



The competence of nurse educators and graduating nurse students

Leena Salminen^{a,*}, Minna Tuukkanen^b, Katharina Clever^c, Pilar Fuster^d, Mary Kelly^e, Viktorija Kielé^f, Sanna Koskinen^b, Herdis Sveinsdóttir^g, Eliisa Löyttyniemi^h, Helena Leino-Kilpi^a, On behalf of the PROCOMPurse-Consortium

^a Department of the Nursing Science, University of Turku and Turku University Hospital, Finland

^b Department of the Nursing Science, University of Turku, Finland

^c Institute of Health and Nursing Science, Martin Luther University Halle-Wittenberg, Germany

^d Faculty of Medicine and Health Sciences, Universitat Internacional de Catalunya Barcelona, Spain

^e School of Nursing, Psychotherapy and Community Health, Dublin City University, Ireland

^f Institute of Health Sciences, Vilnius University, Lithuania

^g Faculty of Nursing, University of Iceland, Iceland

^h Unit of Biostatistics, Faculty of Medicine, University of Turku, Finland

ARTICLE INFO

Keywords:

Nurse educator
Graduating nurse student
Nursing education
Competence

ABSTRACT

Background: A nurse educator has an important role in promoting students' learning and professional development as well as in offering high quality nursing education.

Objectives: To describe the competence of nurse educators and explore its connection with the self-evaluated competence of graduating nurse students.

Design: A cross-sectional survey design was used.

Participants: A total of 1796 graduating nurse students in Finland, Germany, Iceland, Ireland, Lithuania and Spain participated in this study.

Methods: The data were collected with structured electronic or paper-and-pencil questionnaires. Graduating nurse students evaluated the nurse educators' competence using six items derived from the Tool for Evaluation of Requirements of Nurse Teacher (ERNT) and in addition, the students evaluated their own generic professional competence using the Nursing Competence Scale (NCS). The data were analysed statistically.

Results: On average, graduating nurse students evaluated the competence of nurse educators to be rather high. Icelandic and Irish students evaluated nurse educators' competence the highest. German and Finnish students were the most critical. The students also evaluated the level of their own professional competence as good. The higher graduating nurse students evaluated their own competence, the higher they also evaluated their nurse educators' competence.

Conclusions: Students' evaluations of their educators' competence and their own competence seem to be aligned. However, educators' competence and its connection with students' competence warrants further studies.

1. Introduction

More than ever, teaching the profession of nursing to future nurse generations requires excellence. Continuous changes in both society and in working life drive the development of teaching in higher education (European Commission, 2017a). Global health issues (Shustack, 2020) like pandemic diseases (Lake, 2020), environmental risks like climate change (Álvarez-Nieto et al., 2018), increasing chronic diseases because of ageing populations, and technological solutions, among many other issues, are changing health care and transforming working life

(European Commission, 2017b). These also set competence demands for nurse educators.

European collaboration and the Bologna Process year 1999 changed nursing education in Europe (Zabalegui and Cabrera, 2009; Salminen et al., 2010; Humar and Sansoni, 2017). After that, European Union (EU) member countries have worked towards establishing nursing education in higher education institutions and creating comparable nursing degrees to ensure the quality of nursing education (Lahtinen et al., 2014; Humar and Sansoni, 2017). However, it has been challenging to implement changes in nursing education systems in different countries

* Corresponding author at: Department of the Nursing Science, University of Turku, FIN-20014 Turku, Finland.

<https://doi.org/10.1016/j.nedt.2021.104769>

Received 5 May 2020; Received in revised form 20 December 2020; Accepted 6 January 2021

Available online 14 January 2021

0260-6917/© 2021 The Author(s).

Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

(Humar and Sansoni, 2017) because legislation, culture, healthcare needs, philosophies and structures, as well as economic situations, vary in different countries (Salminen et al., 2010). All in all, the EU directives (Directive 2005/36/EC; Directive 2013/55/EU) applied in all EU member countries (also in Iceland, Norway and Switzerland) outline the general principles and practices for nursing education and outline the minimum professional qualifications for registered nurses. However, these documents do not describe the professional requirements for nurse educators (Salminen et al., 2010), and there is no consensus about nurse educators' education (Salminen et al., 2010; NLN, 2019b).

The competence of nurse educators is multidimensional, and the roles and qualifications of the teaching faculty have been discussed for decades (Salminen et al., 2010; Salminen et al., 2013; Mikkonen et al., 2018; Berland et al., 2020). Still, the main role of nurse educators is to promote students learning and professional development (Bono-Neri, 2019). The World Health Organization (2016), the National League for Nursing (2019a) and some researchers (e.g. Salminen et al., 2013; Oprescu et al., 2017; Zlatanovic et al., 2017; Mikkonen et al., 2018) have defined the competencies of nurse educators. The core competencies of nurse educators (WHO, 2016) consist of competence in nursing practice, pedagogical competence, communication, collaboration skills, monitoring and evaluating, management and digital technology. Educators also need knowledge of teaching and learning theories, the curriculum and its implementation, experience in research and gathering evidence, and having ethical principles and professionalism. Nurse educators may have different roles, tasks and duties, but in this study, nurse educators are seen to be those who teach academic content of nursing academic content in educational institutions.

2. Background

Nursing competence and pedagogical competence are regarded as essential competence areas for nurse educators (Salminen et al., 2013; Fowler et al., 2017; Mikkonen et al., 2018). Still, not much research interest has been addressed to either the professional knowledge of nursing or the teaching and learning of nursing in educators' work (Zlatanovic et al., 2017). For this reason, in our study we describe and assess certain aspects of the nursing and pedagogical competence of educators as the core competence areas of nurse educators.

The nursing competence of nurse educators can be described as referring to their theoretical and clinical nursing knowledge and skills, and their attitudes towards nursing practice (Salminen et al., 2009; Pennbrant, 2016). In this study, nursing competence includes educators' ability to encourage students to integrate theory and practice, and make active use of the literature and research in the field (Salminen et al., 2013). A good ability to promote theory and practice integration is especially important when teaching nursing (Fowler et al., 2017; Labrague et al., 2020). Moreover, active use of the literature and research is seen as a basis for teaching evidence-based nursing (Koivula et al., 2011; Kuivila et al., 2020).

Pedagogical competence is described as a process of transmitting knowledge, skills and attitudes and conducting teaching and learning in a positive learning environment and atmosphere (Salminen et al., 2009; Pennbrant, 2016). In this study, pedagogical competence includes nurse educators' ability to encourage students to look for new knowledge, to engage in critical thinking, to guide students towards self-direction and to develop their decision-making skills (Salminen et al., 2013). Recent research has pointed out that learning in higher education should focus more on analytical knowledge and complex problem-solving (Zlatanovic et al., 2017), and educators need good pedagogical competence to teach those skills (Pennbrant, 2016; Zlatanovic et al., 2017).

The systematic evaluation of nurse educators' competence is scarce (Kuivila et al., 2020). Moreover, the evaluations seem to be much dependent on the evaluator and educators themselves usually assess themselves as being more competent than their students assess them to be (Salminen et al., 2013). Regardless of the evaluator or the result of

evaluation, it is important for the educator to recognize nursing students' experience of teaching to ensure a quality teaching (Labrague et al., 2020).

The competence of nurse educators warrants further investigation because nurse educators are centre stage in regard to supporting students' readiness to enter working life (Teoh et al., 2013; Järvinen et al., 2018). Moreover, it has been shown that the quality of nursing education is positively related to graduating nursing students' self-reported competence (Kiekkas et al., 2019). Some studies have shown that educators' competence correlates with students' study achievements (e.g. Baumert et al., 2010) but then, some studies describe there is no connection between students' evaluations of teaching and their learning (Uttl et al., 2017). With respect to the latter, students' ability to evaluate the competence of educators has been discussed. It has been argued that perhaps students evaluate more for example the satisfaction to the studies, the course organization or educators' enthusiasm for teaching than the educators' actual competence (Oerman, 2017; Uttl et al., 2017). However, there is a lack of studies about the connection between the competence of nurse educators and the competence of nurse students. Therefore, the aim of this study was to describe the competence of nurse educators and explore its connection with the self-evaluated competence of graduating nurse students. This study is a part of large research project XXXX, carried out in six European countries: Finland, Germany, Iceland, Ireland, Lithuania and Spain (www.xxxx.fi).

2.1. The competence requirements of nurse educators

There are no uniform competence requirements for nurse educators (Salminen et al., 2010; WHO, 2016; Oprescu et al., 2017; NLN, 2019b). The requirements depend on how and where the nursing education is arranged, either at college or university level. Concerning the educators and nursing education in this study, in Finland (Universities of Applied Sciences Act 2014) and Lithuania (Order of Nursing and Midwifery Education Direction 2015, updated 2020) educators have to have a nurse qualification, a master's degree and three years' clinical experience. In Germany, all educators should currently have at least further vocational training or a bachelor's degree but, according to a law passed in 2017 (Bundesgesetzblatt, 2017), from 2029 onwards, new educators will also need to have master's degree. In Spain, Ireland and Iceland, nurse educators need usually have a doctoral degree to have an academic teaching position. However, there are also some exceptions in these countries and for example a number of nurses holding a master's degree teach nurse students in clinics and clinical nurse specialists also teach their specialties in Iceland.

3. Methods

3.1. Study design

A cross-sectional survey design was used. In the survey, the competence of nurse educators was evaluated by graduating nurse students (GNSs) in all participating countries.

3.2. Sample

Using convenience sampling, GNSs from Finland, Germany, Iceland, Ireland, Lithuania and Spain were included in this study. The GNSs were recruited from the educational institutions founding their nursing degree programmes upon EU directives (Directive 2005/36/EC; Directive 2013/55/EU) and were different sizes in different parts of the countries. The inclusion criteria for the GNSs were that they (1) were studying a nursing degree/certificate programme leading up to the initial qualifications to practice as a registered nurse and (2) were close to graduation. For the whole research project, the minimum sample size requirement per country was 156 respondents, calculated based on the Nurse Competence Scale (NCS; Meretoja et al., 2004), the relevant five mean-

difference points, standard deviation of 15.7 (Kajander-Unkuri et al., 2013), statistical power of 80% and a significance level of 0.05.

3.3. Instruments

The competence of nurse educators was evaluated using six items derived from the Tool for Evaluation of Requirements of Nurse Educator (ERNT; Salminen, 2000; Salminen et al., 2013). The original ERNT tool consists of 20 items divided into five categories: nursing competence, pedagogical competence, evaluation skills, personal factors and relationships with students, and was created to the evaluation of educators by the point of view of educators themselves and also by the point of view of the students (Salminen, 2000). For this study, six items were selected to be used: two items were from the nursing competence category for the importance of teaching evidence-based nursing (Bono-Neri, 2019; Heikkilä et al., 2019) and four items were from the pedagogical competence category for describing the importance of teaching strategies (Bono-Neri, 2019; Mikkonen et al., 2019). These items were considered very carefully in the research group to describe the core of the competence. The original five-point Likert scale of ERNT items was modified to a four-point scale (1 = *realise very poorly*, 4 = *realise very well*) in order to increase differentiation between groups (DeVellis, 2017). In this study Cronbach's alpha coefficient was found to be 0.63 in nursing competence category and 0.83 in pedagogical competence category. The permission was granted to modify and use the instrument.

The GNSs self-assessed their competence using the NCS (Meretoja et al., 2004; Flinkman et al., 2017). The NCS consists of 73 items divided into seven different categories: the helping role, teaching coaching, diagnostic functions, managing situations, therapeutic interventions, ensuring quality and the work role. Each item was scored using a visual analogue scale (VAS; VAS: 0–100, 0 = 'a very low level of competence' and 100 = 'a very high level of competence'). The scale was divided into four parts in order to represent the level of competence as *low* (0–25), *quite good* (>25–50), *good* (>50–75) and *very good* (>75–100) (Meretoja et al., 2004).

The GNSs were also asked about their individual background factors like age, gender, entrance education level, work experience and earlier education in social and health care, and were asked Likert-scaled questions concerning their satisfaction with nursing education (1 = *very unsatisfied*, 4 = *very satisfied*) and they self-assessed their study achievement (1 = *very poor*, 4 = *excellent*).

The instruments were translated into the language of each partner country using a double-translation process (Sousa and Rojjanasirnat, 2011). National questionnaires were piloted before actual data collection and minor rewording was done after pilots. The pilot data were not included in the final data.

3.4. Data collection

The data collection took place between 5/2018–3/2019, either by an online format (REDCap electronic data capture software) or a paper-and-pencil format, depending on the national and local arrangements. For the online format, GNSs were either provided with access to computers, or informed about the link to the questionnaire during a class or GNSs were emailed information and a link to the questionnaire. For the paper-and-pencil format, the questionnaires were distributed to GNSs during a class at a previously agreed time. Students answered on the same occasion and returned their answers in a sealed envelope, either directly to a member of the research team or to the contact person who delivered the envelopes to the research team.

3.5. Data analysis

Continuous variables were summarised with mean and standard deviation (SD). Categorical variables are presented with counts (n) and percentages. Differences between countries in mean ERNT score (and

also each separate ERNT item) were analysed with one-way analysis of variance (ANOVA). Furthermore, the association between mean ERNT and all relevant background explanatory variables (age, gender, work experience, satisfaction with the nursing degree programme, the level of study achievements, earlier education level and earlier education in social and health care) were analysed with a linear model, including the country and one explanatory variable (see Table 3). To describe the association between the ERNT and the explanatory variable, slope or model-based means were estimated.

Pearson correlation coefficients were calculated between the total NCS score and the mean value for the ERNT. Normality assumptions were checked from studentised residuals visually (e.g. using a normal quantile plot). A significance level of 0.05 was used (two-tailed). Also, 95% confidence intervals (CIs) were calculated. The analyses were performed using SAS software, Version 9.4 for Windows (SAS Institute Inc., Cary, NC, 1989–2019).

3.6. Ethical considerations

Good scientific practice was followed in all phases of the study (ALLEA, 2017). The Professional Competence in Nursing (Pro-CompNurse) project received an ethical approval from the University of Turku (Statement 62/2017, 11.12.2017); also, national approvals were obtained when needed. Research permissions from all educational institutions were granted according to local policies. All GNSs were informed about the study in an information letter and they gave informed consent. Data analyses were conducted in an encoded format. The copyright holders of the used instruments gave the permissions for translating and using the instruments. The research project followed the General Data Protection Regulation (Regulation EU 2016/679).

4. Results

4.1. Participants

A total of 1796 GNSs answered the questionnaire (overall response rate: 49%, varying between 36 and 88%). Most of the students (88%) were women and the mean age was 25.5 years old (SD: 6.7). One fifth (20%) of the students had a previous degree in social and health care and more than half (61%) had working experience in health care, excluding clinical placements that were part of their studies. The students were most satisfied with their clinical placements (mean: 3.1; SD: 0.7) and almost all of them (93%) evaluated their study achievement as *good* or *excellent* (see Table 1).

4.2. The competence of nurse educators as evaluated by GNSs

Overall, the GNSs evaluated the nurse educators' competence to be rather high (mean: 3.0; SD: 0.5) and the total ERNT mean scores varied from 2.8 to 3.2 between countries. Competence was evaluated highest in Iceland and Ireland. The GNSs in Germany and Finland were the most critical in their evaluations. The lowest competence areas were educators' competence at guiding students to develop their decision-making skills and encouraging students to integrate theory and practice. There were statistically significant differences for each item and for the total ERNT mean scores between countries ($p < 0.0001$) (see Table 2).

4.3. The connection between the competence of nurse educators and the self-assessed competence of GNSs

Overall, GNSs' self-evaluated their competence with the NCS and evaluated it to be at a good level. The means of the total NCS score varied from 50.0 to 69.1 between countries, the highest evaluations being in Iceland and the lowest in Lithuania (see Table 1). The higher graduating nurse students evaluated their own competence, the higher they also evaluated their nurse educators' competence ($r = 0.15$, $p <$

Table 1
GNSs' ($n = 1796$) individual background factors.

Individual background factors	Total $n = 1796$	Finland $n = 514$	Germany $n = 304$	Iceland $n = 64$	Ireland $n = 399$	Lithuania $n = 272$	Spain $n = 243$
Previous degree in health care? n (%)							
Yes	349 (20)	184 (36)	39 (13)	11 (17)	25 (6)	33 (12)	57 (24)
No	1429 (80)	324 (64)	263 (87)	53 (83)	369 (94)	237 (88)	183 (76)
Education level when entering nursing programme n (%)							
Upper secondary degree (vocational and/or general)	1168 (66)	447 (88)	74 (25)	52 (84)	321 (84)	215 (80)	59 (25)
College-level degree/post-secondary non-tertiary degree	471 (27)	13 (3)	222 (74)	2 (3)	32 (8)	31 (11)	171 (71)
Higher education/university degree	121 (7)	48 (9)	3 (1)	8 (13)	28 (7)	24 (9)	10 (4)
Total length of work experience (months) in health care, median (Q1, Q3)	18 (7, 36)	12 (6, 35)	12 (10, 36)	30 (15, 49)	25.5 (12, 36)	21 (7, 36)	14 (6, 50)
Self-assessed level of study achievements, n (%)							
Very poor	8 (1)	2 (0)	0 (0)	0 (0)	4 (1)	1 (0)	1 (1)
Poor	98 (6)	25 (5)	18 (6)	0 (0)	18 (5)	23 (9)	14 (8)
Good	1296 (81)	414 (87)	240 (82)	39 (81)	277 (78)	201 (78)	125 (74)
Excellent	198 (12)	37 (8)	35 (12)	9 (19)	56 (16)	33 (13)	28 (17)
Satisfaction with the nursing degree programme, mean (SD)							
The programme as a whole	2.9 (0.6)	2.7 (0.6)	2.8 (0.6)	3.3 (0.5)	2.9 (0.6)	3.0 (0.7)	3.2 (0.6)
Theoretical studies	2.7 (0.7)	2.5 (0.7)	2.6 (0.7)	3.1 (0.5)	2.8 (0.7)	3.0 (0.7)	3.0 (0.7)
Clinical placements	3.1 (0.7)	3.2 (0.7)	2.8 (0.8)	3.2 (0.5)	3.0 (0.7)	3.1 (0.7)	3.1 (0.7)
Total NSC score, mean (SD)	62.2 (14.7)	63.2 (13.9)	65.1 (11.9)	69.1 (11.6)	63.6 (13.8)	50.0 (16.1)	66.9 (14.0)

Table 2
The competence of nurse educators as evaluated by GNSs.

	Total ERNT, mean (SD)	Finland, mean (SD)	Germany, mean (SD)	Iceland, mean (SD)	Ireland, mean (SD)	Lithuania, mean (SD)	Spain, mean (SD)	p -Value ^a
Nursing competence								
Encourages students to integrate theory and practice ($n = 1615$)	3.0 (0.7)	2.7 (0.6)	2.9 (0.7)	3.2 (0.5)	3.2 (0.7)	3.2 (0.7)	3.1 (0.6)	<0.0001
Making active use of the literature and research in the field ($n = 1613$)	3.1 (0.7)	3.1 (0.6)	2.7 (0.8)	3.2 (0.5)	3.3 (0.7)	3.0 (0.7)	3.3 (0.6)	<0.0001
Pedagogical competence								
Encouraging students to constantly look for new knowledge ($n = 1614$)	3.1 (0.7)	3.1 (0.6)	2.5 (0.8)	3.3 (0.6)	3.3 (0.7)	3.1 (0.7)	3.1 (0.7)	<0.0001
Encouraging students to a critical way in thinking ($n = 1611$)	3.1 (0.8)	2.9 (0.7)	2.8 (0.9)	3.4 (0.5)	3.3 (0.7)	3.1 (0.7)	3.3 (0.6)	<0.0001
Guiding students towards self-direction ($n = 1608$)	3.1 (0.7)	3.1 (0.6)	2.8 (0.8)	3.2 (0.5)	3.1 (0.7)	3.2 (0.7)	3.0 (0.8)	<0.0001
Guiding students to develop their decision-making skills ($n = 1608$)	2.9 (0.8)	2.7 (0.7)	2.7 (0.8)	3.1 (0.4)	3.1 (0.8)	3.1 (0.8)	3.0 (0.7)	<0.0001
Total ERNT score	3.0 (0.5)	2.9 (0.5)	2.8 (0.6)	3.2 (0.4)	3.2 (0.5)	3.1 (0.6)	3.1 (0.5)	<0.0001 ¹

^a Comparisons between countries were analysed with one-way ANOVA.

¹ There were statistically significant differences ($p < 0.01$) between Finland–Germany, Finland–Iceland, Finland–Ireland, Finland–Lithuania, Finland–Spain, Germany–Iceland, Germany–Ireland, Germany–Lithuania and Germany–Spain.

0.0001).

4.4. Factors connected to the students' evaluation of the educators' competence

There were statistically significant connections between students' individual background factors and their evaluations of the educators' competence. Older ($p < 0.0001$), female ($p = 0.016$), students with longer working experience in social and health care ($p = 0.010$), and students who were more satisfied with their nursing degree programme ($p < 0.0001$) and who evaluated their academic achievement as higher ($p < 0.0001$) evaluated the competence of educators as higher than others (see Table 3). Students' earlier educational level or a previous degree in social and health care were not connected to students' evaluations of the educators' competence.

5. Discussion

In this study, GNSs in Finland, Germany, Iceland, Ireland, Lithuania and Spain evaluated their nurse educators' competence in terms of nursing competence and pedagogical competence. EU directives outline the general principles and practices for nursing education in these

Table 3

The connections between the independent variables and GNSs' evaluations of nurse educator competence.

Independent variable	Model-based mean estimate/slope (B) ¹	CI: 95%	p -Value ^a
Total NCS score	0.0071 ¹	0.0053–0.0089	<0.0001
Age	0.0084 ¹	0.0043–0.0125	<0.0001
Total length of work experience in health care	0.0010 ¹	0.0002–0.0018	0.010
Satisfaction with the nursing degree programme	0.5216 ¹	0.4788–0.5644	<0.0001
Gender			
Female	3.1	3.04–3.11	0.016
Male	3.0	2.90–3.06	
Level of study achievements			
Very poor	2.4	2.02–2.72	
Poor	2.7	2.55–2.76	<0.0001
Good	3.1	3.03–3.10	
Excellent	3.3	3.19–3.33	

^a Connections between the independent variables and GNSs' evaluations of nurse educator competence were analysed with a linear model.

countries (Directive 2005/36/EC; Directive 2013/55/EU) so these countries were considered comparable in this study, although there are some differences in nursing education (Lahtinen et al., 2014). In educators' competence, nursing competence and pedagogical competence have been identified as essential areas for nurse educators (Salminen et al., 2013; Fowler et al., 2017; Mikkonen et al., 2018). Without these competencies, high quality teaching is not possible (Fowler et al., 2017). Although some of the students in this study criticized the competence of their educators, they evaluated the competence of the educators higher than did students that have evaluated the competence earlier (Salminen et al., 2010; Salminen et al., 2013).

The GNSs' evaluations of their nurse educators' competence differed between the countries although educators' nursing and pedagogical competence was rated rather high in almost every country. Icelandic and Irish students evaluated their educators' competence highest and German and Finnish students were the most critical. In regard to nursing competence, German and especially Finnish students were critical concerning the educators' competence to integrate theory and practice. This lack of competence has also been criticized in previous studies (e.g. David et al., 2019). In this study, some of the students also criticized the educators' competence at using literature and research. Differences in evaluations could be explained, for example, at the level of the educators' education or the evidence-based practice level in the health care systems of their country. Koivula et al. (2011), for example, noted that a nurse educator with a higher academic degree utilised more research evidence in their teaching than others. However, more research is required about the connection between the education level of nurse educators and their competence in different countries.

One notable thing is educators' ability to teach decision-making skills. For decades, several stakeholders (i.e. nurses, nurse students, educator candidates and educators themselves) have reported that educators' ability to teach decision-making skills is quite poor (Salminen et al., 2009; Salminen et al., 2013) even though decision-making is a basic skill in nursing (Thompson et al., 2013). Therefore, new or different kinds of teaching and learning methods should be considered in teaching decision-making skills.

As a general summary of the connected factors related to education, many positive findings related to a favourable evaluation of educators' competence. The GNSs in all the participating countries evaluated their own competence to be good, corresponding with earlier studies (Kajander-Unkuri et al., 2016; Kiekkas et al., 2019). As a novel finding, in this study a positive connection was found: the better the students evaluate the competence of educator the better they evaluated their own competence and self-evaluated study achievements. There has been similar result reported in mathematics, where teachers' competence was related to students' higher achievements (Baumert et al., 2010), but also contradictory results has been found (Uttl et al., 2017). Also, students' satisfaction with their nursing degree programme was statistically significantly related to students' evaluations of educators' competence and the differences were considerable. However, there is a need for further studies about educators' competence and its possible connection to students' competence.

5.1. Limitations

There are limitations to this study. First, the convenience sampling method limits the generalisation of the findings. However, educational institutions were selected from different parts of the countries to make the sample as representative as possible. Second, even though the number of respondents was quite high, the response rate remained quite low in some countries. Third, the questionnaire used in this research project was quite long and the items about the nurse educator's competence were at the end of the questionnaire. Some students did not finish the questionnaire, but the loss was still quite small. Also, only six items of the ERNT tool was used in this study, and only two items were used from nursing competence category which may give a slightly

narrow view about nurse educators' nursing competence. Moreover, Cronbach's alpha was a bit low in nursing competence category possibly due to modifying the tool and number (only two) of the items. However, these items were considered carefully by the research team. Finally, even though the ERNT tool is created to the evaluation of educators also by the point of students, the students may, in some cases, evaluate something else rather than the actual competence of educators. Thus, combining the self-evaluations with more objective measurements can be beneficial.

6. Conclusion

Nurse educators' competence was quite good as evaluated by nurse students and aligns with students' evaluation of their own nursing competence. Also, the competence of educators seems to be connected with students' study achievements and the students' satisfaction with the nursing degree programme. It is crucial to note that the nurse educator has good professional competence and adequate academic education, but further studies regarding the possible connection between the educators' and students' competence is warranted. There is also a need for further international collaboration to harmonise nurse educators' competence requirements.

Funding

The ProCompNurse research project is funded by the Academy of Finland (Decision 28.4.2017, no. 310145 for the time period 2017–2021).

Ethical approval

The ProcompNurse project received an ethical approval from the University of Turku (Statement 62/2017, 11.12.2017).

CRedit authorship contribution statement

Salminen Leena: Conceptualization, Methodology, Investigation, Resources, Writing - original draft, Visualization, Project administration, Funding acquisition.

Tuukkanen Minna: Investigation, Resources, Writing - original draft, Visualization.

Clever Katharina: Investigation, Resources, Writing - review & editing.

Fuster Pilar: Investigation, Resources, Writing - review & editing.

Kelly Mary: Investigation, Resources, Writing - review & editing.

Kiele Viktorija: Investigation, Resources, Writing - review & editing.

Koskinen Sanna: Conceptualization, Methodology, Software, Investigation, Resources, Data curation, Writing - original draft, Visualization, Funding acquisition.

Löyttyniemi Eliisa: Methodology, Software, Validation, Formal analysis, Writing - original draft, Visualization.

Sveinsdóttir Herdís: Investigation, Resources, Writing - review & editing.

Leino-Kilpi Helena: Conceptualization, Methodology, Investigation, Resources, Writing - original draft, Visualization, Supervision, Project administration, Funding acquisition.

Declaration of competing interest

None

Acknowledgements

The authors wish to thank all the nurse students for volunteering to participate in this study and all the contact persons for providing assistance during data collection. Finally, the authors thank the

members of the ProCompNurse Consortium for their contributions.

References

- ALLEA, 2017. The European Code of Conduct for Research Integrity – Revised Edition. All European Academies. https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf (accessed 23.10.2019).
- Álvarez-Nieto, C., Richardson, J., Parra-Anguita, G., Linares-Abad, M., Huss, N., Grande-Gascón, L., Grose, J., Huynen, M., López-Medina, I.M., 2018. Developing digital educational materials for nursing and sustainability: the results of an observational study. *Nurse Educ. Today* 60, 139–146.
- Baumert, J., Kunter, M., Blum, W., Brunner, M., Voss, T., Jordan, A., Klusmann, U., Krauss, S., Neubrand, M., Tsai, Y., 2010. Teachers' mathematical knowledge, cognitive activation in the classroom, and student progress. *Am. Educ. Res. J.* 47 (1), 133–180.
- Berland, A., Capone, K., Etcher, L., Ewing, H., Keating, S., Chickering, M., 2020. Open education resources to support the WHO nurse educator core competencies. *Int. Nurs. Rev.* 67 (2), 282–287.
- Bono-Neri, F., 2019. Pedagogical nursing practice: redefining nursing practice for the academic nurse educator. *Nurse Educ. Pract.* 37, 105–108.
- Bundgesetzblatt, 2017. Gesetz zur Reform der pflegebetuete (Pflegeberufereformgesetz – PfIBReG). https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBI&jumpTo=bgbl117s2581.pdf#_bgbl_%2F%2F%5B%40attr_id%3D%27bgbl117s2581.pdf%27%5D_1588243377725 (accessed 3.5.2020).
- David, A.S., Gross, J., Mohammed, A.S., Ninnoni, J.P.K., 2019. Experiences and perceptions of the theory-practice gap in nursing in a resource-constrained setting: a qualitative description study. *Nursing Open* 6 (1), 72–83.
- DeVellis, R., 2017. *Scale Development Theory and Applications*, 4th ed. Sage Publications, California, pp. 122–129.
- Directive 2005/36/EC. Directive 2005/36/EC of the European parliament and of the council. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005L0036&from=EN> (accessed 30.10.2019).
- Directive 2013/55/EU. Directive 2013/55/EU of the European parliament and of the council. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0055&from=FI> (accessed 30.10.2019).
- European Commission, 2017a. Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a Renewed EU Agenda for Higher Education. Brussels, 30.5.2017 COM (2017) 247 Final.
- European Commission, 2017b. State of health in the EU companion report 2017. https://ec.europa.eu/health/sites/health/files/state/docs/2017_companion_en.pdf (accessed 23.3.2020).
- Flinkman, M., Leino-Kilpi, H., Numminen, O., Jeon, Y., Kuokkanen, L., Meretoja, R., 2017. Nurse Competence Scale: a systematic and psychometric review. *J. Adv. Nurs.* 73 (5), 1035–1050.
- Fowler, A., Baker, M., Geraghty, S., 2017. Is faculty practice valuable? The experience of Western Australian nursing and midwifery academics undertaking faculty clinical practice – a discussion paper. *Nurse Educ. Pract.* 26, 91–95.
- Heikkilä, A., Kwiecień-Jaguś, K., Hupli, M., Kero, J., Katajisto, J., Salminen, L., Leino-Kilpi, H., 2019. Polish and Finnish nursing students' attitudes, knowledge and skills related to research utilization. *Medycyna Ogólna i Nauki o Zdrowiu* 25 (3), 181–186.
- Humar, L., Sansoni, J., 2017. Bologna process and basic nursing education in 21 European countries. *Annali di Igiene, Medicina Preventiva e di Comunità* 29, 561–571.
- Järvinen, T., Eklöf, N., Salminen, L., 2018. Factors related to nursing students' readiness to enter working life – a scoping literature review. *Nurse Educ. Pract.* 29, 191–199.
- Kajander-Unkuri, S., Salminen, L., Saarikoski, M., Suhonen, R., Leino-Kilpi, H., 2013. Competence areas of nursing students in Europe. *Nurse Educ. Today* 33 (6), 625–632.
- Kajander-Unkuri, S., Leino-Kilpi, H., Katajisto, J., Meretoja, R., Räisänen, A., Saarikoski, M., Salminen, L., Suhonen, R., 2016. Congruence between graduating nursing students' self-assessments and mentors' assessments of students' nurse competence. *Collegian* 23 (3), 303–312.
- Kiekkas, P., Michalopoulos, E., Igoumenidis, M., Michalopoulos, A., Stefanopoulos, N., 2019. Factors associated with self-reported competence of graduating nursing students. *Collegian* 26 (2), 267–272.
- Koivula, M., Tarkka, M.-T., Simonen, M., Katajisto, J., Salminen, L., 2011. Research utilisation among nursing educators in Finland: a national survey. *Nurse Educ. Today* 31 (1), 24–30.
- Kuivila, H.-M., Mikkonen, K., Sjögren, T., Koivula, M., Koskimäki, M., Männistö, M., Lukkarila, P., Kääriäinen, M., 2020. Health science student teachers' perceptions of teacher competence: a qualitative study. *Nurse Educ. Today* 84, 104210.
- Labrague, L., McEnroe-Petite, D., D'Souza, M., Hammad, K., Hayundi, J., 2020. Nursing faculty teaching characteristics as perceived by nursing students: an integrative review. *Scand. J. Caring Sci.* 34 (1), 23–33.
- Lahtinen, P., Leino-Kilpi, H., Salminen, L., 2014. Nursing education in the European higher education area – variations in implementation. *Nurse Educ. Today* 34 (5), 680–688.
- Lake, M.A., 2020. What we know so far: COVID-19 current clinical knowledge and research. *Clinical Medicine (Lond)* 20 (2), 124–127.
- Meretoja, R., Isoaho, H., Leino-Kilpi, H., 2004. Nursing competence scale: development and psychometric testing. *J. Adv. Nurs.* 47 (2), 124–133.
- Mikkonen, K., Ojala, T., Sjögren, T., Piirainen, A., Koskinen, C., Koskinen, M., Koivula, M., Sormunen, M., Saaranen, T., Salminen, L., Koskimäki, M., Ruotsalainen, H., Lähteenmäki, M.-L., Wallin, O., Mäki-Hakola, H., Kääriäinen, M., 2018. Competence areas of health science educators – a systematic review of quantitative studies. *Nurse Educ. Today* 70, 77–86.
- Mikkonen, K., Koskinen, M., Koskinen, C., Koivula, M., Koskimäki, M., Lähteenmäki, M.-L., Mäki-Hakola, H., Wallin, O., Sjögren, T., Salminen, L., Sormunen, M., Saaranen, T., Kuivila, H.-M., Kääriäinen, M., 2019. Qualitative study of social and healthcare educators' perceptions of their competence in education. *Health & Social Care in the Community* 27 (6), 1555–1563.
- National League for Nursing (NLN), 2019a. Nurse Educator Core Competency. <http://www.nln.org/professional-development-programs/competencies-for-nursing-education/nurse-educator-core-competency> (accessed 15.10.2019).
- National League for Nursing (NLN), 2019b. National League for Nursing, Certified Nurse Educator (CNE®), 2019 Candidate Handbook, Academic Nurse Educator Certification Program. [http://www.nln.org/docs/default-source/default-document-library/download-the-certified-nurse-educator-\(cne\)-examination-candidate-handbook-\(pdf\).pdf?sfvrsn=0](http://www.nln.org/docs/default-source/default-document-library/download-the-certified-nurse-educator-(cne)-examination-candidate-handbook-(pdf).pdf?sfvrsn=0) (accessed 30.3.2020).
- Oerman, M.H., 2017. Student evaluations of teaching. There is more to course evaluations than student ratings. *Nurse Educ.* 42 (2), 55–56.
- Oprescu, F., McAllister, M., Duncan, D., Jones, C., 2017. Professional development needs of nurse educators. An Australian case study. *Nurse Educ. Pract.* 27, 165–168.
- Order of Nursing and Midwifery education direction, 2015, updated 2020. Slaugos studijų krypties aprašas. https://www.skvc.lt/uploads/documents/files/Kokyb%C4%97s%20uoc5%betikrinimas/krypciu_aprasai/Slaugos_krypties_aprasas.pdf (accessed 9.4.2020).
- Pennbrant, S., 2016. Determination of the concepts “profession” and “role” in relation to “nurse educator”. *J. Prof. Nurs.* 32 (6), 430–438.
- Regulation EU 2016/679. Regulation (EU) 2016/679 of the European parliament and of the council. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=FI> (accessed 30.11.2019).
- Salminen, L., 2000. The Portrait of Nurse Teacher – Requirements for Teachers Evaluated Academic doctoral dissertation. *Annales Universitatis Turkuensis, Serie C, Part 158*. University of Turku, Turku (Original in Finnish, abstract in English).
- Salminen, L., Melender, H.-L., Leino-Kilpi, H., 2009. The competence of nurse teacher students. *International Journal of Nursing Education Scholarship* 6 (1) (article 35).
- Salminen, L., Stolt, M., Saarikoski, M., Suikkala, A., Vaartio, H., Leino-Kilpi, H., 2010. Future challenges for nursing education—a European perspective. *Nurse Educ. Today* 30 (3), 233–238.
- Salminen, L., Stolt, M., Koskinen, S., Katajisto, J., Leino-Kilpi, H., 2013. The competence and the cooperation of nurse educators. *Nurse Educ. Today* 33 (11), 1376–1381.
- Shustack, L., 2020. Integrating Google Earth in community health nursing courses preparing globally aware nurses. *Nurse Educ.* 45 (2), E11–E12.
- Sousa, V.D., Rojjansnirat, W., 2011. Translation, adaptation validation of instruments or scales for use in cross-cultural health care research: a clear and user friendly guideline. *J. Eval. Clin. Pract.* 17 (2), 268–274.
- Teoh, Y.T.E., Pua, L.H., Chan, M.F., 2013. Lost in transition—a review of qualitative literature of newly qualified registered nurses' experiences in their transition to practice journey. *Nurse Educ. Today* 33 (2), 143–147.
- Thompson, C., Aitken, L., Doran, D., Dowding, D., 2013. An agenda for clinical decision making and judgement in nursing research and education. *Int. J. Nurs. Stud.* 50 (12), 1720–1726.
- Universities of Applied Sciences Act 2014. 932/2014. (Amendments up to 563/2016 included). <https://finlex.fi/fi/laki/ajantasa/2014/20140932> (accessed 8.4.2020).
- Uttl, B., White, C.A., Wong Conzales, D., 2017. Meta-analysis of faculty's teaching effectiveness: student evaluation of teaching ratings and student learning are not related. *Stud. Educ. Eval.* 54, 22–42.
- World Health Organization (WHO), 2016. Nurse Educator Core Competencies. WHO Document Production Services, Geneva, Switzerland. https://www.who.int/hrh/nursing_midwifery/nurse_educator050416.pdf (accessed 15.10.2019).
- Zabalegui, A., Cabrera, E., 2009. New nursing education structure in Spain. *Nurse Educ. Today* 29 (5), 500–504.
- Zlatanovic, T., Havnes, A., Mausethagen, S., 2017. A research review of nurse educators' competencies. *Vocat. Learn.* 10 (2), 201–233.