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THE CONSTRUCT OF THE ETHICAL ACTIVITY PROFILE OF NURSE MANAGERS – EFFECTIVENESS OF THE ETHICS QUARTER E-LEARNING INTERVENTION

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"Let whoever is in charge keep this simple question in her head (not, how can I always do this right thing myself, but) how can I provide for this right thing to be always done?"
– Florence Nightingale

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ABSTRACT

Nurse managers' ethical activities have a positive impact on personnel, the quality of patient care and overall organizational success. The aim of this two-phase study was to create the theoretical construct of the ethical activity profile of nurse managers (NMs) and to evaluate the effectiveness of the ethics educational intervention Ethics Quarter (EQ). The goal was to support the ethical activity profile of NMs by producing an effective ethics intervention for the use of healthcare organizations.

In the first, theoretical phase of this study, a literature review and a nationwide cross-sectional survey were done to create and analyse the construct of the ethical activity profile of NMs (n=122). In the second, intervention phase of this study, the available instruments to evaluate the ethical activity profile were reviewed and modified, and new ones were developed. Furthermore, literature reviews were done to describe ethics interventions and e-learning method for the NMs. Finally, an ethics educational e-learning intervention, the EQ, was developed and implemented using a randomized controlled trial design among NMs (n=341). The effectiveness of the EQ was evaluated using five different instruments at three different measurement points. In addition, the usability and feasibility of the EQ were assessed. The methods of analysis used in this study were critical appraisal, content analysis, descriptive statistics, and statistical modelling.

This study provided a new theoretical construct, the ethical activity profile of NMs, and a new way of supporting it, the ethics educational e-learning intervention, the EQ. The results showed that the EQ was effective in strengthening the primary outcome, the ethical activity profile of NMs, i.e. 1) developing one's own ethics knowledge, 2) influencing ethical issues, 3) conducting or implementing ethics research, 4) identifying, and 5) solving ethical problems. Furthermore, the usability and feasibility of the EQ were confirmed.

Nursing management education and healthcare organizations would benefit from applying the EQ to support the ethical activity profile of NMs. Further studies are needed to understand how different kinds of organizational ethics support forms affect the behaviour of NMs and thus, clinical nursing in health care.

KEYWORDS: nursing management, nurse manager, ethics, ethical activity profile, ethical activity

TURUN YLIOPISTO
Lääketieteellinen tiedekunta
Hoitotieteen laitos
Hoitotiede
LAURA LAUKKANEN: Hoitotyön johtajien eettinen aktiivisuusprofiili –
Etiikan Vartti- intervention vaikuttavuus
Väitöskirja, 160 s.
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TIIVISTELMÄ

Hoitotyön johtajien eettiset aktiviteetit vaikuttavat positiivisesti henkilöstöön, hoidon laatuun ja organisaation kokonaismenestykseen. Tämän kaksivaiheisen tutkimuksen tarkoituksena oli luoda käsite hoitotyön johtajien eettinen aktiivisuusprofiili ja arvioida Etiikan Vartti (EV) -intervention vaikuttavuutta. Tavoitteena oli tukea hoitotyön johtajien eettistä aktiivisuusprofiilia tuottamalla tehokas etiikan interventio terveydenhuollon organisaatioiden käyttöön.

Tutkimuksen ensimmäisessä, teoreettisessa vaiheessa toteutettiin kirjallisuuskatsaus ja maanlaajuinen poikkileikkaustutkimus, joissa luotiin käsite hoitotyön johtajien (n=122) eettinen aktiivisuusprofiili ja analysoitiin sitä. Tutkimuksen toisessa, interventiovaiheessa tarkasteltiin, modifioitiin ja kehitettiin uusia mittareita, joilla voitiin arvioida hoitotyön johtajien eettistä aktiivisuusprofiilia. Lisäksi toteutettiin kirjallisuuskatsaukset, joissa kuvattiin etiikan interventioita ja verkkokoulutusmenetelmää hoitotyön johtajille. Lopulta kehitettiin etiikan verkkokoulutusintervention, Etiikan Vartti (EV), joka implementoitiin satunnaistetussa kontrolloidussa asetelmassa hoitotyön johtajille (n=341). EV:n vaikuttavuutta arvioitiin viidellä eri mittarilla kolmessa eri mittauskohdassa. Myös EV:n käytettävyyttä ja soveltuvuutta arvioitiin. Analyysimenetelminä käytettiin kriittistä arviointia, sisällön analyysiä, kuvailevia tilastollisia menetelmiä ja tilastollista mallintamista.

Tämä tutkimus tuotti uuden teoreettisen käsitteen, hoitotyön johtajien eettisen aktiivisuusprofiilin, ja uuden tavan tukea sitä, etiikan verkkokoulutuksen, EV:n. Tulokset osoittivat, että EV oli tehokas vahvistamaan päätulosmuuttujaa, hoitotyön johtajien eettistä aktiivisuusprofiilia, eli 1) oman eettisen osaamisen kehittämistä, 2) eettisiin asioihin vaikuttamista, 3) eettisen tutkimuksen tekemistä tai käyttöönottoa, 4) eettisten ongelmien tunnistamista ja 5) eettisten ongelmien ratkaisemista. Lisäksi EV:n käytettävyys ja soveltuvuus varmistuivat.

Hoitotyön johtamisen koulutus ja terveydenhuollon organisaatiot hyötyisivät EV:n käytöstä hoitotyön johtajien eettisen aktiivisuusprofiilin tukemisessa. Lisätutkimusta tarvitaan, jotta voidaan ymmärtää, miten erilaiset organisaatioeettiset tukimuodot vaikuttavat johtajien käytökseen ja näin kliiniseen hoitotyöhön.

AVAINSANAT: Hoitotyön johtaminen, hoitotyön johtaja, etiikka, eettinen aktiivisuusprofiili, eettinen aktiivisuus

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Abbreviations

ACHE	American College of Healthcare Executives
ANA	American Nurses Association
AONE	American Organization of Nurse Executives
CNA	Canadian Nurses Association
CG	Control Group
CReDECI2	Criteria for Reporting the Development and Evaluation of Complex Interventions in Healthcare: Revised Guideline
CRD	Centre for Reviews and Dissemination
CVI	Content Validity Index
DIIEI	Developing, Influencing and Implementing Ethics Instrument
EAI	Ethical activity instrument
ENDA	European Nurse Directors Association
EQ	Ethics Quarter
ESSQ	Ethical Sensitivity Scale Questionnaire
ETENE	National Advisory Board on Social Welfare and Health Care Ethics
ICHRN	International Centre for Human Resources in Nursing
ICN	The International Council of Nurses
ICT	Information and communication technology
I-CVI	Item Content Validity Index
IG	Intervention Group
IOM	Institute of Medicine
NMEKT	Nursing Management Ethics Knowledge Test
NM	Nurse Manager
NMCS	Nurses' Moral Courage Scale
OSF	Official Statistics of Finland
RCT	Randomized Controlled Trial
S-CVI	Scale Content Validity Index
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
SUS	The System Usability Scale
TENK	Finnish Advisory Board on Research Integrity
WHO	World Health Organization

List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

I   Laukkanen, L., Leino-Kilpi, H., & Suhonen, R. 2016. Ethical activity profile of nurse managers. *Journal of Nursing Management*, 24(4), 483–491. doi:10.1111/jonm.12348

II   Laukkanen, L., Suhonen, R., & Leino-Kilpi, H. 2016. Solving work-related ethical problems. *Nursing Ethics*, 23(8), 838–850. doi:10.1177/0969733015584966

III Laukkanen, L., Suhonen, R., Löyttyniemi, E., & Leino-Kilpi, H. 2022. The usability, feasibility and fidelity of the Ethics Quarter e-learning intervention for nurse managers. Submitted.

IV   Laukkanen, L., Suhonen, R., Poikkeus, T., Löyttyniemi, E., & Leino-Kilpi, H. (2021). The effectiveness of the Ethics Quarter intervention on the ethical activity profile of nurse managers: A randomized controlled trial. *Journal of Nursing Management.* Doi: 10.1111/jonm.13411. Advance online publication.

1   Introduction

Healthcare is highly ethics-bound, having the basic aspects of human life, from birth to death, as everyday concerns (Thompson et al., 2006; Beauchamp & Childress, 2013; Caplan et al., 2013; ETENE, 2020). Healthcare professionals respect the human dignity and basic rights of the patients and focus on their best interests. Professionals are responsible for the quality of their work, good services and treatment of patients who may be physically, emotionally and cognitively vulnerable (ETENE, 2012; Beauchamp & Childress, 2013; Boldt, 2019). Thus, high ethics are needed at all levels of healthcare (ETENE, 2020), and especially in the work of nurse managers (=NMs, referring to all those responsible for leadership, management and administrative positions and working as part of the healthcare administration at different levels of management and managing the largest healthcare professional group in Europe, nursing and allied health professionals, i.e., health professions distinct from nursing): they have a wide effect on patients, personnel and organizations through their use of power and authority and the choices they make about values. Every day, NMs deal with ethical issues arising from their work with patients, healthcare personnel and organization, and they play a key role in balancing the needs of all stakeholders (Prestia, 2020). Furthermore, NMs on their part create and develop the organizational conditions that enable practising core professional values and enhancing the professional identity of nursing (Stievano et al., 2012).

Ethics, concerning questions of good and bad, right and wrong in human behaviour (Thompson et al., 2006; Beauchamp & Childress, 2013), defined as "moral principles that govern a person's behaviour or the conducting of an activity" (MOT Oxford Dictionary of English), is a fundamentally central, everyday basis of the work of NMs. Regardless of NMs' leadership theory or framework (Cummings et al., 2010), they should have a strong ethical basis and familiarity with the ethical foundations of healthcare (ETENE, 2012; Stievano et al, 2012; Morrison, 2019). Ethics is always highly topical, and ethically active managers are needed at all levels of healthcare. In addition, as providers of both social and economic good, healthcare organizations are naturally more ethics-bound than businesses in general. NMs must be especially effective at balancing ethics and economics (Williamson & Jauch, 1995; Morrison, 2019). There is a risk that the values of economy and efficiency

have too much influence and decisions are made without investigating sufficiently thoroughly what is actually possible (ETENE, 2012). Managers have expressed concerns of how the focus in management seems to be increasingly on considering economic results and profit, rather than considering the ethical principles of caring for people (Höglund & Falkenström, 2018). On the other hand, "it is ethical to be effective and it is effective to do ethically right" (Ikola-Norrbacka, 2010, p.174).

The basic assumption in this study is that NMs have different kinds of ethical responsibilities to fulfil by doing ethical activities. NMs are responsible for the realization of the health care value base. Professional ethical codes of conduct (ENDA, 2011; ICN, 2012; ANA, 2015; CNA, 2017; Stievano & Tschudin, 2019; TAJA, 2021), such as the European Nurse Directors' proto-code of Ethics (ENDA, 2011; Stievano et al., 2012), the codes of ethics of both the International Council of Nurses (ICN, 2012) and the Association of Academic Managers and Experts of Health Sciences in Finland (TAJA, 2021) and several other separate documents and publications underline the ethical responsibilities (ETENE, 2012; Beauchamp & Childress, 2013) of NMs based on universal ethical principles and values aiming to demonstrate coherent professional duties and expectations (Directive, 2005/36/EC). NMs have a responsibility to develop their own ethics knowledge to carry out their work with competence (ENDA, 2011; ICN, 2012; ANA, 2015; Barkhordari-Sharifabad et al., 2018), uphold the highest moral and ethical standards (Stievano et al., 2012; Poikkeus et al., 2014a; 2014b), support ethically sound research (ENDA, 2011; ANA, 2015) and when conflicts arise, help individuals or organizations to respond to ethical challenges and seek solutions (Stievano et al., 2012; Aitamaa, 2020). Codes of ethics offer a platform for reflection, serving as an ethical compass in times of uncertainty (Newham & Hewison, 2021). Nevertheless, there are differences in the ethical responsibilities of NMs, as emphasized in international and national-based codes of ethics. According to a recent integrative review of national nursing codes of ethics (n=131member countries), most codes do not provide meaningful guidance for NMs (Schick-Makaroff et al., 2019), what is expected of NMs in regards to ethics, or what kind of ethical activities NMs should do.

NMs' activities are also guided by legislation. The law is seen to be the ethical baseline, defining the actions that are prohibited or required – a sort of minimum standard of ethical activities. The most important laws regulating healthcare in Finland are the basic rights recorded in the Constitution (731/1999), the Act on the Status and Rights of Patients (785/1992), the Act on Health Care Professionals (559/1994) and the Health Care Act (2010/1326). However, ethical responsibilities often exceed the minimum requirements stated by the law (ETENE, 2001), and following the law is not always sufficient. Even laws and codes together are not sufficient in themselves. NMs must also develop a habit of ethical thinking (ETENE,

2012), deeply assimilate codes (Stievano & Tschudin, 2019) and use good judgement (Newham & Hewison, 2021).

Implementation of ethical responsibilities by NMs affects nurses' performance and brings about several positive consequences for the health care organization (Barkhordari-Sharifabad et al., 2018b). Nurse managers' ethical activities have been found to be related to personnel's higher work engagement (Shirey, 2005; Cummings et al., 2010; Zhu et al., 2014; Ahmad et al., 2018; Asif et al., 2019; Zappalà & Toscano, 2020) or work commitment (Benevene et al., 2018), job satisfaction (Brown et al., 2005; Spence Laschinger et al., 2012; Benevene et al., 2018; Kaffashpoor & Sadeghian, 2020; Zappalà & Toscano, 2020) well-being (Brown et al., 2005; Shirey, 2005; Cummings et al., 2010; Barkhordari-Sharifabad et al., 2018b), psychological empowerment and caring behaviour (Dehghani-Tafti et al., 2021) and in this way, also to the quality of care (Shirey, 2005; Cummings et al., 2010; Barkhordari-Sharifabad et al., 2018b; Devik et al., 2020; Zaghini et al., 2020; Dehghani-Tafti et al., 2021), to reduced nursing errors (Barkhordari-Sharifabad & Mirjalili, 2020) and to patient satisfaction (Wong et al., 2013; Barkhordari-Sharifabad et al., 2018b; Dehghani-Tafti et al., 2021) and finally, to overall healthcare organizational success (Shirey, 2005; Morrison, 2019).

NMs lead the largest healthcare professional group in Europe (Eurostat, 2020), nursing and allied health professionals (health professions distinct from nursing). In Finland, in 2018, there were 5,152 NMs working in the public sector and they were in charge of more than 300,000 nursing and allied professionals (OSF, 2021). NMs' main responsibility in Finland is to create conditions for effective, high-quality, and productive nursing care (Ministry of Social Affairs and Health, 2009). Unfortunately, NMs and healthcare organizations are facing an unprecedented amount of significant challenges. The COVID-19 pandemic, growing financial pressures and shortage of healthcare professionals, rising public expectations, patient safety and quality improvement issues and healthcare reforms have placed healthcare organizations under great stress which potentially intensifies NMs' ethics concerns and conflicts (WHO, 2006; WHO, 2007; ICHRN, 2010; ACHE, 2015). Maintaining one's ethical compass in challenging times is crucial to minimize the negative effects and maximize the benefits for personnel and patients (Prestia, 2020). Today, ethical activities are thus needed more than ever in the work of NMs.

To support NMs in their ethical activities, there is a need to create and evaluate new ethical interventions (Ganz et al., 2015; Barkhordari-Sharifabad et al., 2018a; Höglund & Falkenström, 2018; Aitamaa, 2020; Devik et al., 2020; Markey et al., 2020; Poikkeus et al., 2020; Roshanzadeh et al., 2020; Aitamaa et al., 2021; Dehghani-Tafti et al., 2021) for the use of healthcare organizations. NMs lack support for ethics issues from their superiors and organization (Makaroff, 2014; Poikkeus et al., 2018) and wish for more guidance on how to be an ethical NM

(Makaroff, 2014; Schick-Makaroff et al., 2019). Furthermore, many nurses lack strong and visible ethical activities on the part of their NMs (Storch et al., 2013). Nurses have stated that they are not ethically supported by their mangers (Rodney et al., 2002; Doane et al., 2009), their NMs would not support them in the event of an ethical conflict (Leino-Kilpi et al., 2002), or the level of NMs' ethical leadership has been considered to be moderate (Barkhordari-Sharifabad & Mirjalili, 2020). It is known, however, that nurses' lower turnover intentions are associated with the extent to which nurses perceive their manager as being ethical and supportive (Hognestad Haaland et al., 2020). Furthermore, lack of ethical activities prevents embedding ethics into practice (Storch, 2002), and ethical activities of NMs are also an important prerequisite for healthcare workers' ethical practice (Schick-Makaroff et al., 2019).

In this study, based on previous literature, all the ethical responsibilities which NMs should fulfil by doing ethical activities were theoretically outlined, and using deductive reasoning, summarized into a new theoretical construct, the ethical activity profile of NMs. Furthermore, it was identified that the ethical activity profile of NMs should be supported by any means available. Thus, in this study, a new, ethics educational e-learning intervention for NMs, the Ethics Quarter (=EQ) was developed and evaluated. There are very few earlier ethics interventions studies in general (Stolt et al., 2018), or on NMs in particular (Storch et al., 2013; Eide et al., 2016). Furthermore, in the recent review of Ravaghi et al. (2020) focusing on studies developing and strengthening the competencies and skills of healthcare managers, the researchers did not find any studies including ethics (as taught skills and expected outcomes).

The aim of this two-phase study was to create the theoretical construct of the ethical activity profile of nurse managers (NMs) and to evaluate the effectiveness of the ethics educational intervention, Ethics Quarter (EQ). (Figure 1). The goal was to support the ethical activity profile of NMs by producing an effective ethics intervention for the use of healthcare organizations.

This study is localized at the interface between healthcare services, professional nursing ethics, nursing management and nursing education research. It focused on theoretical literature and empirical data on the ethical activity profile of NMs. This study produced the new construct of the ethical activity profile of NMs, knowledge about it, and an ethics educational e-learning intervention, the EQ, for the use of healthcare organizations. Previous studies have pointed out that healthcare organizations need to continually ensure available ethics support for NMs in the form of education (Devik et al., 2020; Hognestad Haaland et al., 2020; Markey et al., 2020).

The aim was to create the theoretical construct of the ethical activity profile of nurse managers (NMs) and to evaluate the effectiveness of the ethics educational intervention Ethics Quarter (EQ). The goal was to support the ethical activity profile of NMs by producing an effective ethics intervention for the use of healthcare organizations.

PHASE I (2011-2017)   **Papers I, II, Summary**
THEORETICAL PHASE

Purpose: 1) To create and 2) to analyse the construct of ethical activity profile of NMs

THEORETICAL CONSTRUCTION

PHASE II (2017-2020)   **Papers III, IV, Summary**
INTERVENTION PHASE

IIa) INSTRUMENTATION	IIb) INTERVENTION DEVELOPMENT
Purpose: To modify and develop instruments to evaluate the ethical activity profile of NMs	**Purpose:** 1) To describe ethics interventions and e-learning for NMs and 2) to develop an ethics educational e-learning intervention for NMs

INSTRUMENTATION AND INTERVENTION DEVELOPMENT

IIc) INTERVENTION IMPLEMENTATION

Purpose: To evaluate the effectiveness, usability and feasibility of an ethics educational e-learning intervention, the EQ.

EFFECTIVENESS STUDY

SUMMARY (2021)
The theoretical construct of the ethical activity profile of NMs and an effective, usable and feasible ethics educational e-learning intervention for the use of healthcare organizations to support the ethical activity profile of NMs.
Implications for further research, policymaking, nursing management and education.

Figure 1: Study phases.

2　　Review of the Literature

In this chapter, existing literature about the main concepts of the study will be described. The theoretical background of this study was based on scientific literature. A total of three separate literature reviews were conducted, described at the beginning of this chapter. The concept of nurse manager and ethical activity profile of nurse managers will be described in the second chapter. Then, in the third chapter, previous ethics interventions for NMs and e-learning method will be described. Finally, gaps in the knowledge after the three literature reviews will be presented.

2.1　　Literature reviews

The aim of the three literature reviews was to identify, evaluate and synthesize scientific knowledge (CRD, 2009) about the ethical activity profile of NMs, ethics interventions and e-learning method for NMs. All reviews were based on a systematic search answering a specific question, using well-defined search terms (Wilczynski et al., 2004) and inclusion and exclusion criteria (Khan et al., 2003). Search terms were formulated according to each database's layout requirements (e.g. MeSH-terms, CINAHL-terms, free search words with wildcards (*) and quotation marks ("). Literature reviews were conducted on empirical and theoretical literature in nursing and allied sciences. The searches were supplemented by manual search techniques. Critical appraisal (Gray et al., 2017) and inductive content analysis (Graneheim & Lundman, 2004) were used as analysis methods in all reviews. The first review was the basis of the whole study (Papers I, II), and further reviews were needed to proceed with developing the ethics intervention for NMs.

Review I in study Phase I (Papers I, II, Table 1) was the basis of the theoretical creation of the construct of the ethical activity profile of NMs. The review was conducted in 2011 and aimed to identify NMs' ethical responsibilities and the activities that NMs are expected to do to and have a high ethical activity profile. The electronic search was made by using two databases: National Library of Medicine (MEDLINE/PubMed) and Cumulative Index for Nursing and Allied Health Literature (CINAHL) from literature published between January 1986 and August 2011. The citations produced (n=641) were first screened on title level, then on abstract level and finally, on full-text level. The studies included in the literature

review (n=32) were analysed with inductive content analysis (Graneheim & Lundman, 2004). The search was updated for the first time for Papers I and II and for the instrument search in 2016 and for the second time for the summary with a search covering the period until the year 2020. New studies (n=22) were found and in total, review I included (n=54) studies.

Table 1: Literature review of ethical responsibilities and activities of nurse managers.

Focus	Search terms	Databases	Limiters	Inclusion criteria
Ethical responsibilities and activities of NMs	ethics AND nurse manager, nurse leader, nurse executive, nurse director, nursing management, nursing leadership	MEDLINE/ PubMed CINAHL	Time limit 1986–2020, English	Original study articles, sample included NMs

Review II in study Phase IIb (Appendix 1, Papers III, IV, Table 2) aimed to identify earlier empirical ethics intervention studies for NMs and was used to learn from the strengths and to avoid the weaknesses of earlier interventions in developing the EQ. To identify intervention studies, a systematic review using four electronic databases, MEDLINE/PubMed, CINAHL, ERIC and PsycINFO, was conducted in February 2020 without time limits. Retrieval of the studies included four steps. First, in the identification phase, 273 citations were found in the databases, 47 of which were duplicates. Second, in the screening phase, 226 citations were screened on title and abstract level. A total of 216 abstracts were excluded as they were not relevant. In the third phase, the eligibility phase, the full texts of 10 articles were analysed against the inclusion and exclusion criteria, and 7 full texts were eliminated in this phase. Articles were excluded if the ethics intervention was targeted at nurses. In the fourth and final phase, 3 empirical articles were included.

Table 2: Literature review of ethics intervention studies for nurse managers.

Focus	Search terms	Databases	Limiters	Inclusion criteria
Ethics intervention studies for NMs	ethics, moral, nurse manager, nurse leader, nurse executive, nurse director, nurse administrator, head nurse, charge nurse AND intervention, program, pre-post, quasi-experimental, RCT, experimental	MEDLINE/ PubMed, CINAHL, ERIC and PsycINFO	No time limit, English	An empirical research based intervention with ethics content, conducted in healthcare context with a sample of NMs, and reporting ethics-related outcomes

Review III in study Phase IIb (Appendix 2, Papers III, IV, Table 3) aimed to identify e-learning as a learning method for NMs, and the results were used in developing the

EQ intervention. It was conducted in April 2020 in four electronic databases, MEDLINE/PubMed, CINAHL, ERIC and PsycINFO without time limits. Articles were excluded if e-learning was targeted at nurses. Retrieval of the studies included four steps. First, in the identification phase, 83 citations were found in the databases, 31 of which were duplicates. Second, in the screening phase, 52 citations were screened on title and abstract level. A total of 44 abstracts were excluded as they were not relevant. In the third phase, the eligibility phase, the full texts of 8 articles were analysed against the inclusion and exclusion criteria, and 3 full texts were eliminated in this phase. In the fourth and final phase, 5 empirical articles were included.

Table 3: Literature review of e-learning method for nurse managers.

Focus	Search terms	Databases	Limiters	Inclusion criteria
E-learning method for NMs	nurse manager, nurse leader, nurse executive, nurse director, nurse administrator, head nurse, charge nurse AND e-learning, distance learning, online learning, web-based learning, internet-based learning, net-based learning, MOOC	MEDLINE/PubMed, CINAHL, ERIC and PsycINFO	No time limit, English	An empirical, research based study with e-learning method, study conducted in healthcare context with a sample of NMs

The results of all three reviews are presented in published papers (I–IV) and in the following chapters and appendixes.

2.2 Ethical activity profile of nurse managers

In this chapter, the main concepts of this study will be described as background of the study. The concept nurse manager and ethics as an essential part of nurse manager's competence and management style will be pointed out. Finally, the literature regarding the ethical activity profile of NMs and its dimensions will be described.

2.2.1 Nurse manager

Management and leadership have been studied in many disciplines, such as psychology, military, education and nursing (Cummings et al., 2010; Wong et al., 2013). Management is a set of processes or activities that keeps an organization going every day, including operational planning, budgeting, staffing, clarifying tasks, measuring performance and problem-solving, when needed (Jasper et al., 2012). Leadership, on the other hand, is aligning people to a vision (Kouzes et al., 2012), becoming visible in communication, motivation and inspiration (Casida et al.,

2011). Leadership and management are distinct concepts, even though they are widely used interchangeably (Toor et al., 2008): both involve influencing people towards goal attainment (Northouse, 2016).

NMs are expected to have both skills: management and leadership, a mix of behaviours combining the necessary skills to direct everyday tasks effectively (a role traditionally associated with management), while at the same time anticipating and managing change, having a vision of where the organization is going and translating the strategic vision and values into the organization's care actions (the main role in leadership) (Ofei et al., 2020). Organizations need leaders with managerial skills and managers with leadership skills (Toor et al., 2008; Global Centre for Nursing Executives, 2015). The role of NM has changed substantially during the last decades (Hutchinson et al., 2010) towards broader areas of responsibility (Asamani et al., 2013; Ofei et al., 2020). Furthermore, when management and leadership in its entirety are studied in the most recent nursing science studies, the concept management is used (Markey et al., 2020; Ofei et al., 2020; Aitamaa et al., 2021; González-García et al., 2021). Thus, in this study, the concept nurse manager (NM) is used, referring to all who are responsible for leadership, management and administrative positions and working as part of the healthcare administration in unit, middle, and strategic management, managing the largest healthcare professional group in Europe, nursing and allied health professionals (health professions distinct from nursing).

The management styles of NMs and their impact on health professionals, patients and organizations are of continuing international interest (Spence Laschinger et al., 2012; Wong et al., 2013; Cummings et al., 2010, 2018; Kiwabnuka et al., 2020). As healthcare has a shortage of healthcare professional, implementing strategies to ensure effective management has become paramount (Cummings et al., 2010, 2018) and recognizing one's own personal leadership style has become crucial (Roos et al., 2014). The massive literature review of Cummings et al. (2010, 2018), including 129 studies, summarized that management styles may be broadly characterized "as approaches that focus on people and relationships (relationally-oriented) to achieve common goals or as styles that focus on structures and tasks (task-oriented)" (Wong et al., 2013, p. 710) (Table 4). Relationally-oriented management styles improve outcomes for the nursing personnel (e.g. job satisfaction, satisfaction with leader, intention to stay, commitment, job stress), for organizations (nurse empowerment, culture and climate) and for the quality, productivity and effectiveness of healthcare organizations (Cummings 2010, 2018). Furthermore, for patients they manifest as improved patient satisfaction and safety outcomes (lower patient mortality, reduced medication errors, restraint use and hospital-acquired infections) (Wong et al., 2013).

It is suggested that relationally-oriented managers make more emotionally intelligent and ethical decisions. Furthermore, managers who relationally focus to use their emotional skills to understand what individual employees or work units are

feeling are able to build trust through active listening, empathy and responding to staff concerns. When managers listen to the emotional needs of staff, they are able to understand current issues of the staff and their possible work concerns, and are able to support them. Eventually, this relationally seamless co-operation leads to completion of the activities required to achieve the common goal and to the provision of excellence in patient care. Thus, relationally-oriented management styles are needed to enhance overall outcomes of healthcare. On the other hand, task-focused, non-relationally focused management styles lead to negative outcomes (Cummings et al., 2010; Wong et al., 2013; Cummings et al., 2018).

Table 4: Management styles of nurse managers.

Examples of relationally oriented management styles	
Transformational leadership	Motivates others to go beyond normal work expectations, to do more than was originally intended and more than what was thought possible (Bass & Avolio, 1993)
Authentic leadership	Builds credibility and wins followers' respect and trust (Avolio et al., 2004). Grounded in the leader´s positive psychological capacities, honesty, transparency, strong ethics and behavioural integrity (Wong et al., 2013)
Ethical leadership	Promotes normatively appropriate conduct of followers through two-way communication, reinforcement, and decision-making (Brown et al., 2005)
Resonant leadership	Inspires, coaches, develops and includes others even in the face of adversity (Boyatzis & McKee, 2006)
Individualized consideration	Focuses on understanding the needs of each follower and works continuously to get them to develop to their full potential (Avolio et al., 1999)
Examples of task-oriented management styles	
Transactional leadership	Emphasizes the transaction or exchange that takes place among leaders, colleagues, and followers to accomplish the work (Bass & Avolio, 1993)
Dissonant leadership	Pacesetting and commanding styles that undermine the emotional foundations required to support and promote staff success (Goleman et al., 2002)
Laissez faire approaches	Passive avoidance of issues, decision-making and accountability (Avolio et al., 1999)

Different management competencies of NMs have been studied in previous nursing management research. NMs are expected to have several competencies. To what extent and at what level NMs have these competencies in reality may differ widely, depending on their education, employment and career status (Kang et al., 2012; Numminen et al., 2019). Different kinds of competence areas and classifications have been identified (Kirk, 2008; Kang et al., 2012; AONE, 2015; Pihlainen et al., 2016; Kantanen et al., 2017; Lehtonen et al., 2018; Ofei et al., 2020; González-García et al., 2021). For example, Kantanen et al. (2017) divided

competencies into general and special competencies and Pihlainen et al., (2016) into three competence areas: healthcare context-related, operational, and general competencies. However, these different areas include mainly similar issues, and in this study, competencies are mainly summarized according to Pihlainen (Table 5).

Table 5: Management competencies of nurse managers.

Healthcare-context related competence
- knowledge and understanding of laws, roles and different functions of the political, social and legislative systems (Ministry of Social Affairs and Health, 2009).
- knowledge and understanding of organizational functions, relationships and decision-making systems
- business competence in clinical and cultural contexts as well as different types of processes (changes, services, development, resources and planning)
- development of services and resources competence (Ministry of Social Affairs and Health 2009; Kantanen et al., 2017)
- financial, marketing and budgeting competence (Ministry of Social Affairs and Health 2009; Kang et al., 2012; Kantanen et al., 2017)
Operational competence
- improving the quality and service processes, doing service initiation and innovation (Kantanen et al., 2017) focus on patients
- ability to manage using clinical skills, substance knowledge (Surakka, 2008; Kantanen et al., 2017), participating in direct or indirect care and having expertise in nursing (Surakka, 2008).
- knowing and understanding operations and available resources
- leadership skills, management abilities, such as resource allocation
- professional and clinical operations issues and professional credibility
- ethics competence (Kantanen et al., 2017; Barkhordari-Sharifabad et al., 2017; 2018a, Poikkeus et al., 2018; ETENE, 2012) consisting of five areas: 1) knowledge of values and principles, 2) knowledge of laws and regulations, 3) ethical reflection, 4) ethical decision-making, and 5) ethical behaviour and action (Poikkeus et al., 2018)
- ethics awareness (Zendrato, 2019), ethical sensitivity (Milliken 2018; Roshanzadeh et al., 2020), strong professional ethics (Pihlainen, 2016), moral courage (Clancy, 2003; Spence & Smythe, 2007; Sekerka et al., 2009; Edmonton, 2010; Stievano et al., 2012), integrity and ethical stance (Kang et al., 2012; Kantanen, 2017), ethical approach (Ofei et al., 2020), ethical principles (González-García et al., 2021)
- development and improvement abilities
- proactive approach to changes and impacts
General competencies
- strategic thinking, strategic process and creating a strategy and a vision. Ability to communicate and motivate staff to accomplish strategy and vision (Ministry of Social Affairs and Health, 2009)
- total organization view, visionary (Kirk, 2008)
- human resource management (HR management) (Kantanen et al., 2017; Ministry of Social Affairs and Health, 2009)
- abilities to think critically, prioritize, multi-task and use information in decision-making and problem-solving. Abilities to receive and present constructive feedback and skills in conflict resolution
- communication, building and maintenance of relationships, networking, teamworking, written and oral fluency and clarity and active listening to and facilitation of discussion (Surakka, 2008; Kantanen et al., 2017)
- personal development skills, such as self-awareness
- research competency (Kang et al., 2012; Hafsteinsdóttir et al., 2017; Kantanen et al., 2017; Numminen et al., 2019)
- scheduling ability
- technology skills (Kang et al., 2012)

Ethics has been identified as an essential part of NMs' management style and management competence, as seen in previous tables and chapters. Ethical management style has shown improved outcomes for overall organizational success (Shirey, 2005; Cummings et al., 2010; Wong et al., 2013), and ethics has been identified as an increasingly important part of NMs' competence (Kantanen et al., 2017; Barkhordari-Sharifabad et al., 2018a). NMs themselves recognize ethics as central to their management, too (Makaroff et al., 2014; Kantanen, 2017; Aitamaa et al., 2021): ethics "is just the core… of my job", "fundamentally, it is all about ethics". Ethical practice is not only core to NMs' management role, but they believe it is core to nursing practice "across all levels of work, regardless of the topic". Managers believe that ethical practice occurs "on a daily basis", as "small little daily twinges" (Makaroff et al., 2014, p. 652). Thus, ethics can be seen as an essential component of nurse managers' work. NMs need ethical competence to be able to manage ethically – in other words, to do ethical activities.

2.2.2   Ethical activity profile

Nurse managers have a moral duty to do ethical activities (Morrison, 2019) and thus fulfil their ethical responsibilities. There are, however, no straightforward guidelines or standards available (Schick-Makaroff & Storch, 2019) on what kind of ethical activities are involved. Thus, in this study, based on literature review I, all the ethical responsibilities which NMs should fulfil by doing ethical activities, were theoretically outlined from previous literature and using deductive reasoning, summarised into a new theoretical construct, the ethical activity profile of nurse managers (Table 6, Papers I-IV), consisting of managers:

1) developing one's own ethics knowledge,

2) influencing ethical issues,

3) conducting or implementing ethics research,

4) identifying ethical problems and

5) solving ethical problems.

Next, all the five dimensions will be described in more detail. The width of the description of the dimensions varies according to the amount of previous research about the dimension.

Developing one's own ethics knowledge

NMs have **the responsibility to develop their own ethics knowledge** (Paper I, III, IV). NMs are expected to develop their own ethics knowledge, competence and skills

throughout their career (IOM, 2011; AONE, 2015) in order to have strong ethics knowledge (Grundstein-Amado, 1993; Gallagher & Tschudin, 2010), to be ethically competent (ETENE, 2012; Kantanen, 2017; Barkhordari-Sharifabad et al., 2018a; Poikkeus et al., 2018) and skilled (Gallagher & Tschudin, 2010; ICN, 2012; Stievano et al., 2012; ANA, 2015; Eide et al., 2016). In addition to basic ethics education, NMs need self-oriented life-long ethics learning (ENDA, 2011; ANA, 2015) and continuing ethics education (Clancy, 2003; ICHRN, 2010; ICN, 2012; Stievano et al., 2012; Oztürk, 2012; Eide et al., 2016). However, most NMs do not seem to participate in continuing ethics education after graduation (Aitamaa et al., 2021; Paper I, III, IV).

In this study, the responsibility to develop one's own ethics knowledge refers to developing ethics knowledge, competence and skills throughout the career via basic and continuing education and life-long learning to have ethics knowledge, competence and skills.

Influencing ethical issues

NMs have **the responsibility to influence ethical issues** (Paper I, III, IV). NMs are expected to advocate ethics issues as spokespersons and political strategists (Storch et al., 2013), articulate the application of ethical principles into nursing and, thus, increase the probability for congruence between nursing's core values and nursing practice, integrate values into everyday nursing practice, create an environment with high ethical standards (Gallagher & Tschudin, 2010; Bjarnason et al., 2011; ENSA 2011; ICN, 2012; Kangasniemi et al., 2013; ACHE, 2015; ANA, 2015; AONE, 2015; Eide et al., 2016; Hognestad Haaland et al., 2020) and uphold those standards (Stievano et al., 2012; Poikkeus et al., 2014a, 2014b) by visibly and intentionally role modelling ethical behaviour (Brown & Trevino, 2006; Gallagher & Tschudin, 2010; Shaubroeck et al., 2012; Stievano et al., 2012; Yukl et al., 2013; ACHE, 2015), by keeping actions consistent with espoused values, ("walking the talk") (ETENE 2012; Yukl et al., 2013; Keselman & Saxe-Braithwaite, 2020), and by using a reward system (rewards and discipline) to hold nurses accountable for ethical conduct (Berggren et al., 2005; Brown & Trevino, 2006; Shaubroeck et al., 2012; ACHE, 2015). Influencing can also be seen as involving official posts, work groups or committees.

NMs are expected to actively promote ethical behaviour, practices and the application of individuals' values throughout the organization (ACHE, 2015; Poorchangizi et al., 2019). NMs support nurses to understand and deal with ethical issues (Silén & Svantesson, 2019), provide the necessary support for them in ethically problematic situations (Esterhuizen, 1996; Goethals et al., 2010; Hognestad

Haaland et al., 2020), and strengthen nurses' capacity to practise ethically (Makaroff et al., 2014). NMs foster ethical discussions and ethical forums (Toren & Wagner, 2010; Grönlund et al., 2016; Hognestad Haaland et al., 2020) and dialogue (Fagerström & Salmela, 2010) where free expression of ethical concerns is both encouraged and supported, without retribution, and set up a mechanism protecting those who wish to raise ethical concerns (ACHE, 2015; ANA, 2015). NMs listen to diverse perspectives of nurses and support them to feel proficient about their work (Keselman & Saxe-Braithwaite, 2020). Influencing through managerial support is seen as a crucial factor in the provision of care that is safe, compassionate, competent and ethical (Storch et al., 2013). Furthermore, NMs support the ethical development and competence of nurses (Stievano et al., 2012; Vanderheide et al., 2013; Poikkeus et al., 2018) through provision of ethics education and training aimed at creating greater awareness of ethical considerations (Poorchangizi et al., 2019).

Murray (2007) has provided the following words for NMs regarding their important role in upholding ethics: "Strong leadership is essential to producing and sustaining an ethical environment. As individuals, each nurse is subject to countless influences. When leaders expect and consistently demonstrate the highest professional and personal standards of conduct and ethical behaviours individuals can realize their greatest potential. Conversely, when standards are unclear and questionable behaviours are tolerated... individuals may find themselves questioning profoundly held values. For this reason, leaders must remain on guard constantly to ensure an ethical environment" (Murray 2007, p. 49).

> In this study, the responsibility to influence ethical issues refers to articulating and integrating the ethical principles into nursing, to creating an environment with high ethical standards, to being a role model for ethical behaviour, to holding nurses accountable for ethical conduct, to providing the necessary support for nurses in ethically problematic situations, to holding ethical discussions or forums, to supporting the ethical behaviour and competence of nurses, and to involving ethics officials, work groups or committees.

Conducting or implementing ethics research

NMs have **the responsibility to conduct or implement ethics research** (Paper I, III, IV). NMs are expected to conduct research (ANA, 2015; Hafsteinsdóttir et al., 2017; Numminen et al., 2019), support research (Stievano et al., 2012; Storch et al., 2013; ANA, 2015), for example, via developing the structures and processes that create an organizational climate and infrastructure conducive to research (ANA, 2015), set standards for research (ICN, 2012), evaluate research knowledge (ANA, 2015), and disseminate and use research results (ICN, 2012). To do this, NMS need

research and development knowledge (Kang et al., 2012; Hafsteinsdóttir et al., 2017; Kantanen et al., 2017; Numminen et al., 2019).

NMs are also expected to provide and establish a link between the research team and nursing staff in clinical research (Nurmi et al., 2015). In addition, the dissemination, promotion and implementation of best practices are also important activities of NMs (ICHRN, 2010). Furthermore, NMs contribute to the development and implementation of ethics policies (Stievano et al., 2012).

> In this study, the responsibility to conduct or implement ethics research refers to conducting, supporting and setting standards for research and to evaluating, disseminating and using research knowledge.

Identifying ethical problems

NMs have **the responsibility to identify ethical problems** (Sietsema et al., 1987; Camunas, 1994a; Borawski, 1995; Aitamaa et al., 2021, 2019; Paper I, III, IV). In this study, ethical problems are understood as difficult issues or conflicts between competing moral principles and values that require moral solutions. The solutions must be based on moral principles or values and on what is fundamentally good or right. Ethical problems may be new and unfamiliar, or they can be recurring day-to-day issues (Thompson et al., 2006). Ethical problems in organizations seem to be associated with adverse outcomes, such as stress, decreased organizational commitment, turnover, absenteeism and burnout (Gaudine & Beaton, 2002; Thorne, 2010; Pavlish et al., 2016; Barkhordari-Sharifadad et al., 2017). Furthermore, ethical problems have negative financial consequences (Nelson et al., 2008). Thus, ethical problems should be identified. The number and severity of ethical problems may possibly be reduced by making them visible (Aitamaa et al., 2021).

NMs' ethical problems often have to do with patient care, staff and the organization (Sietsema et al., 1987; Camunas, 1994a; Aitamaa et al., 2016, 2021). Ethical problems related to patient care may be caused by conflict between nursing ethics and economical efficiency, i.e. how to maintain a certain level of care or provide good care in terms of economics (Sietsema et al., 1987; Gaudine & Beaton, 2002; Aitamaa et al., 2010, 2016, 2021; Toren & Wagner, 2010; Suhonen et al., 2011), questions of access to care (Camunas, 1994a) and informed consent (Redman et al., 2003). Ethical problems related to staff may arise from relationships between staff (Borawski, 1995; Cooper et al., 2002, Gaudine & Beaton, 2002; Aitamaa et al., 2010; Suhonen et al., 2011), lack of the skills and knowledge needed in work (Camunas, 1994b; Borawski, 1995; Cooper et al., 2002; Redman et al., 2003) and bullying (Lindy & Schaefer, 2010). Ethical problems related to organizations may result from conflicting values between the healthcare organization and NMs, as seen

in many situations (Gaudine & Beaton, 2002; Aitamaa et al., 2016), as well as administrative issues (Ganz et al., 2015), e.g. difficulty in allocating scarce organizational resources (Sietsema et al., 1987; Gaudine & Beaton, 2002; Andreu et al, 2009; Aitamaa et al., 2010, 2016, 2021).

NMs face ethical problems daily (Makaroff, 2014; Aitamaa et al., 2021). The most frequently encountered ethical problems are related to nursing staff and organization: at least half of the managers encountered those at least weekly. The most difficult ethical problems are related to the organization (Aitamaa et al., 2021).

To identify ethical problems, NMs are expected to be ethically sensitive. Ethical sensitivity is an attribute enabling the identification of ethical problems and emotional perceptions of vulnerable situations of others as well as awareness of the ethical outcomes of decisions made by others (Weaver, 2007; Lützén et al., 2010). Rest (1982), Lützén et al. (2010), Ersoy et al. (2001) and Weaver et al. (2008) have done four major conceptualizations of ethical sensitivity, and Milliken (2018) summarizes the concept of ethical sensitivity as "the capacity or ability to recognize an ethical problem" (Ersoy et al., 2001, p. 300), "the capacity to decide with intelligence and compassion" (Weaver et al., 2008, p. 610), "an understanding of the patients' situation", "an awareness of the moral implications of decisions" (Lützén et al., 2010, p. 216), and as "the awareness of how our actions affect the people" (Rest, 1982, p. 29). Even though ethical sensitivity, judgment, motivation and action are all essential skills or processes of the NMs, the most important skill or process is ethical sensitivity, as it is required for becoming aware and understanding ethical problems and their cues. "Ethical sensitivity is the emphatic interpretation of a situation in determining who is involved, what actions to take, and what possible reactions and outcomes might ensue" (Narvaez, 2009).

NMs' ethical sensitivity can have an enormous impact on many aspects of professional practice, such as commitment to ethical values, quality of patient care, management of nursing errors, communication, decision-making and sensitivity to ethics in practice (Esmaelzadeh et al., 2017). Sensitive managers make morally excellent and optimal decisions (Roshanzadeh et al., 2020).

> In this study, the responsibility to identify ethical problems refers to identifying ethical problems and thus, NMs must be ethically sensitive. Being ethically sensitive is an attribute that enables the identification of ethical problems.

Solving ethical problems

NMs have **the responsibility to solve ethical problems** (Camunas, 1994b; Borawski, 1995; Aitamaa, 2020; Paper II, III, IV) and model ethical decision-making (ICHRN, 2010). Ethical problems that are properly dealt with promote NMs' ethical

reasoning and organizations' ethical culture (Toren & Wagner, 2010). Stronger ethical culture is associated with a lower prevalence of ethical problems as well as higher work engagement (Huhtala, 2019). On the other hand, ethical problems are known to correlate to nurses' intention to leave the healthcare organization (Hognestad Haaland et al., 2020). In addition, the ethical decisions made and any activities taken based on them become crucial because of the direct impact they have on the overall quality of care (Nelson, 2015).

Ethical problems should be analysed and solved in the best possible way (Aitamaa, 2020). Even though ethical problems are difficult issues, it is possible to apply problem-solving methods and find a viable solution (Thompson et al., 2006). NMs and organizations should determine their own guidelines for identifying and solving ethical problems (Tallis et al., 2015) and define common ethical decision-making models (Standford, 2006) and processes (Buell, 2009). There are several ethical decision-making models supporting NMs in ethical decision-making (Stanford, 2006; Thompson et al., 2006; Toren & Wagner, 2010; Park, 2012; Nelson, 2015). All of the models follow a similar process: clarifying and defining the nature of the problem; identifying key facts, values, and stakeholders; listing a course of action; identifying the results of each action on each stakeholder now and in the future; deciding on the action; and evaluating its outcome (Stanford, 2006; Thompson et al., 2006; Toren & Wagner, 2010; Park, 2012; Nelson, 2015).

NMs use a variety of ethical problem-solving methods and most of them are considered to be useful (Aitamaa et al., 2019). NMs use their personal values (Sietsema & Spradley, 1987; Borawski, 1994; Camunas, 1994a, 1994b; Cooper, 2003; Aitamaa et al., 2019, Paper II) and their colleagues to solve ethical problems (Sietsema & Spradley, 1987; Borawski,1994; Camunas, 1994a, 1994b; Cooper, 2003; Redman & Fry, 2003; Aitamaa et al., 2019). They also use discussions (Redman et al., 2003; Lindy & Schaefer, 2010; Aitamaa et al., 2019; Paper II) ethics committees (Borawski, 1994; Camunas, 1994a; Aitamaa et al., 2019), professional meetings, organization policies (Cooper et al., 2003; Aitamaa et al., 2019), the Patient's Bill of Rights (Sietsema et al., 1987; Borawski, 1994; Camunas, 1994a, 1994b; Aitamaa et al., 2019) and codes of ethics (Sietsema et al., 1987; Borawski, 1994; Camunas, 1994a; Cooper et al., 2003; Aitamaa et al., 2010, 2019). However, ethics committees dealing with nursing solutions (excluding research ethics), ethics specialists or other outside experts and ethics literature are more seldom used (Aitamaa et al., 2019).

To solve ethical problems, NMs are expected to have moral courage. According to Rest's moral decision-making model (1986), in problem solving, the fundamental starting point is to recognize the ethical issue in the first place, having ethical sensitivity. Then, managers must have the will to address it, form a moral judgment, and ultimately, proceed with a moral response, which requires moral courage. Moral

courage can be observed when managers are faced with an ethical challenge: moral courage can be assessed by looking at how managers establish and maintain their will to proceed with moral action (Solomon, 1998).

In nursing, moral courage means defending and acting on the values and principles of professional ethics and related laws regardless of resistance from others or possible adverse consequences to oneself (LaSala et al., 2010; Numminen et al., 2017). On the part of the NM, being morally courageous and acting with moral courage calls for true presence, moral integrity, responsibility, honesty, commitment, advocacy, perseverance, and personal risk-taking (Numminen, 2017). To lead, NMs need moral courage (Clancy, 2003; Edmonton, 2010). Courage can be taught (Clancy, 2003; Sekerka et al., 2009), it is a central competency in leadership education (Spence & Smythe, 2007), and NMs are encouraged to develop their moral courage (Edmonton, 2010; Stievano et al., 2012).

In this study, the responsibility to solve ethical problems refers to solving ethical problems and thus, NMs must be morally courageous, and defend and act on the values and principles of professional ethics, regardless of possible resistance from others or adverse consequences to themselves.

The theoretical construct of the ethical activity profile of nurse managers, described above, formed the theoretical basis for this study as a whole: the contents of the Ethics Quarter intervention, measuring and contents of the instruments were based on the construct.

2.3   Ethics interventions for nurse managers

This chapter focuses on describing the results of literature reviews II and III. The reviews were conducted to gain an understanding of what kind of ethics interventions there are for NMs and how the e-learning method is used for NMs to learn from the strengths and avoid the weaknesses of earlier ethics interventions. Development of the new ethics intervention in this study was based on these results.

In the field of healthcare and nursing ethics, there are very few ethics intervention studies (Stolt et al., 2018), and even fewer studies searching for ways to support NMs (Storch et al., 2013; Eide et al., 2016). However, preliminary evidence suggests that it is possible to affect the ethics of practices through professionals. There is evidence that some clinically integrated interventions have led to improvements in professionals' knowledge, skills or attitudes (Stolt et al., 2018).

To identify existing ethics interventions for NMs, systematic review II was conducted and 3 empirical articles were included, published between the years 2015 and 2018. All the interventions had sample sizes ranging from 8 to 44. The designs

of the studies (Appendix 1) included quasi-experimental, pre-post and focus group methods. The interventions were all educational in type, multidimensional, combining different educational elements such as lectures, small group discussions, peer-mentoring, developing and running an ethics project. An electronic learning environment was partly utilized in one intervention (Eide et al., 2016).

The content of the interventions focused on developing and evaluating the outcomes of ethical leadership programmes and strengthening moral courage. The interventions had promisingly positive outcomes: increased NMs' self-reported ethical leadership, organizational citizenship behaviour, job satisfaction, commitment to workplace and professional moral courage (Edmonson, 2015; Eide et al., 2016; Jeon et al., 2018). However, the number of the ethical intervention studies and the number of participants were limited and none of the studies used data randomized into experimental and control groups, even though it is known that in the field of nursing and healthcare ethics, more powerful study designs are required to define the best ethical practices and support evidence-based nursing (Richards et al., 2014). Thus, there was a clear need to develop and implement ethics interventions and evaluate the effects of these interventions (Stolt et al., 2018).

E-learning has been a rapidly growing form of education. In recent years, e-learning has become mainstream in the education sector and it has been massively adopted (Castro & Tumibay, 2019; Al-Fraihat et al., 2020) also in healthcare education (Cook et al., 2010a). Rapid global digitalization over the past decade, Information and communication technology (ICT) and the Internet have enabled the use of new innovative methods to deliver education (European Commission, 2020a; European Commission, 2020b). The latest information technologies (WiFi and 4G/5G mobile phone technology) have increased the availability of Internet access, allowing broad use of educational content in diverse settings globally (Vaona et al., 2018; Al-Fraihat et al., 2020). Furthermore, the global COVID-19 crisis has underlined the need for high-quality digital education (European Commission, 2020b) and driven the fast changes to education necessitated by social distancing measures which prevent face-to-face teaching. This has led to an almost immediate switch to distance learning by educational institutions (Longhurst et al., 2020).

E-learning is a broad concept that involves learning realized in an online environment (Voutilainen et al., 2017), education that is accessed through the use of the Internet (McGowan, 2015), or any educational intervention that is mediated electronically via the Internet (Vaona et al., 2018). In this study, e-learning is described as an educational intervention mediated electronically via the Internet and covers the concepts distance learning, online learning, web-based learning, internet-based learning, net-based learning, computer based training and MOOC.

Previous studies have described e-learning as a dynamic, innovative and rich way of learning (Belcher et al., 2005), allowing participating through a website in

real time or asynchronously and following lectures or completing assignments flexibly according to their own schedules (Simpson, 2003; Liu et al., 2014). The reported benefits of e-learning are flexibility, accessibility, satisfaction and cost-effectiveness (Nisar, 2002; Wutoh et al., 2004; Smith, 2005; Castro & Tumibay, 2019). E-learning can increase participants' control over the content, place and time of learning (Cook et al., 2010). Furthermore, it may help participants gain knowledge and skills more rapidly in comparison to traditional instructor-led methods (Nisar, 2002; Cook et al., 2008). The disadvantages reported for e-learning are possible technology-related costs, such as program development costs, possible technical problems, limited direct interaction, lack of exchanges and relations between participants, absence of the physical presence of the teacher, decrease in motivation to learn, and need for greater self-discipline (Welsh et al. 2003; Cook, 2007; Poon et al., 2015).

E-learning is seen as an education method that is equally good as other methods in continuing medical education (Wutoh et al., 2004). Cook et al. (2010b) showed that while using e-learning interventions, learning outcomes are improved by interactivity, practice exercises, repetition, and feedback (Cook et al., 2010b). However, when comparing e-learning to traditional learning, e-learning may make little or no difference in health professionals' behaviours, skills or knowledge. Even if e-learning might be more successful than traditional learning, particularly in medical education settings, e-learning does not seem to be inherently more effective compared to traditional methods of learning (Vaona et al., 2018).

In the field of nursing management, five empirical articles using e-learning method with a sample of NMs were identified in systematic review III (Appendix 2). The articles used different concepts of e-learning. The results of the studies were promising: all reported positive outcomes. E-learning was considered a suitable, modern (Korhonen & Lammintakanen, 2005) and supportive (Eide et al., 2016) method of learning. Abel et al. (2020) found that online learning was an effective method and recommended that whenever it is difficult to arrange simultaneous education for multiple managers, online learning may be a sustainable solution. In a study of Harrington & Walker (2006), computer-based training improved NMs' knowledge, attitudes and practices, and the participating managers were willing to use computers in future training as well. The researchers summarized that when NMs have limited time to attend, computer-based training can be a very effective tool. However, organizational culture has to support e-learning. In a Finnish study by Korhonen & Lammintakanen (2005) NMs considered support for learning to be essential. NMs also considered web-based learning useful in developing healthcare practice.

To summarize, there are few earlier empirical ethics intervention studies (Edmonson, 2015; Eide et al., 2016; Jeon et al., 2018) or studies using e-learning

method for NMs (Korhonen & Lammintakanen, 2005; Harrington & Walker, 2006; Eide et al., 2016; Kocoglu et al., 2016; Abell et al., 2020), but their results are promising. Furthermore, studies done in other professional groups or disciplines encourage applying e-learning also for NMs. It might be that studies done with other professionals have been so strong that no studies using the e-learning method for NMs have been needed. However, during the COVID-19 pandemic also the digital education for NMs has become more common.

The main concepts of this study: nurse manager, ethical activity profile of nurse managers and e-learning, and their definitions in this study, are presented summarized in (Table 6).

Table 6:   Main concepts and definitions used in this study.

Main concepts	Definition
Nurse manager	Nurse manager refers to all who are responsible for leadership, management and administrative positions and working as part of the healthcare administration in unit, middle, and strategic management and managing the largest healthcare professional group in Europe, nursing and allied health professionals (health professions distinct from nursing).
Ethical activity profile of nurse managers:	**To fulfil ethical responsibilities, NMs are expected to do five different types of ethical activities, summarized as the theoretical construct of the ethical activity profile of nurse managers:**
1) **Developing one's own ethics knowledge**	**It is NMs' responsibility to develop their own ethics knowledge**: To develop ethics knowledge, competence and skills throughout the career via basic and continuing education and life-long learning to have ethics knowledge, competence and skills.
2) **Influencing ethical issues**	**It is NMs' responsibility to influence ethical issues**: To articulate and integrate the ethical principles into nursing, to create an environment with high ethical standards, to be a role model for ethical behaviour, to hold nurses accountable for ethical conduct, to provide the necessary support for nurses in ethically problematic situations, to hold ethical discussions or forums, to support the ethical behaviour and competence of nurses, and to involve ethics officials, work groups or committees.
3) **Conducting or implementing ethics research**	**It is NMs' responsibility to conduct or implement ethics research:** To conduct, support and set standards for research and to evaluate, disseminate and use research knowledge.
4) **Identifying ethical problems**	**It is NMs' responsibility to identify ethical problems:** To identify ethical problems, NMs must be ethically sensitive. Being ethically sensitivity is an attribute that enables the identification of ethical problems.
5) **Solving ethical problems**	**It is NMs' responsibility to solve ethical problems:** To solve ethical problems NMs must be morally courageous; to defend and act on the values and principles of professional ethics, despite any resistance by others or any adverse consequences to themselves.
E-learning	Educational intervention that is mediated electronically via the Internet.

References for the definitions are presented in the previous chapter

2.4   Gaps in the knowledge of existing literature

Next, based on the three literature reviews made in this study, the main gaps in the knowledge are summarized. Firstly, literature describes only sporadically what kinds of ethical activities NMs are expected to do in order to fulfil their ethical responsibilities and to have a high ethical activity profile. It is not clear, either, how high the ethical activity profile of NMs is.

Secondly, existing literature also has a gap in showing how to effectively support NMs to have a high ethical activity profile. It is known that NMs lack support for ethics issues from their superiors and organization (Makaroff, 2014), or the support is suboptimal (Poikkeus et al., 2020). The lack of support weakens the managers' capability to do ethical activities (Barkhordari-Sharifabad et al., 2017). NMs themselves recognize the importance of ethics in healthcare management (Höglund & Falkenström, 2018) and they wish for more guidance on how to be an ethical manager (Schick-Makaroff et al., 2019). In the recent study of Aitamaa (2020), over sixty per cent of the NMs agreed that they needed additional ethics education. However, managers seem to lack possibilities for applying ethical competence as well as ethics competence development (Höglund & Falkenström, 2018).

Finally, existing literature has shown that organizations lack specific measures to support managers' ethical activities (Zhao et al., 2019). This organizational support could be different kinds of ethical interventions (Poikkeus et al., 2020; Höglund & Falkenström, 2018; Ganz et al., 2015), forums (ETENE, 2012) or developmental ethics programs (Barkhordari-Sharifabad et al., 2018a; Asif et al., 2019; Aitamaa, 2020; Dehghani-Tafti et al., 2021), including education and training (Sekerka et al., 2009; Eide et al., 2016; Devik et al., 2020; Hognestad Haaland et al., 2020; Markey et al., 2020; Roshanzadeh et al., 2020; Aitamaa et al., 2021). In spite of several studies recommending ethics interventions for NMs, there are only very few intervention studies in the field of healthcare and nursing ethics (Eide et al., 2016; Storch et al., 2013) aimed at finding these new ways of support for NMs.

In sum, there is a clear gap in describing the ethical activity profile of NMs and in developing and evaluating ethical interventions for NMs to support their ethical activity profile in the future. In nursing science literature, there is a lack of ethics interventions for NMs with large numbers of participants, with strong study designs and interventions using the promising e-learning method.

3 Aim of the Study

The aim of this two-phase study was to create the theoretical construct of the ethical activity profile of NMs and to evaluate the effectiveness of the ethics educational intervention Ethics Quarter (EQ). The goal was to support the ethical activity profile of NMs by producing an effective, usable and feasible ethics educational e-learning intervention for the use of healthcare organizations.

The research questions addressed were as follows:

Phase I: Theoretical Phase

1) What is the ethical activity profile of NMs like?
2) What is the level of the ethical activity profile of NMs? How do NMs
   - develop their own ethics knowledge?
   - influence ethical issues?
   - conduct or implement ethics research?
   - identify and
   - solve ethical problems?

Phase II: Intervention Phase

3) Is the EQ effective in increasing the ethical activity profile of NMs in all 5 dimensions?

   3.1) Is the EQ effective in increasing the development of NMs' own ethics knowledge?
   3.2) Is the EQ effective in increasing NMs' influence on ethical issues?
   3.3) Is the EQ effective in increasing the conduct or implementation of ethics research by NMs?
   3.4) Is the EQ effective in increasing the identification of ethical problems by NMs?

3.5) Is the EQ effective in increasing the solving of ethical problems by NMs?

4) What are NMs' user-evaluations of the usability and feasibility of the EQ?

The following hypotheses (H1-H6) were tested:

H1: Taking part in the EQ intervention supports the ethical activity profile of NMs (in all 5 dimensions):

> H2: EQ statistically significantly supports developing their own ethics knowledge
> H3: EQ statistically significantly supports influencing ethical issues
> H4: EQ statistically significantly supports conducting or implementing ethics research
> H5: EQ statistically significantly supports identifying ethical problems
> H6: EQ statistically significantly supports solving ethical problems compared to control group.

4 Materials and Methods

This study was a two-phased study consisting of a theoretical phase and an intervention phase. In this chapter, the study design, setting, sampling and samples of both study phases are first described. In the second chapter, development of the EQ intervention, its pilot-testing and implementation are described. Then, in the third chapter, the data-collection and instruments used in both study phases are described. The fourth chapter describes all data analysis. Finally, ethical considerations of all study phases are described.

In Phase I, mostly narrative research methods were used to find the essential elements of the ethical activity profile of NMs and in Phase II, mostly quantitative research methods were used to verify and quantify the level of the ethical activity profile of NMs (Figure 2).
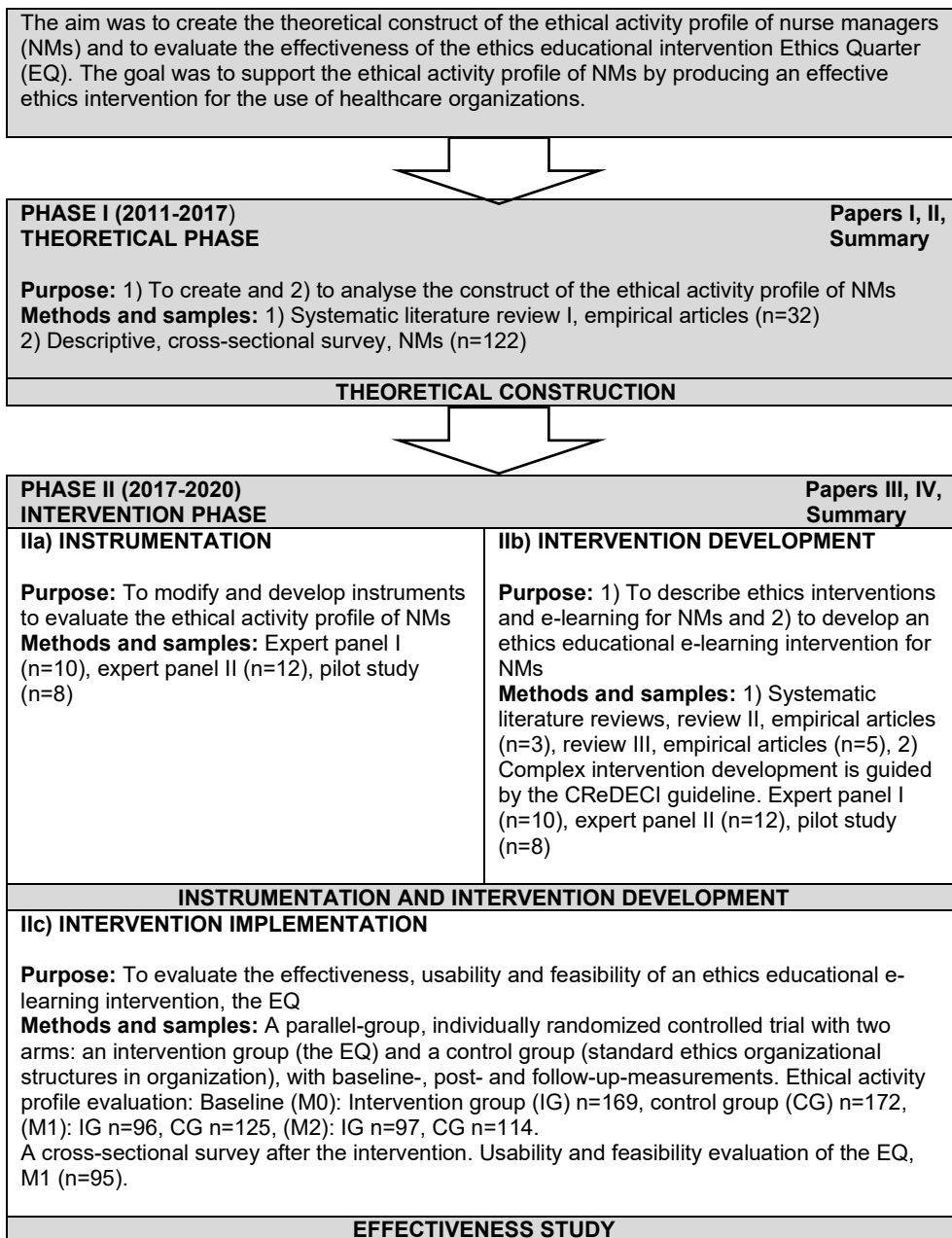
The aim was to create the theoretical construct of the ethical activity profile of nurse managers (NMs) and to evaluate the effectiveness of the ethics educational intervention Ethics Quarter (EQ). The goal was to support the ethical activity profile of NMs by producing an effective ethics intervention for the use of healthcare organizations.

PHASE I (2011-2017) THEORETICAL PHASE	Papers I, II, Summary

Purpose: 1) To create and 2) to analyse the construct of the ethical activity profile of NMs
Methods and samples: 1) Systematic literature review I, empirical articles (n=32)
2) Descriptive, cross-sectional survey, NMs (n=122)

THEORETICAL CONSTRUCTION

PHASE II (2017-2020) INTERVENTION PHASE	Papers III, IV, Summary
IIa) INSTRUMENTATION	**IIb) INTERVENTION DEVELOPMENT**
Purpose: To modify and develop instruments to evaluate the ethical activity profile of NMs **Methods and samples:** Expert panel I (n=10), expert panel II (n=12), pilot study (n=8)	**Purpose:** 1) To describe ethics interventions and e-learning for NMs and 2) to develop an ethics educational e-learning intervention for NMs **Methods and samples:** 1) Systematic literature reviews, review II, empirical articles (n=3), review III, empirical articles (n=5), 2) Complex intervention development is guided by the CReDECI guideline. Expert panel I (n=10), expert panel II (n=12), pilot study (n=8)

INSTRUMENTATION AND INTERVENTION DEVELOPMENT

IIc) INTERVENTION IMPLEMENTATION

Purpose: To evaluate the effectiveness, usability and feasibility of an ethics educational e-learning intervention, the EQ
Methods and samples: A parallel-group, individually randomized controlled trial with two arms: an intervention group (the EQ) and a control group (standard ethics organizational structures in organization), with baseline-, post- and follow-up-measurements. Ethical activity profile evaluation: Baseline (M0): Intervention group (IG) n=169, control group (CG) n=172, (M1): IG n=96, CG n=125, (M2): IG n=97, CG n=114.
A cross-sectional survey after the intervention. Usability and feasibility evaluation of the EQ, M1 (n=95).

EFFECTIVENESS STUDY

Figure 2: Materials and methods of the study.

4.1 Study design, setting, sampling and samples

The designs used in this study were a systematic review, descriptive, cross-sectional, methodological and experimental designs. The sampling methods consisted of systematic, random and purposive methods. (Grove et al., 2017; Table 7)

Table 7: Study designs, samples and sampling methods.

Phase	Design	Data-collection method	Sample	Sampling method
I	Systematic literature review I	Systematic literature search	n=32	Systematic sampling
	Descriptive, cross-sectional	Using paper questionnaires	n=122	Purposive
IIa/IIb	Methodological	Using two expert panels	I n=10 II n=12	Purposive
IIa/IIb	Cross-sectional pilot study	Using electronic questionnaires	n=8	Purposive
IIb	Systematic literature review II and III	Systematic literature search	II n=3 III n=5	Systematic sampling
IIc	Experimental, a parallel-group, individually randomized controlled trial with two arms: an intervention group (the EQ) and a control group (standard ethics organizational structures in organization), with baseline-, post- and follow-up-measurements.	Using electronic questionnaires	IG n=169 CG n=172	Systematic, random
	Descriptive, cross-sectional	Using electronic questionnaires	n=95	Purposive (EQ users)

In Phase I, a systematic review design was used to identify NMs' ethical responsibilities and activities from previous literature, reported above in the chapter "Literature reviews" (see 2.1). Furthermore, a descriptive, cross-sectional design was also used to analyse the created construct of ethical activity profile. The data were collected nationwide from all NM members holding ward-, middle- and strategic-level posts (N=326) via the registry of the Academic Managers and Experts of Health Sciences Association (Akavan sairaanhoitajat and Taja Ry) using purposive sampling. Paper questionnaires were sent to the NMs' home addresses. During the 2-week response time, 122 responses (n=122) were returned (response rate 37%).

In Phase IIa, a methodological design with two expert panels was used to evaluate the modified and completely newly developed instruments. The expert panels consisted of a total of 10 (expert panel I) and 12 (expert panel II) postgraduate

students, professors and ethics researchers enrolled in the "Value Basis and Ethics in Nursing" research programme at the department of Nursing Science in the University of Turku. Finally, the instruments were pilot-tested by NMs (n=8).

In Phase IIb, the educational EQ intervention was developed guided by the CReDECI guideline (Möhler et al., 2015), and the methodological design with two expert panels was used to evaluate its usability and feasibility. The same expert panel evaluated both the instruments and the intervention. Finally, also the developed intervention was pilot-tested by NMs (n=8). Furthermore, a systematic review design was used to identify earlier empirical interventions and e-learning studies for NMs (literature reviews II and III), reported above in the chapter "Literature reviews" (see 2.1).

In Phase IIc, an experimental, parallel-group, individually randomized controlled trial design was used to evaluate the effectiveness of the EQ intervention. The RCT has been registered in the public registry ClinicalTrials.gov with the identifier NCT04234503. Furthermore, a descriptive, cross-sectional design was used to evaluate the usability and feasibility of the EQ intervention.

In Phase IIc, the data were collected from the members of the Union of Health and Social Care Professionals in Finland (Tehy) trade union over a period of 10 weeks from February to November 2020 using systematic random sampling. The trade union is a national interest group for nurses, NMs and advanced specialists in the social and healthcare sector having a Master's degree or registered nurse's degree. The target population of this study consisted of all NMs who were members of the Tehy trade union. A total of (N=5,369) NMs received Tehy's monthly management information letter via e-mail where the ad of the study was. The ad included a short description of the intervention and the study and the web-link into the http://etiikanvartti.fi/?tutkimus website. Information about the study was offered at the website and if NMs wanted to take part the study, filling in all the study measurements was seen as informed consent. The data were collected using REDCap (Research Electronic Data Capture) electronic data capture tool (Harris et al., 2009; 2019). After that, study group and possible user rights information was e-mailed to participants via REDCap. Altogether n=341 (6.4%) NMs participated in the study.

Based on statistical power analysis, the required sample size for the study was 87 NMs in both groups (N=174 NMs in total), at 80%, 0.05 significance level. NMs were randomly allocated to intervention or control group using a randomization table made by a statistician. Randomization was performed with random permuted blocks, using block size of 8, with SAS System for Windows (Version 9.4). The results of the randomization were imported to REDCap software platform (Harris et al., 2009, 2019) where randomization for each subject was executed by the investigator. Stratified randomization was used to prevent major imbalance between the groups at the design stage (Lamb & Altman, 2015). Participants were stratified according to

participation in continuing ethics education (yes/no) and current organizational ethics structures (yes/no), estimated to be related to ethical activity profile according to earlier studies. In a study of Aitamaa et al., (2019), education seemed to be one of the most significant background factor associating with the frequency of perceived ethical problems of NMs, which may mean that NMs' ethical sensibility to identify ethical problems is increased by education. Moreover, some ethical problem solving methods are considered more helpful by NMs with higher education (Cooper et al., 2014; Aitamaa et al., 2019), suggesting that ethics education increases the knowledge of different methods. Similarly, a study among nurses found that nurses' ethics knowledge was higher when nurses had participated in ethics courses or had overall more education (Leuter et al., 2012). Furthermore, it seems that NMs working in hospitals without ethics committees report ethical conflict more often than managers in hospitals with ethics committees (Sietsema et al., 1987). Thus, it was interpreted that participants should be balanced between groups according to their continuing ethics education and organizational ethics structures.

The intervention group participated in the educational e-learning EQ intervention while the control group had their standard organizational ethics structures. The inclusion criteria for the participants were: 1) working as a NM; and 2) having a sufficient command of the Finnish language. A total of n=341 participants were included, of whom n=169 were randomly allocated to the intervention group and n=172 to the control group (Figure 3).
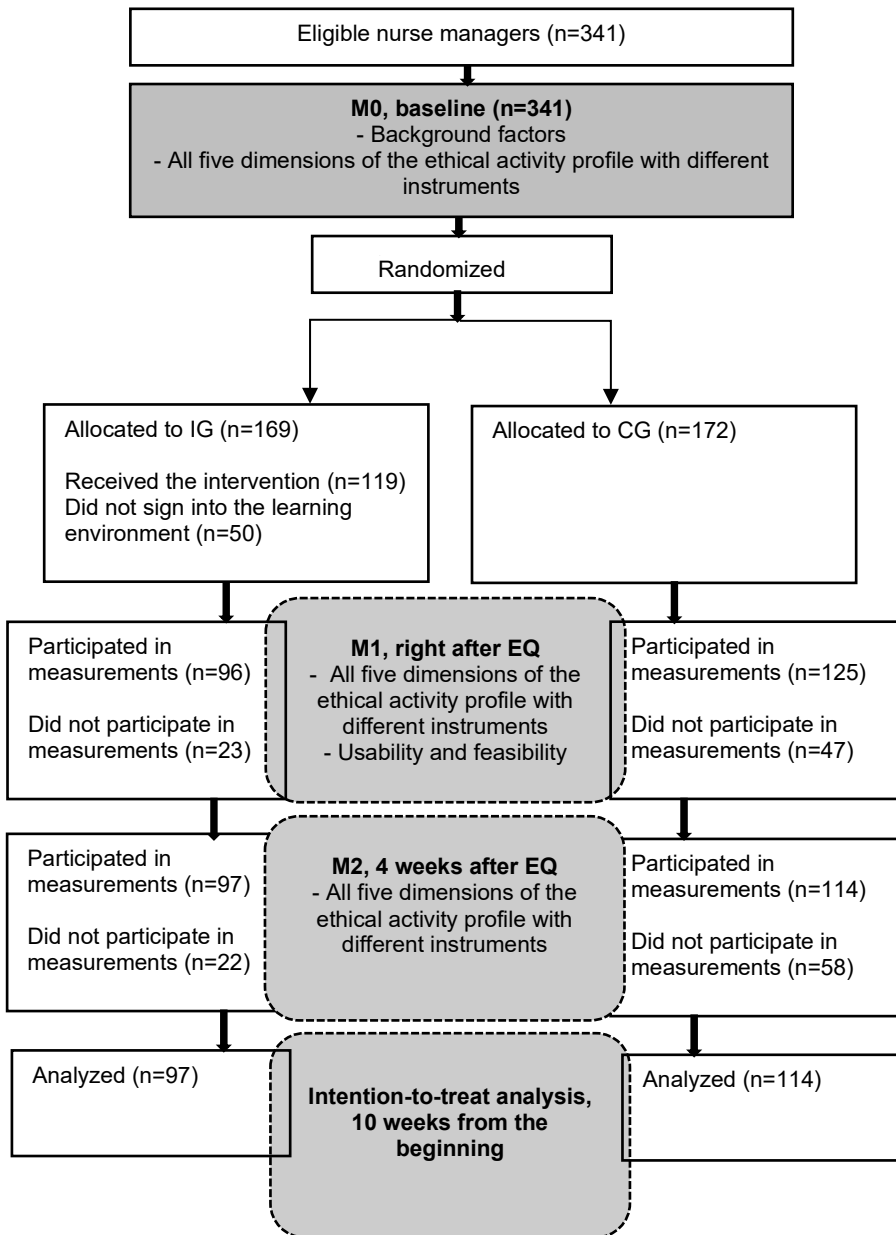
EQ=Ethics Quarter, M0=baseline-measurement, M1=post-measurement, M2=follow-up-measurement, IG=intervention group, CG=control group.

(Paper IV, modified)

Figure 3: Nurse manager participant flowchart in study Phase IIc.

In both empirical study phases (I and IIc), the majority of the respondents were female with a mean age from 49 (Phase IIc) to 51 (Phase I). Both samples were considered representative: in the year 2018, 91% of Finnish NMs were female and 72% of them were 45–64 years old (OSF, 2018). In Phase I, most of the respondents were working in middle- or strategic-level positions (73%, n=89) and in Phase IIc, they were mostly working in unit level management (85%, n=245, Table 8).

Table 8: Demographics of the nurse managers in both study phases.

	Phase I % (n)	Phase IIc % (n)
Female gender	98 (120)	96 (324)
Work experience in nursing management 5 years or more	86 (105)	69 (234)
University degree	91 (112)	21 (72)
Manager had participated in continuing ethics education	48 (58)	17 (59)

In Phase IIc, there were no statistically significant differences (all p>.005) in the background factors between the intervention and the control group. Most of the managers were educated in universities of applied sciences or institutions (74%) and they had mostly long experience, over 10 years (37%). The number of their nurse subordinates ranged from 0 to 5,000 (mean 52, median 26). Only 27% had some kind of organizational ethics structure in their organizations (Paper IV).

In Phase IIc, the sample attrition rate (=number of subjects withdrawing/sample size x 100), (Gray et al., 2017) was higher in the intervention group than in the control group during the measurements (Table 9).

Table 9: Attrition rates of nurse managers at different measurement points.

	IG attrition rate % potential subjects n=169	CG attrition rate % potential subjects n= 172
M0, baseline IG (n=169) GC (n=172)	0 (n=0)	0 (n=0)
M1 IG (n=96) GC (n=125)	43 (n=73)	27 (n=47)
M2 IG (n=97) GC (n=114)	43 (n=72)	34 (n=58)

4.2 The Ethics Quarter intervention

The development, pilot-testing and implementation of the ethics educational e-learning intervention (EQ) will be introduced in the next two chapters.

4.2.1 Development and pilot-testing of the Ethics Quarter

The EQ development process (Table 10, Paper III) started in study Phase IIb in the year 2016 and followed the Criteria for Reporting, Development and Evaluation of Complex Interventions in Healthcare (CReDECI2, Möhler et al., 2015). At the beginning, the theoretical basis of the intervention, the concept of the ethical activity profile of NMs, was created. Based on the theoretical construct, NMs have five different types of ethical responsibilities to fulfil by doing ethical activities, collectively referred to as the ethical activity profile of NMs, as presented above. The EQ intervention aims to support this profile of NMs, all the dimensions equally. The fundamental assumption of the EQ was based on deontology: In order to act in a morally right way, NMs must do ethical activities from moral duty. Furthermore, ethical activities include an assumption of virtue ethics; NMs choose the most virtuous ethical activity for any given situation (Morrison, 2019). The pedagogical basis of EQ is constructivism. NMs' learning is an active, constructive process where new information is linked to old and the NM is an information constructor, actively constructing or creating her or his own subjective representations of reality (Braungart & Braungart, 2008).

Table 10: Process of development of the Ethics Quarter.

2016	2018	2019
Identification of the theoretical and pedagogical basis	Multidisciplinary team: group discussions, feedback rounds	Second paper version
	Initial design	Expert panel n=12
	First paper version	Prototype of electronic version, tested by a few NMs
	Expert panel n=10	
	Structure of the EQ	Pilot-testing n=8

The EQ's initial design was developed through several group discussions and feedback rounds by a multidisciplinary design team of nurse teachers, nursing management ethics researchers and NMs in 2018. The first paper version of the EQ structure was evaluated in December 2018 by an expert panel comprising 10

postgraduate students and two professors enrolled in the "Value Basis and Ethics in Nursing" research programme at the department of Nursing Science in the University of Turku. Based on the comments of the expert panel, the structure of the EQ was clarified; two quarters form one dimension of the ethical activity profile of NMs; in total, the EQ has 5 dimensions, 12 educational quarters, including introduction and summary, spread over a total of 6 weeks (Table 11). The structure of the EQ intervention was made according to the five dimensions of ethical activity profile of NMs. The second paper version of the EQ structure was evaluated in April 2019 by an expert panel comprising 12 ethics researchers at the department of Nursing Science in the University of Turku. The structure of exercises, self-reflections and development plans was considered good. In spring 2019, the paper version of the EQ was translated into an electronic version; an IT specialist coded the virtual learning environment and formulated the structure of the EQ. The prototype of the EQ was tested in autumn 2019 by a few NMs.

Table 11: The content and dosing of the Ethics Quarter.

Part of the intervention, quarters	Dimension	Week/ dose	Description
1.Introduction		1.	-Ethical activities of NMs. -Structure of the EQ.
2.Developing one's own ethics knowledge I	I		-Why develop one's own ethics knowledge? -What is ethics in nursing management? -Codes of ethics, values, laws, ethical guidelines. -Own ethical reflection.
3.Developing one's own ethics knowledge II			-How is ethics knowledge developed? -How to use ethical guidelines, ethical principles and codes of ethics of NMs?
4.Influencing ethical issues I	II	2.	-Why and how can ethical issues be influenced? How can NM increase ethical activities in an organization? -How can NM create an ethical organization?
5.Influencing ethical issues II			-How to recognize unethical action and how to operate in it? -How to report ethically challenging situations? -Different reporting channels.
6.Conductiong or implementing ethics research I	III	3.	-Why should NMs conduct and implement ethics research? -How can implementing be done?
7.Conducting or implementing ethics research II			-Values and ethical principles of NMs' own work unit. How can values and ethical principles be defined and implemented into NMs' own work unit?
8.Identifying ethical problems I	IV	4.	-Definition of an ethical problem. -Identification of an ethical problem. -What kind of ethical problems do NMs have?
9.Identifying ethical problems II			-Why identify an ethical problem? -What is ethical sensitivity? -Why should NMs be ethically sensitive? -How can ethical sensitivity be strengthened?
10. Solving ethical problems I	V	5.	-Why solve an ethical problem? -What is moral courage?
11.Solving ethical problems II			-How can an ethical problem be solved? -The ethical problem-solving process. -Different kinds of activities to solve ethical problems.
12.Summary		6.	-Review of the course

References for the content are presented in the literature review chapter of this study
(Paper III, modified).

The usability and feasibility of the EQ was pilot-tested in January 2020. Permission for the pilot study was gained from the Dean of the Faculty of Medicine, University of Turku. All the master and postgraduate students of the Department of Nursing Science working as NMs were invited to participate. According to participants (n=8), the usability of the EQ was good, measured with the System Usability Scale (SUS, Brooke 1996). The SUS score was 82, while the average SUS score is 68 (Brooke, 2013). Furthermore, the feasibility of the EQ ranged from 3.9 to 4.8 in different items (Likert scale from 1 to 5) and no changes were made based on these (Table 12). Based on the responses to an open question ("Your feedback about the intervention"), an educational video about using the EQ educational area was added and the contents were slightly revised, and some grammar revisions were made.

Table 12: Feasibility of the Ethics Quarter, pilot study.

Feasibility of the EQ, scores ranging from 1 to 5, n=8, pilot study	Mean
1. EQ offered a good way to learn nursing management ethics	4.8
2. Duration of EQ was adequate	4.4
3. The contents of the EQ were interesting	4.6
4. The contents of the EQ increased my knowledge in nursing management ethics	4.4
5. The contents of the EQ were sufficiently challenging	3.9

© Laukkanen et al., 2019.
EQ=Ethics Quarter

4.2.2   Implementation of the Ethics Quarter

In Phase IIc, **the NMs in the intervention group** participated in the EQ intervention via Internet. They had two educational quarters, one dimension per week (Table 11) in the virtual learning environment http://etiikanvartti.fi/?tutkimus. The quarters in the learning environment were text slides (Figure 4) including also real-life vignettes (Cannaerts et al., 2014) of the presented issue, e.g. NMs' ethical sensitivity, seen to provoke interest in nursing ethics (Park, 2013, 2015). After each dimension, NMs did an exercise; quizzie, which is seen to increase overall likelihood of using the e-learning system (Al-Fraihat et al., 2020) and made self-reflection and development plans, in total five times. This provided them with the opportunity to link their everyday experiences to the ethical theory they had just studied. Educationally, multimethod interventions seem to be effective, allowing participants' self-reflection online (Stolt et al., 2018) and combining theory and practice (Cannaerts et al., 2014).
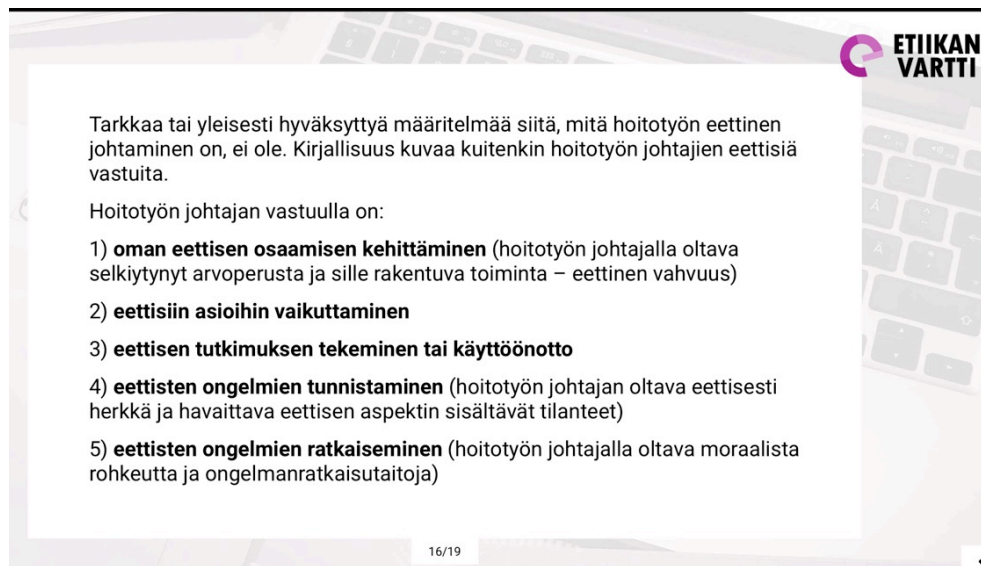
Figure 4: An example of the Ethics Quarter text slide in Finnish. Laukkanen, 2019 ©

The NMs in the control group participated in their standard organizational ethics structures, i.e. possible clinical ethics committees (such as ethical advisory committees and other working groups or persons discussing ethical issues, excluding research ethics committees). A clear picture of Finnish healthcare organizations' ethics structures is not available in the literature and thus, it is not known exactly what the standard organizational structures of the participants were like. To understand the possibilities of the standard Finnish ethics structures, earlier literature is reviewed in the next paragraph.

In the largest healthcare organizations of the Finnish healthcare system, the Hospital Districts, there are relatively few clinical ethics committees (excluding research ethics) dealing with nursing solutions. Furthermore, the definitions of the activities of clinical ethics committees are not univocal (ETENE, 2020) even though already Meslin et al. (1997) found that different organizations manage the same ethical issues differently and guidance is needed. Aitamaa et al. (2019) pointed out that in solving ethical problems, NMs most often use the same resources as were reported in the 1990s (Borawski, 1994): nurse colleagues, administrative colleagues, and personal values (also Paper II). Ethics committees dealing with nursing solutions were seldom utilized; 80% of the participants had never used them although Sietsema et al. (1987) found that ethical conflicts were more often reported by NMs working in hospitals without ethics committees compared to those working in hospitals with ethics committees. In Europe, a number of countries have established clinical ethics committees to provide support to health professionals (McLean, 2007;

Gauher et al., 2013) whereas in Finland, clinical ethics committees have appeared more slowly. In addition, in a study of Aitamaa et al. (2019), 81% of NMs had never used an ethics expert to solve an ethical problem. In Finland, there are no ethics experts employed in clinical settings, although other countries have showed their use to be valuable (Svantesson et al., 2008; Helf et al., 2009). However, the EU Whistleblowing Directive (Directive, EU, 2019/1937) has already led Finnish healthcare organizations to use patient safety channels as whistleblowing channels also for reporting ethical problems anonymously.

4.3   Data collection and instruments

In Phase I, systematic literature review I, data were collected, as already reported in chapter "Literature reviews" (see 2.1). Furthermore, the descriptive, cross-sectional survey data for analysing the ethical activity profile of NMs were collected by a paper questionnaire survey in 2011. The questionnaire was pilot-tested by nine NMs to test the feasibility of the questionnaire and the clarity of the questions. The questions were mainly open-ended questions, based on the five dimensions of the ethical activity profile. First, background factors were asked: gender, age, education, work task and length of work experience. Second, ethical activities were asked: 1) the developing of one's own ethics knowledge by participating in continuing ethical education, 2) influencing ethical issues by participating in official ethical post/work group/committee and 3) conducting or implementing ethics research by participating in ethics development or research projects, and by conducting or implementing research on ethics. Finally, the rest of the activities were asked: 4) identifying ethical problems, and 5) solving ethical problems via one open question where respondents were asked to describe at least one ethical problem they had faced at work and how they had solved it (Appendix 3).

In Phase IIa, three new instruments, **Ethical Activity Instrument (EAI,** measuring all dimensions of the ethical activity profile**), Nursing Management Ethics Knowledge Test (NMEKT,** measuring all dimensions of the ethical activity profile**)** and **Developing, Influencing and Implementing Ethics Instrument (DIIEI,** measuring dimensions 1–3**)** were developed for the purpose of this study, and one instrument, **Nurses' Moral Courage Scale (NMCS,** measuring dimension 5**)** was modified (Table 13) because based on literature searches, no existing instrument for measuring the whole ethical activity profile of NMs was identified, as expected in the newly created construct. Instruments were also searched separately for each five dimensions of the ethical activity profile of NMs; suitable instruments were only found for dimensions 4 and 5 (identifying ethical problems and solving ethical problems) (Appendix 4).

Table 13: Instruments used in study Phase IIc.

Instrument	Outcome variable	Items	Scale and scores	Study groups	Copyright owner	Permission to use
	Background variables	13	Variations between items: Dichotomous and Likert-scale	IG, GG		
EAI	Ethical activity profile of NMs, all dimensions (primary outcome I)	5	Visual analogue scale, VAS 0-100, (0=not at all; 100=very much), ↑ scores ↑ ethical activity profile	IG, GG	LL, RS & HL-K, 2019	
DIIEI	Ethical activity profile of NMs, dimensions 1-3 (primary outcome II)	12 items (4 for each three dimension)	5-point Likert-scale (1 =never; 5=very much), ↑ scores ↑ ethical activity	IG, GG	LL, RS & HL-K, 2019	
ESSQ	Ethical activity profile dimension 4. Ethical sensitivity = ethical problem identifying (primary outcome II)	16	5-point Likert-scale (1=totally disagree; 5=totally agree), ↑ scores ↑ ethical sensitivity	IG, GG	Tirri et al., 2011	E-mail 5.3.2018
NMCS	Ethical activity profile dimension 5. Moral courage = ethical problem solving (primary outcome II)	21	5-point Likert-scale (1=Does not describe me at all; 5=Describes me very well), ↑ scores ↑ moral courage	IG,GG	Numminen et al., 2018	E-mail 4.3.2018
NMEKT	Nursing management ethics knowledge, all dimensions (secondary outcome)	10 (2 questions for each dimension)	Dichotomous, yes-no, Correct responses are worth 1 point and incorrect response 0 (zero), ↑ scores ↑ ethics knowledge	IG, GG	LL, RS & HL-K, 2019	
SUS	Usability of the EQ	10	5-point Likert-scale (1=totally disagree; 5=totally agree), ↑ scores ↑ usability	IG	Finnish version Jokela, 2018	E-mail 22.4.2019
USER-EVALUATION	Feasibility of the EQ	5	5-point Likert-scale (1=totally disagree; 5=totally agree), ↑ scores ↑ feasibility	IG		
	Experiences of the EQ	1 open question	Experiences of EQ			
	Fidelity of the EQ	Google Statistics	The time used in the EQ educational area			

Development of the new instruments followed the framework of instrument development process (Table 14) and was based on literature (Rattray & Jones, 2007; DeVellis, 2017) derived from review I (Papers I and II). *Firstly,* careful conceptualization of the ethical activity profile of NMs ensured content validity (Jacobson, 1997; Wynd et al., 2003). *Secondly*, the validity of the new or modified instruments was determined by examining face and content validity. In fall 2018, face validity of the instruments was assessed by postgraduate students, professors and ethics researchers in nursing science (expert panel I, n=10) to provide insight into how potential participants might interpret and respond to the items (DeVon et al., 2007) from two perspectives; relevance (as a dimension of NMs' ethical activity profile) and item clarity (accuracy and understandability). *Thirdly,* in spring 2019, the content validity of the second version of the instruments was evaluated by expert panel II, n=12. The panel evaluated each item of the instrument from two perspectives: 1) relevance and 2) item clarity. Both were judged using a four-point Likert-scale (Lynn, 1986; Wynd et al., 2003): 1) not relevant/clear, 2) somewhat relevant/clear, 3) quite relevant/clear, and 4) highly relevant/clear. *Finally,* the usability of the instruments was pilot-tested in January 2020. Permission for the pilot study was obtained from the Dean of the Faculty of Medicine. All the master and postgraduate students of the department of Nursing Science in the University of Turku working as NMs were invited to participate. NMs (n=8) evaluated the usability of the instruments via open questions.

Table 14: The instrument development process.

Instrument development phases
1. Careful conceptualization (Papers I, II)
2. Face and content validity, expert panel I, open questions
3. Content validity, expert panel II, Likert-scale questions, I-CVI, S-CVI
4. Instrument pilot-testing

In Phase IIb, expert panel data were collected to evaluate the developed intervention in fall 2018 and spring 2019. Data were collected with the open question "Your feedback about the intervention". Furthermore, the usability and feasibility data of the intervention were collected in a pilot-test in January 2020. The results of this phase were reported above in chapter "The Ethics Quarter intervention and its implementation" (see 4.2). In addition, systematic literature review II and III data were collected, reported in chapter "Literature reviews" (see 2.1).

In **Phase IIc**, the RCT data for evaluating the effectiveness, usability and feasibility of the EQ were collected from February to November 2020. The data collection comprised the outcome variables of the primary outcome (ethical activity profile of NMs), secondary outcome (ethics knowledge) and the usability and feasibility evaluation. In addition, socio-demographic data were collected. The data were collected from NMs in the IG and CG via electronic REDCap (Research Electronic Data Capture) data capture tools, designed to support data capture for research studies (Harris et al., 2019; 2009) in three time points (Baseline M0, M1 and M2) (Figure 5).
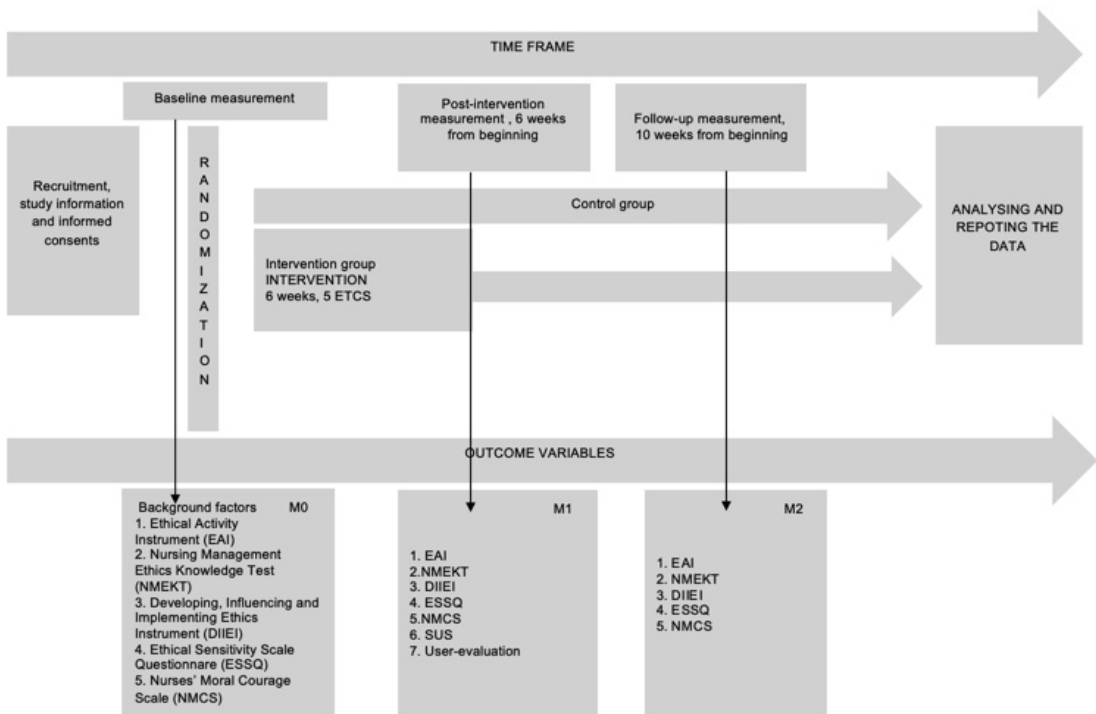

Figure 5: Time points of assessments.

The other instrument used in this study, the **Ethical Sensitivity Scale Questionnaire (ESSQ**, Tirri et al., 2011) has been developed in Finland to measure ethical sensitivity based on Narvae's (2001) theory of ethical sensitivity. ESSQ operates on a general level and can be used in all contexts (Kuusisto et al., 2012). It is a self-evaluation questionnaire using a 5-point Likert-scale (1=totally disagree; 5=totally agree), with 16 items, higher scores indicating higher self-assessed ethical sensitivity. ESSQ has earlier been used with teachers and students (Kuusisto et al., 2012, Tirri et al., 2008). In this study, ethical sensitivity was seen as an attribute that

enables the identification of ethical problems (Lützén et al., 2010; Weaver, 2007) and the whole ESSQ instrument was used to measure dimension 4, identifying ethical problems.

Nurses' Moral Courage Scale (NMCS, Numminen et al., 2018) has been developed in Finland to measure moral courage. It is a self-evaluation instrument using a 5-point Likert scale in terms of the respondent's description of her/himself (from 1=Does not describe me at all to 5= Describes me very well) consisting of 21 items, with higher scores indicating higher self-assessed moral courage. The construct of NMCS is based on the theoretical model developed in the concept analysis of moral courage in nursing (Numminen et al., 2017). The NMCS has been validated with nurses, public health nurses, midwifes, and NMs from different clinical fields (Kleemola et al., 2020; Numminen et al., 2019) and also internationally (Numminen et al., 2021). Nine items were further developed for this study with the permission of the developer to accurately measure the moral courage of NMs. In this study, moral courage was seen as an attribute that enables the solving of ethical problems (LaSala et al., 2010, Numminen et al., 2017) and the whole NMCS instrument was used to measure dimension 5, solving ethical problems.

The System Usability Scale (SUS, Brooke 1996; 2013) has been developed in the United States of America to assess users' evaluation of the general usability of a variety of technologies (Bangor et al., 2008; Sauro, 2011). This study used the Finnish version of SUS (Jokela, 2018) measuring how users evaluate the general usability of the EQ. The SUS comprises 10 items that assess users' evaluations of the usability with a 5-point Likert scale (1=totally disagree; 5=totally agree). The SUS provides a single reference score ranging from 0 to 100 (the worst–the best) and the average SUS score is 68 (Brooke, 2013), higher scores indicating higher usability. SUS is valid (Sauro, 2011; Brooke, 2013; Martins et al., 2015), reliable (Sauro, 2011; Brooke, 2013), widely used (Martins et al., 2015) and adequate for measuring the general usability (Brooke, 1996, 2013) of a broad spectrum of products and user interfaces (Bangor et al., 2008; Sauro, 2011; Martins et al., 2015). In this study, the whole instrument was used to measure usability.

Feasibility, i.e. how users evaluate general feasibility, was measured with five self-developed structured items using 5-point Likert-type (1=totally disagree; 5=totally agree) scales: 1. The EQ offered a good way to learn nursing management ethics, 2. The duration of the EQ was adequate, 3. The contents of the EQ were interesting, 4. The contents of the EQ increased my knowledge of nursing management ethics, 5. The contents of the EQ were sufficiently challenging, and with one open question: "Your open feedback about the content of the EQ".

Fidelity, i.e. whether the intervention was delivered as it was intended, was measured with the EQ web-page user information offered by Google Analytics based on users' URL addresses. The evaluation was based on how much time NMs used on one

dimension (two quarters) of the intervention. The intervention was designed to take 15 minutes per quarter, 30 minutes per dimension, and this was the basis for comparison.

The background factors asked were age, gender, highest education, employment sector (public, private or trust), position in organization, length of work experience, number of subordinates, participation in continuing ethical education, participation in an ethical working group or committee, having an official ethics-related post, participating in an ethics research project, participating in an ethics development project, and having some kind of ethics organizational structure in the organization, e.g. clinical ethics committee.

The primary outcome of Phase IIc was the ethical activity profile of NMs and it was assessed in two ways (higher scores indicated higher self-assessed ethical activity profile/dimensions level):

1) **The ethical activity profile level** was assessed using the Ethical Activity Instrument (EAI).

2) **The ethical activity profile level dimensions** 1–3 were assessed using the Developing, Influencing and Implementing Ethics Instrument (DIIEI), dimension 4 was assessed using the Ethical Sensitivity Scale Questionnaire (ESSQ), and dimension 5 was assessed using the Nurses' Moral Courage Scale (NMCS).

The secondary outcome was NMs' ethics knowledge level assessed with the Nursing Management Ethics Knowledge Test (NMEKT). Higher scores indicate higher level of knowledge.

4.4   Data analysis

This study used several analysis methods in different study phases, including critical appraisal, inductive content analysis, descriptive statistics and advanced statistical analysis (Table 15).

In Phase I, critical appraisal was used in literature review I. Both descriptive statistics and inductive content analysis were also used. Respondents' backgrounds and ethical activities were described using frequencies, percentages and means. Inductive content analysis (Graneheim & Lundman, 2004) and quantification were used to analyse the open questions. The transcribed version of the data was typed out, resulting in 79 A4 pages (1.5 line spacing). The focus of the analysis was on the manifest content, and the units of analysis were the responses to the research task. Words were constellated as suitable meaning units, which were condensed and then abstracted and labelled with a code. These codes were then compared based on differences and similarities and sorted into sub-categories and categories, named according to their main content. After content analysis, the number of ethical

problems and activities used to solve ethical problems was counted. Each respondent described at least one problem and at least one activity to solve an ethical problem. (Papers I, II)

In Phase IIa, both statistical analyses and inductive content analysis were conducted. The face and content validity of the three new instruments and modified NMCS scale were explored. The item-level content validity index (I-CVI) was calculated by summing up the experts' ratings with either three or four and by dividing by the total number of expert counts (Lynn, 1986). The scale level content validity index (S-CVI) was calculated by summing up the I-CVI and by dividing by the number of items (Polit et al., 2006). Furthermore, inductive content analysis was used to analyse the pilot study open question data to improve the instruments further.

In Phase IIb, critical appraisal was used in literature reviews II and III. Also, both statistical analyses and inductive content analysis were conducted. Open questions of expert panels were analysed using inductive content analysis (Graneheim & Lundman, 2004) where the focus of the analysis was the feedback about the EQ intervention to improve it further. In pilot study data, descriptive statistics were used: frequencies and mean values.

In Phase IIc, both statistical analyses and inductive content analysis were conducted. Statistical data analysis was done using SAS software, Version 9.4 of the SAS System for Windows (SAS Institute Inc., Cary, NC, USA). Significance level of 0.05 (two-tailed) was used. Categorical variables were summarized with counts and percentages, continuous variables with median and range. The analysis followed the intention-to-treat principle (as randomized). All allocated participants were included in the analysis with no imputation of missing values. The baseline demographic characteristics were compared between the intervention group and control group using a chi-square test or Fisher's exact for categorical variables and the Mann-Whitney U-test for continuous variables due to normality assumption not being met. Total ethical activity profile and dimensions were analysed using linear mixed model where time was used as within factor and group as between factor. Group by time interaction was also included in the model to investigate whether mean change over time differed between the intervention groups. For repeated measures, computed symmetry covariance structure was used. The effect size was calculated for the primary outcome (assessed only with EAI, as the scale varied in different instruments) using Cohen's d effect size formula and evaluated as follows: the small value of effect size was 0.2, medium 0.5, and large 0.8 (Cohen, 1988). The data included some missing values but they were assumed to be completely random (Papers III, IV).

In the usability analysis, the SUS items were scored before the analysis according to the Brooke system (Brooke, 2013), leading to item contributions ranging from 0 to 4 (from the most negative to the most positive response). Then, all contributions

were summed up and multiplied with 2.5, and thus, the numeric value from 0 to 100 was obtained. The mean SUS score, SUS item score and feasibility item score comparisons between the demographic variables were conducted by using the Kruskal-Wallis test and continued with Steel-Dwass for multiple comparisons (Paper III).

To analyse the open question concerning the content of the EQ, inductive content analysis (Graneheim & Lundman, 2004) and quantification were used. The transcribed version of the data was typed out, resulting in seven A4 pages (1.5 line spacing). The focus of the qualitative analysis was the feedback about the content of the EQ while the quantitative analysis focused on the number of negative, positive and constructive comments (Paper III).

Table 15: Data analysis methods.

Phase	Purpose	Analysis method
Phase I	To describe the ethical activity profile of NMs and its level based on empirical data from cross-sectional survey.	Critical appraisal. Inductive content analysis (Graneheim & Lundman, 2004). Quantification: frequencies, percentages and means.
	To describe NMs' background factors.	Descriptive statistics: frequencies, percentages, mean values.
Phase IIa	To analyse item and scale relevancy and clarity of the developed or modified instruments.	I-CVI and S-CVI. Inductive content analysis (Graneheim & Lundman, 2004).
Phase IIb	To describe ethics interventions and e-learning for NMs. To analyse the structure and content of EQ and usability of the instruments, pilot study.	Critical appraisal. Inductive content analysis (Graneheim & Lundman, 2004). Descriptive statistics: frequencies, mean values. Inductive content analysis (Graneheim & Lundman, 2004).
Phase IIc	To summarize the data and identify possible differences between the study groups' (IG, CG) background factors.	Categorical variables, reported parameters: counts and percentages, significance test: A chi-square test or Fisher's exact test. Continuous variables, reported parameters: median and range, significance test: Mann-Whitney U-test.
	To identify the overall ethical activity profile and dimensions in different groups (IG, GG) and at different measurement points (M0, M1, M2).	Linear mixed model, time as within factor and group as between factor in the model. Group by time interaction, to examine whether mean change over time differed between the intervention groups. Computed symmetry covariance structure was used for repeated measures. Model-based means, 95% confidence intervals (CI). Effect size according to Cohen's d method.
	To identify the usability and feasibility of the EQ.	Kruskal-Wallis test, continued with Steel-Dwass for multiple comparisons. Inductive content analysis (Graneheim & Lundman, 2004) and quantification.

4.5   Ethical considerations

The principles of research ethics and good scientific practice were followed throughout the research process (TENK, 2012; ALLEA, 2017). The selection of the research topic and research questions was considered from the ethical point of view. The justification for the study came from literature reviews pointing out that NMs' important ethical activities were only sporadically described in the literature. To support NMs, activities were theoretically outlined and using deductive reasoning, summarized into a construct of the ethical activity profile of NMs. Literature also pointed out a clear lack of ethics organizational supportive structures for NMs; thus, the goal of this study was to produce a new intervention to support NMs for the use of healthcare organizations. From an ethical perspective, the topic and the aim of this study can be considered acceptable because strengthened ethical activities of NMs could bring several justified and positive consequences for organizations and patients (Hudak et al., 1993; Zhu et al., 2004; Shirey, 2005; Bell et al., 2008; Cummings et al., 2010; Wong et al., 2013; Barkhordari-Sharifabad et al., 2018b; Dehghani-Tafti et al., 2021) and overall, strengthen the value-based healthcare.

In Phase I, permission for the descriptive, cross-sectional study was given by the Association of the Academic Managers and Experts of Health Sciences on 2 May 2011. Ethical approval from a human sciences ethics committee was not needed because the study did not deviate from the principle of informed consent, did not involve intervening in the physical integrity or expose participants to exceptionally strong stimuli, did not involve a risk of causing mental harm, and did not involve a threat to the safety of participants (TENK, 2019). However, careful consideration of research ethics was done. A cover letter of the paper questionnaire informed potential participants about the aim of the study, voluntary participation, participant anonymity and opportunity to get more information about the study. A completed and returned questionnaire was considered as consent to participate the study. A personal data register was not required because no stage of the research dealt with participants' personal data.

In Phase IIc, the study received ethical approval from the Ethics Committee of the University of Turku (Decision number 4/20, 24.2.2020). In addition, the (Tehy) trade union gave permission to use their registry to approach the participants (1/2020, 9 Jan 2021). The RCT study was documented in a public registry providing transparent information about studies, ClinicalTrials.gov, with the identifier NCT04234503. Possible participants received written information on the webpage http://etiikanvartti.fi/?tutkimus, including information about the purpose of the study, length of participation, study procedures, researchers' contact details and statements encouraging participants to ask if they had any further questions. The webpage also included the privacy notice of the research data before their consent to participate in the study and prior to their allocation to IG or CC, e.g. how personal

data will be handled, where the data will be stored and for how long, and the possibility to withdraw at any point without explanation (TENK, 2019; Data Protection Act 1050/2018). Responding to the first measurements was considered as informed consent.

The EQ learning environment was password-protected to guarantee participant confidentiality. The research data were only collected by using REDCap electronic data capture tools hosted at the University of Turku (Harris et al., 2009, 2019) and were thus stored in a secure platform during the research. Afterwards, the data were stored at the University Cloud Service, Seafile folder (http://seafile.utu.fi/). The data collected included respondents' e-mail addresses as identifiers to help connect the data from different measurement points. Because the research data thus contained personal data, it was also recorded to the University Research Data Inventory at https://datainventory.utu.fi. Before the analysis, the data were pseudonymized; the personal data (e-mail addresses) were removed and coded with ID numbers (Data protection Act 1050/2018).

When the study results were published (in Papers I–IV), any required citations were carefully made throughout the studies to respect the work and achievements of others and to avoid plagiarism (COPE, 2020). Paper authors have been listed in the order of their contributions and all sources of financing have been reported (TENK, 2019). Furthermore, the primary data have been published only once.

The contents of the EQ educational area were developed by LL and the ownership of the whole EQ product is hers. The electronic version of the EQ was developed in collaboration with an IT specialist according to a written contract. The nonrecurring IT specialist reward was covered by the State Research Funding of the Hospital District of South-West Finland.

5 Results

In this chapter, the results of this study will be introduced in two parts, according to the research phases and research questions. In the last chapter, all the results will be summarized. The more detailed results can be found in the original papers (I–IV).

5.1 Ethical activity profile of nurse managers

In Phase I (theoretical phase), the new theoretical construct, the ethical activity profile of NMs, was created. Based on previous literature, all the ethical responsibilities which NMs should fulfil by doing ethical activities were theoretically outlined, and using deductive reasoning, summarized into a new theoretical construct, the ethical activity profile of nurse managers consisting of five dimensions reported above in the chapter "Ethical activity profile" (see 2.2.2, Papers I-IV, Figure 6):

1) Developing one's own ethics knowledge referring to NMs activities to develop one's own ethics knowledge, competence and skills throughout career via basic and continuing education and life-long learning to have ethics knowledge, competence and skills.

2) Influencing ethical issues referring to NMs' activities to articulate and integrate the ethical principles into nursing, to create an environment with high ethical standards, to be a role model for ethical behaviour, to hold nurses accountable for ethical conduct, to provide the necessary support for nurses in ethically problematic situations, to hold ethical discussions or forums, to support the ethical behaviour and competence of nurses, and to involve ethics officials, work groups or committees.

3) Conducting or implementing ethics research referring to NMs' activities to conduct, support and set standards for research and to evaluate, disseminate and use of research knowledge.

4) Identifying ethical problems referring to NMs' activities to identify ethical problems and thus, being ethically sensitive.

5) Solving ethical problems referring to NMs' activities to solve ethical problems and thus, being morally courageous.

Figure 6: Ethical activity profile of nurse managers.

All five dimensions require different kinds of activities from NMs, but are equal and can be summarized together into an ethical activity profile. To have a high ethical activity profile, nurse managers have to do activities from all dimensions. Managers have different kinds of profiles, different dimensions of the profile are at different stages, but all the dimensions can be strengthened.

In the theoretical phase, the construct of the ethical activity profile of NMs (n=122) was analysed via cross-sectional survey to see how the ethical activity profile of NMs was realized. The ethical activity profile of NMs was high, referring to the dimensions identifying and solving ethical problems. NMs identified many ethical problems related to staff, the NMs themselves, resources, patients, superiors and organizations. In addition, NMs identified a variety of activities they used to solve ethical problems: discussion, cooperation, work organization, intervention, personal values, operational models, statistics and feedback, and personal examples. Other dimensions of the ethical activity profile of NMs were low: developing one's

own ethics knowledge, influencing ethical issues, and conducting or implementing research. More than half of the NMs had not developed their own ethics knowledge, over 80% had not influenced ethical issues, and 90% of the NMs had not conducted or implemented research on ethics (Papers I, II, Figure 7).
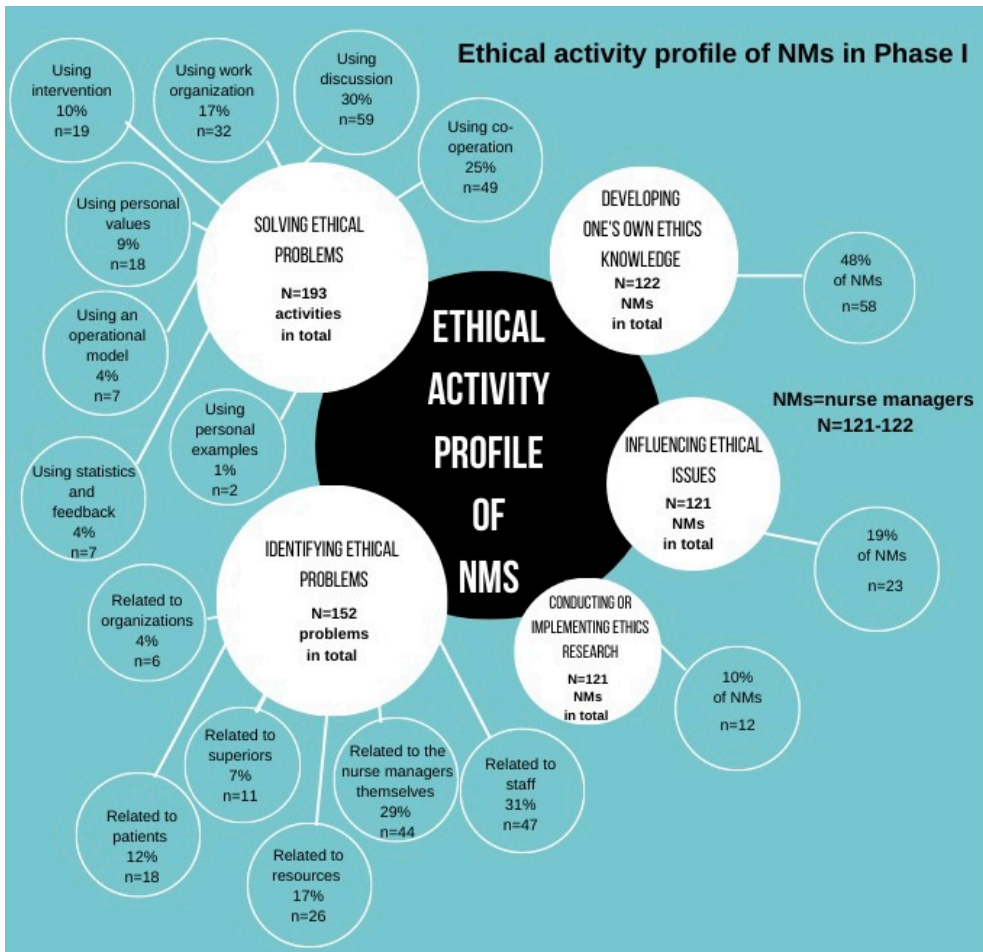

Figure 7: Ethical activity profile of nurse managers in Phase I. (Papers I and II, modified).

5.2 Effectiveness of the Ethics Quarter intervention

In Phase IIa (instrumentation phase), one instrument was modified (NMCS) and three new ones were developed (EAI, NMEKT and DIIEI) to measure the effectiveness of the Ethics Quarter intervention. As a result of expert panel I open questions, 10 items were revised and in one instrument, the response options were clarified. Expert panel II provided a content validity index, I-CVI, from two

perspectives: 1) relevance and 2) item clarity for individual items to check that they reached a minimum I-CVI of 0.78 for 6 or more experts (Polit et al., 2006). Experts also had an opportunity to justify each of their responses. Relevance I-CVI of the items was 0.92–1. Clarity I-CVI of all items was 0.83–1, except in two items, 16 and 28 (I-CVI 0.73 in both, Table 18, Appendix 5). Based on the I-CVI, items 16 and 28 were clarified. Scale content validity index, S-CVI, varied from 0.93 to 1 when S-CVI of .80 or higher is seen as acceptable (Polit et al., 2006). Furthermore, inductive content analysis was used to analyse the pilot study open question data to improve the instruments further. As a result of the pilot study, one background factor, university of applied sciences degree, was added to the instrument's education section, and some language corrections were made.

In Phase IIb (intervention phase), the ethics educational e-learning intervention, the EQ, was developed. The results of this phase were reported in chapter "The Ethics Quarter intervention and its implementation" chapter (see 4.2).

In the next chapter, the main outcomes of **Phase IIc** (intervention implementation phase) where the EQ was implemented for nurse managers (n=341) in a randomized controlled trial (Papers III, IV) will be presented.

Ethical activity profile

Ethical activity profile of NMs (n=307–325) was measured with the Ethical Activity Instrument (EAI; Visual analogue scale, VAS 0–100) at the baseline (M0), after the intervention (M1), and in the follow-up (M2) of the study. The baseline for NMs in the intervention group (n=169) was 64.5 and in the control group (n=172) 67.0. The intervention showed to be effective: Ethical activity profile level was statistically significantly higher in the intervention group when compared to the control group after the intervention (p<.001). Ethical activity profile level showed score improvement from baseline to 10 weeks of 8.2 (95% CI=6.2–10.1), from 64.5 (95% CI=62.6–66.5) to 72.7 (95% CI= 70.4–74.9) in the intervention group and the effect size was medium (Cohen's d= 0.48). However, in the control group, no statistically significant changes were identified; improvement of 0.6 (95% CI=-1.2–2.4), from 67.0 (95% CI= 65.0–69.0) to 67.6 (95% CI= 65.5–69.7) (Figure 8).
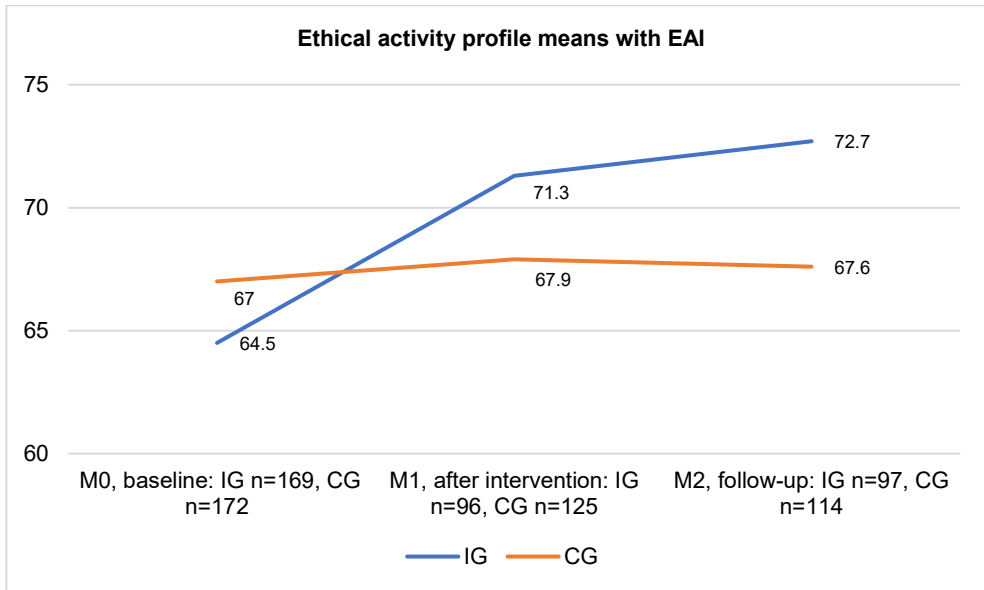
Figure 8: Means at the baseline, after the intervention and at the follow-up with the EAI. (Paper IV, modified).

Ethical activity profiles dimensions were measured in two different ways: 1) with the Ethical Activity Instrument (EAI, dimensions 1–5) and 2) with the Developing, Influencing and Implementing Ethics Instrument (DIIEI, dimensions 1–3), Ethical Sensitivity Scale Questionnaire (ESSQ, dimension 4) and Nurses' Moral Courage Scale (NMCS, dimension 5). At the baseline, the strongest dimensions of all NMs (n=307–325) were identifying (75.2/100; 4.2/5) and solving (68/100; 4.4/5) ethical problems. The weakest dimension was conducting or implementing ethics research (Figure 9, Figure 10).
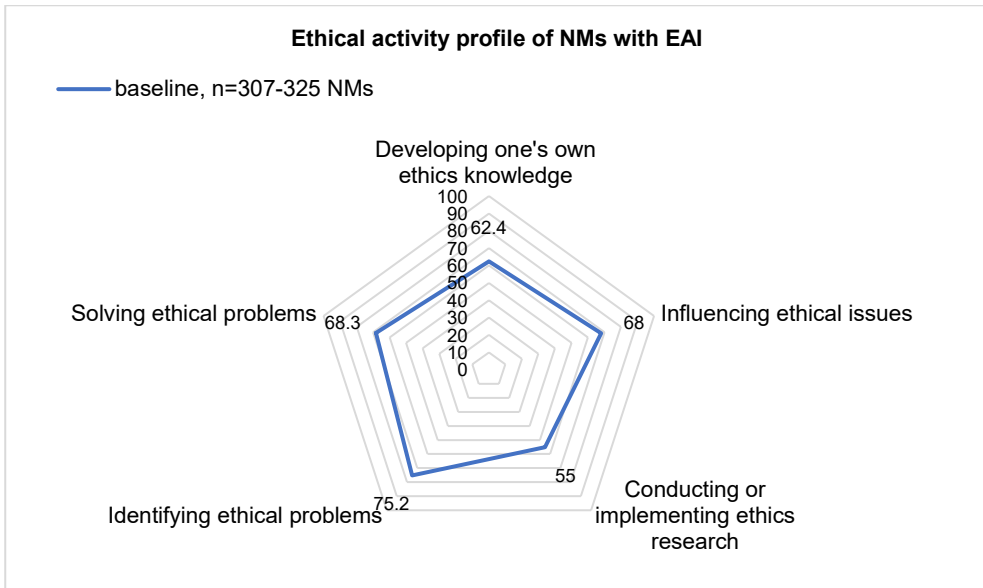
Figure 9: The Ethical activity profile of NMs at baseline with the EAI.
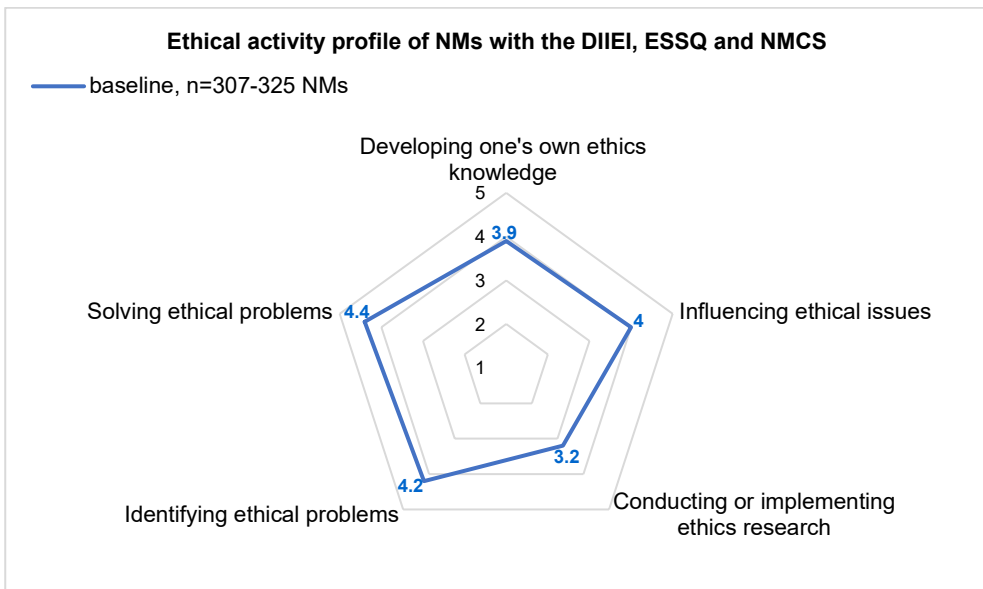

Figure 10: The Ethical activity profile of NMs at baseline with the DIIEI, ESSQ and NMCS.

The EQ intervention was effective in increasing all five dimensions measured with the Ethical Activity Instrument (EAI, dimensions 1–5): the five dimensions of nurse managers' ethical activity profiles showed a statistically significant difference

in mean change between the groups from baseline (M0) to 10 weeks (M2). Developing of own ethics knowledge (dimension 1) showed significant score improvement of 10.6 (95% CI=7.7–13.4, p<.0001), from 60.8 (95% CI=58.3–63.3) to 71.4 (95% CI=68.4–74.4) in the intervention group. Influencing ethical issues (dimension 2) showed significant score improvement of 8.5 (95% CI=5.9–11.2, p<.0001) from 67.3 (95% CI=64.9–69.7) to 75.8 (95% CI=73.0–78.7) in the intervention group. Conducting or implementing ethics research (dimension 3) showed significant score improvement of 8.1 (95% CI=4.8–11.4, p<.0001), identifying ethical problems (dimension 4) improvement of 5.4. (95% CI=2.8–7.9), p<.0001), and solving ethical problems (dimension 5) improvement of 8.9 (95% CI=6.3–11.5, p<.0001) in the intervention group (Figure 11). The control group had no statistically significant differences (Figure 12).
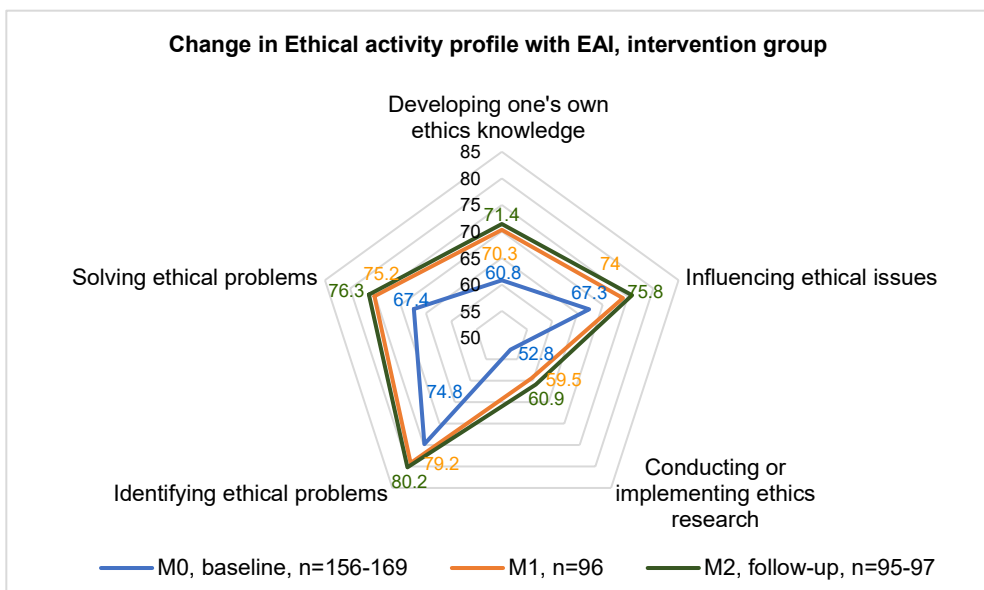

Figure 11: Intervention group means at the baseline, M1, and at the follow-up with the EAI.
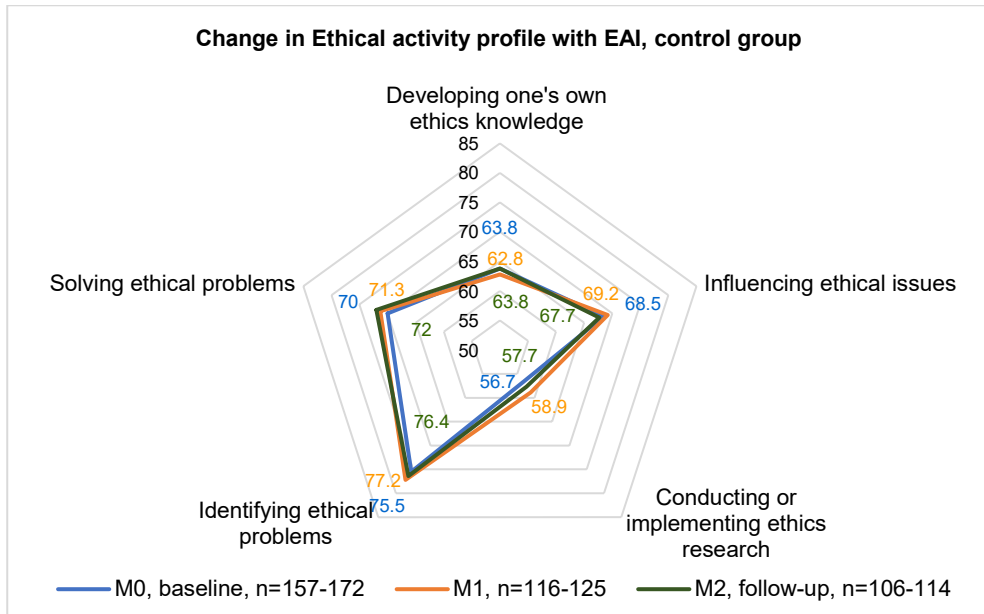
Figure 12: Control group means at the baseline, M1, and at the follow-up with the EAI.

The EQ intervention was also effective in increasing all five dimensions measured with the other instruments: the Ethical activity profile dimensions showed a statistically significant difference in mean change between the groups from baseline (M0) to 10 weeks (M2) also when measured with Developing, Influencing and Implementing Ethics Instrument (DIIEI) (p<.001) (dimensions 1–3), Ethical Sensitivity Scale Questionnaire (ESSQ) (p=.001) (dimension 4) and Nurses' Moral Courage Scale (NMCS) (p=.004) (dimension 5). Dimension 1 showed significant score improvement of 0.3 (95% CI=0.2–0.3, p<.0001), dimension 2 improvement of 0.3 (95% CI=0.1–0.3, p<.0001), dimension 3 improvement of 0.4 (95% CI 0.3–0.5, p<.0001), dimension 4 improvement of 0.2 (95% CI=0.1–0.2, p<.001), and dimension 5 improvement of 0.2 (95% CI=0.1–0.2, p<.001) after 10 weeks of the intervention (Figure 13). The control group had no statistically significant changes (Figure 14).
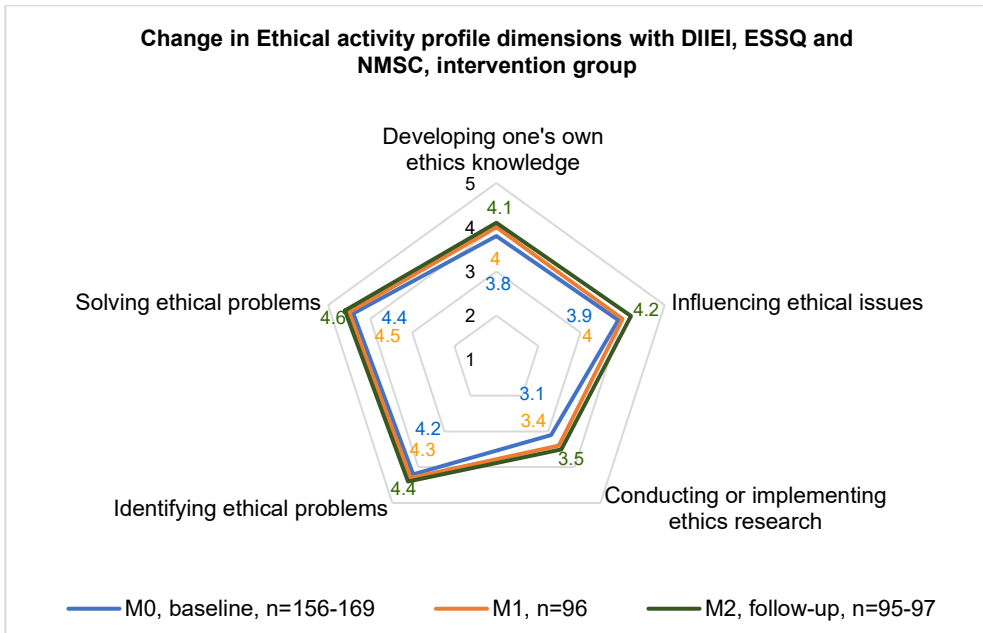
Figure 13: Intervention group means at the baseline and at the follow-up with the DIIEI, ESSQ and NMCS.
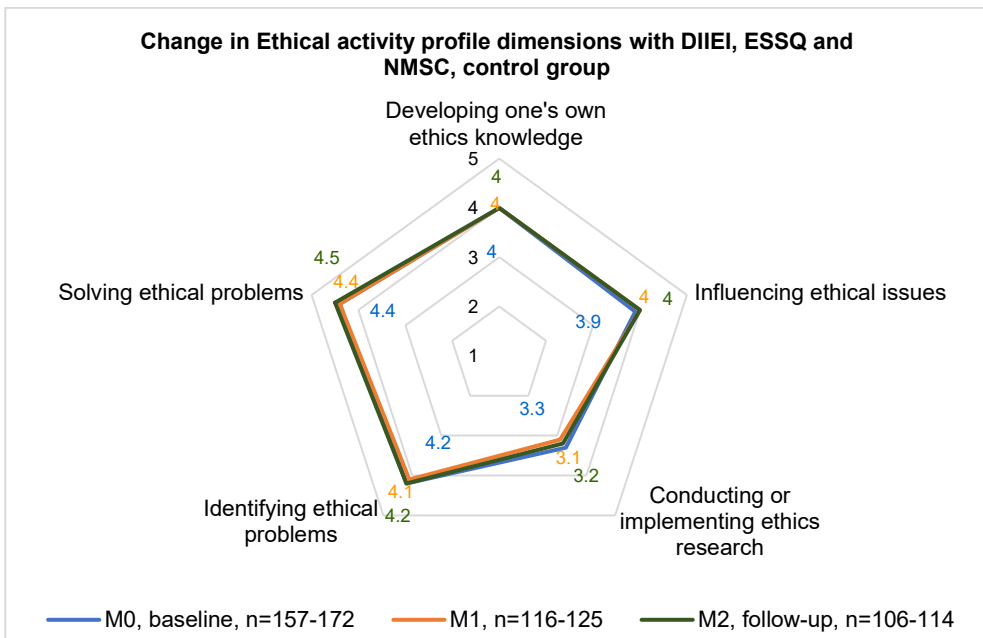

Figure 14: Control group means at the baseline and at the follow-up with the DIIEI, ESSQ and NMCS.

Ethics knowledge

Ethics knowledge of NMs was already high and exactly the same in both groups at the baseline measurement (M0), 9.3, (95% CI=9.2–9.4) measured with the Nursing Management Ethics Knowledge Test. Thus, the test was not able to show possible improvement in ethics knowledge. However, NMs (n=95) in the intervention group evaluated their ethics knowledge to be improved in the feasibility evaluation of the study. When asked if the EQ improved their ethics knowledge, NMs' rating was 4.59 on a 5-point Likert-scale (1=totally disagree; 5=totally agree).

Usability, feasibility and fidelity of the intervention

The usability of the EQ intervention was assessed by the NMs in the IG (n=95) after the intervention (M2) with the System Usability Scale (SUS, Brooke 1996). The usability of the EQ showed a high mean SUS score of 85.4 (SD 14.3, range 42.5–100.0, Brooke, 2013) out of 100 (**Table 16**, Paper III).

Table 16: SUS scores of the Ethics Quarter.

SUS items, ranging from 0 to 4, n=95	Mean	SD
1. I think that I would like to use this website frequently	3.2	0.7
2. I found the website to be simple	3.4	0.7
3. I thought the website was easy to use	3.4	0.9
4. I think that I could use the website without the support of a technical person	3.7	0.6
5. I found the various functions in this website were well integrated	3.4	0.9
6. I thought there was a lot of consistency in this website	3.5	0.7
7. I would imagine that most people would learn to use this website very quickly	3.6	0.6
8. I found the website very intuitive	3.2	0.8
9. I felt very confident using the website	3.2	0.9
10. I could use the website without having to learn anything new	3.7	0.6
The SUS sum score	85.4	14.3

© SUS, Brooke 1996
SD=standard deviation
(Paper III, modified)

The feasibility of the EQ intervention was assessed by the NMs in the IG (n=95) after the intervention with five structured questions concerning the EQ as a learning method, EQ duration, and EQ contents. The feasibility of the EQ intervention was considered to be high, from 4.2 to 4.7, by NMs (Table 17, Paper III)

Table 17: The feasibility of the Ethics Quarter.

Scores ranging from 1 to 5, n=95	Mean	SD
1. EQ offered a good way to learn nursing management ethics	4.7	0.5
2. Duration of EQ was adequate	4.6	0.5
3. The contents of the EQ were interesting	4.7	0.5
4. The contents of the EQ increased my knowledge in nursing management ethics	4.6	0.6
5. The contents of the EQ were sufficiently challenging	4.2	0.8

© Laukkanen et al., 2019.
EQ=Ethics Quarter
SD=Standard Deviation
(Paper III, modified)

The fidelity of the EQ intervention was assessed via EQ webpage user information offered by Google Analytics. The evaluation was based on how much time NMs used on one dimension (two quarters) of the intervention according to their URL addresses. The intervention was planned to take 15 minutes per quarter, 30 minutes per dimension, and this was the basis for comparison. According to Google Analytics, on average, the NMs completed one dimension in 18.57 minutes.

Additionally, the contents of the EQ were assessed by NMs with one open question (n=71, 75%). The responses were positive in 99% (n=70) of the cases and negative in 1% (n=1). Development propositions for the future development of the intervention were also included in 11% (n=8) of the responses (in Paper IV).

Summary of main results

NMs have the responsibility to do ethical activities. However, these activities have been described only sporadically. There seemed to be no exact or widely agreed definition of the ethical activities of NMs or guidance for NMs. Furthermore, NMs seemed to need more support for their activities from their superiors and healthcare organizations. Thus, in this study, these activities were theoretically outlined based on literature, and using deductive reasoning, summarized into the new theoretical construct of the ethical activity profile of NMs and furthermore, analysed empirically. In a cross-sectional survey, the ethical activity profile of NMS seemed to be partially low (Papers I, II) in the dimensions developing one's own ethics knowledge, influencing ethical issues and conducting or implementing research. Thus, three new instruments to measure the ethical activity profile of NMs and an educational e-learning intervention, the EQ, were developed to support NMs in all their ethical activities to have a high ethical activity profile.

The effectiveness of the EQ was evaluated and it was shown to succeed in improving the ethical activity profile of NMs and all its dimensions (Paper IV). Furthermore, NMs assessed the usability and feasibility of the EQ to be good and its fidelity to be average (Paper III). An effective ethics educational intervention, the EQ, was developed to support NMs for the use of healthcare organizations (Figure 15).
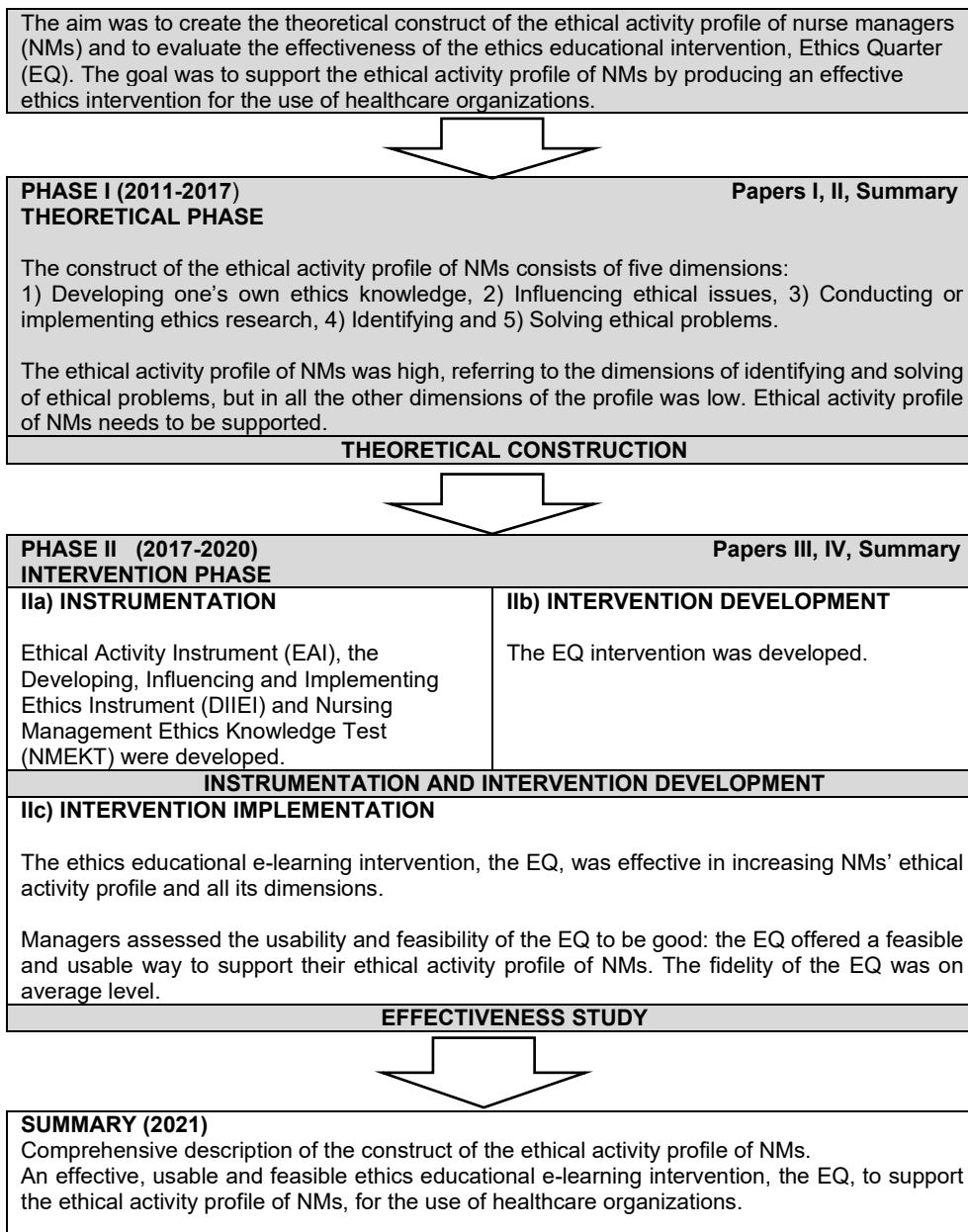
The aim was to create the theoretical construct of the ethical activity profile of nurse managers (NMs) and to evaluate the effectiveness of the ethics educational intervention, Ethics Quarter (EQ). The goal was to support the ethical activity profile of NMs by producing an effective ethics intervention for the use of healthcare organizations.

PHASE I (2011-2017)   Papers I, II, Summary
THEORETICAL PHASE
The construct of the ethical activity profile of NMs consists of five dimensions: 1) Developing one's own ethics knowledge, 2) Influencing ethical issues, 3) Conducting or implementing ethics research, 4) Identifying and 5) Solving ethical problems.
The ethical activity profile of NMs was high, referring to the dimensions of identifying and solving of ethical problems, but in all the other dimensions of the profile was low. Ethical activity profile of NMs needs to be supported.
THEORETICAL CONSTRUCTION

PHASE II (2017-2020)	Papers III, IV, Summary
INTERVENTION PHASE	
IIa) INSTRUMENTATION	**IIb) INTERVENTION DEVELOPMENT**
Ethical Activity Instrument (EAI), the Developing, Influencing and Implementing Ethics Instrument (DIIEI) and Nursing Management Ethics Knowledge Test (NMEKT) were developed.	The EQ intervention was developed.
INSTRUMENTATION AND INTERVENTION DEVELOPMENT	
IIc) INTERVENTION IMPLEMENTATION	
The ethics educational e-learning intervention, the EQ, was effective in increasing NMs' ethical activity profile and all its dimensions.	
Managers assessed the usability and feasibility of the EQ to be good: the EQ offered a feasible and usable way to support their ethical activity profile of NMs. The fidelity of the EQ was on average level.	
EFFECTIVENESS STUDY	

SUMMARY (2021)
Comprehensive description of the construct of the ethical activity profile of NMs. An effective, usable and feasible ethics educational e-learning intervention, the EQ, to support the ethical activity profile of NMs, for the use of healthcare organizations.

Figure 15: Summary of the main results.

6   Discussion

In this chapter, the main results and the validity and reliability of the study will be discussed. In addition, suggestions for further research and practical implications will be presented.

6.1   Discussion of the results

This study provided the new theoretically created and empirically analysed construct of the ethical activity profile of nurse managers in the area of nursing science and nursing management ethics. Furthermore, the construct, the ethical activity profile of NMs, was substantially supported in a randomized controlled trial by Ethics Quarter, an educational ethics e-learning intervention, developed in this study. Also, the usability, feasibility and fidelity of the EQ were confirmed. Thus, this study provided an effective ethics intervention, the EQ, for the use of healthcare organizations and nursing management education.

The theoretical construct of the ethical activity profile of NMs was created by synthesizing the scientific knowledge (CRD, 2009) based on a systematic literature review (review I). All five parts or different dimensions of the profile, i.e. different ethical activities of NMs, were based on previous literature, theoretically outlined, collected together, and using deductive reasoning, summarized into the new theoretical construct. The construction formed the basis for future research. The ethical activity profile of NMs was analysed by a nationwide cross-sectional survey study. The study pointed out that the dimensions of the ethical activity profile of the participating NMs were not equally high and some dimensions were at low level. Thus, it seemed urgent to support NMs' ethical activity profile and contribution as ethical managers (Makaroff et al., 2014; Zappalà & Toscano, 2020).

The ethics intervention for NMs, EQ, was created to support and increase the discovered partly low ethical activity profile of NMs. In addition, many earlier studies had identified a need to develop ethics interventions for NMs (Ganz et al., 2015; Barkhordari-Sharifabad et al., 2018a; Poikkeus et al., 2020; Roshanzadeh et al., 2020; Aitamaa et al., 2021; Dehghani-Tafti et al., 2021). The construction of the ethical activity profile of NMs was operationalized as three new instruments and the

construction also guided the development of the educational ethics e-learning intervention.

In a randomized controlled trial, the EQ was empirically evaluated and was shown to be effective in supporting the ethical activity profile of NMs. The promising results of earlier studies about NMs' strengthened moral courage (Edmonson, 2015) and ethical leadership (Jeon et al., 2018) after interventions were supported by this study. The ethical activity profile of NMs in the intervention group was strengthened and the change was seen also as clinically significant with the EAI, measured by medium effect size.

The EQ was effective in supporting the separate dimensions of the ethical activity profile, too. Throughout the study, the most prominent parts of the profile were identifying and solving ethical problems. Identifying and solving ethical problems are everyday issues in the work of NMs (Aitamaa et al., 2019, 2021) and thus, perhaps the most familiar part of the profile for NMs. Developing of own ethics and influencing ethical issues were weaker than identifying and solving problems. Conducting or implementing ethics research was the weakest dimension at all measurement points (M0, M1 and M2), with all measurement methods (with different instruments), and in both study phases (Phase I / Phase IIc) even though the educational level and amount of continuing education varied. Luckily, the EQ intervention succeeded in increasing especially the weakest parts of the profile and thus, strengthened the overall profile. However, even in the intervention group, after the intervention, conducting or implementing ethics research still remained at a lower level than the other dimensions. It seems that this area of the profile was so weak that the EQ was not able to help it catch up with other dimensions. Interpreting this cautiously raises the question of whether it has something to do with the fact that only one fifth of the NMs in this data had a university degree when at the same time it is known that in university education, the emphasis is on doing and implementing research (Universities Act 558/2009). On the other hand, when considering nation widely, there are very few active nursing management ethics researchers in Finland, and only one of the five universities offering nursing science has an ethics research programme (Leino-Kilpi & Stolt, 2019).

The highest education level of NMs varied in different phases of this study. In Phase I, nearly all of the NMs had a university degree, while in Phase IIc, nearly half of the NMs had only registered nurse's or corresponding degree. When NMs had higher education they also had a higher position in the organization. Thus, the education level as well as the position in the organization varied in this study, according to the trade union. In earlier Finnish studies, the amount of university-educated managers has been between 25% and 40% (Poikkeus et al., 2018; Aitamaa et al., 2021), whereas in this study it varied from 21% to 91%. Compared to many other European countries, Finnish nurse managers have rather a high level of

education (Leino-Kilpi & Stolt, 2019). At minimum, NMs should have a Bachelor's degree (Registered Nurse) or a Master's degree, whereas NMs at executive level should even obtain a doctoral degree (AONE, 2010). PhD education aims to produce highly qualified researchers who can offer solutions to problems and thus add to the development of societies worldwide, and in the role of NMs, they can effectively translate evidence into clinical practice (Numminen et al., 2019). Earlier studies have concluded that Bachelor's degree is not enough to handle the role of NM (Shirey et al., 2010), and the Institute of Medicine (IOM, 2011) has pointed out the critical need for advancing education for NMs. Despite countless recommendations from nursing professionals and associations, when interpreting results of this study, as well as other earlier studies (Kang et al., 2012), it seems that NMs' education may be still partly inadequate as nearly half of the unit-level NMs in this study had only registered nurse's degree.

This study pointed out that continuing education about ethics for nurse managers is needed. Nearly half (in Phase I) or nearly two fifths (in Phase IIc) of the NMs had previous continuing ethics education. Although not reported, it seems that ethics continuing education in the area of nursing management and nursing science overall is quite uncommon in Finland. However, it is known that continuing ethics education plays a pivotal role in learning and instilling professional values. In the study of Poorchangizi et al. (2019), nurses who participated in ethics continuing education obtained higher professional value scores compared to those who did not participate. In addition, in the study of Grady et al. (2008) and Ulrich et al. (2007), nurses who had participated in continuing education focusing on ethical decision making used ethics resources (ethics committee or ethics consultation) more frequently than nurses who had not taken part. Furthermore, NMs with recent ethics education used a wider variety of ethical problem solving methods than those without (Aitamaa et al., 2019). Thus, as part of nursing management continuing education, an increased emphasis on ethics (Makaroff et al., 2014; Höglund & Falkenström, 2018) and ethical activities, systematically and organization-widely (ACHE, 2015), is called for. Regular possibilities for ethical competence development should be offered for NMs (Höglund & Falkenström, 2018) in the form of development programs (Barkhordari-Sharifabad et al., 2018a) or educational programs and training (Eide et al., 2016; Devik et al., 2020; Hognestad Haaland et al., 2020; Roshanzadeh et al., 2020; Aitamaa et al., 2021; Dehghani-Tafti et al, 2021) as part of other management continuing education (McCallin & Frankson, 2010; Ramseur et al., 2018). Continuing education has been identified as a competitive advantage for hospitals (Longenecker & Ariss, 2002) and as a justified investment (Ravaghi et al., 2020).

In this study, e-learning was shown to be a usable and feasible method for NMs' continuing ethics education, in line with Eide et al. (2016). In addition, the e-learning method was considered a practical way of learning ethics and ethical activities. NMs

would also like to use e-learning in the future (as in the study of Harrington & Walker, 2006). E-learning was also considered to be a modern and supportive method of learning parallel to previous studies (Korhonen & Lammintakanen, 2005; Eide et al., 2016). When NMs cannot be brought together for education simultaneously in one place, e-learning offers a sustainable solution (Liu et a., 2014; Abel et al., 2020). Naturally, also other learning methods have been used successfully for NMs and thus, it is crucial for nurse managers to find the method that supports their own learning most effectively.

   NMs also produced some development propositions for the EQ intervention. According to the participants, implementing some interactivity into the educational area, through common discussions or other participants' readable responses, for example, would increase the feasibility of the EQ. It is known that social interaction plays a role in learning (Yilmaz, 2008). Interactivity and feedback could also improve the learning outcomes (Cook et al., 2010) even more and have a positive influence on utilizing the e-learning system (Al-Fraihat et al., 2020).

   Organizational ethics structures (meaning different kinds of clinical ethics committees dealing with nursing solutions) in the participants' organizations were rare in Phase IIc. Most of the organizations had no ethics structures (73%). This result is parallel to the results of a survey by ETENE (2020), which concluded that the Finnish Hospital Districts have only relatively few clinical ethics committees dealing with nursing solutions. However, clinical ethics support (such as clinical ethics committees, ethics consultants and ethics rounds) has been widely used in hospitals in Europe (Magelssen et al., 2016) and it is known that clinical ethics committees can establish a supportive network, facilitate open discussion and learning in organizations and overall, provide ethical leadership (Ong et al., 2020). Thus, it is obvious that all healthcare organizations should consider strengthening their resources for ethical issues and establish multiprofessional clinical ethics committees, as already recommended by ETENE years ago (2010). Organizational ethics structures need to be developed and standardized in Finland.

   Clinical ethics support alone does not seem to be enough for NMs. NMs experience ethical activities as challenging (Devik et al., 2020) and wish for more guidance on how to be an ethical NM (Schick-Makaroff & Storch, 2019) and carry out ethical responsibilities (Devik et al., 2020). NMs would like to discuss ethics issues widely (Höglund & Falkenström, 2018). Moreover, managers have indicated that the levels of support provided by healthcare organizations are suboptimal (Poikkeus et al., 2020). Thus, organizations globally would benefit from taking the EQ into use as an ethical structure for NMs: it provides systematic, evidence-based education, guidance on how to carry out ethical activities, and strengthens the ethical profile of NMs. Furthermore, it is easy to use: organizations only need access to the Internet. After the whole management team has completed the EQ, organizations

could continue ethics work on a regular basis with different approaches within the same organization (Bollig et al., 2017; ETENE, 2012) in order to improve the status of ethics (Höglund & Falkenström, 2018). Such approaches could include steering forms (Höglund & Falkenström, 2018), multi-professional ethics committees (Aitamaa et al., 2021) or ethics reflections (Silén & Svantesson, 2019). Short, daily reflections amongst the work team could also be an option. Doing something, even just bringing up ethical issues regularly during staff meetings, is much better than doing nothing at all (Silén & Svantesson, 2019; ETENE, 2010) to keep up and maintain NMs' ethical activity profile on a high level. "There is no quick fix or shortcut leading to a higher ethical state of being" (ETENE, 2012, p. 29).

Taking the EQ into use would be justified. It is an effective, usable and feasible ethics intervention. By taking the EQ into use and holding managers accountable for doing ethical activities, the highest management of the organizations could give a clear message that ethics work, values and ethical activities are a priority. Implementation of ethical activities requires support (Makaroff et al., 2014) and clear directives from the organizations' highest management (Silén & Svantesson, 2019). Although ethical values are frequently mentioned and emphasized in different national and organizational policy documents, managers have indicated that ethics has quite a low position in their daily work. In the study of Höglund & Falkenström (2018), strategic level management managers only sporadically reflected over ethics in their work activities, such as budgeting, reforms or other decision-making overall. They described how ethics was rarely discussed in meetings and the decisions taken were not discussed in ethical terms. Researchers concluded that ethics, although prescribed in policy documents, was not integrated into actual management of the organization. The EQ could work as a one possible bridge to integrate ethics into actual management. Taking the EQ into use in an organization requires only one person who coordinates the passwords for the whole staff. The content of the EQ will be regularly updated by the researcher based on the latest knowledge updates.

Managers at healthcare organizations need to create a shared organizational strategy of ethics to which all level managers are committed and who have the courage and strength to assume responsibility for it, too (ETENE, 2012). What is needed is an ethics strategy with a systematic approach to ethics, involving organizations' ethics practices, such as the EQ, and job descriptions where ethics is part of daily activities. By investing in ethics and putting it into the centre, healthcare organizations support ethical activities of NMs and thus, have a positive impact on healthcare personnel (Cummings et al., 2010; Brown et al., 2005; Asif et al., 2019; Hognestad Haaland et al., 2020; Zappalà & Toscano, 2020), patient outcomes (Wong et al., 2013; Barkhordari-Sharifabad et al., 2018b; Dehghani-Tafti et al, 2021) and overall organizational performance and success (Shirey, 2005; Cummings et al., 2010). Ethical activities make a difference.

6.2 Validity and reliability

The major strength of this study lies in the use of various methods used to develop the educational e-learning intervention (Möhler et al., 2015) for the area of ethics as well as to evaluate the effectiveness, usability and feasibility of the developed intervention. The validity and reliability of this study were considered in all study phases. However, this study also includes some inherent limitations and the results should thus be interpreted with caution. The strengths and limitations of individual studies are reported in more detail within the publications (Papers I-IV). In the following chapters, the validity and reliability of the theoretical construct, data collection, instruments and intervention in both phases of the study will be discussed.

6.2.1 Validity and reliability of the theoretical construct

This study showed in the theoretical phase that NMs have several ethical responsibilities and in order to meet them, ethical activities are needed. These activities were theoretically outlined from the literature and by using deductive reasoning, summarized into a new theoretical construct, the ethical activity profile of NMs. The five dimensions of the profile were identified for the first time in this study and the relationship between the dimensions or the order of the dimensions is not clear, i.e. how the dimensions are related to each other. This needs to be explored more in further studies. However, it is evident that all NMs have their own ethical activity profile, and it needs to be supported somehow in healthcare organizations and education.

6.2.2 Validity and reliability of data

The data in the literature review were searched from four substantial scientific databases for research in the nursing science field: MEDLINE/PubMed, CINAHL, ERIC and PsycINFO. To increase the probability of including all essential literature in the reviews, the search terms and search strategy were examined by medical library informatics experts. To ensure comprehensiveness of the literature searches, they were additionally supplemented by a search on Google Scholar and by screening the reference lists of all the articles. To ensure validity of data collection, all the searches had pre-specified, clear inclusion and exclusion criteria, the literature selection process was displayed in a separate flow diagram (Moher et al., 2009; Higgins et al., 2019) in review I (Paper I), and all the included studies were summarized in separate tables (CRD, 2009) in reviews II and III. However, using another researcher in the selection and quality assessment of the studies would have increased the quality of the reviews even more (Khan et al., 2003; Higgins et al., 2019). Philosophical or other disciplines' viewpoints were not systematically

searched, but when discovered, were used to strengthen earlier views. Thus, the definition of the concepts was evaluated from a limited perspective, which is why a deeper understanding of the points of view in philosophy and other disciplines might be called for.

The strength of this study is the description of the ethical activities of NMs as a whole in the ethical activity profile of NMs. The construct is new, but the dimensions exist in the literature, as presented in the study (papers I–IV). Solving ethical problems has been the main nursing management ethics research interest (Aitamaa et al., 2016, 2021), but there were indications that NMs also have other important ethical responsibilities. To find a balance between these responsibilities requiring NMs to do ethical activities, these were theoretically outlined from the research evidence and using deductive reasoning, summarized into the construct ethical activity profile of NMs. Thus, this study strived to generalize from a particular to a broader construct (Polit et al., 2010). Furthermore, the empirical data in Phase I were collected to analyse the created construct. The response rate was relatively low (Gray et al., 2017), 37%, as the data were collected using a paper questionnaire, but seen as adequate, offering saturated, rich and diverse data that could be classified into categories (Papers I, II).

In Phase IIc, the aim was to achieve representativity so that the findings would be generalizable (Burns et al., 2009; Polit et al., 2010). In this study, the study sample was representative of the population by age and gender. The data of this study were collected nationwide in both study phases: first, via the registry of the Academic Managers and Experts of Health Sciences Association and, secondly, via the trade union Tehy. This study had a total of 463 NM participants and provided rich NM data. However, it is possible that the study population included mostly NMs interested in ethics.

Randomization was also used in Phase IIc. It was an advantage for this study to conduct the sampling using randomization; it is the most robust method for preventing selection bias (Graig et al., 2008). To increase the degree of representativeness and to decrease sampling error (Fawcett & Garity, 2009), stratified random sampling was used. NMs were randomly allocated to an intervention or control group by stratified random sampling based on continuing ethics education and ethics organizational structures, which is known to be critical to achieve representativeness (Gray et al., 2017). Stratification ensured that all levels (yes/no continuing ethics education, yes/no organizational ethics structure) were adequately represented in the sample.

Sample size justification was ensured in Phase IIc by estimating the sample size via power analysis. The data collection was stopped when the sample size was estimated to be adequate including possible dropouts. At the end of the study, the required power was reached (Gray et al., 2017), over 87 NMs per group. However,

the attrition rates were quite high, 43% in the intervention group and 34% in the control group (Gray et al., 2017, Table 9). The reasons for dropouts were: did not sign into the learning environment (n=50), did not answer the measurements (n=22). It is not known why NMs (n=50) wanted to participate, got the password to the learning area, but never signed in. Something changed their mind about participating between the recruitment and starting, even though they got the passwords via e-mail right after signing in. NMs' ability to participate may have been negatively affected by the COVID-19 pandemic. When the demographic characteristics were compared between the groups who 1) completed the EQ and participated in measurements (n=95), 2) got the password, but did not sign in to the EQ (n=50), and 3) signed in, but did not participate in measurements (n=24), there were no statistically significant differences (all p >.005) between the groups that would explain it (Paper III). The NMs who signed in (n=119) had a very strong commitment to the EQ (n=96): 80.7% completed the intervention. When excluding from the counts those who never signed in to the intervention area (n=50), the attrition rate in the intervention group was low, 13% (<10% to 15%, Gray et al., 2017) and it could be cautiously concluded that the sample represents the target population. However, the degree of attrition differed between groups and it is regarded as a major threat to validity (Crutzen et al., 2015). In previous NM ethics interventions, Edmonson (2015, n=16) and Jeon (2018, n=44) succeeded in retaining all NMs in both pre- and post-measurements.

6.2.3   Validity and reliability of the instruments

An obvious limitation of this study are the instruments. Ethics is abstract, non-observable and challenging to measure (Stolt et al., 2018). The concept of ethical activity profile of NMs was constructed in this study and there were no previous instruments available to measure the primary outcome. Overall, instruments in the area of nursing management ethics were lacking at the time of planning of the study. Thus, three new instruments had to be developed. In addition, there were no wholly suitable instruments to measure how NMs identify and solve ethical problems, either, and those dimensions were therefore measured via ethical sensitivity (enables the identifying of ethical problems) and moral courage (enables the solving of ethical problems).

To strengthen the validity of the study, the primary outcome was measured with two different instrument sets (see chapter 4.3.) The same instruments were used at all measurement points, and follow-up measurement showed that the changes persisted (Graig et al., 2008). However, the instruments used were mostly self-evaluation instruments, which has its own limitations. NMs may have been too critical or on the other hand, they may have attempted to respond in a way that they understand to be socially or organizationally acceptable (Gray et al., 2017) and thus,

shown higher ethical activity than they have in reality. An attempt was made to avoid possible social desirability response bias by using anonymous participation and computer administration (Randall & Fernandes, 1991). Also, the instruments used in this study do not indicate how the strengthened ethical activity profile of NMs translates into action in healthcare organizations or how it impacts on patient outcomes (Page et al., 2021).

In instrument development, the aim was to achieve instrument validity (instrument measures what it is intended to measure) (Polit et al., 2006; Tavakol et al., 2011) by basing instrument development on systematic literature reviews from study phases I and II and by following the framework of the instrument development process (Rattray & Jones, 2007; DeVellis, 2017). Careful conceptualization ensured face and content validity (Jacobson, 1997; Wynd et al., 2003). Face validity of the instruments was also assessed by postgraduate students in nursing science to see how future study participants might interpret and respond to the items (DeVon et al., 2007). Furthermore, the content validity of the second version of the instruments was evaluated by an expert panel (Table 18, Appendix 5).

Table 18: Psychometric properties of the instruments in study Phase IIc.

Instrument	Psychometric properties	
	Cronbach's alpha	Validity
EAI	α=0.86	S-CVI clarity 0.92. S-CVI relevance 1.
DIIEI	α=0.88	S-CVI clarity 0.94. S-CVI relevance 0.99.
ESSQ	α=0.85	Operates on general level, can be used in all contexts, validated with teachers and students internationally (Kuusisto et al., 2012).
NMCS	α=0.93	Validated with different occupational groups, clinical fields and internationally. S-CVI clarity 0.98. S-CVI relevance 0.98.
NMEKT		S-CVI clarity 0.93. S-CVI relevance 0.99.
SUS	α=0.93	Shows effectively usability, correlates highly with other usability measurements (Martins et al., 2015; Brooke, 2013; Sauro, 2011) and is reliable (Brooke, 2013; Sauro, 2011).

(Paper IV, modified)

The instrument reliability (the ability of an instrument to measure consistently) was measured by using Cronbach's alpha coefficient (Tavakol et al., 2011) testing the internal consistency of the items in the instruments in this study. The closer Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. An alpha coefficient of 0.70 or above is acceptable for new scales (Gliem et al., 2003; DeVon et al., 2007). A Cronbach's alpha over 0.8 is considered good and one over 0.9 excellent (Tavakol et al., 2011). In this study Cronbach's

alphas ranged from 0.85 to 0.93 (Table 18) and thus, the internal consistencies of the instruments were acceptable.

The feasibility of the instrument (respondent burden, time and skills needed to respond instruments) (Jacobson, 1997) was considered acceptable for NMs in the pilot study, and the burden to respond to surveys was low: it took only 15 minutes maximum to respond, and it was also possible to do so by mobile phone. Furthermore, the REDCap software was easy to use and did not require a lot of effort on the part of the NMs.

6.2.4   Validity and reliability of the intervention

This study produced a unique, value-based ethics educational e-learning intervention, the EQ, for NMs, although ethics has been considered a challenging area for creating interventions. The context where the developed intervention lies is thus new and good.

Intervention development was guided by the Criteria for Reporting the Development and Evaluation of Complex Interventions in Healthcare (CReDECI2) guideline (Möhler et al., 2015) with the aim of improving the quality of the development of the complex EQ intervention. Since the guideline does not focus on a specific study design, the CONSORT statement (Consolidated Standards of Reporting Trials) (Schuz et al., 2010) guideline was additionally used in reporting the randomized controlled trial to reveal possible deficiencies in the research (Paper IV). Furthermore, the detailed description of the intervention allows the future replication of the EQ (Paper III). The intervention was tested by using a strong, golden standard RCT design in the evaluation of the effectiveness of the EQ intervention (Moore et al., 2015; Clark et al., 2018), recommended for developing robust evidence (Feeley et al., 2009) and for evaluating interventions aimed at developing leadership within organization (Cummings et al., 2010).

The EQ was developed in this study. Intervention development was needed because no previous ethics educational interventions for NMs were available. Ethics experts were consulted multiple times during the long EQ development period to reach consensus on both instrument content and dosing (Sermeus, 2015). Furthermore, NMs (n=2) tested the prototype of the EQ and (n=8) participated in development of the EQ in the pilot study. The EQ was based on basic references of ethics, latest studies and different guidelines. In terms of contents, the aim was to ensure high quality, conciseness and clarity to provide a pleasant and enjoyable experience for the participants and contribute to their overall satisfaction with the EQ (Al-Fraihat et al., 2020). The e-learning method was chosen in this study because it is flexible, accessible and cost-effective (Nisar, 2002; Wutoh et al., 2004, Smith, 2005) for the participants. It has also been shown to produce equal knowledge and

skill results (Vaona et al., 2018). Furthermore, e-learning also made it possible for NMs to use the intervention according to their own timetables, nationwide and at low cost.

The development of the EQ electronic version, the learning environment structure, was conducted in 2019 with the help of an IT specialist. Organizing the content into logical and understandable dimensions in the electronic learning environment was mostly manual work and took several hours. To be able to evaluate the possible cost benefit (Al-Fraihat et al., 2020), the costs of developing the EQ and the user costs (working hours) should have been calculated. When developing the intervention further in the future, this should be considered. Since the electronic environment was developed an increasing amount of different electronic educational platforms programs have become available. Because of the COVID-19 pandemic, the amount of e-learning courses has increased enormously (Al-Fraihat et al., 2020). However, e-learning educational ethics education for NMs still seems to be lacking.

The EQ intervention was delivered as planned to guarantee implementation rigor (Lamb & Altman, 2015). The EQ intervention was standardized by using the same computer control, e.g. login process, EQ page and materials for all the participants (Paper III). Each quarter had its own learning objectives (Braungart & Braungart, 2008) and the exercises, self-reflection materials and development plan platforms were available in the educational area. The duration of the intervention was six weeks in order to produce learning, and thus required high engagement. However, to complete one quarter took about 15 minutes and it was possible to carry it out on a tablet, laptop or smartphone. According to Google Analytics, on average, the NMs completed one dimension in 18.57 minutes, which was quicker than estimated. Thus, according to this and the feasibility question about the degree of challenge of the contents, in the future, the contents could be more challenging.

One weakness of the EQ intervention lies in the lack of proper process evaluation, exploring the way in which the intervention was implemented. In the intervention development phase, the process evaluation was not planned even though the main researcher should have known that proper process evaluations are lacking in nursing science research. Multimethod process evaluation would have helped to explore the acceptability of the EQ intervention and also to interpret the results (Craig et al., 2013; Moore et al., 2015). It might have provided more valuable insights into why so many of the participants did not start the EQ, why EQ worked successfully and how it could be optimized even more (Graig et al., 2013). However, NMs' user-evaluations of feasibility and usability of the EQ were studied.

6.3   Suggestions for future research

Based on the results of this study, suggestions for future nursing research will be identified. There is an obvious need for further research in the area of nursing management ethics (Ganz et al., 2015; Höglund & Falkenström, 2018; Barkhordari-Sharifabad et al., 2018a; Aitamaa et al., 2020; Devik et al., 2020; Markey et al., 2020; Poikkeus et al., 2020; Roshanzadeh et al., 2020; Aitamaa et al., 2021), consisting of at least the following:

Developing of the construct of ethical activity profile of NMs:

- The theoretically constructed dimensions of the ethical activity profile of NMs are promising, but need further development. Times have changed from the years 2011–2017 when the construct was developed, and the variety of ethical responsibilities of NMs seems to have increased. Today's NMs have new ethics responsibilities, such as sustainability and global health issues relating to the COVID-19 pandemic (Rosa, 2017; ICN, 2021), for example. The meaning of these new areas for ethical activity profile should be examined. It could be worthwhile to use multi-professional judgement, e.g. expert panels, to assess the relevance and coverage of the dimensions and to develop them further. Also, the construct of the ethical activity profile of NMs was empirically analysed here for the first time and the relationship of the different dimensions and wholeness of the profile require further evaluation. It is not clear, for example, whether the ethical activity profile of NMs should be equal in different NM working sectors or positions, or whether some dimensions should be higher than others, for example.

Measuring the ethical activity profile of NMs and developing the instruments:

- Three new instruments, the EAI, NMEKT and DIIEI, measuring the ethical activity profile of NMs and its dimensions, were developed for the purpose of this study. In the future, the construct validity of the instruments should be assessed by using different statistical analyses, such as confirmatory factor analysis (CFA). Different criteria could be used to report the goodness-of-fit of the construct.

- The developed EQ intervention was effective in supporting the ethical activity profile of NMs when evaluated by NMs themselves. In the future, to obtain wider evidence of the effectiveness of EQ, the evaluation should be done by others via behavioural outcomes. For instance, nursing staff could evaluate the effects of EQ in possible behaviour changes of the NM. Is the EQ effective enough to translate the strengthened ethical activity

profile of NMs also into action in healthcare organizations? Furthermore, it would also be worth studying whether the ethical activities increase in the whole organization and different multi-professional management levels when the whole management team has participated in the EQ.

Developing the Ethics Quarter intervention:

- The novel educational EQ intervention was developed in this study. In the future, the contents of the EQ could be developed to be even more demanding, and communication or interactivity features could be added into the educational area to evaluate if these features have a positive effect on learning outcomes and overall utilization of the educational area. Furthermore, the EQ could be tested in different countries after updating the contents to correspond with local laws, regulations and guidelines.

Evaluating the ethical activity profiles and the EQ in nursing management education:

- The EQ intervention could also be used in basic education of NMs. It would be interesting to evaluate the effects of EQ in different career phases to see whether there is an optimal phase of career to support the ethical activity profile or whether the profiles are different in different career phases.

Effects of high ethical activity profile on nursing:

- Further studies would especially be warranted to evaluate how NMs' high ethical activity profile affects clinical nursing care by using clinical nursing instruments and patient outcomes, such quality of care and patient satisfaction instruments. Is the quality of care and patient satisfaction higher when the NM has a higher ethical activity profile?

Testing other types of interventions for NMs:

- The EQ evaluated is only one type of ethics intervention in this study. It is known that health care organizations need effective ethics organizational support structures and interventions. Thus, researchers should evaluate different kinds of new innovative ethics structures.

6.4   Practical implications

Based on the results of this study, practical implications can be suggested for policymaking, nursing management and education.

Suggestions for policymaking: Ethical activities need to gain more attention in value-based healthcare and management. It is known that there are ethics issues at

every level of the organizations – at micro, macro and meso levels (Thompson et al., 2006). These issues are multidimensional, affecting widely the quality of care, patient safety and wellbeing of personnel. As early as in 2010, the National Advisory Board on Social Welfare and Health Care Ethics recommended (ETENE, 2010) establishing multiprofessional clinical ethics committees in healthcare organizations. However, according to the participants of this study, the past ten years have not been sufficient for comprehensive establishment of ethics committees; this is also supported by the previous report of ETENE (2020). Thus, stronger guidance is needed to ensure that all healthcare organizations 1) establish clinical ethics committees to work as a supportive ethics network, open ethics discussion and learning forums, 2) offer ethics continuing education, and 3) ensure the ethics competence of different level health professionals on a regular basis.

Suggestions for nursing management: Prioritizing values, ethics and ethical activities in management benefits organizations, personnel and patients in several ways: for example, it increases personnel's job satisfaction (Brown et al., 2005; Spence Laschinger et al., 2012; Benevene et al., 2018; Kaffashpoor & Sadeghian, 2020; Zappalà & Toscano, 2020), quality of care (Shirey, 2005; Cummings et al., 2010; Barkhordari-Sharifabad et al., 2018b; Devik et al., 2020; Zaghini et al., 2020; Dehghani-Tafti et al., 2021) and patient satisfaction (Wong et al. 2013; Barkhordari-Sharifabad et al., 2018b; Dehghani-Tafti et al., 2021). By creating a multi-professional, shared ethics strategy, the organization gives a clear message to invest in ethics. Several earlier studies have shown that support on ethical issues for NMs, and also nurses, is lacking in rapidly changing healthcare organizations. Thus, taking the e-learning educational EQ into use could be one concrete strategy step in organizations to show this longed-for support. When implemented in an organization as suggested, it is an easy, usable and feasible way to strengthen managers' ethical activity profile. In addition, the burden it causes is reasonable. Afterwards, when the whole management team has completed the EQ, organizations could continue ethics work according to their strategy. The strategy might include formulating organizational codes of ethics, naming ethics responsibilities, selecting common ethical decision-making models, establishing clinical ethics committees, ethics reflections, steering groups, or using ethics specialists on a regular basis. The construct of the ethical activity profile of NMs and its dimensions can be utilized in planning the organizational ethics support structures. Whatever the concrete structures, it is crucial to remember that continuous, even small efforts or short forums are better than doing nothing at all, and that maintaining a clear ethical compass is the way to maximise the overall organizational success. Ethics can be seen as a competitive advantage for the organization, and when, for instance, competing for competent personnel and new patients, being recognized as an ethical organization is vital.

Suggestions for education: Education of ethical issues is crucial. NMs encounter an increasing amount of changes and challenges in their work every day. To balance between the different needs of patients, healthcare personnel and organizations it is crucial for NMs to regularly update their ethics knowledge, skills and competence. This study has theoretically collected all the ethical activities together and thus, the construct offers a good theoretical basis for planning all types of educations for NMs. The EQ intervention created in this study is a relevant intervention also from the educational point of view. The EQ succeeded in increasing all the ethical activity profile dimensions as well as the ethics knowledge of NMs. Furthermore, it is known that supporting NMs also supports the staff nurses. Thus, it can be estimated that increasing the knowledge of NMs increases the knowledge of the whole working team. In addition, if the EQ is able to support graduated NMs, it might also be useful in basic education of NMs. Even if the EQ itself is not implemented, this study provides findings and viewpoints for planning further e-learning ethics education for NMs.

7 Conclusions

Nurse managers have a moral duty to fulfil their ethical responsibilities by doing ethical activities. Nurse managers working in today's healthcare organizations encounter a growing amount of different kinds of ethical challenges, and ethical activities are expected from them every day. It has been shown that ethical activities by nurse managers have several positive outcomes for the personnel, patients, and health care organizations. This study theoretically outlined all the ethical activities of NMs and created a new theoretical construct, the ethical activity profile of NMs, i.e. 1) developing one's own ethics knowledge, 2) influencing ethical issues, 3) conducting or implementing ethics research, 4) identifying and 5) solving ethical problems.

Earlier studies have pointed out NMs' lack of support for ethical activities from their healthcare organizations and superiors. Furthermore, the area of healthcare management and ethics seemed to have only few earlier ethics interventions described for NMs despite the widely identified need. To support the empirically analysed, partially low ethical activity profile of NMs, the educational e-learning Ethics Quarter intervention was developed based on the developed theoretical construct of the ethical activity profile of NMs.

The results of this study suggest that the developed and evaluated ethics educational e-learning intervention, the EQ, succeeded in strengthening the ethical activity profile of NMs and all its dimensions. Thus, this study created a new, theoretical construct, the ethical activity profile of NMs, and an effective way to strengthen it, i.e. the new ethics educational e-learning intervention intended for the use of healthcare or educational organizations. However, to achieve this advantage completely, organizations have to take the EQ into use and keep up the ethical activity profile of NMs on a high level by constant ethics work implemented in different ways.

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Appendices

Appendix 1: Ethics interventions for nurse managers.

Authors, year, country	Aim	Study design	Number of participants	Instrument (s)	Type of intervention	Implementation	Outcome reported and effect
Jeon et al, 2018, Korea	To evaluate the effect of an ethical leadership program (ELP) on ethical leadership, organizational citizenship behavior (OCB), and job outcomes of nursing unit managers (UMs) and to examine changes in staff nurses' perception about UMs' ethical leadership, OCB, job outcomes, and ethical work environments (EWEs) post-ELP.	A quasi-experimental, pre- post intervention (no control group)	Unit managers n= 44 Staff nurses n= 158	UMs' self-EL: Ethical Leadership at Work Staff nurses' perceived EL: Ethical Leadership Scale Organizational citizenship behavior: OCB scale with both UMs and staff nurses. For job outcomes and EWEs: Copenhagen Psychosocial Questionnaire II	A competency development program for nursing UMs.	6 months, 7 x 2h classes: 1h) lecture and practice, where participants planned and practiced EL activities for next month based on self-evaluation EL skill checklists 2h) small-group discussion, where participants actively learned from sharing experience based on reflection on their own EL activities during the last month. Peer mentoring, in terms of feedback on individual EL activity plans.	-UM's self-reported ethical leadership (+), organizational citizenship behavior (+), job outcomes (+) -Staff nurses perceived ethical leadership (-), organizational citizenship behavior (-), job outcomes (-), ethical work environments (-) (only influence at work +)

Edmonson, 2015, USA	To strengthen the moral courage of nurse leaders with intervention	Pre-post intervention	Targeted group of NMs from community hospital, n=16	Professional Moral Courage Scale	1) Participants self-evaluated their current level of professional moral courage. 2) Participants were taught about ethics and moral courage and discussing about virtue ethics. 3) Participants completed a two-week, post-education re-evaluation of their level of professional moral courage	1x2h classes which consisted of concrete experience, reflection, scenarios, discussion, and expressing action	Professional moral courage (+)
Eide et al, 2016, Norway	To develop and investigate the feasibility of an ethical leadership educational programme and learn from participants' experience.	Focus group interviews	Middle managers from a part-time master's programme in leadership n=8		1) Practice part: participating middle managers developed and ran an ethics project in their own departments (2) a web-based reflection part: including three online reflections and coaching and audiotaped relaxation exercises while executing the ethics project.	6 weeks	The training programme was evaluated as efficient and supportive, with the written, situational feedback/coaching as the most important element.

Appendix 2: E-learning for nurse managers.

Authors, year, country	Aim	Method(s) used in data analysis	Number of participants, settings	Type of e-learning	Results	Notes
Korhonen & Lammintakanen, 2005, Finland	To describe the NMs' expectations, attitudes and experiences on web-based learning before and after participation in a web-based course.	Qualitative study, Analysis of diagnostic assignments n=18, interviews n=8.	NMs n=23 from one Finnish hospital district	Web-based learning environment, lectures, individual assignments, discussions, personal feedback	NMs found web-based education to be a suitable and modern method of learning. NMs found multiple ways to utilize web-based learning environments in health care.	Information technology skills, equipment, support and time were considered essential in web-based learning. NMs' own attitudes and experiences have an impact on further use of web-based learning. The NMs' positive experiences probably encourage a wider implementation of the IT in the unit.
Abel, Hall, Swartz, & Madigan, 2020, USA	To evaluate the effectiveness of an online learning, certificate programme for front-line nurse leaders' sense of empowerment.	A pre-post study design.	Acute care front-line leaders N=29 in the USA and Australia	Online programme, 5.4.hr, 12 modules. Different learning tools e.g. workbook, interactive scenarios, knowledge checks. participants had 30 days to complete the online programme and pre- and post-tests.	Empowerment improved significantly. Online learning was effective.	An online learning programme may be a more adorable method of evidence-based education for front-line leaders. It may be difficult to arrange multiple front-line leaders to be allocated for education simultaneously, online learning may be a sustainable solution.

Kocoglu, Duygulu, Abaan & Akin, 2016, Turkey	To evaluate the effects of an interactive problem solving training program on first-line NMs' self-reported problem solving skills.	Evaluation study, variance analysis for repeated measures.	First line NMs, n=39, Ministry of Health hospitals in Turkey	An interactive training program, 3 hours of theoretical study and 5 hours of individual study, problem solving during the program.	Statistically significant improvements in the first line NMs perceived problem solving skills, problem solving confidence, and approach-avoidance behaviors.	Education program included thinking and problem perception, critical thinking and decision making processes-models, tools managers use in decision making, problem solving processes-models and problem solving strategies. Paper didn't include any process evaluation.
Harrington & Walker, 2006, USA	To test the effectiveness of a computer- based training for teaching nursing facility managers about ergonomics.	A pre-post study design.	Nursing facility managers (n=45)	Computer-based training (CBT) program, combining text, graphics, color illustrations, photographs, animation and sound to provide a fully interactive, media-rich learning environment.	Combuter-based training improved the ergonomic knowledge, attitudes, and practices of managers. All participants who completed a participant evaluation form (n=22) indicated they would recommend the program to others; computers were easy to use for training and they would like to use computers for future training.	Educators need to consider CBT as a viable option for training in their workplaces. It can be a very effective training tool for staff who may have limited time to attend training.

Eide et al, 2016, Norway	To develop and investigate the feasibility of an ethical leadership educational programme and learn from participants' experience.	Focus group interviews	Middle managers from a part-time master's programme in leadership n=8	1) Practice part: participating middle managers developed and ran an ethics project in their own departments (2) a web-based reflection part: including three online reflections and coaching and audiotaped relaxation exercises while executing the ethics project.	The training programme was evaluated as efficient and supportive.	The written, situational feedback/coaching was the most important element of the training.

Appendix 3: Content of questionnaire used in phase I.

	Number of items	Scale
Background factors: gender, age, education, work task and length of work experience.	5	Numeric scale or free text
Ethical activities, dimensions I-III: 1) Developing one's own ethics knowledge by participating in continuing ethical education, 2) influencing ethical issues by having an official ethical post/participating in work group/committee and 3) conducting or implementing ethics research by participating in ethics development or research projects, and by conducting or implementing research on ethics.	4	Numeric scale or free text
Ethical activities, dimensions IV-V: 4) Identifying ethical problems and 5) solving ethical problems.	2	Open questions, respondents were asked to describe at least one ethical problem they had faced at work and how they had solved it.

Appendix 4: Content of questionnaire used in phase IIc.

	Number of items	Scale
Background factors: Age, gender, highest education, employment sector (public, private or trust), position in organization, length of work experience, number of subordinates, participation in continuing ethical education, participation in an ethical working group or committee, having an official ethics-related post, participating in an ethics research project, participating in an ethics development project, and having some kind of ethics organizational structure in the organization, e.g. a clinical ethics committee.	13	Dichotomous and Likert-scale
Ethical activity profile of NMs, all dimensions. EAI. - I develop my own ethics knowledge. -I influence ethical issues. -I conduct or implement ethics research. -I identify ethical problems. -I solve ethical problems.	5	Visual analogue scale, VAS 0-100 (0=not at all; 100=very much)
Knowledge test: Nursing management ethics knowledge, all dimensions. NMEKT Ethically active nurse manager: -Is aware of his/her ethics responsibilities. -Makes ethically sustainable decisions according to own values. -Is responsible for ethically high performance in work unit. -Solves clinical nursing ethics problems. -Discusses different ethical guidelines in work unit. -Takes best ethics practices into use. -Considers impact of own performance on others. -Notices ethical problems. -Knows automatically how to act ethically. -Makes ethical decisions by pondering different perspectives.	10	Dichotomous, yes-no, Correct responses are worth 1 point and incorrect response 0
Ethical activity profile of NMs, dimensions I-III. DIIEI. -I am aware of my organization's values. -I am aware of the guidelines guiding my work, such as ethics guidelines for nurse managers. -I am aware of the legislation guiding my work, such as the Act on the Status and Rights of Patients. -I read ethics literature/publications. -I discuss ethics and values in my work unit. -I express my gratitude for ethical behaviour. -I support my staff in ethically challenging situations. -I work as a role model through my own high quality ethical behaviour. -I take into use ethical guidelines in my work unit, such as ethics guidelines for nurses. -I take into use organizational ethics guidelines in my work unit, such as value-based practice guidelines. -I bring different ethics publications into my work unit, such as Shared Values in Healthcare. -I bring ethics research knowledge into my work unit.	12 (4 for each three dimension)	5-point Likert-scale (1 =never; 5=very much)

Ethical activity profile dimension IV. Ethical sensitivity = ethical problem identifying. ESSQ, Tirri et al., 2011. -I am able to cooperate with people who do not share my opinions on what is right and what is wrong. -I tolerate different ethical views in my surroundings. -I think it is good that my closest friends think in different ways. -I also get along with people who do not agree with me. -I am concerned about the wellbeing of my partners. -I take care of the wellbeing of others and try to improve it. -In conflict situations I do my best to take actions that aim at maintaining good personal relationships. -I try to have good contacts with all the people I am working with. -When I am working on ethical problems, I consider the impact of my decisions on other people. -I contemplate the consequences of my actions in making ethical decisions. -I consider different alternatives when aiming at the best possible solution to an ethically problematic situation. -I am able to create many alternative ways to act when I face ethical problems in my life. -I notice that there are ethical issues involved in human interaction. -I see a lot of ethical problems around me. -I am aware of the ethical issues I face at work. -I am better than other people in recognising new and current ethical problems.	16	5-point Likert-scale (1=totally disagree; 5=totally agree)
Ethical activity profile dimension V. Moral courage = ethical problem solving. Modified NMCS, Numminen et al., 2018. -I act in accordance with professional ethical principles even if… -I discuss the fears or anxiety concerning patient care of an employee even if… -I bring up for discussion the patient's right to good care even if… -If someone else acts professionally dishonestly… -If I observe evident shortcomings in someone else's… -I participate in ethical decision-making despite… -I participate in ethical decision-making regardless of… -If the resources required for ensuring good care are inadequate… -I intervene in an ethical problem situation in nursing care even if… -Regardless of the situation, I try to encounter each patient or employee as a dignified human being even if… -If someone else acts unethically, I intervene… -If someone else tries to cover up an evident care mistake, I intervene… -I bring up my honest opinion concerning even…	21	5-point Likert-scale (1=Does not describe me at all; 5=Describes me very well)

-I am even prepared to break prevalent care practices to advocate… -In order to ensure good care quality… -I bring up for discussion the patient's right to good care if… -I support patients or employees by being truly present for them even if… -I do not compromise on patient's right to good care even… -I admit my own mistakes… -Regardless of the situation, I seek to create a genuine human encounter with the patient or employee even though… -I adhere to professional ethical principles even if…		
Usability of the EQ. SUS, Brooke, 1996. -I think that I would like to use this website frequently. -I found the website to be simple. -I thought the website was easy to use. -I think that I could use the website without the support of a technical person. -I found that the various functions in this website were well integrated. -I thought there was a lot of consistency in this website. -I would imagine that most people would learn to use this website very quickly. -I found the website very intuitive. -I felt very confident using the website. -I could use the website without having to learn anything new.	10	5-point Likert-scale (1=totally disagree; 5=totally agree)
Feasibility of the EQ. -The EQ offered a good way to learn nursing management ethics. -The duration of the EQ was adequate. -The contents of the EQ were interesting. -The contents of the EQ increased my knowledge of nursing management ethics. -The contents of the EQ were sufficiently challenging. -Open question: "Your open feedback about content of the EQ?".	5 and one open question	5-point Likert-scale (1=totally disagree; 5=totally agree)

Appendix 5: The content validity index (CVI), item and scale validities, of developed or modified instruments, Phase IIa, second expert panel.

Item clarity:

Respondent	B) EAI	item 14	item 15	item 16	item 17	item 18	C) NMEKT	item 19	item 20	item 21	item 22	item 23	item 24	item 25	item 26	item 27	item 28	D) DIIEI	item 29	item 30	item 31	item 32	item 33	item 34	item 35	item 36	item 37	item 38	item 39	item 40	F) NMCS	item 58	item 62	item 63	item 65	item 66	item 71	item 73	item 75	item 76
1		3	4	3	4	4		4	3	3	4		3	4	4	3	4		4	4	4	4			4	4	3	3	4			3	4	4	4	4	4	3	4	3
2		3	3	2	4	3		4	3	4	4	4	3	3	3	3			4	4	4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4
3		3	4	4	4	4		4	4	4	4	4	3	4	4	3	4		4	4	4	4	4	4	4	4	4	4	4	4		4	3	4	4	4	4	4	4	4
4								3	2	3	3	3	3	3	2	2	2		3	3	3	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3
5		3	3	2	4	4		4	4	4	4	4	4	4	4	4	2		4	4	4	4	4	2	4	2	4	5	2	2		3	4	4	4	4	4	4	4	2
6		3	3	4	4	4		4	3	4	4	4	3	4	4	4	3		4	4	4	4	4	3	4	3	4	4	4	4		3	4	4	4	3	3	3	4	3
7		3	3	4	4	4		4	4	4	4	4	3	4	4	3	4		4	4	4	4	4	4	4	4	4	4	3	3		4	4	4	4	4	4	4	4	4
8		4	4	4	4	4		4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4
9		3	3	3	4	4		4	3	4	3	3	3	4	4	3	3		4	4	4	4	4	3	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4
10		3	3	3	4	4		4	4	4	4	4	3	3	4	3	4		3	4	4	4	4	4	4	4	4	3	4	4		4	4	4	4	4	4	3	4	3
11		4	4	2	4	4		4	4	4	4	4	4	4	4	4	4		4	4	4	4	4	2	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4
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I-CVI		0,91	1,00	0,73	1,00	1,00		1,00	0,92	1,00	1,00	1,00	0,92	0,92	0,92	0,92	0,73		0,92	1,00	1,00	1,00	1,00	0,82	1,00	0,83	1,00	0,92	0,92	0,92		1,00	1,00	1,00	1,00	1,00	0,92	1,00	1,00	0,92
S-CVI	0,93						0,93											0,94													0,98									

Item relevance:

Respondent	B) EAI	14	15	16	17	18	C) NMEKT	19	20	21	22	23	24	25	26	27	28	D) DIIEI	29	30	31	32	33	34	35	36	37	38	39	40	F) NMCS	58	62	63	65	66	71	73	75	76
1		4	4	4	4	4		4	3	3	4	4		4	4	3	4		4	4	4	3	4	4	4	4	4	4	4	4		4	4	4	4	4	4	4	4	4
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12		4	4	4	4	4		4	4	4	4	4	3	3	4	3	3		4	4	4	4	4	4	4	3	4	4	4	4		4	4	4	4	4	4	4	4	4
I-CVI		1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	0,92	1,00		1,00	1,00	1,00	0,92	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00		1,00	1,00	1,00	1,00	1,00	1,00	0,92	0,92	1,00
S-CVI	1						0,99											0,99													0,98									