effective interprofessional collaboration (Akbal Ergun et al., 2017; Ballangrud et al., 2014; Boev et al., 2022; Kendall-Gallagher et al., 2017; Matusov et al., 2022; Wising et al., 2024). By embracing the distinct knowledge and skills within each profession, collaboration can be strengthened, resulting in more substantial teamwork. Acknowledging each other's competencies involves factors such as clear leadership, mutual trust, role clarity, team building and communication. Simulations involving the entire team, rather than just members of the same profession, proves to be a beneficial facilitator for promoting this.

We found that the presence of a clear leader emerges as a fundamental element for effective collaboration, both in the daily care of the ICU patient and during emergent situations. As Alexanian et al. (2015) highlighted, clear leadership facilitates effective communication among team members, fostering a cohesive response when patients deteriorate. We believe that the ability of a leader to guide the team through emergent situations not only ensures the timely execution of tasks but also fosters trust among team members, thereby enhancing overall collaboration. However, the rotation of team members, particularly ICU physicians, presents a

challenge to maintaining leadership continuity within the interprofessional team. The high personnel turnover associated with shifts further complicates the establishment of clear leadership (Husebø, 2021). Kruser et al. (2023) underscores the disruptive impact of physician rotation on the care plan, emphasising the need for a consistent attending physician to set the tone for patient care. This highlights the crucial role of stable leadership competencies in reducing uncertainty among team members regarding which orders to follow. Additionally, our review of simulation studies underscores the importance of training for the entire ICU team, with an emphasis on the physician leadership role. Ballangrud et al. (2014) emphasise that without designated leadership, simulations can quickly devolve into disorganisation, mirroring real-life scenarios where clarity of roles and guidance is essential. Simulating and training reinforce teamwork skills and prepare the team to effectively handle challenging situations (Husebø, 2021; Reader & Cuthbertson, 2011). Conducting SBTTs with a diverse combination of team members and leaders offers the team distinct advantages, as it mirrors the real-life scenario of rotating team members in the ICU. This dynamic allows for collaborating among various combinations of professions. This approach not only enhances communication skills, but also cultivates trust within the team. Through shared learning experiences the team grows stronger, enabling a more cohesive response when faced with patient deterioration.

A strong correlation between factors influencing nurse-physician collaboration within the ICU and the concept of psychological safety in fostering effective teamwork has been observed in the results. When healthcare professionals feel psychologically safe, they can confidently navigate the complexities of their roles, engage in open dialogue, and provide safe care to patients (Newman et al., 2017; O'donovan & Mcauliffe, 2020). However, the results suggest that nurses often perceive themselves as undervalued by physicians, accompanied by a lack of mutual understanding regarding each other's roles and objectives. This sentiment is echoed in the studies by Akbal Ergun et al. (2017) and Hasanabadi et al. (2023), indicating a gap in interprofessional understanding and appreciation. Effective collaboration hinges on each participant feeling valued and respected and having a shared sense of responsibility (Morley & Cashell, 2017). Furthermore, our results revealed that nurses often feel their medical knowledge is undervalued and disregarded by physicians. Such perceptions hinder effective collaboration and do not promote psychological safety. It is evident that improving collaboration requires a deeper understanding of each other's professions, knowledge and skills, as advocated by several studies (Akbal Ergun et al., 2017; Ballangrud et al., 2014; Hasanabadi et al., 2023; Wising et al., 2024).

Establishing clear role definitions emerges as a fundamental requirement for effective collaboration and optimal ICU performance, as Boev et al. (2022) emphasised. When role clarity is established, each profession within the team understands the competencies their colleagues possess, fostering reliance on one another to fulfil their respective roles. This highlights the importance of every team member understanding their role and working towards a shared objective, promoting a cohesive partnership rather than independent roles. Simulation-based training proves to be a valuable tool in raising awareness about the significance of clarifying roles and responsibilities within the interprofessional team (Ballangrud et al., 2014). Through such exercises, team members gain insight into their own roles as well as those of their colleagues, fostering a culture of mutual learning and respect. In turn this contributes to psychological safety within the team, promoting open communication and trust. Moreover, simulation exercises can identify areas for improvement in leadership, communication, and teamwork, as exemplified by the participants' reflections provided by Ballangrud et al. (2014). Conversely, the absence of psychological safety can significantly impact team performance, leading to reluctance in sharing insights or taking necessary risks (Greene et al., 2020; Newman et al., 2017). In such environments, nurses and physicians may feel undervalued or misunderstood, hindering effective collaboration, and compromising patient care outcomes. The literature underscores the importance of fostering psychological safety within ICU teams to optimise collaboration and enhance patient care. By creating an environment where all team members feel valued, respected, and empowered to voice their opinions, ICU teams can overcome communication and decision-making barriers, ultimately improving patient outcomes.

At the start of this thesis, we held expectations regarding the importance of team building, yet the true extent of its significance was initially underestimated. Initially, team building was presumed to be necessary, given the emphasis on social well-being and the collegial nature of the team. However, the findings surpassed these expectations, revealing the indispensable role of team building in reinforcing mutual trust and effective communication within the interprofessional team (Boev et al., 2022; Matusov et al., 2022). Team building encourages professionals from diverse backgrounds to establish connections beyond their roles, while fostering an appreciation for each other's expertise. Additionally, it becomes evident that effective communication is crucial in driving positive outcomes. As highlighted by Boev et al. (2022) and Matusov et al. (2022), the transformative potential of communication education was

underscored by participants, emphasising its capacity to yield positive results. This emphasises the vital need for healthcare professionals to have good communication abilities. Simulation with the team emerges as an invaluable tool for fostering this educational aspect. Simultaneously, effective collaboration within the team hinges on the presence of mutual trust (Morley & Cashell, 2017). With mutual trust established, the team can engage in clear communication, thereby averting misunderstandings, facilitating informal exchange, and ensuring alignment in treatment plans (Nancarrow et al., 2013)

Furthermore, the indispensable nature of teamwork dynamics and cooperation in healthcare delivery is emphasised in the studies conducted by Boev et al. (2022) and Matusov et al. (2022). Participants recognised the invaluable contributions of every team member. They stressed the importance of group cooperation, aligning with Morley & Cashell's (2017) definition of collaboration as a dynamic process involving multiple individuals working together to achieve a common objective. A direct correlation between collaboration and enhanced patient outcomes emerged as a recurring theme in the study by Boev et al. (2022). Instances showcased where effective collaboration and communication led to favourable patient outcomes, underscoring the vital role of interprofessional teamwork. However, fostering a collaborative culture remains challenging, as stated by Hasanabadi et al. (2023), who highlighted a lack of mutual trust and shared educational activities between physicians and nurses, exacerbating existing barriers to collaboration. Addressing these challenges requires enabling behaviours such as active listening, reflexive questioning, and education, as identified by Boltey et al. (2023). These behaviours serve as catalysts for enhanced collaboration among healthcare professionals, promoting open communication and trust within the team, in line with the emphasis on communication strategies by Chichirez & Purcărea (2018). Considering the unique environmental influences of the ICU, such as being an isolated environment, having advanced technical equipment, and continuous monitoring sounds, understanding these factors is crucial for effective collaboration (Wenham & Pittard, 2009). The physical and emotional influences of the ICU environment on healthcare professionals can significantly impact collaboration, communication, and decision-making (Alsohime et al., 2021; Ball & McElligot, 2003; Ervin et al., 2018). Team building initiatives play a central role in enhancing interprofessional collaboration, particularly in light of the distinctive environmental challenges that may impede effective communication and trust-building within the team.

5.3 To Acknowledge the Interprofessional Team Dynamics in the ICU

Acknowledging the importance of interprofessional team dynamics in the ICU, the results highlight recurring themes such as team stability, which includes considerations such as sick leave, turnover rates, and job satisfaction (Boev et al., 2022; Kendall-Gallagher et al., 2017; Matusov et al., 2022; Meurling et al., 2013; Wising et al., 2024). These factors significantly influence team dynamics, directly impacting collaborative consistency and reliability. For example, high turnover rates or frequent sick leaves can disrupt care continuity and diminish trust among team members, leading to communication breakdowns and coordination issues. Addressing these issues proactively is crucial for maintaining cohesive and effective interprofessional teams. Therefore, prioritising team stability and job satisfaction is essential for ICU management practices. By doing so, ICU administrations can foster an environment conducive to strong team cohesion, thereby improving patient care outcomes and overall team effectiveness (Boev et al., 2022; Hasanabadi et al., 2023; Wising et al., 2024).

The literature revealed that effective management within the ICU is paramount for fostering teamwork, enhancing patient care, and ensuring a supportive work environment (Boev et al., 2022; Wising et al., 2024). The significance of interprofessional collaboration within an ICU extends its influence beyond the critical care context, potentially impacting the entire hospital ecosystem (Van Der Sluijs et al., 2017). This collaborative approach, characterised by teamwork and open communication, has a profound impact on various dimensions, contributing to both the success of the ICU and the hospital's overall success (O'Leary et al., 2012). Our review of the dynamics of relationship-building within the ICU underscores the critical role of ICU administration in acknowledging and fostering such initiatives among healthcare professionals. Despite recognising the importance of relationship-building, our findings reveal a significant gap between the perceived importance of these initiatives and the actions taken by the ICU administration. This disparity becomes evident when considering the perspectives of nurses, who are central in patient care delivery.

Nurses often express frustration over feeling undervalued and under recognised by the administration, as highlighted in the study by Kendall-Gallagher et al. (2017). The sentiment shared by one nurse underscores the pressing need for greater acknowledgement and respect from management. When nurses feel undervalued and under recognised by the administration, it can have far-reaching consequences for both individual morale and overall team dynamics.

Such feelings of frustration can lead to decreased job satisfaction, increased burnout rates, and ultimately, diminished quality of patient care. Additionally, when nurses perceive a lack of acknowledgment and respect from management, it erodes trust and creates barriers to effective communication and collaboration within the interprofessional team. Therefore, addressing these concerns and ensuring that nurses feel valued and respected by the administration is crucial for fostering a supportive work environment and enhancing team cohesion (Pihlainen et al., 2016). While the administration bears a responsibility to address these concerns, it is equally crucial for individuals to assertively advocate for their needs and actively seek opportunities for open dialogue and resolution.

Moreover, our review revealed the importance of building strong relationships between nurses and physicians for fostering collaboration and enhancing patient outcomes, as emphasised by Boev et al. (2022) and Hasanabadi et al. (2023). However, our findings suggest that the administration may not prioritise initiatives aimed at facilitating such relationships, creating a disconnect between the perceived importance of relationship-building and its implementation within the ICU. This disconnect between perception and action within ICU administration raises important questions about organisational culture and leadership priorities in healthcare settings. It highlights the need for the administration to align its actions more closely with the recognised importance of relationship-building initiatives. By prioritising these initiatives and fostering collaboration and mutual respect among healthcare professionals, the administration can create a more cohesive and supportive work environment within the ICU (Babiker et al., 2014).

This discrepancy highlights a potential blind spot in the ICU administration's understanding of the intricacies of interprofessional relationships. While administrators may acknowledge the theoretical importance of collaboration, they may overlook the practical implications of fostering strong relationships among healthcare professionals. Failure to address these relational dynamics can lead to decreased morale, hindered communication, and ultimately compromised patient care. To address these challenges, ICU administration must proactively bridge the gap between perception and action. This involves not only recognising the importance of relationship-building but also implementing concrete strategies to foster collaboration and mutual respect among healthcare professionals. By prioritising initiatives aimed at strengthening interprofessional relationships, such as SBTT, the administration can create a supportive work environment where all team members feel valued, respected, and

empowered to contribute to the delivery of high-quality patient care (O'Leary et al., 2012; Van Der Sluijs et al., 2017).

One crucial aspect of relationship-building that ICU administration should prioritise is fostering psychological safety within the team. As defined by Edmondson (1999), psychological safety refers to the shared belief among team members that they can voice opinions, pose questions, and make mistakes without fear of reprimand or embarrassment. Psychological safety is crucial in healthcare settings, where patient safety is paramount, and work environments are complex. It fosters teamwork, creativity, and performance by allowing individuals to take interpersonal risks, contributing to improved learning and outcomes. This sense of safety encourages participation, innovation, and constructive engagement, ultimately benefiting both individuals and the team. The administration should exemplify and lead by example in creating an environment where all team members feel empowered to freely express their ideas, concerns, and questions (Pihlainen et al., 2016).

This open communication can lead to increased teamwork, as individuals are more willing to take risks and explore new approaches (O'Donovan & McAuliffe, 2020). However, achieving psychological safety within the ICU requires more than mere verbal affirmation. It demands a cultural shift, with ICU administration leading the change. Administration, seen as department leaders, must actively foster an environment where all team members feel valued, respected, and empowered to speak up. This may involve implementing practices such as regular team meetings where all voices are heard, encouraging constructive feedback and dissent, and modelling vulnerability by openly acknowledging mistakes and learning from them. By prioritising psychological safety, ICU administration can create a workplace where healthcare professionals feel empowered to collaborate, innovate, and deliver the best possible care to their patients. This not only enhances team performance and job satisfaction but also improves patient outcomes and organisational success (Nembhard & Edmondson, 2006).

Maintaining team cohesion in the ICU ensures seamless care delivery and effective communication. However, several challenges exist in this regard, particularly concerning turnover rates among healthcare professionals. The ICU's commitment to interprofessional collaboration creates a culture of job satisfaction among healthcare professionals (Busari et al., 2017). This infuses positivity throughout the hospital, where staff members become engaged contributors to the hospital's overarching culture (Mitchell et al., 2014). Our review indicates

that while interprofessional collaboration significantly contributes to job satisfaction and a positive work environment, challenges such as high turnover rates among nurses underscore underlying issues that require further investigation. Despite the collaborative efforts within the ICU, the discrepancy between reported job satisfaction levels and actual turnover rates among nurses suggests the existence of unaddressed concerns that may impact team cohesion and patient care outcomes (Boev et al., 2022). Understanding the root causes of this misalignment is critical for developing targeted interventions aimed at improving retention rates and fostering a supportive work environment conducive to effective collaboration. Moreover, while the benefits of interprofessional collaboration are widely acknowledged, our results highlight the nuanced dynamics within ICU teams. The perceived lack of respect from certain specialists towards nurses and other healthcare professionals is an issue of concern that also requires deeper investigation. Addressing such interpersonal tensions is essential for nurturing a supportive work environment where all team members feel valued and respected. Additionally, exploring strategies to mitigate workplace tensions and foster mutual respect could contribute to enhancing team cohesion and overall job satisfaction.

Effective communication emerges as a critical factor influencing job satisfaction among nurses and physicians, as Boev et al. (2022) and Kendall-Gallagher et al. (2017) noted. However, despite moderately high job satisfaction levels reported by Meurling et al. (2013), turnover rates among nurses remain high, suggesting a potential discrepancy between satisfaction and retention. Additionally, the perceived lack of respect from physicians towards nurses contributes to workplace tensions, further hindering team cohesion (Wising et al., 2024). Implementation of SBTT is seen as a strategy to enhance stability and emergency preparedness (Ballangrud et al., 2014).

By incorporating the theoretical framework provided, we can better understand how interprofessional collaboration influences ICU administration practices, team cohesion, and overall hospital success. This collaborative spirit embodies the principles of job satisfaction, professional growth, quality enhancement, and innovation, ultimately positioning the hospital as a leader in providing high-quality care and staying relevant in healthcare advancements (O'Leary et al., 2012; Van Der Sluijs et al., 2017). This underscores the importance of the ICU administration's proactive approach to fostering relationship-building initiatives and addressing challenges in team cohesion. By acknowledging the unique dynamics within the ICU and actively supporting interprofessional collaboration, the administration can create an

environment where healthcare professionals thrive, leading to improved patient outcomes and organisational success.

6.0 Strengths and Limitations

The study presents several strengths that contribute to its robustness and credibility. Firstly, incorporating mixed-methods and cross-sectional studies further enhances the research by providing nuanced results and a broader perspective on the topic. Additionally, using the PRISMA framework ensures transparency and clarity in the research process, enhancing the reliability of the findings. Thorough efforts to mitigate bias, including the involvement of both authors in the data analysis process and adherence to acknowledged checklists, strengthen the validity of the findings. Moreover, continuous feedback and review from supervisors, alongside engagement in seminars with peers and faculty, ensured ongoing refinement and improvement of the research methodology.

However, several limitations should be acknowledged. Including articles from diverse healthcare settings across different geographical regions enriched the depth and breadth of insights, offering a comprehensive understanding of interprofessional collaboration dynamics. While this review delves into diverse geographical regions and cultures, it does not conclusively provide insight into all aspects of ICU dynamics, given the significant influence of cultural and geographical variations. Hence, it must be noted that the findings may not be universally transferable. Most of the study participants are nurses, which may cause a deviation from the findings and limit the perspectives of other healthcare professionals, such as physicians. Ethical considerations were lacking in some studies, potentially raising concerns about participant confidentiality and informed consent. Additionally, the qualitative nature of most studies, while providing in-depth insights, may limit the generalisability of findings. The relatively small sample size of the thesis, comprising only 11 studies, may not fully capture the complexity of interprofessional collaboration, although efforts were made to ensure transferability. Despite these limitations, the study's strengths contribute to a deeper understanding of interprofessional collaboration dynamics in healthcare settings.

7.0 Conclusion

Our master thesis aimed to review the factors influencing interprofessional collaboration dynamics within the ICU as described in the literature, focusing on understanding nurse-physician dynamics. This thesis sought to offer valuable insights into how positive interprofessional collaboration can enhance the ICU environment by uncovering these factors. Our comprehensive literature review reveals a detailed overview of these factors, identifying challenges and opportunities for enhancement. Across the breadth of studies examined, consistent themes have emerged: a culture of mutual respect, acknowledging each other's competencies and acknowledging the interprofessional team dynamics in the ICU. These fundamental principles highlight the significance of promoting equality, nurturing relationships, acknowledging individuality, providing clear leadership, implementing team-building initiatives, fostering trust, ensuring team stability, and ultimately encouraging a supportive work environment within the ICU. These efforts collectively enhance interprofessional collaboration.

Effective leadership, clear role definitions, unambiguous responsibilities and team building initiatives emerge as vital components in strengthening mutual trust and enhancing collaboration within the ICU. This positively influences the role of building relationships and improving communication, both of which affect the social well-being and collegial nature of the ICU. By prioritising these initiatives, ICU administration can establish a positive work environment where healthcare professionals can flourish and thrive. This necessitates collaborative participation from both the administration and individual healthcare professionals to continually improve the ICU as a whole.

Nurses, as frontline caregivers, advocate strongly for mutual respect and recognition of their expertise, emphasising the need for a workplace culture that values contributions irrespective of hierarchical positions. Conversely, physicians acknowledge the significance of respect in promoting equality, yet there exists a gap in perception between physicians and nurses regarding respect and recognition within the ICU team. Bridging these perceptual divides requires a collaborative approach to cultivate understanding and appreciation among the nurses and physicians. From our review, it is evident that nurturing mutual respect requires a multifaceted approach. Initiatives such as promoting equality whilst recognising hierarchical positions, acknowledging competencies, good performance, and establishing trust emerge as

essential strategies. These efforts improve personal relationships and enhance organisational structure and power dynamics within the team.

Furthermore, the results underscore the important role of psychological safety in fostering effective collaboration. Creating an environment where all team members feel valued, respected, and empowered to contribute without fear of judgment or retribution is paramount. This cultural transformation towards psychological safety is not just a theoretical ideal but a practical necessity for enhancing teamwork and patient care in the ICU. However, our review also highlights persistent challenges, such as lack of collaboration and reluctance to collaborate among healthcare professionals, particularly physicians. Addressing these challenges requires a unified effort to overcome hierarchical barriers and foster mutual respect among all team members.

In essence, our synthesis of literature investigates the intricate dynamics between interpersonal relationships, administration, and leadership within the ICU. This review allowed us to explore our research question: What factors shape interprofessional collaboration dynamics within the ICU environment? Although we uncovered certain factors, we acknowledge that numerous others play a role in shaping these dynamics. By acknowledging and addressing these dynamics, healthcare organisations can cultivate a collaborative culture that fosters innovation, continuous learning, and, ultimately, better patient outcomes. Significantly, as found in this review, all the enablers for enhancing interprofessional collaboration can arguably be cost-efficient to implement. There are clear, tangible benefits of these strategies in enhancing interprofessional collaboration.

8.0 Recommendations for further research and implications for practice

Future research should employ diverse methodologies to deepen the understanding of interprofessional collaboration within the ICU. In addition to exploring various research methodologies, it is essential to investigate the specific factors that contribute to effective interprofessional collaboration within the ICU context. Longitudinal studies can provide valuable insights into how collaboration dynamics evolve over time, while cross-sectional analyses can offer an overview of current practices and identify areas for improvement. Mixed-methods approaches can combine qualitative and quantitative data to provide a more comprehensive understanding of collaboration processes and their outcomes.

Practical interventions aimed at strengthening team cohesion and fostering a positive ICU environment should be prioritised. Regular team building activities tailored to the unique challenges of ICU work can help cultivate trust and mutual respect among healthcare professionals. Leadership development initiatives should focus on enhancing communication skills, conflict resolution strategies, and emotional intelligence, empowering leaders to effectively navigate complex team dynamics and promote a culture of collaboration. The utilisation of simulation exercises plays a central role in improving team cohesion and readiness within the ICU. Healthcare professionals can refine their skills, enhance protocols, and refine coordination in a controlled setting through simulations. These exercises not only elevate clinical proficiency but also embed confidence and mutual trust among team members. By simulating diverse scenarios, teams can identify potential obstacles, enhance communication strategies, and establish effective teamwork protocols, ultimately leading to enhanced patient outcomes and a more cohesive ICU team.

Implementing multidisciplinary approaches that involve various healthcare professionals can further enhance team unity and collaboration within the ICU. Initiatives such as interprofessional rounds, where different specialities come together to discuss patient cases and treatment plans, can facilitate information sharing and interprofessional communication. Establishing cross-functional committees focused on quality improvement initiatives can provide opportunities for collaboration and innovation across different departments. Integrating technology solutions, such as secure messaging platforms or electronic health record systems, can streamline communication processes and facilitate information exchange among team members. These tools can improve efficiency and coordination within the ICU, ultimately enhancing patient care delivery and outcomes (Liu et al., 2019).

Furthermore, fostering a culture of psychological safety is paramount for promoting open communication, idea sharing, and constructive feedback within the ICU team. Creating an environment where healthcare professionals feel empowered to voice their opinions, ask questions, and express concerns without fear of retribution can significantly improve collaboration and decision-making processes (O'Donovan & McAuliffe, 2020). By prioritising these recommendations and actively working towards enhancing interprofessional collaboration within the ICU, healthcare organisations can create a supportive and productive work environment that ultimately leads to better patient care outcomes and staff satisfaction.

9.0 References

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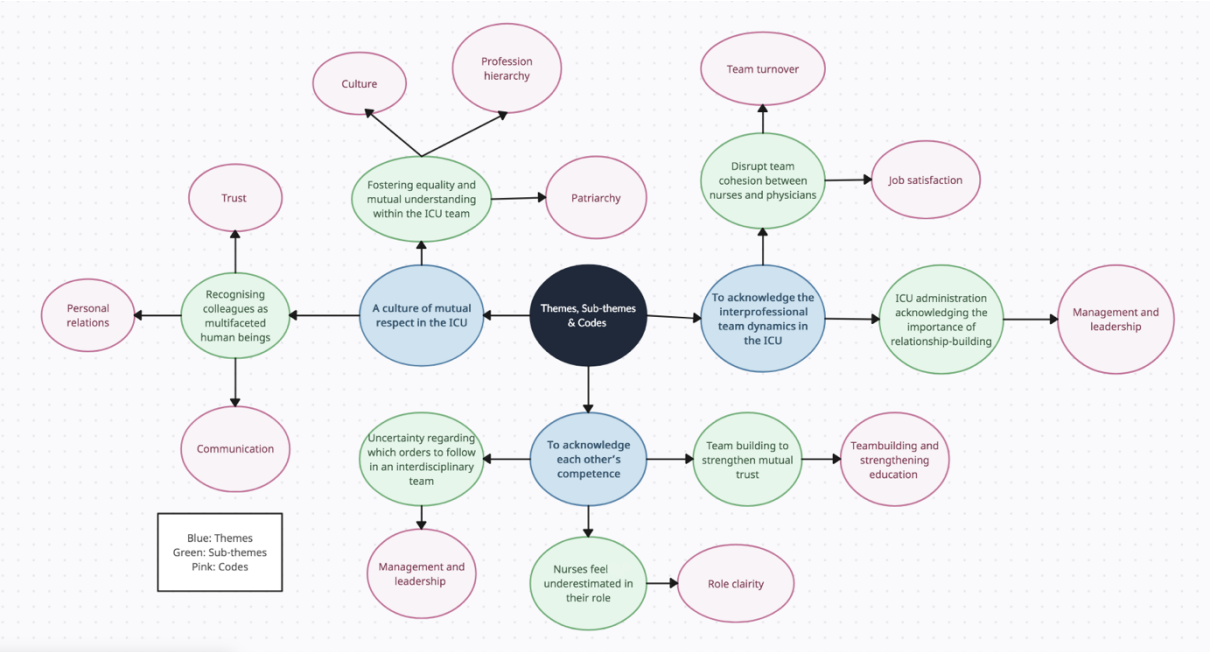
10.0 Appendix

10.1 Appendix 1: Thematic Analysis Map



10.2 Appendix 2: Master's in Specialised Nursing, Specification of Both Student's Attribution

Vedlegg 6: Master i spesialsykepleie, spesifisering av studentbidrag

UNIVERSITETET I STAVANGER

Studentene som skriver sammen, forplikter seg til å bidra likt. Den enkeltes bidrag skal spesifiseres, og signeres av studentene og veileder ved innlevering av masteroppgave.

STUDENT 1

Navn Rebekka Elisabeth Baxter

Spesialisering i: Intensivsykepleie

Bidrag: Vi har begge vært bidragsytere i alle ledd av oppgaven.

STUDENT 2

Navn Tanika Vågen

Spesialisering i: Intensivsykepleie

Bidrag Vi har begge vært bidragsytere i alle ledd av oppgaven

Signatur:

Student 1

Student 2

Tanika Vågen

Veileder:

Johnn Strøm

10.3 Appendix 3: Supervisor Agreement

Vedlegg 2: Veiledningsavtale

Universitetet i Stavanger

Veiledningsavtale for masteroppgave i spesialsykepleie

Evt utnevnelse av medveileder må avklares med oppnevnt veileder i forkant.

Fylles ut til første veiledning.

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