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TUIJA YLITÖRMÄNEN

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ABSTRACT

The importance of collaboration in health care is emphasized widely; hence, the health care environment and nurses' role are changing constantly. Concurrently, many countries are facing a shortage of qualified nurses. Collaboration and intraprofessional relationships are important for healthy work environments as they affect RNs' welfare, everyday practice, and care quality and patients' outcomes. The purpose of this study was to examine nurse–nurse collaboration and job satisfaction and the relationship between them in a mixed methods design by examine Finnish and Norwegian RNs' perceptions (Substudy I) and experiences (Substudy II) in a hospital setting. The study hypothesis was that good nurse–nurse collaboration predicts high job satisfaction. The overall goal of this study was to strengthen and deepen the understanding of RNs' intraprofessional collaboration through multiple viewpoints.

This study was carried out in two acute-care hospitals in Finland and Norway in 2015, using a convergent parallel mixed-methods design. The data were composed of two substudies. Substudy I employed a cross-sectional, descriptive, and quantitative study design with a sample of 406 Finnish and Norwegian RNs and focused on the RNs' perceptions of collaboration between nurses and job satisfaction. The data were gathered via an electronic survey including the Nurse–Nurse Collaboration Scale and the Kuopio University Hospital Job Satisfaction Scale. Statistical methods were utilized in the data analysis. Additionally, a secondary analysis of the existing data was conducted to examine the relationships between collaboration and the job satisfaction subscales using structural equation modelling. Substudy II described both Finnish and Norwegian nurses' experiences of collaboration between nurses and job satisfaction. This qualitative substudy consisted of 29 RN interviews, which were analysed qualitatively by applying inductive content analysis.

The results revealed that Finnish and Norwegian nurses' perceptions and experiences of intraprofessional collaboration were good, yet significant differences were found between the countries. The Finnish and Norwegian nurses' emphasized slightly different views on nurse–nurse collaboration. Demographic variables like main

working time and work experience were affiliated with the RNs' views of collaboration, and an RN's working unit, age, form of work, and country were associated with their job satisfaction. Work welfare and motivating factors of work were important factors in job satisfaction.

The results also suggested a strong connection between nurse–nurse collaboration and job satisfaction, such that the nurses were more content when there was good collaboration. Similarly the experience of job satisfaction enhanced nurse–nurse collaboration. The qualitative analysis identified seven categories describing nurse–nurse collaboration: (a) equal and smooth collaboration towards a common goal with patients in the centre, (b) collegial networking in nursing, (c) a functioning work environment, (d) clear communication, (e) experiences of collegiality, (f) the sharing of knowledge and skills, and (g) support and sharing of work. The results regarding RNs' experience of job satisfaction also resulted in seven categories: (a) opportunities to influence the work, (b) continuous learning, (c) interaction and feedback, (d) relationships with colleagues, (e) support from colleagues, (f) meaningful and motivating work in a comfortable and positive work environment, and (g) experience of success.

The study revealed that RNs' perceptions of intraprofessional collaboration vary. The survey and the interviews produced slightly different results about intraprofessional collaboration. In conclusion, by identifying and promoting qualities that support intraprofessional collaboration, it is possible to enhance job satisfaction, which contributes to a positive and healthy work environment, which in turn supports nurses' well-being.

Keywords: nurse–nurse relations, collaboration, job satisfaction, hospitals, comparative study, mixed methods, surveys, questionnaires, interviews, Finland, Norway

Ylitörmänen, Tuija
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TIIVISTELMÄ

Yhteistyön merkitys terveydenhuollossa korostuu laajasti nyky-yhteiskunnassa, sillä terveydenhuoltoympäristö ja sairaanhoitajien rooli muuttuu jatkuvasti. Samalla monessa maassa on pula ammattitaitoisista sairaanhoitajista. Yhteistyö ja ammatin sisäiset suhteet ovat tärkeitä hyvinvoivien työympäristöjen kannalta, sillä ne vaikuttavat sairaanhoitajien hyvinvointiin, jokapäiväiseen työhön, hoidon laatuun ja potilaan hoitotuloksiin. Tarkoituksena oli tutkia sairaanhoitajien välistä yhteistyötä ja työtyytyväisyyttä sekä niiden välistä suhdetta monimenetelmätutkimuksella tutkimalla suomalaisten ja norjalaisten sairaanhoitajien käsityksiä (osatutkimus I) ja kokemuksia (osatutkimus II) sairaalaympäristössä. Tutkimuksen hypoteesi oli: hyvä sairaanhoitajien välinen yhteistyö ennustaa korkeaa työtyytyväisyyttä. Tämän tutkimuksen kokonaistavoitteena oli vahvistaa ja syventää ymmärrystämme sairaanhoitajien välisestä yhteistyöstä useista eri näkökulmista.

Tutkimus suoritettiin kahdessa yliopistollisessa sairaalassa Suomessa ja Norjassa vuonna 2015 käyttäen monimenetelmätutkimusta. Tutkimus rakentui kahdesta osatutkimuksesta. Osatutkimus I koostui kuvailevasta poikkileikkaustutkimuksesta, jossa tutkittiin 406 suomalaisen ja norjalaisen sairaanhoitajan näkemyksiä sairaanhoitajien välisestä yhteistyöstä ja työtyytyväisyydestä. Tutkimusaineisto kerättiin sähköisesti Nurse–Nurse Collaboration -mittarilla ja Kuopio University Hospital Job Satisfaction Scale -mittarilla. Aineiston analysoinnissa käytettiin tilastollisia menetelmiä. Lisäksi sekundaarianalyysillä analysoitiin olemassa olevan datan pohjalta yhteistyön ja työtyytyväisyyden osa-alueiden välisiä suhteita käyttäen rakenneyhtälömallia. Osatutkimuksessa II kuvailtiin suomalaisten ja norjalaisten sairaanhoitajien kokemuksia ammatin sisäisestä yhteistyöstä ja työtyytyväisyydestä. Tämä laadullinen osatutkimus koostui 29 sairaanhoitajan haastattelusta, jotka analysoitiin laadullisesti induktiivista sisällönanalyysia käyttäen.

Tulokset osoittivat, että suomalaisten ja norjalaisten sairaanhoitajien näkemykset ja kokemukset sairaanhoitajien välisestä yhteistyöstä olivat hyvät, mutta myös merkittäviä maiden välisiä eroja havaittiin. Suomalaiset ja norjalaiset sairaanhoitajat

korostivat joitakin eri asioita sairaanhoitajien välisessä yhteistyössä. Taustamuuttujilla kuten työajalla ja työkokemuksella oli yhteys sairaanhoitajien käsityksiin yhteistyöstä, kun taas työyksiköllä, sairaanhoitajien iällä, työmuodolla ja maalla oli yhteys työtyytyväisyyteen. Työhyvinvointi ja työn motivoivat tekijät olivat tärkeitä tekijöitä työtyytyväisyydelle.

Tulokset viittaavat lisäksi siihen, että sairaanhoitajien välisellä yhteistyöllä ja työtyytyväisyydellä oli vahva yhteys. Sairaanhoitajat olivat tyytyväisempiä, kun yhteistyö oli hyvää. Vastaavasti kokemus työtyytyväisyydestä edisti sairaanhoitajien välistä yhteityötä. Laadullisessa analyysissä tunnistettiin seitsemän yläluokkaa, jotka kuvasivat sairaanhoitajien välistä yhteistyötä: (a) tasavertainen ja sujuva yhteistyö kohti yhteistä tavoitetta potilas keskiössä, (b) kollegiaalinen verkostoituminen hoitotyössä, (c) toimiva työympäristö, (d) selkeä viestintä, (e) kokemus kollegiaalisuudesta, (f) tiedon ja taitojen jakaminen ja (g) tuen ja työn jakaminen. Tulokset sairaanhoitajien kokemuksista työtyytyväisyydestä johtivat myös seitsemään yläluokkaan: (a) mahdollisuudet vaikuttaa työhön, (b) jatkuva oppiminen, (c) vuorovaikutus ja palaute, (d) suhteet kollegoihin, (e) tuki kollegoilta, (f) mielekäs ja motivoiva työ mukavassa ja positiivisessa työympäristössä ja (g) kokemus menestyksestä.

Tutkimus osoitti, että sairaanhoitajien näkemys ammatin sisäisestä yhteistyöstä on vaihteleva. Kysely ja haastattelut tuottivat hieman erilaista tietoa ammattien välisestä yhteistyöstä. Yhteenvetona voidaan todeta, että tunnistamalla ja edistämällä tekijöitä, jotka tukevat sairaanhoitajien välistä yhteistyötä voidaan lisätä työtyytyväisyyttä, mikä edesauttaa positiivista ja terveellistä työympäristöä sekä tukee sairaanhoitajien hyvinvointia.

Avainsanat: sairaanhoitajat, yhteistyö, työtyytyväisyys, sairaalat, mixed methods, kyselytutkimus, haastattelututkimus, vertailututkimus, Suomi, Norja

” Coming together is a beginning. Keeping together is a progress. Working together is success.”

-Henry Ford-

Jesperille ja Jonathanille

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In Imatra, 21th May 2021
Tuija Ylitörmänen

LIST OF ORIGINAL PUBLICATIONS

This dissertation is based on the following original publications:

I Ylitörmänen T, Kvist T and Turunen H. Perceptions on nurse–nurse collaboration among registered nurses in Finland and Norway. Scandinavian Journal of Caring Sciences, 3: 731–740, 2019. https://doi.org/10.1111/scs.12669

II Ylitörmänen T, Turunen H and Kvist T. Job satisfaction among registered nurses in two Scandinavian acute care hospitals. Journal of Nursing Management, 26: 888–897, 2018. https://doi.org/10.1111/jonm.12620

III Ylitörmänen T, Turunen H, Mikkonen S and Kvist T. Good nurse–nurse collaboration implies high job satisfaction: A structural equation modelling approach. Nursing Open, 6(3): 998–1005, 2019. https://doi.10.1002/nop2.279

IV Ylitörmänen T, Kvist T and Turunen H. Intraprofessional collaboration—A qualitative study of registered nurses' experiences. Submitted 2021.

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In addition, this publication contains previously unpublished material.

CONTENTS

ABBREVIATIONS

AACN	American Association of Critical-Care Nurses
BIC	Bayesian information criterion
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
CINAHL	Cumulative Index to Nursing and Allied Health Literature
COREQ	Consolidated Criteria for Reporting Qualitative Research Guidelines
DF	Degrees of freedom
FI	Finland
ICN	International Council of Nurses
KUHJSS	Kuopio University Hospital Job Satisfaction Scale
M	Mean
MI	Modification indices
NNCS	Nurse–Nurse Collaboration Scale
NO	Norway
PUBMED	United States National Library of Medicine
RMSEA	Root mean square error of approximation
RN	Registered nurse
SD	Standard deviation
SE	Standardized direct effects
SEM	Structural equation modelling
SPSS	Statistical Package for Social Sciences
SS	Sum of squares
WHO	World Health Organization

1 INTRODUCTION

A worldwide shortage of nurses has been acknowledged. This is to some extent due to social changes such as the ageing population, the ageing workforce, and the growing workplace requirements related to matters such as quality of care and patient safety. The importance of collaboration in health care is emphasized widely these days, thus the health care setting is changing, making it harder for organizations to improve working circumstances and environments (WHO, 2016a.)

The role of nurses also is changing, because the demands on nurse professionals are growing and increasing constantly, which highlights the changes in the nursing profession and emphasizes the importance of collaboration within the profession and with other professionals (WHO, 2020a). Moreover, pandemics, disasters, and emergency situations have been linked with nurses' job satisfaction, stress, well-being, and intentions to leave (Labrague & De los Santos, 2020); thus, various outbreaks call for collaboration at all levels (Vervoort et al., 2020), and peer and social support are of paramount importance (Labrague & De los Santos, 2020).

According to WHO (2020a), there are approximately 7,333,000 nurses, or about 79 nurses per 10,000 people, in the WHO European Region and 28,000,000 nurses in the world, yet there is a global shortage of nurses. The ratio of nurses per 1,000 people varies considerably. Finland's population is 5,532,000, with nurses making up 71.1% (74,877 nurses) of the health workforce, and Norway's population is 5,378,000, with nurses making up 77.4% (94,329 nurses) of the health workforce (WHO, 2020b). According to an OECD (2019a) report, Finland had 14.3 practicing nurses per 1,000 people in 2018, and Norway had 17.8 per 1,000 people. Even though the number of nurses has improved in both countries over the last 10 years, the number is not adequate to meet their future needs, such as providing care for the ageing population and compensating for the retirement of health care workers. In addition, there is a problem of professional turnover among young nurses, particularly in Norway (OECD, 2019b). Previous research has reported that RNs in Norway are more satisfied with their work and work environments than Finnish RNs (Aiken et al., 2013; Lindqvist et al., 2014). According to Aiken et al. (2013) almost half of the Finnish RNs intended to leave their work, while in Norway the percentage of nurses reporting intendent to leave their work were 25 %, respectively. This is interesting, since health care, and nursing and the nursing education are quite similar in both countries. The researcher's own background, experience, interest and curiosity about the chosen topic and countries guided the selection. For these reasons, Finland and Norway, are the context in the study.

WHO (2016b) published the "Global Strategic Directions for Strengthening Nursing and Midwifery 2016-2020" as a foundation to strengthen nursing with a strategy that underlines how nurses ought to "work together to maximize the capacities and

potentials of nurses and midwifes through intra- and interprofessional collaboration, and foster education and continuing professional development" (p. 21). The American Association of Critical-Care Nurses (AACN; 2005) stated that nurses must strive for true collaboration in nursing to achieve optimal care, as an unhealthy work environment with ineffective relationships might cause harm to the patients and job dissatisfaction among nurses (Ulrich et al., 2019).

Although the demands on and requirements of nursing professionals are rising, more emphasis is being given to a healthy work environment and nurses' well-being. Nurses' unhappiness with their work and intents to leave the workplace are causes of concern at the moment (Dilig-Ruiz et al., 2018; Nowrouzi-Kia & Fox, 2019; Ulrich et al., 2019). Factors such as management support, decision-making, autonomy, and interaction are also related to nurses' job satisfaction (Atefi et al., 2015). It is crucial to invest in health care workers and their well-being (WHO, 2016b), to make their work environments better, to increase job satisfaction and stop migration from the profession (Zangaro & Soeken, 2007), and to maintain the health workforce in the future (Ensio et al., 2019; Strømseng Sjetne et al., 2019).

Many organizations have developed guidelines to promote a healthy work environment. The Registered Nurses' Association of Ontario (2016) has developed guidelines to create a healthy work environment and to strengthen collaborative practices among nurses to produce the best outcomes for patients. The Finnish Nurses Association (2014) has published nurses' collegiality guidelines to support collegiality at work. The guidelines highlight cooperation and communication between nurses and common goals for best patient care. Similarly, the Norwegian Nurses Organization (2020) has published guidelines to support nurses' work. The guidelines emphasize that nurses should show respect for their colleagues work and support them in difficult situations. They should also promote openness and good interdisciplinary collaboration. Interprofessional collaboration between nurses and physicians has been studied since the 1960s from the viewpoint of doctors and nurses' relationships and interactions (Stein et al., 1990).

Nurse–nurse collaboration is important in health care. However, collaboration is a complex concept, which needs to be addressed. To my best knowledge, there are limited studies on how nurses perceive and experience intraprofessional collaboration and how it relates to nurses' job satisfaction. Studies have proposed that there is a positive connection between nurses' relationships, teamwork, job satisfaction, and well-being at work (Uhrenfeldt & Hall, 2015; Utriainen et al., 2015). Hence, there is a need to explore further how nurses view and experience intraprofessional collaboration to improve nurses' job satisfaction and relationships within the profession and their work environments and thus retain nurses in the profession.

The aims of this study were to examine nurse–nurse collaboration and job satisfaction and the relationship between them and examine Finnish and Norwegian RNs' perceptions and experiences in a hospital setting. A mixed methods design was the preferred methodology for answering the research aims because it corroborates

the results from the diverse methods and gives a better understanding of the issue being studied (Creswell & Plano Clark, 2018).

This thesis contains an overview of four original publications, papers published in scientific peer-reviewed nursing journals. The overview offers a theoretical framework and a conclusion to the original publications. This dissertation was conducted at the Faculty of Health Sciences of the University of Eastern Finland. This research topic focus to the field of nursing and falls into the scope of nursing leadership and management, and it is associated with the development of nurses' work and job satisfaction.

2 REVIEW OF THE LITERATURE

This section builds on previous scientific knowledge of collaboration between nurses and job satisfaction. The defined research problem directed the literature review, which was limited to nursing science, for clarifying the position of this research in the field of nursing science.

First, however, the Finnish and Norwegian health care and nursing education is described briefly. Next, the main concepts are defined and explored, and the literature selection process is presented. Then, previous research on nurse–nurse collaboration is introduced, and finally, a summary of the literature review is presented.

2.1 FINNISH AND NORWEGIAN HEALTH CARE AND NURSING EDUCATION

Health care in the Scandinavian countries is founded on the thought of good and equivalent rights to health care services for all. Health care services are primarily provided by the public sector and financed by taxes (Lindqvist et al., 2014; Olsen et al., 2016.) In Finland, municipalities are accountable for organizing health care and social welfare, and specialized care is arranged by hospital regions (The Finnish Ministry of Social Affairs and Health, 2020). In Norway, municipalities are responsible for the primary services such as social services and basic health care, and the regions are responsible for the specialist services, such as hospital and clinical care (The Norwegian Ministry of Health and Care Services, 2020). An ageing population, with more people requiring health services (Brix & Sander Garsdal, 2018), decreased hospital stays, and pressure on primary care are future challenges for the Nordic countries (Brix & Sander Garsdal, 2018; Olsen et al., 2016). The focus is on the proactive health services, technology, autonomy, and collaboration between diverse stakeholders (Brix & Sander Garsdal, 2018). Finland and Norway have high ratios of nurses compared to other European countries, but they will not be sufficient for future demands such as the growing need for care for the ageing population and for the replacement of retiring nurses. In Finland, nurses' role has expanded to limited prescribing and care coordination to meet the challenges of a shortage of doctors, whereas in Norway, one challenge is that 1 of 5 graduating nurses is not employed in the health care sector, and there is a high rate of dropouts among nurses employed in nursing care (OECD, 2019b).

The nursing education in Finland and Norway is quite similar because it has shifted to higher education (Lindqvist et al., 2014). In Finland, the University of Applied Sciences educates professional RNs. A basic bachelor's degree in health care takes 3.5 years. The school also offers a practice-oriented master's degree. The university emphasizes research-based academic education and scientific research. Higher

education degrees include a bachelor or master of science and postgraduate degrees at universities (e.g., in health sciences or nursing sciences). In Norway, the nursing education is 3 years. RNs obtain licensure and a bachelor's degree at colleges or universities. Similarly, nurses in Norway can obtain further education after completing the bachelor degree, for example masters degree and PhD degree in nursing. (Rafferty et al., 2019.) In Finland, there are 4,728 graduates per year, and in Norway, the number is 4,211 (WHO, 2020b).

2.2 DEFINITIONS OF MAIN CONCEPTS

2.2.1 Collaboration

The word "collaboration" originated in the mid-19th century, coming from the French and Latin word "collaboration," which was defined an "act of working together and united labour" (Online Etymology Dictionary, n.d.). Today, it means "to work jointly with others or together especially in an intellectual endeavor" (Merriam-Webster Dictionary, n.d.) and "the action of working with someone to produce or create something" (Oxford Dictionary, n.d.). Henneman (1995) described the concept of collaboration as a complex, sophisticated process, a rather traditional definition of collaboration that is often used in the context of health care. Dougherty and Larson (2010) defined collaboration as "an interpersonal relationship between and among colleagues" (p.18). This study used Dougherty and Larson's definition to describe the phenomenon of collaboration. Emich (2018) developed a more recent definition of collaboration in nursing that included intraprofessional collaboration.

Often used related synonyms of collaboration are cooperation, collegiality, and teamwork, which are attributes of collaboration (Baggs & Schmitt, 1988; Gardner, 2005). According to Kaiser et al. (2017), collaboration requires cooperation, and teamwork necessitates both collaboration and cooperation. Collaboration is the most important aspect of teamwork (Baggs & Schmitt, 1988). Hence, it is of importance to distinguish between these concepts. Additionally, in health care, collaboration often refers to interprofessional and intraprofessional collaboration. Definitions of collaboration and related concepts are presented in Tables 1 and 2.

Table 1. Definition of collaboration

Concept	Definition	Author
Collaboration	"Collaboration is co-operation, collegiality and coordination." Increased collaboration leads at its best to effective and efficient care.	Baggs & Schmitt (1988, p. 148)
	"An interpersonal relationship between and among colleagues, defined by the commonality of a goal recognized by each party, shared authority, power, and decision making, based on knowledge and expertise."	Dougherty & Larson (2010, p. 19)
	"Intraprofessional or interprofessional process by which nurses come together and form a team to solve a patient care or healthcare system problem with members of the team respectfully sharing knowledge and resources."	Emich (2018, p. 569)
	"A collaborative process involves a synthesis of diverse perspectives to better understand complex problems. . . It is a process and an outcome in which shared interest that cannot be addressed by any single person is addressed by key stakeholders to produce a resolution."	Gardner (2005, p. 3)
	"A complex, sophisticated process that requires competence, confidence and commitment on the part of all parties involved." "It is a non-hierarchical relationship grounded on knowledge and expertise, and where power is shared."	Henneman (1995, pp. 104–108)
	"Is a process in which autonomous or semi-autonomous actors interact through formal and informal negotiation, jointly creating rules and structures governing their relationship and ways to act or decide on the issues that brought them together; it is a process involving shared norms and mutually beneficial interactions."	Thomson et al. (2007, p. 25)

Table 2. Definition of concepts related to collaboration

Concept	Definition	Author
Interdisciplinary collaboration	"An interpersonal process characterized by health care professionals from multiple disciplines with shared objectives, decision-making, responsibility, and power working together to solve between individuals care problems."	Petri (2010, p. 80)
Interprofessional collaboration	"A continuum, from cooperation as the lowest intensity, to collaboration, to teamwork as the highest intensity."	Kaiser et al. (2017, p. 265)
	"A variety of health care professionals working together to deliver quality care within and across settings."	College of Nurses of Ontario, Practice Guidelines (2014, p. 3).
Intraprofessional collaboration	"A team of professionals who are all from the same profession, such as three physical therapists collaborating on the same case."	Miller-Keane Encyclopedia and Dictionary of Medicine (2003)
	"Multiple members of the same profession working collaboratively to deliver quality care within and across settings."	College of Nurses of Ontario, Practice Guidelines (2014, p. 3)
Cooperation	"Is a key component of collaboration, including planning and working together in a helpful way."	Baggs & Schmitt (1988, p. 146)
	"The actions of someone who is being helpful by doing what is wanted or asked for."	Merriam-Webster Dictionary (n.d.).
Collegiality	"Companionship and cooperation between colleagues who share responsibility."	Oxford Dictionary (n.d.).
	"Collegiality means that professionals respect each other." "Collegiality has a common objective: what is best for the patients. . . . Professional ethics is the basis of collegiality."	Kangasniemi et al. (2017, p. 538)
Teamwork	"A distinguishable set of two or more individuals who interact dynamically, adaptively, and interdependently; who share common goals or purposes; and who have specific roles or functions to perform."	Salas et al. (2008, p. 208, ref. Salas et al., 1992)
	"A dynamic process involving two or more healthcare professionals with complementary backgrounds and skills, sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care. This is accomplished through interdependent collaboration, open communication and shared decision-making, and generates value-added patient, organizational and staff outcomes."	Xyrichis & Ream (2008, p. 238)

Personal relationships have been identified as an important part of collaboration (King et al., 2017). Interpersonal skills are related both positively and negatively to collaboration. Good relational skills are needed to promote a functional relationship in a collaborative practice (Moore et al., 2019). In health care, collaboration is often described with several characteristics. The characteristics are listed in Table 3.

Table 3. Characteristics of collaboration

Characteristic	Author(s)
Collegiality	Moore et al., 2015; Utriainen et al., 2015
Communication	Baggs & Schmitt, 1988; Dougherty & Larson, 2010; Henneman, 1995; House & Havens, 2017; Kieft et al., 2014; Moore et al., 2019; Petri, 2010; Zamanzadeh et al., 2014
Common goal	Moore & Prentice, 2015; Thomson et al., 2007; Zamanzadeh et al., 2014; Zealand et al., 2016
Consultation	Gardner, 2005; Moore et al., 2015
Coordination	Baggs & Schmitt, 1988; Dougherty & Larson, 2010
Decision-making	Dougherty & Larson, 2010; Moore et al., 2015
Individual beliefs	House & Havens, 2017; Shohani et al., 2017
Problem-solving	Gardner, 2005; Moore et al., 2015
Respect	Emich, 2018; Henneman, 1995; Kieft et al., 2014; Lemetti et al., 2017; Petri, 2010; Pfaff et al., 2014; Ulrich et al., 2014; Zamanzadeh et al., 2014
Sharing	Baggs & Schmitt, 1988; Emich, 2018; House & Havens, 2017; Kieft et al., 2014; Lemetti et al., 2017; Petri, 2010; Thomson et al., 2007
Teamwork	House & Havens, 2017; Moore et al., 2015; Pfaff et al., 2014; Zamanzadeh et al., 2014
Trust	Henneman, 1995; Kieft et al., 2014; Thomson et al., 2007; Zamanzadeh et al., 2014

2.2.2 Job satisfaction

The area of job satisfaction has been quite well explored since the 1930s; however, the subject is relevant and still gaining attention. It is defined as "the feeling of pleasure and achievement that you experience in your job when you know that your work is worth doing, or the degree to which your work gives you this feeling" (Cambridge Dictionary, n.d.). Locke (1976) defined job satisfaction as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1304). In a meta-analysis by Zangaro and Soeken (2007), "job satisfaction" is defined as "the extent to which employees like their jobs" (p. 446). According to Castaneda and Scanlan (2014), three qualities describe job satisfaction: interpersonal relationships, autonomy, and patient care. They also reported that job satisfaction has been connected to time, team, and trust. These components overlap each other in job satisfaction (Uhrenfeldt & Hall, 2015.) A systematic review by Niskala et al. (2020) suggested that intrinsic factors such as professional identity, awareness, and spiritual

intelligence for instance meaning at work and belongingness enhance job satisfaction. This is supported partly by a systematic review done by Yasin et al. (2020), who proposed that job satisfaction is associated with authority, the physical work environment, freedom and autonomy at work. Definitions of job satisfaction and related concepts are presented in Table 4.

Table 4. Definition of job satisfaction and related concept

Concept	Definition/ Content	Author
Job satisfaction	”Is an effective reaction to a job that results from the incumbent’s comparison of actual outcomes with those that are desired, expected, and deserved.”	Castaneda & Scanlan (2014, p. 130)
	“The degree of satisfaction nurses have with the nurse administrators’ collaboration at all levels, including interdisciplinary teams, executive officers and other stakeholders.”	Kol et al. (2017, p. 3)
	“Nurses’ positive feeling response to the work conditions that meet his or her desired needs as the result of their evaluation of the value or equity in their work experience.”	Liu et al. (2015, p. 87)
Work well-being	Five facets of well-being: innovative, connected, healthy, authentic, and meaningful.	Jarden et al. (2019, p. 81)
	Is constructed from “meaningfulness and success in patient-centred care, collegial support, good leadership and professional development.”	Utriainen et al. (2015, pp. 740–741)

2.3 LITERATURE SEARCH

A literature search was conducted several times during the research process. Peer-reviewed literature published between January 2014 and July 2020 was systematically searched to obtain a comprehensive understanding of current existing knowledge regarding nurse–nurse collaboration and job satisfaction among nurses in a hospital setting.

The computerized search was conducted in consultation with an information specialist. Keywords, such as nurse*, collaboration*, intraprofessional collaboration*, teamwork*, cooperation, and job satisfaction were used (Figure 1). The keyword hospital* was included in the initial search, but was removed due to few results. The selected articles had to meet the following inclusion criteria: (a) published 2014 or later, (b) peer-reviewed, (c) written in English, and (d) examined nurse–nurse collaboration or the equivalent or intraprofessional collaboration between nurses or

nurse collaboration and job satisfaction. The focus of the study was limited to the hospital setting. Articles were excluded if they did not include at least one of the given terms. The first step was the selection of articles based on the headlines and keywords. Duplicates were removed. The retrieved articles' abstracts were read and evaluated for relevance. If they were not related to the subject, they were removed. Next, the selected articles were read completely and evaluated. The quality of the studies were assessed using the Joanna Briggs Institute Critical Appraisal tools (Joanna Briggs Institute, 2017). Last, a manual search of journals and of the reference lists of the selected articles were scanned for additional relevant articles.

The final selection was 55 studies, of which 26 were quantitative, 14 were qualitative, 8 were reviews, 4 were mixed methods, and 3 were secondary analyses. The results were gathered and organized in Refworks. The selection process is presented in Figure 1. The chosen articles are described in Appendix 1.

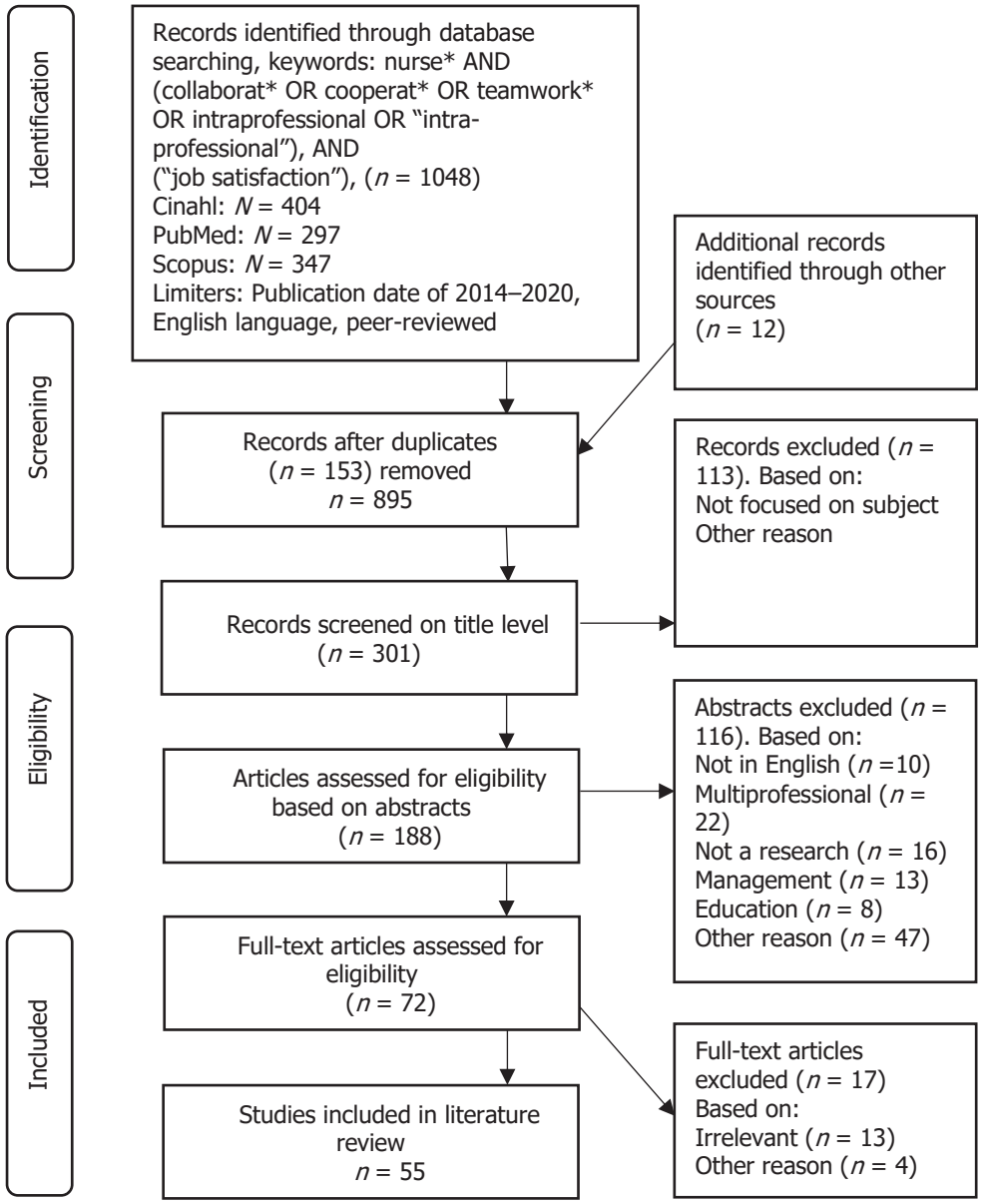

Figure 1. The literature selection process of this study (adapted from Moher et al., 2009)

2.4 PREVIOUS RESEARCH ON NURSE–NURSE COLLABORATION AND JOB SATISFACTION

2.4.1 A healthy work environment

The shortness of employment and turnover of the health care workforce have been noticed globally. A healthy work environment has a positive effect on patient outcomes, patient safety, and quality of care (Ulrich & Kear, 2018); health care professionals' well-being and job satisfaction (James-Scotter et al., 2019; Ulrich et al., 2014); and health care institutions' retention of staff (Galletta et al., 2016).

Collaboration is also associated with a healthy work environment (Ulrich et al., 2014). Additionally, collaboration is essential to minimize medical errors and sustain a safe environment (Ma et al., 2018). In their literature review, Kowalski et al. (2019) identified five concepts that support a healthy and effective practice in the nursing environment: leadership, decision-making, resources, organizational commitment, and teamwork. Leadership affects a healthy workplace environment; hence, it is one of the main factors for supporting personnel (Ulrich et al., 2014), enhancing well-being at work (Utriainen et al., 2015), and fostering teamwork and quality of care. Decision-making (Moore et al., 2015) and autonomy are considered positively, because it is important to be heard and empowered. Resources are important for practicing nursing effectively, and the organizational commitment is considered essential overall, as it affects nursing. Teamwork with respect supports the quality of care and is the key to a healthy work environment (Kowalski et al., 2019.) The management, peers, and relationships with others have an important impact on nurses' daily practice (Sun, 2019; Van Bogaert et al., 2017).

2.4.2 Interprofessional collaboration in health care

Interprofessional collaboration between nurses and physicians has been studied from the viewpoint of patient safety (Karlsson et al., 2019), good quality patient care (Ma et al., 2015; Majima et al., 2019; Ulrich & Kear, 2018; Van Bogaert et al., 2017), and employee outcomes such as job satisfaction (Anselmo-Witzel et al., 2017; Galletta et al., 2014; James-Scotter et al., 2019; Ma et al., 2015).

Themes like teamwork (Galletta et al., 2016; Siffleet et al., 2015), communication, and shared decision-making (House & Havens, 2017) more frequently appear in studies concerning nurse–physician collaboration. Interdisciplinary decision-making has been suggested to have an overall positive impact on the job (Adriaenssens et al., 2017).

Patient safety has been reported to increase in both intra- and interprofessional team collaboration where information and support are shared (Ma et al., 2018) and

decrease when the skills and knowledge of colleagues are not known (Karlsson et al., 2019).

Furthermore, the literature revealed that interprofessional collaboration has also been positively related to nurses' turnover intentions (Adriaenssens et al., 2017; Galletta et al., 2016; Ma et al., 2018). This was supported by Nowrouzi-Kia and Fox (2019), who reported that nurses who are content with their interprofessional relationships, have adequate resources, and feel job satisfaction were less likely to leave their work.

Overall, good collaboration and communication support nursing practice, helping nurses deal with stressful situations and balance their workloads (Van Bogaert et al., 2017). A higher commitment to the team supports a positive perception of nurse–physician collaboration (Galletta et al., 2016), suggesting that communication improves performance, confidence, and job satisfaction (James-Scotter et al., 2019).

On the other hand, interprofessional collaboration has also been negatively related to nurse turnover, job stress, and engagement (Kaiser et al., 2017). Additionally, dissatisfaction with workload, time pressure (Uhrenfeldt & Hall, 2015), and teamwork have been associated with mild to severe depression among nurses (Saquib et al., 2019).

A systemic review by House and Havens (2017) pointed out that nurses and physicians' views and attitudes and the definition of interprofessional collaboration differ. The value of nurse–physician collaboration often varies depending on the clinical units and departments (House & Havens, 2017) but may as well vary between different countries depending on various hierarchical relationships (Kaiser et al., 2017). House and Havens (2017) argued that there is a need for a common definition of "collaboration" before collaboration can actually happen. Nevertheless, it is clear that the exchange of ideas and discussions in multidisciplinary teams deepen the quality of care (Norikoshi et al., 2018).

2.4.3 Intraprofessional collaboration between nurses and job satisfaction

Teamwork is considered an essential part of nurses' practice environment (Papastavrou et al., 2014). It has been positively connected with RNs' job satisfaction (Atefi et al., 2015; Dilig-Ruiz et al., 2018; Kaiser & Westers, 2018; Zamanzadeh et al., 2014). Teamwork in nursing sort of forces nurses to collaborate for the patients' best outcomes; thus, cooperation helps nurses manage different situations easier (Atefi et al., 2015). Nurse–nurse collaboration or intraprofessional collaboration has been described as working together (Lin et al., 2019; Uhrenfeldt & Hall, 2015) as a team to provide the best quality of care (Moore et al., 2017). Eventually, the outcome of nurse–nurse collaboration can lead to patient satisfaction and better care (Lemetti et al., 2017.)

The literature revealed that collaboration means different things to nurses; for example, generational differences have been reported (Moore et al., 2015). Factors

such as age seem to influence collaboration. In a study by Moore et al. (2017), younger nurses evaluated collaboration lower than older nurses did, even though the younger nurses felt that the older nurses had poor interpersonal interactional skills and were sometimes unwilling to collaborate.

Demographics might affect nurses' views on collaboration; for instance, regarding employment, nurses with continuous employment have evaluated collaboration higher than those with temporary contracts have (Durmuş et al., 2018). Previous research has indicated that work experience is associated with teamwork, and nurses with less experience rated teamwork higher than those with more work experience did (Bragadóttir et al., 2019; Kaiser & Westers, 2018). On the other hand, team effectiveness (Lavoie-Tremblay et al., 2016), employment status, and level of education have been associated with work satisfaction (Fiske, 2018). Furthermore, performing at their highest capacity, role clarity (Moore et al., 2017), and religious and ethical beliefs can have positive and negative effects on collaboration (Shohani et al., 2017). Moreover, the patient population and clinical practice environment can influence collaboration (Moore et al., 2017).

Consequently, adequate staffing, staff characteristics, and experience on the current unit also play an important role in nursing teamwork (Bragadóttir et al., 2019). According to Pfaff et al. (2014), satisfaction with the team, team strategies, participation in mentorship or education were predictors of nurses' engagement in collaborative practice. According to a study by Uhrenfeldt and Hall (2015), teamwork is a source of both job satisfaction and dissatisfaction. Hospital nurses' job satisfaction is associated with their team, time, and trust, and thus a lack of any of these three factors threatens patient care and nurse retention. Unit-based teamwork needs group and goal orientation to work fully (Kaiser & Westers, 2018).

Intraprofessional collaboration between nurses has been related to a person's attitude towards collaboration: Some like to work together, and others prefer to work alone. Factors such as personal experience, motivation, personal characteristics, personal problems (Shohani et al., 2017), or poor interpersonal skills can be barriers to successful collaboration (Moore et al., 2017.) Previous research has suggested that having colleagues do their jobs well, collegial relationships, feedback (Lin et al., 2019; Uhrenfeldt & Hall, 2015), responsibility, a great level of self-sufficiency, and good relationships with patients and other staff members are associated with high levels of job satisfaction (Sun, 2019; Zeleníková et al., 2020) and decrease when horizontal violence appears (Purpora & Blegen, 2015).Well-being at work has been associated with, among other things, assistance and support between colleagues (Adriaenssens et al., 2017; Norikoshi et al., 2017), nurses' cooperation, patients' experiences of quality of care, and meaningful work (Utriainen et al., 2015).

Collaboration requires a supportive and respectful working atmosphere that enhances intraprofessional interactions and processes and promotes collaboration (Lemetti et al., 2017). Cooperative relationships among nurses are built through expressed appreciation and selfless reciprocity (Norikoshi et al., 2017).

Collaboration is facilitated and enhanced by face-to-face contact and relationship formation (King et al., 2017). Social relationships with other nurses and success in patient care have been shown to be strongly connected to nurses' well-being (Utriainen et al., 2015). Thus, collegial solidarity is important for ensuring effective care. Collegial solidarity is associated with a supportive and positive work environment, which consists of a supportive climate, teamwork, and job satisfaction (Kılıç & Altuntaş, 2019.) Nurses rely on teamwork with their colleagues. They value belongingness; it is important to be accepted and to fit in. Teamwork, trust, and willingness to help enhance this (Mohamed et al., 2014).

Nursing leadership plays a vital part in promoting nurse–nurse collaboration. They have to create opportunities and support nurses' relationships and communication, though collaboration can be inhibited if the leadership or resources are poor (Moore & Prentice, 2015). Leadership behaviour can positively affect nurse–nurse relationships by creating teamwork in the unit, for example, by working together for a common goal or in shared decision-making (Kaiser, 2017). Leaders also have to manage conflicts for team backup and to facilitate teamwork (Grubaugh & Flynn, 2018).

Furthermore, work interaction (Atefi et al., 2015), communication, openness, and involvement for the cause of task integration enhance work motivation (Toode et al., 2015) and job satisfaction (Havens et al., 2018), which can be improved through leaders' emphasis on the meaning of work, professional identity, and development (Niskala et al., 2020). Teamwork training might enhance the way nurses work together effectively in a team and nurses' overall performance (Marguet & Ogaz, 2019) as they develop new understandings and values when collaborating with various people in different contexts and situations (Lemetti et al., 2017). Zealand et al. (2016) suggested that, in turn, it is more important to commit to the same care goals and less important to like one's colleagues.

2.5 SUMMARY OF PREVIOUS RESEARCH

Due to changes in the population and the organizational structures of health care, the meaning of a healthy work environment in nursing has been emphasized. The literature has revealed that a good working environment is essential for quality care, patient safety (Ulrich & Kear, 2018), and health care professionals' well-being (James-Scotter et al., 2019; Ulrich et al., 2014).

A healthy work atmosphere is supported by collaboration and teamwork (Kowalski et a.l; Ulrich et al., 2014). Both inter- and intraprofessional collaboration have been associated with patient outcomes such as patient falls and higher hospital-acquired pressure ulcers (Ma et al., 2018). Thus, a healthy work environment requires good collaboration within and between professionals because collaboration and relationships with colleagues are associated with job satisfaction.

Concurrently, the nurse's role has changed regarding the physicians in previous decades. The hierarchical process structure is changing, and the nurses are more

independent, have more responsibilities, and are involved in the decision-making. Nurses are at the frontline of patient care and work as patients' advocates. The nurse–physician relationship (e.g. Galleta et al., 2016; House & Havens, 2017) has been studied to some extent; however, the literature review revealed that nurse–nurse collaboration and intraprofessional has been sparsely studied. A limited number of studies have been concerned with nurse–nurse collaboration and what impact it had on job satisfaction (Durmuş, 2018; Uhrenfeldt, & Hall, 2015), even though nurses' job satisfaction has been studied extensively in the past (e.g. Dilig-Ruiz et al., 2018; Sun, 2019). Most of the studies are concerned with teamwork (e.g. Grubaugh & Flynn, 2018; Pfaff et al., 2014), collegiality (e.g. Kılıç & Altuntaş, 2019) and nurse relationships (e.g. Mohamed et al., 2014; Zealand et al., 2016) or interprofessional collaboration (Ma et al., 2015). There was a gap and deficiency in literature about nurse-nurse collaboration in a hospital setting overall, including Finland and Norway. There is also a lack of information whether nurse–nurse collaboration is related to job satisfaction. Most of the studies included in this study were of quantitative design and completed in the United States. The data had been collected commonly in the ICU and corresponding units. (Appendix 1).

The collaboration concept is complex and understood in various ways. More detailed information is required on how nurses comprehend the concept of collaboration for efficient and satisfactory collaboration. This is important for the development of clinical nursing and the nursing profession, to increase safety and improve communication, and better patient outcomes. Nurse–nurse collaboration is needed for improving patient care, patient safety, and nurses' job satisfaction (Ulrich & Kear, 2018). In addition, factors such as collaborative relationships, competent nurses, nurses' autonomy, support from management, control of nursing practice, and patient-centred care have been reported to improve patients' experiences of care (Kieft et al., 2014). Action needs to be taken, to improve nurses' job satisfaction and to remain nurses in the profession, and also to make nursing profession more attractive. For that reason, more attention should be placed on intraprofessional collaboration.

The theoretical framework for this study has been formed according to international guidelines and the current literature. The framework was the basis for the hypothesis and used to guide the research and interpret and discuss the findings. Figure 2 presents a theoretical framework on collaboration between nurses and job satisfaction based on the literature.

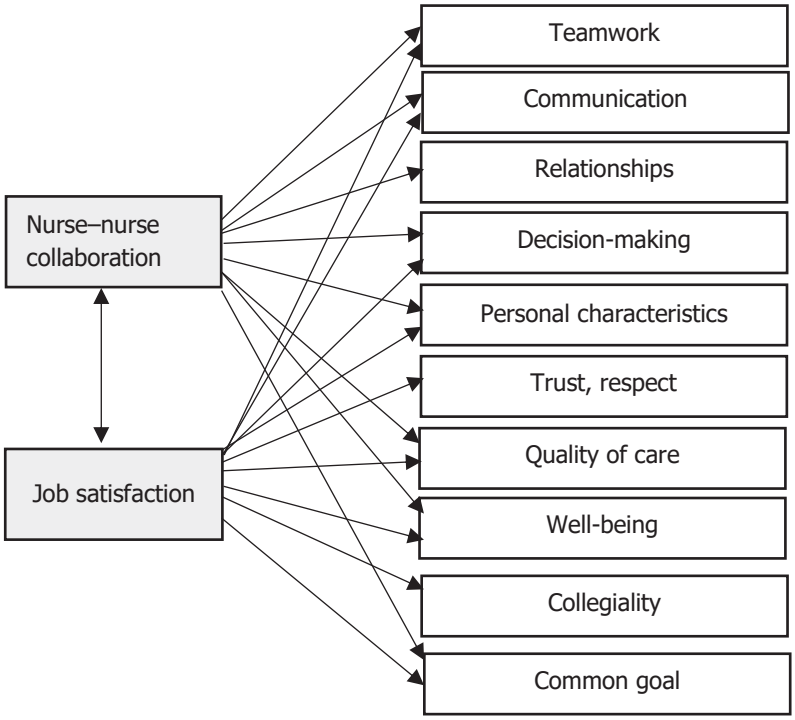

Figure 2. Summary of this study's theoretical framework on nurse–nurse collaboration and job satisfaction.

3 AIMS OF THE STUDY

The aims of this study were to examine nurse–nurse collaboration and job satisfaction and the relationship between them and examine Finnish and Norwegian RNs' perceptions and experiences in a hospital setting. A mixed methodology was used to answer the research aims. The main focus of this study was collaboration between RNs. This study's goal was to strengthen our understanding on RNs' intraprofessional collaboration.

The specific objectives of the study were the following:

Substudy I

The hypothesis of this study: Good RN–RN collaboration predicts high job satisfaction.

1. To examine RNs' perceptions of nurse–nurse collaboration in a hospital settings in Finland and Norway (Article I);
    i. and to identify what background factors are related to nurse–nurse collaboration.

2. To examine RNs' perceptions of job satisfaction in a hospital settings in Finland and Norway (Article II);
    ii. and to identify what background factors are related to RNs' job satisfaction.

3. To examine the effect of the relationship between nurse–nurse collaboration and job satisfaction (Article III).

Substudy II

4. To describe how RNs experience intraprofessional collaboration (Article IV) and job satisfaction.

The provided knowledge from the study can be utilized to meet the requirements of the working life, develop and improve the RNs' collaboration and interaction skills, and thus enhance nurses' job satisfaction.

4 SUBJECTS AND METHODS

4.1 STUDY DESIGN

In this study, a convergent parallel design was used to answer the research aims. The convergent design, earlier also called the triangulation design, is broadly used in diverse sciences. The method includes multiple phases, which are described below (Figure 3). Convergent design involves collecting both qualitative and quantitative data at the same phase, analysing them separately, and integrating the results during the interpretation phase, including exploring conjunctions, differences, and contradictions of the results (Creswell & Plano Clark, 2018).

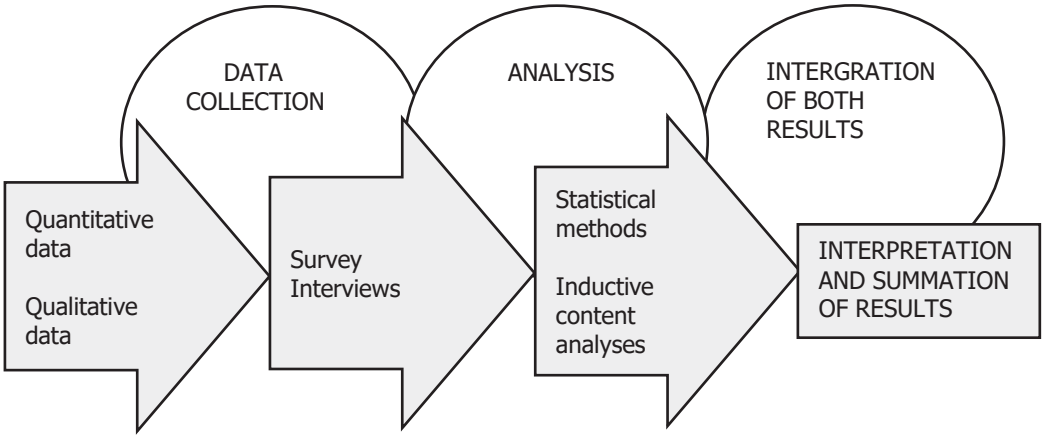

Figure 3. Convergent parallel design (adapting and modifying Creswell's and Plano Clark's flowchart of the convergent design, 2018, p. 66)

Combining quantitative and qualitative methods in the same study provides richer results than if only using one method (Rahm Hallberg, 2015); in other words, it enables a comprehensive understanding of the phenomena (Creswell & Plano Clark, 2018).

This study was composed of two substudies. Substudy I (Articles I–III) utilized a cross-sectional, descriptive quantitative study design. Substudy II (Article IV) had a qualitative approach that consisted of RNs' interviews. Table 5 presents the aim, design, sample, setting, data collection, and data analysis used in these studies.

Table 5. Substudies of the research

	Articles	Aim	Design	Sample and setting	Data collection	Analysis
Substudy I	Article I: Perceptions on nurse–nurse collaboration among RNs in Finland and Norway	To describe RNs' perceptions of RN–RN collaboration in hospital settings and identify background factors that are related to RN–RN collaboration	A cross-sectional quantitative study design	RNs (n = 406) working in a university hospital in Finland (n = 303) and Norway (n = 103)	Electronic web-based survey	Descriptive statistics, cross-tabulations, Pearson's chi-squared tests, and multivariate ANOVA
	Article II: Job satisfaction among RNs in two Scandinavian acute care hospitals	To describe RNs' perceptions of job satisfaction in a hospital setting and to identify background factors that are related to RNs' job satisfaction				Nonparametric tests, and multiple linear regression analyses
	Article III**:** Structural equation modelling indicates that good nurse–nurse collaboration implies high job satisfaction.	To explore the effect of the relationship between nurse–nurse collaboration and job satisfaction	A secondary analysis of a cross-sectional survey			Structural equation modelling analysis
Substudy II	Article IV**:** Intraprofessional collaboration – A qualitative study of Finnish and Norwegian nurses' experiences.	To explore how RNs experience intraprofessional collaboration and job satisfaction	Descriptive	Sample of Finnish RNs (n = 16), Norwegian RNs (n = 13)	Semistructured open-ended interviews	Inductive qualitative content analysis

4.2 SUBSTUDY I: A CROSS-SECTIONAL STUDY (ARTICLE I–III)

4.2.1 Study setting, sample, and data collection

A cross-sectional, descriptive, and quantitative design was selected to conduct the first phase of the study. The design was used to answer the research questions, which were to examine nurse–nurse collaboration and job satisfaction in a hospital setting as a phenomenon on a general level. Also the international viewpoint was of interest.

Data were collected in one Finnish and one Norwegian university hospital. The hospitals for this study were chosen with discretion as they represent a relatively homogeneous sample. A convenience sample of all RNs working in the hospitals were approached to join in the study (Finland, $N = 1031$, April–May 2015, Norway, $N = 1039$, May–June 2015) and to answer a self-administered questionnaire. The final sample consisted of 303 Finnish RNs, with a response rate of 29%, and 103 Norwegian RNs, with a response rate of 10%. Fifteen operational units participated in Finland, and 10 participated in Norway, respectively. The units were combined into five categories. A power analysis was performed for sample size estimation (Articles I–III). The required sample size was calculated for each objective separately. An estimated sufficient sample size was 325 with a confidence level of 95% for the most common statistical tests. In addition, 406 RNs participated in the study; thus, the overall sample size was satisfactory. The optional sample size for each country was 281, which means that the Norwegian sample did not meet the criterion for all analyses such as multiple regression analysis because of the small sample size and low representation in the categorical groups. (Raosoft, 2004).

Information about the study (Appendix 2) was distributed by email to nursing managers concurrently with site visits to hospitals and to named contact persons before the study. They then further distributed the electronic survey to RNs working at different wards. To boost the response rate, three reminders were sent out. Completion of the survey was taken as consent to participation (Groove et al., 2013).

4.2.2 Instruments

This 72-item survey consisted of two instruments: the first Nurse–Nurse Collaboration Scale (NNCS) developed by Dougherty and Larson (2010), which comprises 35 items measuring five domains of collaboration (number of items, "example of item"): conflict management (seven items, "All the nurses will work hard to arrive at the best possible solution"), communication (eight items, "It's easy for me to talk openly with nurses in this unit"), shared process (eight items, "I have a lot to say over what happens for patient care"), coordination (five items, "There

are written evidence-based treatment protocols"), and professionalism (seven items, "On this unit, nursing leadership supports collaboration"). The items are scored using a 4-point Likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*). A higher mark indicated a more optimistic perception of intraprofessional collaboration. Values of .66 to .90 were reported for the Cronbach alpha of the original NNCS (Dougherty & Larson, 2010).

The researchers translated the English scale into Finnish, two authorized language reviewers translated it into Norwegian, and two native speakers later reviewed it. A pilot study using the NNCS was performed in 2011 in a Finnish hospital (n = 113; Ylitörmänen et al., 2013).

The second instrument used in this study was the Kuopio University Hospital Job Satisfaction Scale (KUHJSS) developed by Kvist et al. (2012). The scale was available in both the Finnish and English languages. The scale consists of 37 items covering seven domains (number of items, "example of item"): leadership (seven items, "My manager/director is genuinely interested in the well-being of the staff"), requiring factors of work (eight items, "There are usually enough staff in my unit"), motivating factors of the work (six items, "My work tasks are suitably challenging"), working environment (four items, "My work unit is safe and secure"), working welfare (four items, "I look after my personal well-being"), participation in decision-making (four items, "I have opportunities to plan my work independently"), and sense of community (four items, "There is a good community spirit in my unit"). The responses were measured with a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Two authorized language reviewers translated the KUHJSS into the Norwegian language using the double-translation method, and then two native speakers reviewed it to confirm accuracy. Minor alterations in wording were applied (Article II). The authors acquired consent to use both instruments. The Cronbach alpha values for the original KUHJSS ranged from .64 to .92 (Kvist et al., 2012).

The survey additionally comprised questions involving demographic variables, such as gender, age, work unit, work experience in the current unit, total work experience in the health care sector, form of employment, and shift pattern (Appendix 5).

The scales were pretested in a hospital setting in Finland (n = 28) and Norway (n = 10) in 2015 before performing the study. Small phrasing changes were made in the Finnish and Norwegian questionnaires according to replies from the pilot tests (Article I).

4.2.3 Data analysis

The gathered quantitative data were analysed and processed using the Statistical Package for Social Sciences (SPSS for Windows 27.0, IBM, and Armonk, NY). The data from Finnish RNs and Norwegian RNs were handled separately. Frequencies,

percentages, means, and standard deviations were used to describe the characteristics of the participating RNs. Categorical variables were combined because there were inadequate responses in the categories and to simplify interpretation of the results. Four age groups were constructed: ≤ 30 years, 31–40 years, 41–50 years, and ≥ 51 years. Participants' working units were combined into five categories: medical, surgical, emergency and critical care, mental health, and other units. The duration of the participants' service in their present working unit and total health care work experience groups were also recombined into five categories respectively. The categorizations are described in more detail in Articles I–II.

a) The NNCS had seven negatively worded items in the subscales, and they were reversed. The 4-point Likert scale was dichotomized from *strongly disagree* to *disagree* and *strongly agree* to *agree*. Cross-tabulations and Pearson's chi-squared tests were used to determine if there were associations between the categorical variables and to compare the Finnish and Norwegian statistics (Polit & Beck, 2008). Multivariate ANOVA was used for multiple comparisons and to define the effects of RN characteristics on the five subscales of collaboration (Article I).
b) The Kolmogorov–Smirnov test was used to test normality of the distributions in the KUHJSS. Mean scores for the subscales were calculated. Statistical relationships between the demographic variables and sum variables were tested using the Mann–Whitney U test and Kruskal–Wallis test because the data did not show normal distribution. A concurrent multiple regression analysis was used to explore how the nurses' characteristics and country affected job satisfaction (Article II).
c) The secondary analysis was used to analyse the existing data collected in 2015 described above. Secondary data analysis is an effective way to gain a more comprehensive understanding of the research questions (McCaston, 2005). This design allows the researcher to examine the data from a new viewpoint that was not originally presented (Groove et al., 2013). In this secondary analysis, data from Finland and Norway were joined and used as one data set. Structural equation modelling (SEM; Hoyle, 2012) was used to measure how well the hypothesized model fit the study data. This is a statistical procedure where path coefficients are calculated. The analysis shows the effect one variable has on another (Groove et al., 2013). The model contains statistically significant regression terms. According to Hoyle (2012), this causes a change in terminology, and the models are usually given more general SEM definitions (latent variables). At the beginning of the analysis, the structure of the NNCS 5-factor scale and the KUHJSS 7-factor scale were established with confirmatory factor analysis (CFA). CFA is used for confirming a hypothesized measurement model (Polit & Beck, 2008). This procedure has demonstrated to be a good factor model for

verifying theories in nursing sciences (Kääriäinen et al., 2011). CFA confirmed the hypothesized factor structure, justifying the subsequent SEM analysis (Article III).

4.3 SUBSTUDY II: A QUALITATIVE STUDY (ARTICLE IV)

4.3.1 Sample and data collection

To obtain more understanding and knowledge of RNs' experiences of nurse–nurse collaboration, a qualitative inductive approach was chosen. Data were collected through interviews with open-ended questions (Vaismoradi et al., 2013). The interview themes (Appendix 6) of this study were related to collaboration between nurses and job satisfaction and were built on the domains of the NNCS (Dougherty & Larsen, 2010) and KUHJSS (Kvist et al., 2012). Two official language revisers conducted double translation and revision of the interview themes. Then the interview themes were piloted with Finnish and Norwegian nurses to ensure comparability and comprehensibility of the themes. The researcher conducted the interviews in the respondents own native language and audio recorded them with the participants' consent (Polit & Beck, 2008).

A cover letter (Appendix 3) describing the study and its voluntary nature was sent out to the RNs in connection with the survey in one university hospital in Finland and one in Norway to invite RNs to participate in the study. Nurses who were willing to participate in the interviews contacted the researcher by email. Being a RN was the inclusion criteria to participate. Thirty nurses were willing to participate, and 29 RNs were accepted to participate, as one of the volunteers was not a RN. Sixteen interviews took place in Finland and 13 in Norway.

The interviews were conducted between June and December 2015 at the hospitals where the RNs worked. The volunteer RNs selected the date, time, and location for the interviews. One Norwegian RN was interviewed by telephone. Informed concent (Appendix 4) was provided to the participants with information about the study, its confidentiality, and the anonymity. The interviews were conducted outside the ward or in a suitable room near the unit. The interviews lasted approximately 30–60 min. Data were collected until data saturation was achieved (Vaismoradi et al., 2013).

4.3.2 Qualitative inductive content analysis

The audio-recorded interviews were transcribed verbatim into text files and covered 275 A4 pages, with 1.5 line spacing. The transcriptions were read and reread thoroughly to obtain an overview of nurses' experiences of collaboration between nurses and job satisfaction. The researcher chose a qualitative inductive content analysis, processing the data in steps from specific to general (Elo &

Kyngäs, 2007; Silverman, 2005), to answer the research questions. The interviews were then divided into meaning units dealing with the same content, and the codes were identified and clustered into subcategories and categories (Vaismoradi et al., 2013). The data of RNs in the two countries were then compared for similarities and differences. In Article IV, direct quotations were used in the text to confirm confirmability (Polit & Beck, 2008; Silverman, 2005). The number represents the informant RN, FI stands for Finland, and NO stands for Norway. Table 6 presents examples of the progression from meaning units to categories in the inductive content analysis process.

Table 6. An example of the inductive content analysis process from meaning unit to categories (Ylitörmänen et al., 2020; Article IV)

Meaning unit	Code	Subcategory	Category
"…work together to care for the patients…" (FI5)	Work together in care for patients	Patient in the centre of care	Equal and smooth collaboration towards a common goal with the patient in the centre
"…work jointly towards the same course…" (FI7)	Work jointly		
"…work together to achieve the best for the patients…" (NO5)	Work together for best care for the patients		
"…we complement each other in the work tasks that must be done in relation to the patient…" (NO1)	Complement each other in work tasks in relation to the patient	Collaboration is needed for the work to flow in patient care	

4.4 VALIDITY AND RELIABILITY OF THE STUDY

4.4.1 Substudy I: the quantitative study

In the cross-sectional study, validity and reliability were enhanced using validated questionnaires and previously tested in various international settings. Professional translators translated the NNCS (Dougherty & Larson, 2010) and KUHJSS, developed by Kvist et al. (2012), into the required language, and native speakers revised it to check correctness.

In this study exploratory factor analysis was applied using the principal axis method with varimax rotation to evaluate NNCS scale's construct validity. All items were loading into the factor. Furthermore, the internal consistency of the whole NNCS and the subscales was measured using Cronbach alpha coefficient values ranging from .62 to .86 for the five collaboration subscales. The subscale with the lowest value had less numbers of items, which might be the cause of a lower Cronbach alpha (Polit & Beck, 2008). The Cronbach alpha for the whole scale was

.92. Cronbach alpha coefficient values for the KUHJSS alternated from .65 to .92 for the seven job satisfaction subscales. The overall Cronbach alpha value was .93. These values reflect "acceptable" and "good" levels, respectively, of internal consistency (Polit & Beck, 2008).

4.4.2 Substudy II: the qualitative study

Regarding the validity and reliability of Substudy II, the qualitative study was enhanced using Lincoln and Guba's (1985) criteria. Their criteria for establishing trustworthiness include credibility, confirmability, dependability and transferability (Lincoln & Guba, 1985).

The following strategies were used to strengthen and improve data quality. At the beginning, prolonged engagement and trust were built by providing the respondents' information about the interviewer herself and the interview process and by confirming that the respondent felt comfortable.

Credibility was achieved in this study by providing the respondents sufficient time to answer the questions undisturbed and by listening to the respondent actively.

Confirmability was established by a transparent analysis process, from meaning units to subcategories and categories, to certify that the data were neutrally interpreted. The findings represented the participants.

Dependability was strengthened between the researchers through discussions about the content of the data and the categorization process.
Transferability was accomplished by providing sufficient and accurate description of the descriptive data, such as the context, participants, analysis process, and findings (Lincoln & Guba, 1985). Consolidated criteria for reporting qualitative research (COREQ) were applied for reporting this study's results. The COREQ tool supported comprehensive reporting of the results (Tong et al., 2007).

4.5 ETHICAL ISSUES

This study extends the knowledge about nurse–nurse collaboration and job satisfaction. The selected research topic is based on the clinical experience of working as a nurse in both countries, as well as in various working areas. Clinical experience may be a compelling source for research topics (Polit & Beck, 2008). There is still limited research on this emerging topic.

The study was conducted in Finland and Norway, and local rules and guidelines were followed. The study was reviewed and approved by the University of Eastern Finland Committee on Research Ethics (14/2014) and the Norwegian Data Protection Authority (3130/2015). Consent to collect data was obtained from appropriate authorities in both participating hospital. Good scientific practice

includes an ethically tolerant research plan (Polit & Beck, 2008). In this study, good ethical practice was maintained. The study did not cause harm or risks to the participants, who were health care professionals. The research process was conducted and guided in accordance with the Finnish Advisory Board on Research Integrity (Finnish National Board on Research Integrity, 2019).

The respondents, both those who took part in the survey and participated in the interviews, were informed about the study through cover letters, which provided information about the purpose of the study, the voluntary and anonymous participation, the confidentiality pledge, the estimated response time, the reporting of the results, and the right to withdraw from the study at any time (Art. 17; General Data Protection Regulation, 2019). The participants were likewise provided with the researcher's contact information for further inquiries or clarifications. Completing the questionnaire was interpreted as giving consent to participate in the electronic web-based survey (Polit & Beck, 2008). The data were handled with confidentiality and in such a way that no individual respondent could be identified.

In Substudy II, informed consent was obtained from participants before the interviews. Identifying information (name) was only for the researcher if further information or clarification was needed after the interviews. Only the researcher had access to the research data, which were stored in a locked cabinet out of others' reach. All research materials, tapes, and consent forms will be preserved according to the University of Eastern Finland's guidelines and instructions after acceptance of this thesis.

5 RESULTS

The results of this study are reported according to Substudies I and II and linked with the published articles. The quantitative data were collected through an electronic survey in late spring and summer 2015 in Finland and Norway. The obtained data explored nurses' perception on nurse–nurse collaboration and job satisfaction (Articles I–II). The SEM analysis used the existing quantitative data (Article III). Later, in summer and winter 2015, the nurses' views on intraprofessional collaboration and job satisfaction were examined through interviews (Article IV). The results of this study are presented under three main headings related to the substudies and according to the study's aims. In conclusion, the results were merged and presented in the summary.

5.1 NURSE–NURSE COLLABORATION AND JOB SATISFACTION PERCEIVED BY FINNISH AND NORWEGIAN NURSES (SUBSTUDY I)

5.1.1 Characteristics of the respondents of the quantitative study

The findings of this electronic survey show that the Finnish nurses whom participated in this study are on average older and have more work experience in health care than Norwegian nurses. In this study, respondents' average age was 40.9 years (ranging from 22 to 62 years). A majority of the respondents were women (88%). On average, the respondents had worked in health care for 15.7 years (ranging from less than 1 to 34 years, *SD* = 10.6). Most of the RNs worked in shifts (77%), and 78% reported that they held a permanent position. The RNs had worked in their present ward for 7.9 years on average (with a range of less than 1 to 33 years, *SD* = 8.8). Table 7 presents the background information.

Table 7. Demographics of RNs (*N* = 406; Ylitörmänen et al., 2019; Article I)

Background variable	**Finland (*n* = 303)**		**Norway (*n* = 103)**	
	n	(%)	*n*	(%)
Gender				
Female (***n*** = 357)	267	(88)	90	(87)
Male (***n*** = 49)	36	(12)	13	(13)
Form of employment				
Permanent position (***n*** = 317)	227	(75)	90	(87)
Fixed-term employment (***n*** = 89)	76	(25)	13	(13)

Main working time						
Daytime (***n*** = 92)	75	(25)		17	(17)	
Working shifts (***n*** = 314)	228	(75)		86	(83)	
Age (years)	*n*	(%)	Mean 42	*n*	(%)	Mean 38
≤ 29 (***n*** = 96)	64	(21)		32	(31)	
30–40 (***n*** = 106)	75	(25)		31	(30)	
41–51 (***n*** = 112)	88	(29)		24	(23)	
≥ 52 (***n*** = 92)	76	(25)		16	(16)	
Work experience in current unit (years)			8			7.2
≤ 1 (***n*** = 66)	34	(11)		32	(31)	
2–5 (***n*** = 109)	86	(29)		23	(22)	
6–10 (***n*** = 97)	76	(25)		21	(21)	
11–20 (***n*** = 84)	64	(21)		20	(19)	
≥ 21 (***n*** = 50)	43	(14)		7	(7)	
Total work experience in health care sector (years)			16.1			14.3
≤ 4 (***n*** = 66)	43	(14)		23	(22)	
5–10 (***n*** = 67)	44	(15)		23	(22)	
11–19 (***n*** = 122)	95	(31)		27	(27)	
20–30 (***n*** = 92)	69	(23)		23	(22)	
≥ 31 (***n*** = 59)	52	(17)		7	(7)	

5.1.2 RNs' perceptions of nurse–nurse collaboration (Article I)

Based on the findings of the electronic survey in 2015, most of the participating RNs' perceptions on nurse–nurse collaboration were good. The cross-tabulations and Pearson's chi-square test analysis revealed that the Norwegian nurses had a significantly more positive view on nurse–nurse collaboration overall.

Nonetheless, both Finnish and Norwegian nurses evaluated conflict management lowest. Most of the RNs sought to resolve a conflict to arrive at the best solution, yet the responses were more divided among the Finnish nurses. The nurses evaluated the subscales' professionalism the highest. Many of the nurses expressed mutual respect and cordial relationships among nurses. The Finnish nurses evaluated communication slightly weaker than the Norwegian nurses—for example, three-quarters (77%) of the Finnish nurses agreed with the item "communication between nurses is very open", whereas almost all (90%) of the Norwegian nurses agreed with the item. In general, the nurses expressed that the communication was open and that they enjoyed talking to others. However, the answers were divided when concerning the sharing of information. Similarly, the Finnish nurses perceived shared processes less positively. The evaluation of their decision-making and autonomy was different from the Norwegian nurses, who evaluated most of these components higher. Differences in perception were furthermore found in the

coordination subdomain. The Finnish nurses' perceptions were more distributed than the Norwegian nurses. Evidence-based treatment protocols and daily staff rounds caused the most deviation. Table 8 presents additional details about nurses' views of nurse–nurse collaboration (Article I).

The findings of multivariate ANOVA revealed the effects of nurses' characteristics on the subscales of collaboration. The data from both countries were here used as one data set. RNs' characteristics, such as the country, gender, and work experience in health care and the working schedule, were associated with the perceptions of intraprofessional collaboration. The Finnish nurses scored the subscales lower than the Norwegian nurses regarding the effect of country. Male nurses evaluated conflict management and communication lower than the female nurses. Nurses with 5–19 years of work experience estimated conflict management and coordination lower than nurses with less than 5 years or more than 20 years of experience. In addition, the working schedule was associated with nurse–nurse collaboration. Nurses who worked in the daytime rated that the subscales shared process and professionalism higher than those who worked in shifts (see Article I, Table 3 for more details).

Table 8. Nurse–nurse collaboration perceived by Finnish and Norwegian registered nurses (*n*, %; Ylitörmänen et al., 2019; Article I)

Subscale of collaboration	Finnish RNs (*n* = 281–303)		Norwegian RNs (*n* = 94–103)		
	Disagree *n* (%)	Agree *n* (%)	Disagree *n* (%)	Agree *n* (%)	*p**
Conflict management					
All points of view will be carefully considered in arriving at the best possible solution	127 (42)	173 (58)	10 (10)	93 (90)	< 0.001*
All the nurses will work hard to arrive at the best possible solution	93 (31)	207 (69)	12 (12)	90 (88)	< 0.001*
The nurses involved will not settle the dispute until all are satisfied with the decision	151 (51)	146 (49)	24 (24)	77 (76)	< 0.001*
Nurses will work together to resolve a conflict	86 (29)	213 (71)	11 (11)	91 (89)	< 0.001*
When nurses disagree, they will ignore the issue, pretending it will go away	99 (33)	201 (67)	29 (28)	74 (72)	
Nurses will withdraw from conflict	112 (37)	187 (63)	50 (49)	52 (51)	0.040*
Disagreements between nurses will be ignored or overlooked	123 (41)	175 (59)	33 (33)	68 (66)	

Communication					
It's easy for me to talk openly with nurses in this…	33 (11)	265 (89)	6 (6)	95 (94)	
Communication between nurses is very open	68 (23)	228 (77)	10 (10)	92 (90)	0.004*
I find it enjoyable to talk with other nurses…	30 (10)	268 (90)	1 (1)	100 (99)	0.003*
It's easy to ask advice from nurses on …	15 (5)	283 (95)	1 (1)	99 (99)	
I can think of the number of times when I received incorrect information from nurses…	43 (14)	256 (86)	20 (20)	82 (80)	
It's often necessary for me to go back and check the accuracy of information	75 (25)	225 (75)	27 (26)	75 (74)	
The accuracy of information passed among nurses on this unit leaves much to be desired	125 (42)	174 (58)	29 (28)	73 (72)	0.016*
I feel that certain nurses don't completely understand the information they receive	114 (38)	186 (62)	40 (39)	62 (61)	
Shared process					
I'm able to make a lot of decisions on my own	18 (6)	281 (94)	12 (12)	89 (88)	
I'm allowed to make decisions that affect me at work	65 (22)	231 (78)	11 (11)	92 (89)	0.012*
I'm involved in making decisions about what happens in my work	59 (20)	236 (80)	21 (21)	81 (79)	
I have a lot to say over what happens for patient care …	83 (28)	217 (72)	14 (14)	88 (86)	0.004*
Nurses agree on goals for patient pain management …	53 (18)	245 (82)	7 (7)	95 (93)	0.008*
Nurses agree with patient safety goals…	33 (11)	263 (89)	16 (16)	87 (84)	
Nurses stop a procedure that violates patient safety standards of identification	32 (11)	265 (89)	14 (14)	87 (86)	
Nurses may stop a procedure that violates infection control standards for central line insertions	40 (14)	242 (86)	22 (22)	79 (78)	
Coordination					
Nurses speak directly to each other regarding patient care…	40 (14)	256 (86)	6 (6)	96 (94)	0.038*

Nurses have ad hoc group meetings regarding patient care…	150 (50)	148 (50)	41 (42)	57 (58)	
There are written evidence-based treatment protocols	131 (44)	167 (56)	17 (17)	81 (83)	< 0.001*
There are written policies and procedures regarding coordination of care	63 (22)	230 (78)	8 (8)	86 (92)	0.005*
There are daily staff rounds	116 (41)	165 (59)	17 (17)	82 (83)	< 0.001*
Professionalism					
There is a respectful and cordial relationship among nurses	56 (19)	240 (81)	7 (7)	94 (93)	0.004*
There is a willingness among nurses to collaborate with each other	40 (14)	254 (86)	6 (6)	95 (94)	0.041*
Nurses have adequate knowledge of drugs ordered for the patients…	40 (14)	252 (86)	10 (10)	91 (90)	
Nurses have adequate knowledge of the disease process for patients…	33 (11)	261 (89)	12 (12)	87 (88)	
Nurses have the technical skills necessary to provide safe care to the patients…	30 (10)	263 (90)	6 (6)	95 (94)	
On this unit, nurses with more experience help to mentor and teach less-experienced nurses	20 (7)	278 (93)	6 (6)	94 (94)	
On this unit, nursing leadership supports collaboration	120 (41)	175 (59)	12 (12)	87 (88)	< 0.001*

Crosstabs and Pearson's chi-squared tests, reversed items in italics
Asymp.Sig. (2-sided), * $P < .05$

5.1.3 Job satisfaction perceived by Finnish and Norwegian RNs (Article II)

The findings of this survey showed that both Finnish and Norwegian nurses were satisfied as a whole, although there were between-country differences. The Mann–Whitney U test and Kruskal-Wallis test revealed that there were a statistically significant difference on how Finnish and Norwegian nurses perceive job satisfaction ($p < .001$).

The nurses rated the perception of motivating factors of work and working welfare most positively, whereas they perceived the subscales requiring factors of work, working environment, and participation in decision-making less positively. Factors such as low salary, understaffing, lack of appreciation by the management, poor opportunities to participate in decision-making, or poor chances for career

development were influencing job satisfaction negatively (see Article II, Table 2 for more details).

A multiple regression analysis was used to examine how demographic variables affect job satisfaction. In this analysis country was included as a demographic variable. The analysis revealed that 22% of job satisfaction was explained by joint background variables.

The result of the whole data indicated that the variables' country and working unit were strongest related to job satisfaction. In terms of country, the Norwegian RNs indicated job satisfaction higher than the Finnish RNs, and in relation to working unit, the emergency and critical care units evaluated job satisfaction lowest. Nurses' working day shift scored job satisfaction higher than those who worked in the shift. The findings also showed that nurses over 30 years of age were more satisfied than nurses under 30, which is interesting; thus, nurses with 11–19 years of work experience evaluated job satisfaction lower that younger nurses with < 5 years of work experience (Article II, Table 3).

5.1.4 The relationship between nurse–nurse collaboration and job satisfaction (Article III)

The results of the secondary analysis and SEM analysis revealed that collaboration and job satisfaction were positively and significantly associated with each other. The structure and theoretical concepts of both the NNCS and KUHJSSC were verified using CFA. CFA confirmed that the hypothesized structure justified the SEM (Figure 4). The SEM model fits well with the data (RMSEA = 0.05, CFI = 0.985, $\chi 2$, $p > .1$). The SEM analysis showed a clear statistical support for the hypothesis. The latent variables, collaboration, and job satisfaction are the circles at the top of Figure 4.

The model revealed that collaboration had direct effects on all collaboration subscales and that job satisfaction had direct effects on all job satisfaction subscales. In addition, there were relations between the subscales such that working welfare, participation in decision-making, leadership, and shared process were positively connected with one another. Moreover, motivating factors of work were related to working welfare and involvement in decision-making. In addition, paths between professionalism, shared processes, communication, and conflict management were confirmed (see Article III, Table 1 and Figure 2 for more details).

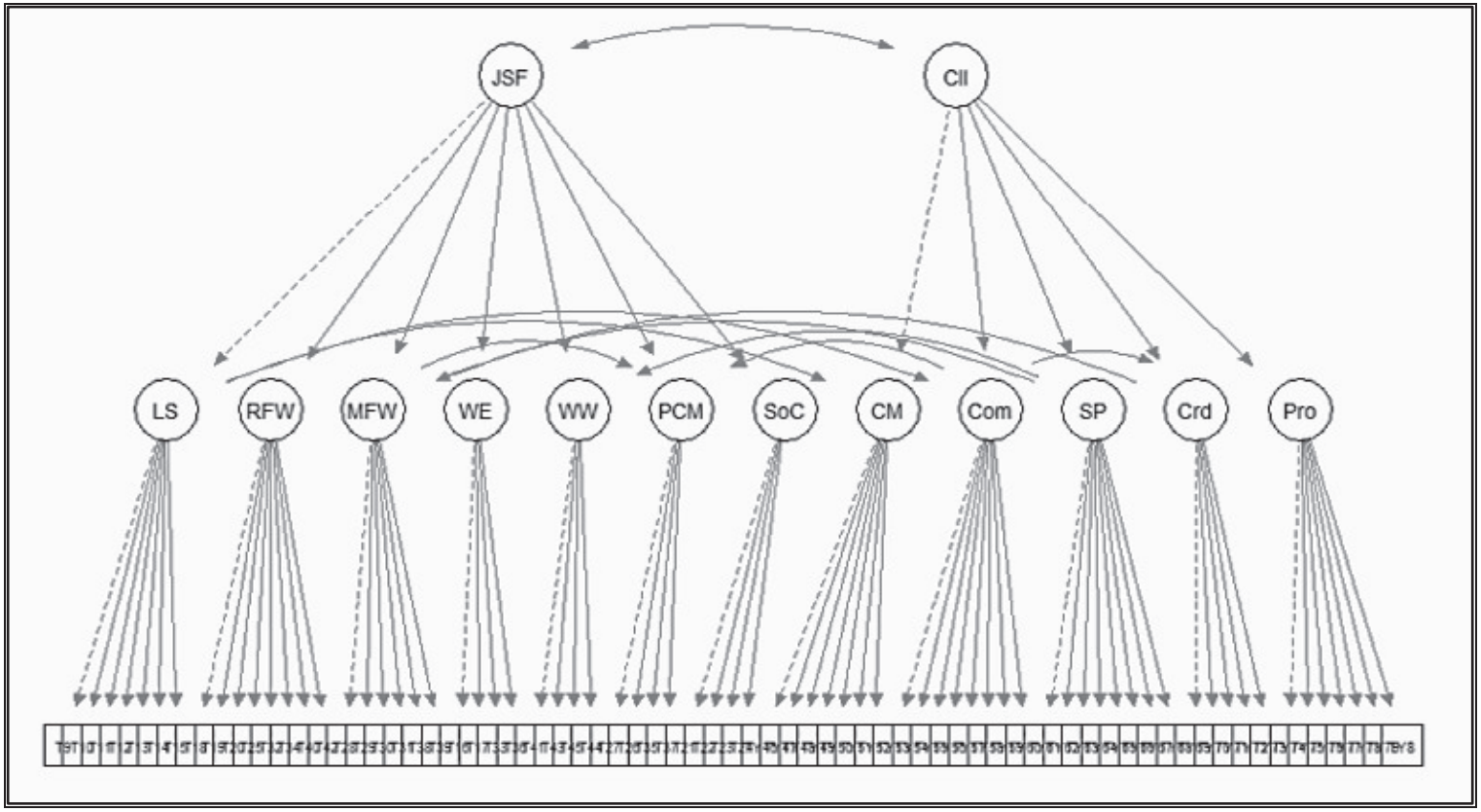

Figure 4. Confirmatory factor analysis (CFA) of the NNCS and KUHJSS (JSF = job satisfaction; Cll = collaboration; LS = leadership, RFW = requiring factors of work; MFW = motivating factors of work; WE = working environment; WW = working welfare; PCM = participation in decision-making; SoC = sense of community; CM = conflict management; Com = communication; SP = shared process; Crd = coordination; Pro = professional. The items of both scales are at the bottom of the figure.

5.2 NURSE–NURSE COLLABORATION AND JOB SATISFACTION EXPERIENCED BY FINNISH AND NORWEGIAN RNs (SUBSTUDY II)

5.2.1 Participants of the qualitative study

The nurses were recruited for the interviews from various units concurrently with the electronic survey. A total of 29 hospital nurses participated in the interviews. Sixteen Finnish RNs were interviewed in summer 2015, and 13 Norwegian RNs were interviewed in summer and winter 2015.

Most of the participants were women (n = 25). The Finnish nurses had a mean age of 45 years and experience in health care for an average of 18 years, and the Norwegian nurses' mean age was 38 years, with an average of 15 years' work experience. Nine nurses worked on the medical unit, nine on the surgical unit, three on the anaesthesia and operation units, and three on the children and adolescent units, respectively. Furthermore, three were from the diverse unit, and, finally, two nurses were from the psychiatric unit (Table 2 in Article IV).

5.2.2 Nurse–nurse collaboration (Article IV)

The results of the interview data regarding RNs' experiences of nurse–nurse collaboration identified seven categories in the inductive analysis: (a) equal and smooth collaboration towards a common goal with the patient in the centre, (b) collegial networking in nursing, (c) a functioning working environment, (d) clear communication, (e) experiences of collegiality, (f) sharing of knowledge and skills, and (g) support and sharing of work (Figure 5).

The findings suggest that the Finnish and Norwegian RNs considered nurse–nurse collaboration to be highly important. However, both similarities and variations were apparent in the way nurses understood and experienced collaboration within the profession. In addition, various issues were emphasized regarding intraprofessional collaboration. The nurses reported that nurse–nurse collaboration requires working together with enjoyment and with a focus on the patient. Some of the nurses also thought that time together was important both on and off the unit.

Finnish nurses emphasized collegiality; consequently, professional networking was said to promote professionalism, and interaction was required when planning patient care. Collaboration was enhanced by a unified flow of information for all. Experience of collegiality was central to collaboration, and nurses felt that poor collegiality weakens nurse–nurse collaboration. Collegiality was described as collaborating on the same tasks and giving advice in a positive way.

Norwegian nurses highlighted communication even more as it was associated with the well-being of both nurses and patients. The importance of being heard and seen

by colleagues was stressed. Humour and an open atmosphere were encouraging and enabled collaboration; thus, a functioning working environment was seen as important.

Finnish and Norwegian nurses explained that the sharing of knowledge and skills between professionals was essential. In addition, support and sharing of work were important. The nurses emphasized that one should be able to ask for help when needed but also give help when asked. Overall, nurse–nurse collaboration was supported by an open communication culture, collegial relationships, and professional interaction (more details in Article IV).

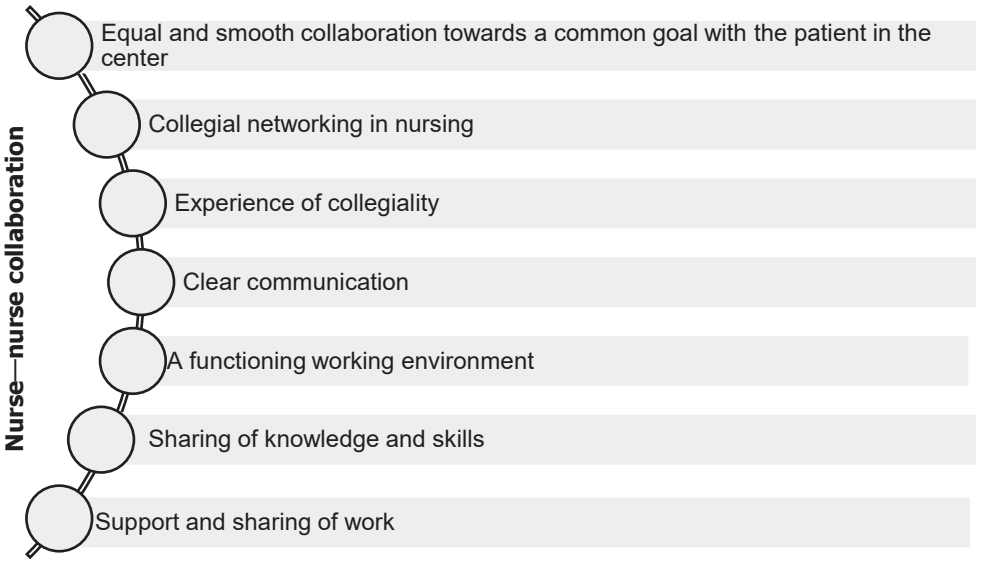

Figure 5. Nurses' experiences of nurse–nurse collaboration (Ylitörmänen et al., 2021, Article IV)

5.2.3 Job satisfaction (Additional results)

The results regarding RNs' experience of job satisfaction resulted in seven categories in the inductive analysis: (a) opportunities to influence the work, (b) continues learning, (c) interaction and feedback, (d) relationships with colleagues, (e) support from colleagues, (f) meaningful and motivating work in a comfortable and positive work environment, and (g) experience of success. (Figure 6).

Finnish and Norwegian nurses emphasized meaningful and motivating work to promote job satisfaction most, as it was seen as an important part of life. The nurses moreover underlined continuing self-development and education to stay up to date at work and enhance job satisfaction. Both Finnish and Norwegian RNs expressed that the feeling of fellowship with others and reciprocity promoted job satisfaction. Even though interaction and communication were important and relationships with

colleagues were considered vital, some Norwegian nurses stressed that a positive attitude and cooperation between colleagues improve job satisfaction. It was important to be able to ask other nurses for help and assistance. Furthermore, experience of success at work increased job satisfaction. The Finnish RNs highlighted the importance of influencing their work. Participation and decisional involvement enhanced job satisfaction. The nurses mentioned things like autonomy in nursing practice, planning of shifts, and your own work as important. (Figure 6).

Figure 6. Nurses' experiences of job satisfaction

5.3 SUMMARY OF THE RESULTS

The summary of the results in this thesis comprises RNs' perceptions and experiences of nurse–nurse collaboration and job satisfaction in one hospital setting in Finland and one in Norway. Overall, the results from both quantitative and qualitative data analysis indicated that the perception of intraprofessional collaboration was good and that the RNs were moderately satisfied with their jobs. Intraprofessional collaboration was seen as crucial in nursing.

In this study, collaboration was also at times referred to as cooperation and teamwork. The RNs experienced nurse–nurse collaboration as working together towards a common goal with the patient in the centre, along with a spirit of togetherness. Collaboration was seen as sharing of knowledge and work. Intraprofessional collaboration meant respecting and trusting each other. Involvement and being heard enhanced nurse–nurse relationships. Nevertheless, differences exist between the Finnish and Norwegian nurses' responses according to the quantitative

and qualitative data presented earlier. The Finnish RNs rated all the subscales of the surveys less positively than Norwegian nurses did. In addition, the interviews revealed that the Finnish and the Norwegian RNs somewhat emphasized different items in both nurse–nurse collaboration and job satisfaction.

In the quantitative data, the collaboration subscales with the highest scores were communication, professionalism, and shared process, and the lowest scored subscale was conflict management. Communication was also emphasized in the interviews as part of a nurse's work and from the viewpoint of patient safety. Interaction and communication were associated with the well-being of both nurses and patients. Hence, poor communication was experienced as a hindrance to collaboration. The Norwegian nurses also stressed that clear communication encourages good collaboration. Both sets of data underlined that for real collaboration to occur, the RNs must be willing to collaborate with each other in a respectful way.

The quantitative data also revealed that conflict management had an effect on nurse–nurse collaboration. The Finnish and the Norwegian nurses handled conflicts slightly differently. Nevertheless, nurses experienced that conflicts weaken work. In the interviews, the RNs expressed that personalities could have a positive or a negative influence on intraprofessional collaboration because of different views or incompatible personal chemistries. Face-to-face get-togethers and social interactions were considered important for nurse relationships and for learning about one another and thus improving collaboration.

The results of both sets of data also demonstrated that a nurse's characteristics were related to the perceptions of collaboration (e.g., work experience). Nurses expressed that work experience made collaboration easier and made work go more smoothly.

The participants did not all directly combine intraprofessional collaboration with job satisfaction in their interview answers, although they cited that nurses' relationships were vital in achieving a common goal in nursing. Overall, the Finnish and the Norwegian nurses where relatively satisfied with their work. In the quantitative data, they scored motivating factors of work and work welfare highest and requiring factors of work, participation in making decisions, and working environment lowest. The Norwegian nurses were more satisfied with their work compared to the Finnish nurses. Both Finnish and Norwegian nurses highlighted meaningful and motivating work, as well as a healthy work environment with a good working atmosphere, in the interviews. They described that continuous learning fostered motivation. This study suggests that nurse–nurse collaboration affects nurses' job satisfaction. The produced model confirmed that collaboration and job satisfaction were significantly and positively related to each other; it was a two-way street. The study hypothesis has been confirmed. The summary of the study results is presented in Figure 7.

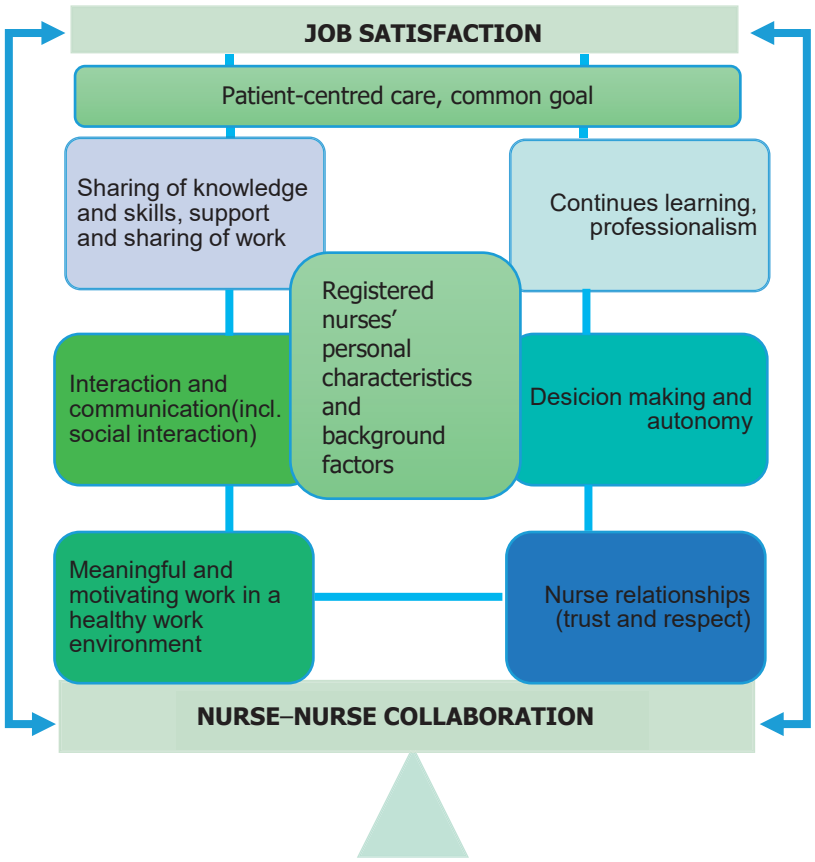

Figure 7. Summary of the main results of nurse–nurse collaboration and job satisfaction.

6 DISCUSSION

6.1 DISCUSSION OF THE MAIN STUDY FINDINGS

In this study, Finnish and Norwegian RNs' evaluations on nurse–nurse collaboration and job satisfaction were examined and were partly compared using two types of data sets. Although the topic has been sparsely studied, some of the findings of this study were similar to the results from previous studies. However, the literature review revealed that most of the earlier studies were completed in Canada and the United States. To the best of my knowledge, nurse–nurse collaboration has been sparsely examined in the Scandinavian countries. Lemetti et al. (2017) explored nurse–nurse collaboration from the viewpoint of nurses' perception of collaboration between hospital and primary health care in Finland.

The findings of this study expand our understanding of the phenomena and confirm the earlier findings. The theoretical framework (Figure 2) reinforces the main result of this study (Figure 7) on nurse–nurse collaboration and job satisfaction. This study results strengthen the relationship between nurse–nurse collaboration and job satisfaction. The mixed method design included interpretation of both data sets, exploring the differences, exceptions, and integration of the results for finding the interfaces and connections between them (Creswell & Plano Clark, 2018). The result revealed both similarities and variances in the Finnish and Norwegian RNs' evaluations of nurse–nurse collaboration and job satisfaction. In this section, the main findings of the study are discussed in relation to the literature and the aim of the study.

6.1.1 Nurse–nurse collaboration is essential in nursing practice

The quantitative and qualitative data revealed that nurses in this study evaluated nurse–nurse collaboration as an asset. In addition, most of the nurses were satisfied with their work. However, RNs' ratings of both nurse–nurse collaboration and job satisfaction varied slightly between the Finnish and the Norwegian nurses.

The quantitative data of this study revealed that nurse–nurse relationships were important. The highest mean score of the NNCS was obtained for the professionalism subscale, which among other aspects showed the nurses were willing to work with each other and that respectful and cordial relationships exist among nurses. This was evident among both Finnish and Norwegian RNs and supported by the interviews. True collaboration, skilled communication, effective decision-making, good staffing, meaningful recognition, and authentic leadership are the six standards for sustaining a healthy work environment according to the AACN (2005).

Even though collaboration can be described as a voluntary process, for it to occur, nurses need to be willing to collaborate (Moore et al., 2017). A good and successful

collaborative relationship does not take place spontaneously, and a nurse needs to make an effort at building it (Gardner, 2005; King et al., 2017).

In the qualitative data findings, the nurses expressed that it was important for RNs to work together collaboratively for a common goal, which might in turn commit nurses to working together more effectively (Zealand et al., 2016). The participating nurses responded that professionalism also meant one had adequate knowledge to provide good care for patients. Previoius studies imply, that collaboration is a professional expectation (Moore et al., 2019) and has been reported to improve when nurses cooperate fully (Moore et al., 2017), because working together and relationships with colleagues influence the working unit (Uhrenfeldt & Hall, 2015). Even though the nurses in this study emphasized working together, they also reported that some nurses prefer to work alone (Shohani et al., 2017).

Both Finnish and Norwegian nurses evaluated that they had adequate knowledge required for the work and that they were willing to mentor less experienced nurses. Previous literature suggested that fulfilment from work and a good work environment such as mentoring new colleagues predict job satisfaction (Atefi, 2014; James-Scotter et al., 2019; Karlsson et al., 2018).

In this study, nurses expressed that continuous learning and education enhanced job satisfaction. They thought that one has to stay up to date in one's professional development. Education and training of nurses has been effective in enhancing job satisfaction (Kol et al., 2017). In the qualitative data, the nurses described professionalism as a professional attitude to nursing care, maintenance of competence, and good behaviour. Competence is needed in consultation, which has been described as part of collaboration (Moore et al., 2015).

In the interviews, nurses underlined that intraprofessional collaboration was important in the practise along with meaningful and motivating work in a healthy work environment. The nurses emphasized that job satisfaction occurs when the work is challenging and interesting. These elements are supported in a healthy work environment, which is a key factor in constructive relationships (Zealand et al., 2016).

The nurses surveyed in this study scored conflict management lowest. Yet, conflicts are a natural part of collaboration (Gardner, 2005). The responses were most divided in this subscale. Finnish RNs evaluated conflict management lower than the Norwegian RNs did, which suggested that the Finnish RNs evaluate that they do not always fully attempt to solve the conflicts, or they withdraw from conflicts. Often, unsolved conflicts result in weakened collaboration and stress (Grubaugh & Flynn, 2018). Teamwork can also be threatened by disrespect and dislike by colleagues (Mohamed et al., 2014). On the other hand, the way nurses handle conflicts can differ due to culture or different working environments (Papastavrou, 2014). The results of the quantitative results in this study are similar to previous studies examining intraprofessional collaboration, where professionalism was scored highest and conflict management lowest of the NNCS collaboration subscales (Durmuş et al., 2018; Moore et al., 2017).

Interestingly, nurses expressed that good collaboration requires social interaction and humour. The findings revealed that face-face get-togethers, where ideas and thoughts can be exchanged, are essential for fruitful collaboration. This finding is consistent with previous findings that showed personal characteristics (e.g., a sense of humour, a positive attitude, and being open; Moore & Prentice, 2015) and personal relationships facilitate collaboration because face-to-face interactions are needed and valued (King et al., 2017; Lemetti et al., 2017; Moore & Prentice, 2015; Pfaff et al., 2014). Thus, the clinical practice environment has been shown to influence how collaboration proceeds (Moore et al., 2017).

The Finnish and the Norwegian RNs evaluated communication as an important part of collaboration. However, not all of the Finnish RNs agreed that communication was very open on their units. The Norwegian RNs felt that clear communication improved collaboration and was essential for mutual understanding. They also stressed the importance of nonverbal communication. The results are in line with the literature, indicating that communication is a characteristic of collaboration (Kieft et al., 2014; Moore et al., 2015; Zamanzadeh et al., 2014). Skilled and open communication encourages collaboration, which is essential in patient care (AACN, 2005). Training in communication patterns, such as giving constructive feedback (Zealand et al., 2016) or team interventions (Marguet et al., 2019) have been perceived as good for addressing conflicts and improving collaboration among nurses (Zealand et al., 2016).

Shared processes with components such as autonomy and decision making, common goals, and authority were scored moderate by the RNs in this study, but then again, the Finnish RNs evaluated the subscale slightly lower than the Norwegian RNs did (e.g., in decision-making concerning one's work). The qualitative findings revealed that Finnish and Norwegian nurses expressed that the management makes the larger decisions; nonetheless, the nurses felt they were taking part in discussions and heard in smaller matters. The nurses experienced that decisions were made in collaboration. Previous studies suggest that involvement and accountability in decision-making and commitment to common goals are essential in nursing practice (Kowalski et al., 2018; Lemetti, et al., 2018; Ulrich et al., 2019; Zamanzadeh et al., 2014; Zealand et al., 2016). Kol et al. (2016) suggested that participation in making decisions enhances nurses' job satisfaction. According to Gardner (2005), shared decision-making is an indication of collaborative practice.

Both Finnish and Norwegian nurses experienced that sharing of knowledge and skills, as well as support and sharing of work, was important between nurses. These items emerged when respondents were asked to describe what collaboration meant to them. According to Kılıç and Altuntaş (2019), collegial solidarity such as interactions and support between nurses plays an essential role in the organizational climate. Additionally, support and teamwork also predict job satisfaction (Lin et al., 2019; Zamanzadeh et al., 2014). Friendly relationships and cooperation facilitate information sharing between nurses (Norikoshi et al., 2017).

6.1.2 Nurse–nurse collaboration enhances job satisfaction

The quantitative findings of this study showed that collaboration and job satisfaction were positively and significantly associated to each other. This finding is consistent with previous findings that reveal nurses' job satisfaction positively correlated with their degree of collaboration (Durmuş et al., 2018; Ma et al., 2015), team commitment (Galletta et al., 2016), teamwork (Fiske, 2018; Uhrenfeldt & Hall, 2015), and relational coordination (Havens et al., 2018). Collaboration has been facilitated in units having models of nursing teamwork (Moore et al., 2019). However, the relation between intraprofessional collaboration and job satisfaction did not appear as obviously in the interview responses.

Overall, both Finnish and Norwegian nurses evaluated their job satisfaction as relatively good. Motivating factors of work and working welfare were scored highest by the nurses, whereas requiring factors of work, participation in decisions, and working environment were evaluated lowest on the KUHJSS. Motivation factors such as autonomy and career development have also been reported to increases job satisfaction (Atefi et al., 2014). The findings also revealed that nurses appreciate their work and that client feedback motivates them. Patient satisfaction with care is related with nurses' well-being (Utriainen et al., 2015).

6.1.3 Background factors related to nurse–nurse collaboration and job satisfaction

One aim of this study was to explore the factors related to nurse–nurse collaboration and job satisfaction. The findings revealed that background factors such as work experience and working time were linked to nurses' perceptions of intraprofessional collaboration, whereas 22% of the background factors explained job satisfaction, in which the strongest associations were with country and working unit. Working time seemed to be connected with job satisfaction. In this study fewer participating nurses worked daytime, which might have affected the results. Nurses working in the emergency and critical care units were less satisfied with their work than other nurses in the study were. Demographic variables such as work experience and age have been related to nurses' job satisfaction (Kvist et al., 2015). Bragadóttir et al. (2019) found an association between teamwork and work experience in the current unit.

Nurses evaluated that work experience for the most part affected competence and that work experience made the daily work go more smoothly, because one simply spends more time strengthening collaboration or cohesion between the nurses. Nurses younger than 30 were less satisfied with their jobs than older nurses were. Nurses with work experience of 11–19 years were less satisfied with their jobs and evaluated conflict management and professionalism lowest in the NNCS. The results are consistent with Lin et al. (2019), who showed nurses with higher experience reported higher job satisfaction. Moore et al. (2017) showed that younger nurses reported lower

scores for all collaboration subscales, especially the subdomain professionalism, because they thought older nurses were not willing to collaborate.

6.2 LIMITATIONS AND STRENGTHS OF THE STUDY

The study has limitations that need to be taken into consideration when generalizing the findings. This study consisted of two data sets (i.e., the survey and the interviews), of which both have limitations and strengths. First, the data collection took place in two university hospitals, which limits the transferability to other organizations in the participating countries. Second, a convenience sample was used, which can limit the generalizability of the results because it represents only the views of the respondents. However, the criterion for taking part in the study was being an RN, which limits the extent of generalization but decreases sampling bias. A convenience sampling was of choice to obtain the desired sample (Groove et al., 2013). The differences in culture and health care services ought to be recognized when interpreting the findings. Yet, similar results were found from both Finnish and Norwegian nurses' responses.

One limitation was related to the low response rate of Substudy I. Notices were sent out three times to increase the amount of responses. The recruitment of RNs to participate in the study was challenging due to ongoing projects and organizational changes at the hospitals. In addition, the different sample size of nurses in the two countries may have influenced the results. This might be partly explained by the online data collection method, thus low response rates are often reported in the literature (Polit & Beck, 2008). However, power analysis confirmed the overall data was of adequate sample size for the chosen analytical methods used in the survey (Groove et al., 2013). The survey was quite long because it included two questionnaires, which can have triggered respondent fatigue.

Another limitation to the study is related with Substudy II. The data were collected in two countries with different languages, which might have caused misinterpretations of the text. This could be a potential risk for the validity of the study. On the other hand, the interviewer has lived and worked in both countries and thus had sufficient language skills to carry out the data collection and analyses. The researcher performed the interviews in both countries in the respondents own native language, which increase the reliability of the study (Cypress, 2017). The interview schedule was pretested in both countries, which enhanced the reliability (Silverman, 2005). The findings are based on the interpretation of interviews with a convenience sample of RNs working on various wards at one organization in two different countries. The researcher was aware of her own potential biases. Own perceptions and opinion were put aside during the interviews, which were completely recorded (Cypress, 2017) to increase reliability. The number of the participants (n = 29) was appropriate for a qualitative study. The interviews lasted until saturation of the data was received.

However, it might be that those who did not take part in this study may have a different view of the issue.

The strength of this study was that it produced new information on nurse–nurse collaboration and job satisfaction and the relationship between them among Finnish and Norwegian nurses and simultaneously supported previous research results on the issue. The instruments used in this study have verified acceptable reliability and validity for measuring levels of intraprofessional collaboration and job satisfaction. The mixed method findings from the data supported each other and offered a deeper understanding on the research subject.

7 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, the following conclusions can be drawn:

1. Nurse–nurse collaboration has slightly different meanings among nurses, which may be explained by the complexity of the collaboration concept.

2. The results confirm the hypothesis: good collaboration among RNs predicts high job satisfaction.

3. Finnish and Norwegian nurses' perceptions of nurse–nurse collaboration in a hospital setting were positive, although the Finnish RNs evaluated intraprofessional collaboration less positively than Norwegian RNs.

4. Finnish and Norwegian nurses were relatively satisfied with their work in a hospital setting. However, the Finnish RNs evaluated job satisfaction less positively than Norwegian RNs.

5. Different background factors might influence the perception of collaboration and job satisfaction, which suggests nurses perceive intraprofessional collaboration and job satisfaction in various ways in different life-stages.

6. Intraprofessional collaboration is vital in nursing, because it enhances job satisfaction. A healthy work environment, with a supportive atmosphere, might attract new health care professionals to the profession.

7. Identifying and promoting qualities that support intraprofessional collaboration through training can improve nurse–nurse collaboration.

8. Knowledge provided in this study can help train nurses in intraprofessional collaboration and enhance collaborative practices in units.

Recommendations for further research:

The findings of this study reinforce current knowledge related to nurse–nurse collaboration and job satisfaction. Further research on the following topics is recommended:

1. Enhance the knowledge of how nurses experience and value nurse–nurse collaboration within the profession, because the responsibilities are continually enlarging and the demand for high-quality care is increasing.

2. Develop and implement new methods for promoting intraprofessional collaboration and continuous evaluation procedures of the progress.

3. Examine enablers of and barriers to intraprofessional collaboration to promote intraprofessional collaboration.

4. Strengthen the findings with site replication within the countries and in different health care organizations such as acute care hospitals and primary care.

5. Compare the relationship between nurse collaboration and job satisfaction with samples of newly graduated and experienced nurses.

6. Conduct research on how nurse–nurse collaboration affects patient safety.

Recommendations for clinical practice:

1. Recognize the significance of nurse–nurse collaboration and the influences it has on job satisfaction.

2. Nurses should aim to develop their intraprofessional collaboration skills and engagement by active interaction and collaboration goal setting with colleagues. They should also assess the outcomes and achievement consistently.

Recommendations for policymakers and management:

1. Nurse leaders need to be aware of the meaning and importance of collaboration in nursing because it is associated with job satisfaction.

2. Nurse leaders need to create an organizational culture that supports and facilitates nurse–nurse collaboration. Nurses should be provided with time for face-to-face meetings to enhance collaboration and job satisfaction.

3. Nurse management needs to support RNs in their work by taking into account their various backgrounds and use this knowledge for evaluating the needed support.

4. Nurse management should support and encourage continuous learning to increase nurses' job satisfaction.

Recommendations for nursing education:

1. Highlighting the important skills of collaboration, interaction, and communication in nursing education, especially now when nursing education is conducted in various ways, is imperative.

2. Nursing students should be engaged in group work and collaborative activities to enhance interaction.

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APPENDICES

APPENDIX 1. Studies Examining Nurse-Nurse Collaboration and Job Satisfaction

Authors, (Year), Country	Purpose and aim(s) of the study	Design, method(s), sample	Results
Adriaenssens et al. (2017). Belgium	To describe connections between job characteristics, as well as interdisciplinary conflicts with physicians as predictors of well-being, distress, turnover intention and work engagement	Cross-sectional design. Conducted in 11 hospitals in 2015. Survey. First-line nurse managers (*n* = 318).	Job demand and control were predictive of all outcomes. Interdisciplinary collaboration was predictive of turnover intention. Social support from personnel was a predictor of stress.
Anselmo-Witzel, S., Orshan, S.A., Heitner, K.L., Bachand, J. (2017). United States	To explore the lived experiences of job satisfaction among Generation Y nurses.	A descriptive phenomenological study. Semistructured interviews. RNs (*n* = 10).	Four main themes emerged: job strain, feeling good, relationships, and having choices.
Atefi, N., Abdullah, K.L., Wong L.P. Mazlom, R. (2015). Iran	To define the level of job satisfaction among Iranian nurses.	A cross-sectional study design conducted in a large Iranian hospital in 2011. Questionnaire. RNs (*n* = 303).	Demographic characteristics have an influence on job satisfaction. Medical nurses scored work interaction, task requirements, and autonomy higher than surgical nurses did, and thus they had higher job satisfaction.
Atefi, N., Abdullah, K.L., Wong, L.P. (2014). Malaysia	To explore factors related to feelings of job satisfaction and job dissatisfaction.	Qualitative descriptive study in 2011. RNs (*n* = 46). Focus group discussions.	Work environment factors, personal values, beliefs, and motivation factors were considered important for nurses' job satisfaction.
Bragadóttir, H., Kalish, B.J., Tryggvadóttir, G.B. (2019). Iceland	To examine the extent to which staffing adequacy predicts nursing teamwork.	A quantitative descriptive cross-sectional study. Nursing staff (*n* = 567).	Teamwork was associated with adequate staffing.

Dilig-Ruiz, A., MacDonald, I., Demery Varin, M., Vandyk, A., Graham, I.D., Squires, J.E. (2018). Canada	To combine data on critical care nurses' job satisfaction.	Systemic review: MEDLINE, CINAHL, PsychInfo, EMBASE, & ProQuest Nursing & Allied Health Source in 1980–2015. Articles (*n* = 61).	Job satisfaction was positively related to shift work, autonomy, personnel resources, and teamwork and cohesion. Negatives related to job stress, burnout, and emotional exhaustion.
Durmuş, S.Ç., Ekici, D., Yildirim, A. (2018). Turkey	To determine the level of collaboration among Turkish RNs.	A cross-sectional study of six hospitals in 2014. Survey. Nurses (*n* = 859).	The RNs scored professionalism highest and conflict management lowest. The mean score for collaboration was 3.09 of 4.
Fiske, E. (2018). United States	To examine nurse stressors and satisfiers in ICUs.	A descriptive correlational design in three NICUs. Survey. Nurses (*n* = 243).	Nurses at NICUs responded well to stress. Inadequate staffing was the most common stressor. RNs desired more teamwork at the units.
Galletta, M., Portoghese, I., Carta, M.G, D'Aloja, E., Campagna, M. (2016). Italy	To investigate the relationship between group- and individual-level variables associated with nurses' job satisfaction and team commitment.	A cross-sectional study in three hospitals. Data collected in 2010. Survey. Nurses (*n* = 1,024).	Nurses with a positive perception of interprofessional collaboration and job satisfaction were more committed to the team.

Galletta, M., Portoghese, I., Coppola, R.C., Finco, G., Campagna, M. (2014). Italy	To analyse how factors in nurses' operating environments affect identification and commitment among ICU nurses.	A cross-sectional study in 12 ICUs from four hospitals. Survey. Nurses (*n* = 222).	Nursing work characteristics are related to team commitment, which in turn is facilitated by perceived supervisor support and job satisfaction.
Grubaugh, M.L., Flynn, L. (2018). United States	To examine the relationships among nurses' perceptions of nurse-manager leadership ability, team support, and conflict management.	Secondary analysis of a study conducted in 2012. Staff nurses (*n* = 257).	The relation between nurse managers' leadership abilities and team support is vital, because conflict management improves team backup.
Havens, D.S, Gittell, J.H. & Vasey, J. (2018). United States	To explore how relational coordination affects job satisfaction and work engagement.	A parent study of a nonexperimental design. Data collected from five rural community hospitals. RNs (*n* = 382).	Relational coordination was linked with nurses' well-being, job satisfaction, and work engagement. Shared knowledge and goals correlated with nursing outcomes.
House, S., Havens, D. (2017). United States	To explore nurses and physicians' perceptions of interprofessional collaboration and factors that have an influence on their opinions.	A systemic review using PubMed, CINAHL, and PsychInfo in 2016. Articles (*n* = 16).	Nurses and physicians' views of effective collaboration were not similar. Teamwork, decision-making, and communication themes reoccurred.
James-Scotter, M., Walker, C., Jacobs, S. (2019). New Zealand	To explore factors affecting job satisfaction of operating room team members.	Literature review: CINAHL, PsychInfo, Medline, and ABI/Inform from 1997 to 2017. Articles (*n* = 48).	Factors affecting job satisfaction: work conditions, fulfilment from clinical role, and support from management.

Kaiser, J.K. (2017). United States	To examine the effect of ways of management on the reported rates of lateral hostility in nurses.	Survey. Nurses (*n* = 237).	Transformational leadership was most associated with low levels of incivility. Staff involvement and teamwork influenced staff incivility.
Kaiser & Westers, (2018). United States	To examine teamwork among nursing teams.	Descriptive cross-sectional study. Survey in 2015. RNs, licensed practical nurse, nursing assistants, nursing managers, charge nurses and secretaries (*n* = 1,414).	Team roles and responsibilities are clear. Team members were more individualistic than team oriented.
Kaiser, S., Patras, J., Martinussen, M. (2018). Norway	To examine the association between interprofessional work and health care employees' outcomes (e.g., job stress and job satisfaction).	A meta-analysis. A systemic literature search in PsycInfo, Embase and Medline (2016) and CINAHL (2017). Articles (*n* = 45).	Interprofessional collaboration was weakly negatively related to job stress, burnout, and turnover intention and moderately associated with autonomy, engagement, job satisfaction, and perceived service quality.
Karlsson, A-C., Gunningberg, L., Bäckström, J., Pöder, U. (2018). Sweden	To describe RNs' job satisfaction and their intention to stay in in workplace and the profession, as well as to explore patient safety in relation to these.	A descriptive design. Data collection in 2016–2017. Interviews. RNs (*n* = 25).	RNs feel satisfied when providing person-centred care; RNs enjoy the variability of work; RNS feel unsatisfied when care is put on hold; RNs depend on team collaboration for patient safety and their intention to stay is connected to work environment and chance of renewal.

Kieft, R., AMM. De Brouwer, B., BJM, Francke, A., L., Delnoij, D. MJ. (2014). Netherlands	To explore Dutch nurses' views of how their work affects positive patient experiences.	A descriptive qualitative research design. Interviews. RNs (*n* = 26).	Collaborative relationships, competent nurses, adequate staffing, nurses' autonomy, support from management, control of nursing practice, and patient-centred care improved patient experiences.
Kılıç, E., Altuntaş, S. (2019). Turkey	To examine the effect on the organizational climate of collegial solidarity among the nurse.	A descriptive design. Data collected in 2014. Nurses (*n* = 544).	Collegial solidarity affects organizational commitment, teamwork, negative interaction, stress, communication, job satisfaction, supportive climate, hierarchy, human relations, and innovative climate.
King, N., Bravington, A., Brooks, J., Melvin, J., Wilde, D. (2017). United Kingdom	To explore experiences of collaborative working among nurses.	A qualitative study. Semistructured interviews in 2010–2012. Nurses (n = 45) and other stakeholders (n = 33).	Two factors emerged strongly: face-to-face contact and relationship formation.
Kol, E., İlaslan, E., Turkay, M. (2017). Turkey	To find satisfaction levels of nurses with positive environment and positive management strategies.	Pre- and postquestionnaire. Nurses (*n* = 235 in 2011, *n* = 259 in 2013).	Intervention with magnet hospital components were implemented. Job satisfaction levels rose after the interventions (transformational leadership and structural empowerment).

Kowalski, M.O., Basile, C., Bersick, E., Cole, D.A., McClure, D.E., Weaver, S.H. (2020). United States	To examine nurses' perceptions of what they need to practice nursing effectively.	Integrative review in 2016–2018. Articles (n = 25).	RNs need decision making, leadership, teamwork, staffing, and organizational commitment to nursing to practice effectively.
Lavoie-Tremblay, M., Feeley, N., Lavigne, G.L., Genest, C., Robins, S., Frechette, J. (2016). Canada	To explore factors associated with nurse stress and work satisfaction in a neonatal unit.	Cross-sectional study. Questionnaire in 2014. Nurses (*n* = 86).	Working stress was associated with working shift, lower team-effectiveness task obstacles, and the perception of family-centred care. Support, team effectiveness, employment status, family-centred care, environmental obstacles, and level of education were related to work satisfaction.
Lemetti, T., Voutilainen, P., Stolt, M., Eloranta, S., Suhonen, R. (2017). Finland	To describe nurses' perceptions of their collaboration between hospital and primary care.	A qualitative study. Focus group interviews in 2013. RNs (*n* = 28).	Conditions, context, and situation; the consequences of nurse–nurse collaboration; and interactions and processes were identified.
Lin, C. F., Lai, F. C., Huang, W. R., Huang, C. I., Hsieh, C. J. (2019). Taiwan	To explore the relation between job satisfaction and indicators of a quality nursing working environment.	A cross-sectional correlational study design. Survey in 2013. Psychiatric nurses (*n* = 185).	Professional specialization and teamwork, support, and caring were related to job satisfaction. Married nurses and work experience were related to higher job satisfaction compared to single nurses' experiences.

Ma, C., Shang, J., Bott, M.J. (2015). United States	To identify the effects of unit collaboration and nursing leadership on nurse outcomes and quality of care.	A secondary analysis of cross-sectional data collected in 2012. Survey. RNs (*n* = 29,742 in 1,228 units from 200 acute care hospitals).	Unit-level collaboration and nursing leadership were significantly associated with nurses' job satisfaction, intent to leave, and quality of care.
Ma, C., Hye Park, S., Shang, J. (2018). United States	To explore the association between inter- and intradisciplinary collaboration and patient safety outcomes.	A cross-sectional study. Data collected in 2013. Registered data from NDNQI survey nurses (n = 23,078). HAPU (patient safety indicators; *n* = 900 units).	Nurse–physician and nurse–nurse collaboration is related to patient safety outcomes (e.g., HAPUs and patient falls).
Majima, T., Yamamoto, T., Sakai, I., Ikezaki, S. and Nagasaka, I. (2019). Japan	To determine the link between nurses' job satisfaction and interprofessional collaborative competency.	Survey in 2014. Nurses (*n* = 913).	Two factors were significantly related with job satisfaction: (a) attitudes and beliefs as a professional and (b) attitudes and behaviours that improve team cohesion and opportunities for exchange of information with other professionals outside the hospital.
Marguet, M.A., Ogaz, V.O. (2019). United States	To determine whether teamwork intervention affects a nursing team's view of teamwork and missed nursing care.	A quasi-experimental study design (pretest and posttest survey). Staff members participated including five registered nurses, nine licensed practical nurses, and seven nursing assistants and patient care assistants (*n* = 19).	Teamwork training is positively related to nursing teamwork and missed nursing care. There was an increase in staff satisfaction in teamwork.

Mohamed, Z., Newton, J. M., McKenna, L. (2014). Malaysia	To explore factors associated with Malaysian nurses' sense of belonging at work.	A qualitative descriptive approach. Survey in 2011. RNs (*n* = 437).	RNs' belongingness was about acceptance and fitting in through strategies such as practicing teamwork in all tasks, always being willing to help, and trust. Belongingness was influenced by factors such as culture, nature of teamwork, and values on the nursing profession.
Moore, J., Prentice, D., Taplay, K. (2015). Canada	To explore the meaning of collaboration among RNs to enhance collaborative practice.	An exploratory case study. Data collected in 2013. Semistructured interviews. RNs (*n* = 13).	The main theme was that collaboration represents various meanings to different people. Collaboration was seen as consultation, communication, and collegiality.
Moore J., Prentice, D. (2015). Canada	To describe the experience of collaboration among oncology nurses and factors associated with collaboration.	Qualitative case study design. Data collected in 2013 by individual phone interviews and document reviews. Oncology nurses or nurse practitioners (*n* = 14).	Two themes were found: art of dancing together (including having face-to-face interactions, an existing relationship, and good interpersonal skills) and the stumbling point (roles, leadership, and generational differences).

Moore, J., Prentice, D., Salfi, J. (2017). Canada	To examine factors influencing collaboration between RNs and practical nurses and to understand and improve collaborative practice.	Explanatory, sequential mixed methods design. Data collected in 2016 using a NNCS survey. RNs and RPNs (*n* = 65). Telephone interviews (*n* = 10).	Younger nurses scored collaboration domain lower. The qualitative results revealed older age and poor interpersonal skills are barriers to collaboration while working to full scope of practice.
Moore, J., Prentice, D., Crawford, J., Lankshear, S., Limoges, J., Rhodes, K. (2019). United States	To examine the nature of registered nurses and practical nurses' collaboration in acute care hospitals.	Scoping review in 2017. Identification of key journals: *The Journal of Nursing Administration*, *Nursing Management and Journal of Advanced Nursing*. Articles (*n* = 39).	Three themes were recognised: scope of practice, interpersonal skills, and patient-related outcomes.
Niskala, J., Kanste, O., Tomietto, M., Miettunen, J., Tuomikoski, A-M., Kyngäs, H., Mikkonen, K. (2020). Finland	To identify effective interventions to enhance nurses' job satisfaction.	A systemic review of 20 articles in 2020.	The Spiritual Intelligence training and the Professional Identity Development program were effective interventions in enhancing job satisfaction.
Norikoshi, K., Kobayashi, T., Tabuchi, K. (2017). Japan	To identify qualities of nurses' workplace social capital in Japan.	Semistructured interviews in 2014. Nurses (*n* = 32).	Workplace social capital included a structure that allowed nurses to use their abilities, and they were supported by a sense of security. Selfness reciprocity was important for building cooperative relationships with others.

Nowrouzi-Kia, B., Fox M.T. (2019). Canada	To examine the association between environmental factors at work and nurses' intentions to leave their work.	A cross-sectional study in 2012. RNs (*n* = 1427).	Job satisfaction, resources, and interprofessional relationships are associated with nurses' intentions to leave their workplaces.
Papastavrou, E., Efstathiou, G., Lemonidou, C., Kalafati, M., Katajisto, J., Suhonen, R. (2014). Cyprus	To explore and compare Cypriot and Greek nurses' perceptions of their professional practice environment.	A descriptive comparative survey design conducted in 2009. Nurses (*n* = 294).	Greece evaluated professional practice higher than Cyprus did in factors such as leadership, teamwork, and clinical practice.
Pfaff, K. A., Baxter, P. E., Ploeg, J. & Jack, S. M. (2014). Canada	To explore team and organizational factors in relation to new graduate nurses' engagement in collaborative practice.	A mixed method design with two phases: a cross-sectional survey (RNs: *n* =514) and semistructured interviews (RNs: *n* = 16)	Satisfaction with the team, team strategies, participation in mentorship, and availability of management or educators were predictors of nurses' engagement in collaborative practice. Team facilitators were respect, interactions, and team support.
Purpora, C., Blegen, M.A. (2015). United States	To describe the association between horizontal violence and job satisfaction.	Cross-sectional mediational model testing. Survey in 2010. RNs (*n* = 175).	A negative association was found between horizontal violence and peer relationships, which is related with job satisfaction.
Saquib, N., Zaghloul, M.S., Saquib, J., Alhomaidan, H.T., Al-Mohaimeed, A. & Al-Mazrou, A. (2019). Saudi Arabia	To explore the association between dissatisfaction and teamwork, workload, and salary among expatriate nurses in Saudi Arabia.	Cross-sectional study. Survey in 2017. Nurses (*n* = 977).	Dissatisfaction with teamwork and workload was associated with mild and severe depression. The risk of depression was higher for nurses who were dissatisfied with more than one domain.

Shohani, M., Valizadeh, L., Zamanzadeh, V., Dougherty, M.B. (2017). Iran	To examine the effect of individual contributions to intraprofessional collaboration.	Qualitative study. In depth and unstructured interviews in 2013–2014. RNs (*n* = 23).	Four factors emerged: personal problems, personal experiences, nurses' perspectives and beliefs, and individual characteristics.
Siffleet, J., Williams, A.M. Rapley, P., Slatyer, S. (2015). Australia	To explore the perspectives of experienced intensive care nurses regarding maintenance of their emotional wellbeing.	Grounded theory. Interviews. RNs (*n* = 15).	Five categories had a positive effect on nurses' wellbeing: achieving best care, caring for the patients' family teamwork, autonomy, and previous nursing and life experience.
Sun, H. (2019). United States	To determine the main factors that affect job satisfaction.	Secondary analysis. Survey. A convenience sample of nurse practitioners (*n* = 193).	Stress has effect on nursing practitioners' intent to leave. High levels of job satisfaction and coping skills reduced intent to leave.
Toode, K., Routasalo, P., Helminen, M. & Suominen, T. (2015). Estonia	To examine whether nurses' levels of satisfaction at work influence patient care and job performance.	Cross-sectional study. Online questionnaire. RNs (*n* = 201).	Characteristics that correlated with nurses work motivation were team communication, communication and openness, patient care transitions, and engagement.

Uhrenfeldt & Hall, (2015). Denmark	To explore public hospital nurses' experiences of job satisfaction.	Interview of 10 nurses.	Time, team, and trust were seen as essential components of job satisfaction.
Ulrich, B.T., Lavandero, R., Woods, D., Early, S. (2014). United States	To evaluate the state of critical care nurse work environment.	Survey in 2013. Critical care nurse (n = 8,444).	The work environment and quality of care has declined in, for example, staffing, quality of care, and communication.
Ulrich, B.T., Kear, M. (2018). United States	National assessment of the health and safety of nephrological nurses and their work environments.	A mixed method study. Survey. RNs (n = 1,070). Focus group interviews with RNs (n = 15). In addition, input from nephrology nurses on the ANNA open forum.	The nurse environment is related to nurses, quality of care, patient safety, and organizational outcomes. Improvements can be made in areas such as staffing, knowledge and skills, and mental health.
Utriainen, K., Ala-Mursula, L., Kyngäs, H. (2015. Finland	To develop a theoretical model of hospital nurses' wellbeing at work.	Empirical testing. Survey in 2010. RNs (n = 233).	Hospital nurses' wellbeing is constructed of patients' experience of good quality of care, nurses' cooperation and togetherness, challenging work, supportive leadership communication, etc.

Van Bogaert, P., Peremans, L., Van Heusden, D., Verspuy, M., Kureckova, V., Vand De Cruys, Z., Franck, E. (2017). Belgium	To confirm two SEM models when examining the connection between practice environment and work characteristics as predictors of burnout and engagement, as well as nurse-reported job outcomes and quality of care. The second aim was to explore nurses and nurse managers' perceptions and experiences of staff nurse workload.	A mixed method study design. A cross-sectional survey in two acute care hospitals. Participants (n = 751). Data collected in 2014–2015. Semistructured interviews. Staff nurses (n = 9) and nurse managers (n = 10).	The models fit the data well. Nurses reported that outcomes and quality of care explained the variance by 52% to 62%. Nurse management and workload had a direct effect on outcome variables. Personal accomplishment and depersonalization had an effect on job outcomes. Burnout and engagement had less effect on quality of care. The qualitative results revealed themes such as organization of daily practice, interdisciplinary collaboration, communication and teamwork, staff nurse personal characteristics and competence, patient centeredness, quality, and patient safety.
Yasin, M.Y., Kerr, M.S., Wong, C.A., Bélanger, C.H. (2019). Canada	To identify factors influencing acute care nurses' job satisfaction.	A systematic review. Six databases were used. Search between January 1998 and June 2018. 38 studies were selected for the review.	Physical working environment and authority and freedom were the most frequently reported factors related with nurses' job satisfaction.

Zamanzadeh, V., Irajpour, A., Validadeh, L., Shohani, M. (2014). Iran	To explain the meaning of collaboration and its dimensions.	A qualitative research design in 2012–2013. Health care professionals (*n* = 18, of which 11 were nurses).	Eight subcategories appeared: understanding, friendship, commitment, satisfaction, team making, trust, communication, and respect. Collaboration is about working together with mutual satisfaction with the client in the centre.
Zealand, R., Larkin, D. & Shron, M. (2016). United States	To strengthen communication and build relationship-centred care between the nurses.	Pre- and postsurveys of experimental workshops. Staff nurses and nurse managers (*n* = 129).	The result revealed it is important to commit to the same goal in care. It was inessential to like one's co-workers.
Zeleníková, R., Jarošová, D., Plevová, I., Janíková, E. (2020). Czech Republic	To find a relationship between nurses' views of the professional practice environment and missed nursing care and job satisfaction.	A descriptive correlational study. General and practical nurses (*n* = 513).	Professional practice environment is related to missed nursing care and job satisfaction.

APPENDIX 2. Fact sheet

The relationship between nurse-nurse collaboration and job satisfaction -a comparative mixed methods study among Finnish and Norwegian nurses

Dear Registered Nurse

You are invited to participate in a research study that examines the relationship between nurse–nurse collaboration and job satisfaction among registered nurses (RNs).

The aim of this international comparative study is to further and strengthen our knowledge of the relationship between RN–RN collaboration and job satisfaction. The data will be collected from Finnish and Norwegian RNs from one university hospital in each country. The study will provide knowledge that can be used in the development of the RNs' collaboration and interaction skills, as well as nursing practices and improved job satisfaction. The aim is to develop a model of the relationship between RNs' collaboration and job satisfaction.

Participation in this study is based on voluntary action and is conducted by responding anonymously through the link below. The questionnaire comprises of eight questions charting the background variables and 72 items measuring collaboration and job satisfaction. The response time is approximately 20–30 min. We kindly ask you to fill in the questionnaire before XX.XX.XX.

You have the right to withdraw from the questionnaire at any time and for any reason, even after you agree to participate and begin the study. The information will be treated with confidentially so that one individual respondent cannot be identified. The data will be stored out of reach of anyone others than the researcher, and destroyed properly, when the research has been completed. This study is a part of my doctoral thesis, which will be published in the University of Eastern Finland publication series and will consist of four international scientific articles. The results will also be introduced at national and international conferences. The questionnaire is attached to the link www.xxx. Once you've opened the link you can reply to the questionnaire. Thank you for your response!

Please feel free to contact me if you have any questions.

Researcher: Tuija Ylitörmänen, MNSc, doctoral student
Department of Nursing Science, University of Eastern Finland
Tel. XXXX, email: XXXX

Supervisors:
APPENDIX 3. Fact sheet for the interview

The relationship between nurse-nurse collaboration and job satisfaction -a comparative mixed methods study among Finnish and Norwegian nurses

Dear Registered Nurse

You are invited to participate in a research study that examines the relationship between nurse–nurse collaboration and job satisfaction among registered nurses (RNs). The aim of this international comparative study is to further and strengthen our knowledge of the relationship between RN-–RN collaboration and job satisfaction. The study will provide knowledge that can be used in the development of the RNs' collaboration and interaction skills, as well as nursing practices and improve job satisfaction. The aim of this study is to develop a model of the relationship between RNs' collaboration and job satisfaction.

Ten to 15 RNs will be interviewed in both countries. The individual interview is based on voluntariness. You have the right to withdraw from the interview at any time, and for any reason, even after you agree to participate and begin the study. Informed consent will be obtained from the participants. The duration of the interview is estimated to be 45–60 min. The interviews will be audio taped with permission and handled with confidentiality so that individual participants cannot be identified. The identifying information (name and e-mail) is only for the researcher if further information or clarification is needed during the interviews. The data will be stored in a locked cabinet, out of reach from anyone other than the researcher. The research data will be destroyed properly when the research has been completed.

This study is a part of my doctoral thesis, which will be published in the University of Eastern Finland publication series and will consist of four international scientific articles. The results will also be introduced at national and international conferences.

If you are interested in participating in the interview, please contact the researcher. Please feel free to contact me if you have any questions.

Researcher:
Tuija Ylitörmänen, MNSc, doctoral student
Department of Nursing Science, University of Eastern Finland
Tel. XXXX, email: XXXX

Supervisors:

APPENDIX 4. Informed consent

The relationship between nurse-nurse collaboration and job satisfaction -a comparative mixed methods study among Finnish and Norwegian nurses

Consent for Participation in Interview Research

The study "The Relationship Between Nurse–Nurse Collaboration and Job Satisfaction Among Finnish and Norwegian Nurses" has been clarified to me. I understand that my participation in this study is based on voluntariness and I can withdraw from the study at any time, and for any reason, even if I agree to participate and begin the study. I will be interviewed for approximately 45–60 minutes about my experience of RN–RN collaboration and its relationship to job satisfaction. The interview will be tape–recorded. The identifying information (name and e-mail) is only for the researcher if further information or clarification is needed. I understand that the data will be kept confidential and stored out of reach of anyone other than the researcher. The research data will be destroyed properly when the research has been completed.

I am aware that this study is a part of the researcher's doctoral thesis, which will be published in the University of Eastern Finland publication series. It will consist of four international scientific articles. I also understand that the results will also be introduced at national and international conferences.

I agree to participate in the interview explained to me and I give permission to use the data in the doctoral study and in the publication mentioned above.

Date/ Place

Signature of the participant/	Signature of the researcher/
Name in block letters	Name in block letters

Researcher:
Tuija Ylitörmänen, MNSc, doctoral student
Department of Nursing Science, University of Eastern Finland
Tel. XXXX, email: XXXX

Supervisors:

APPENDIX 5. Questions charted background variables

The relationship between nurse-nurse collaboration and job satisfaction -a comparative mixed methods study among Finnish and Norwegian nurses

Survey for registered nurses (RN)

Background information	
1. Gender	1. Female 2. Male
2. Age	__ years
3. Education	1. Registered nurse (diploma) 2. Registered nurse (bachelor) 3. Registered nurse (MNSc) 4. Public health nurse 5. Midwife 6. Other
4. Working unit	__
5. Work experience in current unit	__ years
6. Total years of experience in health care sector	__ years
7. Form of employment	1. A permanent position 2. Fixed-term employment
8. Main working time	1. Daytime 2. Working shift

APPENDIX 6. The interview protocol

Collaboration
What does nurse–nurse collaboration mean to you?
What supports nurse–nurse collaboration?
What are the barriers for nurse–nurse collaboration?
What are the characteristics of a good collaboration?
What kind of people do you like to work with?
What kind of personal qualities do they have?
How do personal characteristics and (work) experience affect collaboration?

Conflict management
How do conflicts affect your work?
How are conflicts avoided (in your work community)?
How are conflicts resolved (in your work community)?
In your experience, do you avoid or seek to resolve conflicts in your work community?

Communication
What is a good interaction like?
How is a good atmosphere created in your workplace?
When and in what cases do you express your opinion?
If not, why not?
What kind of things do you not want to talk about at your work?

Shared process
How well you listened to in the work community?
What are the means to ensure that everyone is heard? Describe the means to confirm that everyone will be heard.

Shared decision–making
How are decisions made in your work community?
How do you think this method has worked?
How do you feel that you have been able to participate in decision-making, and how have you been involved?

Coordination
What does job coordination mean to you?
Describe when work coordination is needed?

Professionalism
Describe what professionalism and its meaning to you. What are the characteristics?
What does your job mean to you?

Describe how the value of your work is reflected in your own work and what about the work community?
How can you make autonomous solutions in your work? Describe how it appears?

Job satisfaction
What does job satisfaction mean to you?
What promotes job satisfaction and what weakens it?
How is job satisfaction achieved?
What personal qualities support coping at work?
Is the work rewarding and motivating? If so, then how does it appear in your work and work community?

Working environment
How do you feel about your work environment?
Does the work environment support your work? If so, describe how?
What kind of work environment would you like to work in?

Motivating factors of work
Describe the things that make your work interesting?
What makes a workday good?

Requiring factors of work
Do you feel as though you are in control over your work? Describe how.
How do you feel about your workload?
Do you feel that you have the qualifications and skills required for your job, and what does it consist of?

Leadership
Describe how management supports your work?
How does it appear?
How is open interaction reflected by management in your work community?
How does it appear?

Working welfare
How do you take care of yourself to cope with your work?
Does the employer feel interested in your well-being at work?
How does it show in your work?

Sense of community
Do you feel connected to your co-workers and work community?
How does it appear?
What does that mean for you?

TUIJA YLITÖRMÄNEN

Intraprofessional relationships are important for healthy work environments as they affect RNs' welfare and quality of care. This study examined nurse–nurse collaboration and job satisfaction and the relationship between them in a mixed methods design by examine Finnish and Norwegian RNs' perceptions and experiences. The results suggested that there is a connection between nurse–nurse collaboration and job satisfaction, and that RNs' perceptions of intraprofessional collaboration vary.

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