



## Research article

# Professional competence, personal occupational well-being, and mental workload of nurse educators – A cross-sectional study in four European countries

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## ABSTRACT

**Background:** Nurse educators need a high level of professional competence to educate future health care professionals. Professional competence supports occupational well-being whilst high mental workload can undermine it. There is little existing research into nurse educators' professional competence, occupational well-being, mental workload, and the relationships between them, particularly in the European context.

**Objectives:** To describe the professional competence, personal occupational well-being, and mental workload of nurse educators in four European countries, and to explore how the professional competence and mental workload of nurse educators relate to their personal occupational well-being.

**Design:** Cross-sectional study design with quantitative survey data.

**Setting:** Nurse educators from Finland, Spain, Slovakia, and Malta.

**Methods:** The data were collected from 302 nurse educators through an online questionnaire which used the Health and Social Care Educator's Competence (HeSoEduCo) instrument. This contains 43 items which measure areas of professional competence. Statistical analysis involved descriptive and multivariate analysis.

**Results:** Nurse educators self-assessed their overall professional competence as high. Competence in evidence-based practice was assessed as the highest whilst cultural competence was perceived to be the lowest of the six competence areas. Nurse educators perceived their levels of personal occupational well-being and the balance of mental workload as moderate. However, these levels varied between the four countries. Professional competence, more specifically administrative and curriculum competence, and a balanced mental workload were positively related to personal occupational well-being.

**Conclusions:** The educators who perceive themselves to have very good professional competence and a balanced mental workload are more likely to report high occupational well-being. The findings suggest that nurse educators' cultural competence needs to be strengthened and intervention research is needed to determine ways of reducing mental workload and increasing the occupational well-being of nurse educators.

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## 1. Background

Nurse educators play an important role in educating future health care professionals to address future health care needs. The quality of that educational experience relies on the professional competence of nurse educators (Mikkonen et al., 2018; World Health Organization [WHO], 2016, 2021). Ongoing and future challenges and changes in the health care sector and education including an aging population, digitalization, globalization, pandemics, heavy workload, and staff shortage, are challenging the work and professional competence of nurse educators in Europe and worldwide (WHO, 2021; Howard et al., 2022; Jarosinski et al., 2022; Mikkonen et al., 2018). The mental workload of nurse educators is high, the main stressors being organisation and management of the work, time pressure, and the uneven distribution of work over an academic year (Rinne et al., 2022; Singh et al., 2020). When considering work-related problems and challenges, it is important to examine the competence of educators and their occupational well-being in respect of perceived workload balance (Saaranen et al., 2015).

In 2016 WHO published a framework of core competencies for nurse educators to provide a clear outline of performance expectations of nurse educators through eight core competencies. Nurse educator competence has also been defined in previous studies (e.g. Mikkonen et al., 2022; Salminen et al., 2013, 2021; Satoh et al., 2020; Zlatanovic et al., 2017), and there are existing instruments for measuring the professional competence of nurse educators from different perspectives (Lemetti et al., 2023). Educators need competence on pedagogy focusing on adult education and learning, monitoring and evaluating, curriculum work and development, subject knowledge and clinical practice (Mikkonen et al., 2018, 2020; Salminen et al., 2013, 2021; Satoh et al., 2020; WHO, 2016; Zlatanovic et al., 2017). Educators also need digital competence to adapt to constantly changing learning environments (Zlatanovic et al., 2017; Mikkonen et al., 2018, 2020; Pajari et al., 2022). Collaborative situations require collaboration and networking competence (WHO, 2016; Mikkonen et al., 2020; Satoh et al., 2020), collegiality (Koskenranta et al., 2022), cultural and linguistic competence, and ethical competence in teaching-related decision-making (Burns, 2020; Erkkilä et al., 2023; Mikkonen et al., 2018, 2019, 2020; Satoh et al., 2020; WHO, 2016). Educators also need the competence to mentor students in their own competence development as future nurses (Mikkonen et al., 2020; Salminen et al., 2021), facilitate learning (Satoh et al., 2020) and promote critical thinking in nursing students (Dekker-Groen et al., 2011). In addition, educators should be competent to utilise and conduct research (Mikkonen et al., 2018; Salminen et al., 2021; Satoh et al., 2020; WHO, 2016; Zlatanovic et al., 2017).

Whilst autonomy contributes to educators' occupational well-being (see Arian et al., 2018), high workloads challenge their work-life balance and can cause increased risk of emotional exhaustion and burnout (Singh et al., 2020). This reinforces the need for educators to develop competence in leadership, management, and self-management (Mikkonen et al., 2018, 2020; WHO, 2016; Zlatanovic et al., 2017) and in promoting occupational well-being (Mikkonen et al., 2019).

There is some evidence that educator's professional competence is positively related to occupational well-being (Laine et al., 2018; Saaranen et al., 2007) whilst experiencing high mental workload can weaken the experience of occupational well-being (Singh et al., 2020). Professional competence can be seen as both an aspect of occupational well-being (Hyvärinen et al., 2017; Laine et al., 2018; Saaranen et al., 2007) and a resource, if it is of a sufficient level in relation to workload (Saaranen et al., 2015). Several factors of professional competence, such as field- (or area)-specific competence, as well as adequate education and continuing education opportunities, utilization of own competence, and opportunities for working in health care practice, contribute to occupational well-being. (Hyvärinen et al., 2017; Saaranen et al., 2007).

Professional competence (Salminen et al., 2021) and minimum education requirements for nurse educators vary across Europe (Campos Silva et al., 2022). There is limited research into the professional

competence of nurse educators within Europe (e.g. Salminen et al., 2021), and even less into the relationship between professional competence, mental workload, and occupational well-being (see Laine et al., 2018; Lauermaann and König, 2016; Xu et al., 2022). The objective of this study was to describe the professional competence, personal occupational well-being, and mental workload of nurse educators in four European countries, and to explore how the professional competence and mental workload of nurse educators relate to their personal occupational well-being. The research questions were:

1. What is the self-evaluated level of professional competence, personal occupational well-being, and mental workload of nurse educators?
2. How do the professional competence and mental workload of nurse educators relate to their personal occupational well-being?

## 2. Methods

### 2.1. Design

This was a cross-sectional study which used an online questionnaire survey to gather data from four European countries as part of a larger research and development project. The STROBE Checklists (2023) were followed in reporting the results.

### 2.2. Instrument

This study uses the Health and Social Care Educator's Competence (HeSoEduCo) self-assessment instrument (43 items: Likert 1–4; 1 = Fully disagree, 2 = disagree to some extent, 3 = agree to some extent, 4 = fully agree; Mikkonen et al., 2020), along with demographic factors (nursing education and qualification, clinical nursing experience, educational training, highest level of education, pedagogical education, continuous education, teaching experience) and items concerning the level of personal occupational well-being (1 item; 0–5; 0 = very poor to 5 = very good) and balance of mental workload (1 item; Likert 1–5; 1 = totally disagree to 5 = totally agree; Saaranen et al., 2015; Vauhkonen et al., 2023). The HeSoEduCo is a validated and relatively new instrument and examines several current nurse educator's competence needs (Mikkonen et al., 2020, 2022). The instrument had previously been translated into English (Mikkonen et al., 2020). For this study the instrument was forward translated into Spanish and Slovak, after which it was back-translated into English for comparison. The instrument was pre-tested in each of the four countries, after which minor changes to the wording were made. The guidelines by Sousa and Rojjanasrirat (2011) were applied in the translation process. The pre-test data was included in the analysis of the main research data set.

### 2.3. Data and data collection

The study sample consisted of nurse educators from Finland, Slovakia, Spain, and Malta ( $N = 1163$ ) and were selected based on a European nomenclature of territorial units for statistics (NUTS) classification (Eurostat, 2022). Data were gathered from Nursing education organisations within the basic regions of NUTS 2 in Finland and Slovakia and NUTS 1 in Spain. Due to its size, Malta was sampled at the whole-country level.

This study concerns nurse educators who teach undergraduate nursing students in the educational institutions for both the theoretical and practical components of nursing curriculum (WHO, 2016). In Finland, nurse educators must have a master's degree from either a university or a university of applied science, with a focus on health sciences and, separately or as part of the degree, pedagogical studies. In Slovakia the requirement is a master's degree in health science, whilst in Malta it is a master's degree in health sciences, social sciences, or pedagogy. In Spain, a doctoral degree focusing on health science is required (Campos Silva et al., 2022).

Data were gathered between May 2021 and February 2022 in each country through an online questionnaire (RedCap) which was emailed to contact persons at the nursing educational institutions, who forwarded the questionnaire to the nurse educators, along with an information sheet and privacy notice. Three reminders were sent. Altogether 302 educators participated in the study: Finland 112, Spain 115, Slovakia 54, and Malta 21. The overall participation rate was 26 %, but the response rate for each country varied (Finland 29 %, Spain 19 %, Slovakia 47 %, Malta 56 %).

## 2.4. Analysis

Data were analysed using R version 4.0.2 (R Core Team, 2023). Descriptive analysis was used to describe demographics, level of competence, balance of mental workload, and personal occupational well-being. Exploratory factor analysis (EFA) with principal axis factoring extraction and varimax rotation were performed to form

unifying dimensions from the 43 Likert-scaled items for nurse educators' professional competence. Kaiser-Meyer-Olkin (KMO): 0.898 and Bartlett's Test of Sphericity:  $p < .001$ , confirmed that the sampling adequacy and that the correlation matrix were suitable for factor analysis. Based on EFA, the original eight sum variable in the HeSoEduCo instrument were replaced by six sum variables, formed and named as follows: *competence in evidence-based practice*, *pedagogical competence in teaching and guidance*, *administrative and curriculum competence*, *education technology competence*, *networking and social competence*, and *cultural competence*. The formed factor structure was confirmed through Cronbach's alpha reliability analysis (0.79–0.87). Likert scale (1–4) items of competencies were summarised as 1–2 = disagree, 3–4 = agree, to facilitate reporting of the results.

Differences between countries were examined using the Kruskal-Wallis test, and pairwise comparison was based on Dunn's z-test. Nonparametric tests were chosen because the size of groups varied and smaller groups were not normally distributed based on a visual

**Table 1**

The competence of nurse educators in all participating countries (mean; scale 1–4, standard deviation, percentages).

	Mean SD	Disagree %	Agree %
Total competence scale ( $n = 243$ )	3.38 ± 0.35		
1. Competence in evidence-based practice ( $n = 287$ , $\alpha = 0.87$ )	3.54 ± 0.41		
1.1 Utilizing evidence-based knowledge		2.3	97.6
1.2 Ability to explain the importance of evidence-based practice in social and health care		2.7	97.4
1.3 Ability to critically evaluate the validity of research		4.0	95.9
1.4 Ability to identify the process of evidence-based practice		3.7	96.3
1.5 Ability to search research evidence		4.0	96.0
1.6 Ability to guide students in finding the best possible knowledge for decision making		4.0	95.9
1.7 Continuously following scientific publications to develop competence		9.6	90.3
1.8 Ability to produce scientific knowledge		11.6	88.4
2. Pedagogical competence in teaching and guidance ( $n = 281$ , $\alpha = 0.86$ )	3.50 ± 0.39		
2.1 Acting accordance with ethical principles			100.0
2.2 Ability to integrate theoretical knowledge into practice in teaching		1.3	98.6
2.3 Ability to interactively collaborate with students during teaching and supervision		3.0	97.0
2.4 Ability to motivate students to strive for continuous professional development		2.7	97.3
2.5 Knowing how to provide constructive feedback on students' learning and competence		3.3	96.6
2.6 Ability to evaluate students' learning and competence based on evaluation criteria		3.6	96.4
2.7 Using student-centered methods in teaching or guidance		4.3	95.7
2.8 Ability to guide students in different stages of their learning process		4.3	95.7
2.9 Ability to collaborate with mentors of students completing clinical or on-the-job learning placements		5.3	94.6
2.10 Knowing how to support clinical mentors in challenging mentoring situations		10.1	90.0
2.11 Knowing how to individualize teaching and guiding		12.6	87.4
2.12 Knowing pedagogical foundations of collaborative learning		16.2	83.8
3. Administrative and curriculum competence ( $n = 288$ , $\alpha = 0.87$ )	3.45 ± 0.46		
3.1 Knowing the responsibilities assigned by the organisation		2.0	98.0
3.2 Knowing the curriculum of the degree program		2.7	97.4
3.3 Adapting to rapid changes in educators' work		6.0	94.0
3.4 Ability to manage work (i.e. schedule, priorities, tasks)		7.9	92.0
3.5 Competence in managing tasks and leading people		6.3	93.7
3.6 Ability to adhere to the principles of competence identification and recognition		7.3	92.7
3.7 Ability to develop the curriculum		12.0	88.0
3.8 Knowing the legislation and guidelines relating to the work of educators		16.2	83.7
3.9 Ability to complete financial tasks related to educators' work		18.0	82.0
4. Education technology competence ( $n = 295$ , $\alpha = 0.87$ )	3.15 ± 0.57		
4.1 Ability to use a variety of tools for collaborative work and interaction in virtual learning		10.0	90.0
4.2 Ability to manage communication channels		12.1	87.9
4.3 Knowing the role of educator in virtual teaching		13.0	87.0
4.4 Ability to design virtual learning that promotes students' collaborative building of knowledge		23.6	76.4
4.5 Knowing how to identify students' needs for guidance in virtual teaching		27.4	72.6
5. Networking and social competence ( $n = 291$ , $\alpha = 0.79$ )	3.16 ± 0.59		
5.1 Ability to collaborate with various organisations		16.3	83.7
5.2 Ability to guide interprofessional student groups through clinical or on-the-job learning placements		16.6	83.3
5.3 Knowing how to utilise diverse opportunities for working life cooperation		15.1	84.8
5.4 Competence in teaching interprofessional student groups		20.8	79.2
5.5 Knowing how to exert social influence		28.5	71.4
6. Cultural competence ( $n = 295$ , $\alpha = 0.82$ )	3.11 ± 0.59		
6.1 Ability to treat culturally and linguistically diverse students equally		6.3	93.6
6.2 Ability to identify cultural differences in students' learning		22.7	77.3
6.3 Knowing how to guide culturally and linguistically diverse students		22.8	77.1
6.4 Knowing how to collaborate internationally		35.3	64.7

Note:  $\alpha$  = Cronbach's alpha, SD = standard deviation, % = percentages, n for individual items 294–302.

examination of the histograms. The relationships of competence and the balance of mental workload to personal occupational well-being were analysed using multiple regression analysis. The assumption related to regression analysis was fulfilled based on model diagnostics (linearity, no multicollinearity, homoscedasticity, and normality of residuals). Country, age, work experience as an educator, attendance at continuous education courses, and highest education level were controlled in the models. The statistical significance level was  $\alpha \leq 0.05$ . Missing data were addressed by listwise deletion method (Agresti, 2015).

### 2.5. Ethical considerations

An ethical statement was issued by the Ethics Committee for Human Sciences at the University of Turku (5/2021, 16.02.2021). Participation in this study was based on informed consent. Permission to conduct the study was obtained from every participating education organisation. This study was carried out in accordance with the Declaration of Helsinki and General Data Protection Regulation (GDPR 2016/679, n.d.) was followed at every stage of the study.

## 3. Results

### 3.1. Nurse educators' demographics

The mean age of educators was 48 years ( $\pm 9.27$ ) ranging from 24 to 67 years. Most educators had a nursing degree (98 %), and a nursing qualification (96 %). Educators had an average of 15 years' ( $\pm 9.71$ ) clinical nursing experience and had worked as nurse educators for an average of 13 years ( $\pm 9.39$ ). Most had completed postgraduate education, with 45 % having a doctoral degree, 46 % having a master's degree, 6 % having a graduate diploma, and 3 % of educators had no postgraduate qualification. About three-quarters (73 %) had studied pedagogical studies and 82 % had attended continuous education courses after graduation.

### 3.2. Professional competence levels of nurse educators

Educators assessed their overall professional competence as high (Mean 3.38,  $\pm 0.35$ ). Of the competence areas, educators rated their competence in evidence-based practice highest (Mean 3.54,  $\pm 0.41$ ). A majority of educators evaluated that they can explain the importance of evidence-based practice (97 %) and that they utilise evidence-based knowledge in their teaching (98 %). Pedagogical competence was also self-evaluated as high (Mean 3.50,  $\pm 0.39$ ). All educators (100 %) experienced that they act according to ethical principles and nearly all evaluated they can integrate theoretical knowledge into practice in teaching (99 %) (Table 1).

In terms of administrative and curriculum competence, educators

knew their responsibilities as assigned by their organisation (98 %), knew the curriculum they teach (97 %), could manage their work (92 %), and felt competent in managing tasks and leading people (94 %) and adapted to rapid changes (94 %). In terms of education technology competence, most of the educators had ability to use a variety of tools for virtual learning (90 %) and managed communication channels (88 %). However, 24 % of educators did not have the ability to design virtual learning that promotes students to build knowledge collaboratively, and 27 % did not know how to identify students' needs for guidance in virtual teaching (Table 1).

Regarding networking and social competence, over four fifths of educators felt ability to collaborate with various organisations (84 %) and knew how to utilise diverse opportunities in working life cooperation (85 %). Over one fifth of educators (21 %) did not have adequate competence in teaching interprofessional student groups and 29 % did not know how to exert social influence. Cultural competence was the lowest evaluated area of competence (Mean 3.11,  $\pm 0.59$ ). Most of the educators (94 %) had ability to treat culturally and linguistically diverse students equally, but only about three quarters (77 %) knew how to guide them and 35 % of educators did not know how to collaborate internationally (Table 1).

The results for Slovakia were notably different to those for the other three countries, in several key areas of competence (Table 2). Further pairwise comparisons using Dunn's z-test revealed that educators in Finland and Spain evaluated their competence in evidence-based practice higher than their colleagues in Slovakia ( $p < .05$ ). Slovakian educators evaluated their pedagogical competence higher than educators in Spain ( $p < .001$ ), Finland, and Malta ( $p < .05$ ), administrative and curriculum competence higher than the educators in Finland, Spain and Malta ( $p < .01$ ), and networking and social competence higher than Finnish educators ( $p < .01$ ).

### 3.3. The level of personal occupational well-being and mental workload

Results for personal occupational well-being were on average  $3.41 \pm 1.08$ , and for the balance of mental workload  $3.23 \pm 1.21$ . Experience varied by country (Table 3). Pairwise comparisons using Dunn's z-test revealed that in Finland personal occupational well-being was higher than in Spain ( $p < .05$ ), Slovakia ( $p < .05$ ), and Malta ( $p < .001$ ). Spanish educators considered their occupational well-being to be higher than their Maltese counterparts ( $p < .05$ ). Mental workload was perceived to be more balanced in Finland than in Slovakia ( $p < .05$ ).

### 3.4. Professional competence and mental workload of nurse educators in relation to personal occupational well-being

In the first model total competence scale and balance of the mental workload were related to personal occupational well-being when

**Table 2**  
Competence of nurse educators in four countries.

Variables	Mean SD				p-Value <sup>a</sup>
	Finland (n = 100–112)	Spain (n = 84–114)	Slovakia (n = 45–52)	Malta (n = 14–20)	
Total competence	3.37 $\pm$ 0.32	3.36 $\pm$ 0.38	3.48 $\pm$ 0.36	3.28 $\pm$ 0.31	0.093
1. Competence in evidence-based practice	3.61 $\pm$ 0.34	3.56 $\pm$ 0.43	3.37 $\pm$ 0.46	3.45 $\pm$ 0.41	<b>0.005</b>
2. Pedagogical competence in teaching and guidance	3.52 $\pm$ 0.36	3.43 $\pm$ 0.39	3.67 $\pm$ 0.38	3.36 $\pm$ 0.40	<b>&lt;0.001</b>
3. Administrative and curriculum competence	3.40 $\pm$ 0.47	3.45 $\pm$ 0.42	3.67 $\pm$ 0.40	3.19 $\pm$ 0.55	<b>&lt;0.001</b>
4. Education technology competence	3.19 $\pm$ 0.53	3.14 $\pm$ 0.58	3.19 $\pm$ 0.56	2.91 $\pm$ 0.74	0.457
5. Networking and social competence	3.02 $\pm$ 0.61	3.22 $\pm$ 0.55	3.36 $\pm$ 0.60	3.11 $\pm$ 0.50	<b>0.002</b>
6. Cultural competence	3.13 $\pm$ 0.57	3.06 $\pm$ 0.62	3.14 $\pm$ 0.59	3.16 $\pm$ 0.60	0.695

Note: Mean (scale 1–4), SD = standard deviation, **significant p-value < 0.05**.

<sup>a</sup> Kruskal-Wallis test.

**Table 3**

Personal occupational well-being and the balance of mental workload of educators in four countries.

Variable	Mean SD	Mean SD				p-Value <sup>c</sup>
	Total (n = 300–302)	Finland (n = 113)	Spain (n = 115–116)	Slovakia (n = 52–53)	Malta (n = 20)	
Personal occupational well-being <sup>a</sup>	3.41 ± 1.08	3.68 ± 1.04	3.36 ± 1.00	3.23 ± 1.19	2.63 ± 0.95	<0.001
Balance of mental workload <sup>b</sup>	3.23 ± 1.12	3.41 ± 1.07	3.23 ± 1.14	2.85 ± 1.17	3.20 ± 1.01	0.027

Note. SD = standard deviation, **significant p-value < 0.05.**

<sup>a</sup> Continuous scale 0–5, 0 = very poor, 5 = very good.

<sup>b</sup> Likert scale 1–5, 1 = totally disagree to 5 = totally agree.

<sup>c</sup> Kruskal-Wallis test.

**Table 4**

Professional competence and the balance of mental workload in relation to personal occupational well-being. Personal occupational well-being as dependent variable.

	$\beta$	SE B	95 % CI		p-Value
			Lower	Upper	
Model 1, R <sup>2</sup> = 0.363					
Constant	0.371	0.720	−1.048	1.790	0.607
Total competence scale	0.434	0.185	0.069	0.799	0.020
Balance of the mental workload	0.477	0.055	0.368	0.585	<0.001
Model 2, R <sup>2</sup> = 0.387					
Constant	0.874	0.810	−0.722	2.471	0.281
1. Competence in evidence-based practice	−0.099	0.189	−0.473	0.275	0.602
2. Pedagogical competence in teaching and guidance	−0.196	0.216	−0.622	0.231	0.367
3. Administrative and curriculum competence	0.484	0.182	0.126	0.843	0.008
4. Education technology competence	0.083	0.125	−0.162	0.329	0.504
5. Networking and social competence	0.193	0.123	−0.049	0.435	0.118
6. Cultural competence	−0.075	0.114	−0.299	0.150	0.513
Balance of the mental workload	0.455	0.057	0.344	0.567	<0.001

Note: R<sup>2</sup> = R-squared,  $\beta$  = unstandardized coefficient, SE = standard error, 95 % CI = 95 % confidence interval for  $\beta$ . Country, age, work experience as an educator, attend to continuous education courses, and highest education level are controlled, **significant p-value < 0.05.**

controlling for country, age, work experience as an educator, continuous education courses, and education level. The second model, which used the competence areas, showed that personal administrative and curriculum competence and balance of mental workload were only related significantly with occupational well-being. The second model explained 39 % of the variation in personal occupational well-being (Table 4).

#### 4. Discussion

Educators assessed their overall level of competence as high, and evidence-based practice as their area of highest competence. This supports the findings of several earlier studies (Mikkonen et al., 2022; Salminen et al., 2013, 2021; Satoh et al., 2020). Levels of competence in different competence areas may vary between groups of educators (Erkkilä et al., 2023; Mikkonen et al., 2022) and the educational level at which they teach (Mikkonen et al., 2022). Slovakian educators experienced their competence in evidence-based practice the lowest compared to other countries studied, but experienced their pedagogical competence, administrative and curriculum competence, and networking and social competence to be higher when compared to the other countries. This is a new finding and research to date has not considered such country-by-country differences. However, educational requirements differ between the countries studied (Campos Silva et al., 2022), so it is possible that the curriculum in different countries may enhance certain elements of competence, and that educators in different countries have different perceptions of the levels of competence required.

Cultural competence was assessed at the lowest level of the competencies suggesting cultural competence needs development, particularly international collaboration. Moderate levels of cultural competence were also found in an earlier study by Burns (2020). International collaboration is necessary in nursing education as educators often teach international student groups (Erkkilä et al., 2023). However, cultural issues are not well addressed in nurse educator education (Mikkonen et al., 2019) and this study signifies the necessity to increase cultural

competence in basic and continuing education for nurse educators (see Paric et al., 2021; Erkkilä et al., 2023). Educators' Cultural competence is fundamental to enabling students to provide culturally competent care (Ogundipe et al., 2023; Paric et al., 2021). Cultural diversity is a growing area in nursing and nursing education due to migration and the movement of both staff and students from country to country (Erkkilä et al., 2023).

Education technology competence was evaluated the second lowest level of competence areas. This study suggests that educators need such competence to guide students and their building of knowledge collaboratively using virtual teaching methods. The data for this study were collected during the COVID-19 pandemic, when virtual teaching solutions were being rapidly implemented, placing many new demands on educators (Howard et al., 2022).

Overall, educators assessed their personal occupational well-being and mental workload balance as moderate, with some variation across the four countries. Both were higher in Finland than in the other countries. A previous study using the same scales found that Finnish social and health care educators experience moderate occupational well-being but disagreed with the balance of their mental workload (Rinne et al., 2022).

In the multiple regression analysis, a positive relationship was found between professional competence and personal occupational well-being. This supports the results of previous studies which have indicated a positive relationship between professional competence and occupational well-being (Hyvärinen et al., 2017; Laine et al., 2018; Saaranen et al., 2007) and reduced levels of burnout (Lauermaann and König, 2016; Xu et al., 2022). Moreover, the significant relationship between administrative and curriculum competence and personal occupational well-being highlights the importance for educator self-efficacy, their experience of management of their own work and their competence to develop personal occupational well-being. Previous research has highlighted self-management as an area that needs further development (Smith et al., 2023).

The balance of mental workload was shown to have a strong relationship with personal occupational well-being. Arian et al. (2018) indicate that independent and self-directed work is associated with job satisfaction amongst nurse educators, and the versatility of the work is seen as an advantage. However, the excessive scope of the work can become problematic in terms of workload. The well-being of both the individual educator and the wider health care community requires that the educator's resources and workload factors are balanced with the demands of the job (Rinne et al., 2022).

Whilst the balance of mental workload was considered moderate, educators reported high levels of competence in self-management. This could indicate that the mental workload is too much to handle despite educators' competence in managing their own work and tasks and ability to adapt to rapid changes. Work organisation challenges, time pressure, and high workload and backlogs have also been identified by previous studies (Rinne et al., 2022; Vauhkonen et al., 2023). In addition, challenging interaction situations with students can increase mental workload (Howard et al., 2022) and the transition from nurse to nurse educator can be difficult, and expectations of novice nurse educators can be excessive (Brower et al., 2022; Singh et al., 2020).

The working careers of employees will lengthen in time, making it particularly important to maintain the occupational well-being of older educators. Although not specifically the subject of this research, aging of the educator workforce and shortages of nursing faculty are challenges that are being faced worldwide (WHO, 2021; Jarosinski et al., 2022). In this context, continuous professional develop should not only look to build well-recognised areas of competence such as cultural, networking, and technological competence, but also build competence in sustaining occupational well-being. These should be acknowledged as areas for development throughout both the education and working careers of nursing educators. Further, employers should offer more support to reduce nurse educators' mental workload and strain during working hours (Rinne et al., 2022).

#### 4.1. Strengths and limitations

The strengths of this study are the use of a reliable and validated instrument, pre-testing of the instrument in each participating country, and country-specific comparison. However, it also has some limitations. Competence was studied solely as self-evaluated by educators, and there is some evidence that educators rate their own competence more generously than their students or nurse mentors do (Salminen et al., 2013). This was the first international study using this instrument. Whilst highlighting the value of this study, it is also a limitation in that the instrument still requires validation internationally. The response rate varied between countries. Since the dataset from each country was small, it was not possible to reliably explore or compare country-specific demographics. Such investigations could perhaps have provided interesting country-specific comparisons and shed light on the emerging similarities and differences. In addition, it is possible that educators suffering from high workload ignored the survey. Moreover, the data were collected during the COVID-19 pandemic, and this may have affected the results. Due to these limitations, particularly the significant differences between countries, the results cannot be generalised without appropriate caution.

## 5. Conclusions and recommendations

Across the four European countries studied, nurse educators assess their overall competence level as generally high. However, the cultural competence of nurse educators needs to be strengthened. The level of occupational well-being and the balance of mental workload is moderate, but varies between the four countries studied. Those educators who perceive that they have very good professional competence, specifically administrative and curriculum competence, whilst having a balanced mental workload are more likely to report high occupational well-being.

However, educators need competence to promote their own occupational well-being, which can be enhanced through continuous professional education. Intervention research to determine ways to reduce mental workload and increase occupational well-being activities during working hours is recommended.

### CRedit authorship contribution statement

**Anneli Vauhkonen:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Writing – original draft. **Terhi Saarinen:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Software, Supervision, Writing – original draft. **Maria Cassar:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – review & editing. **Michelle Camilleri:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Writing – review & editing. **Leandra Martín-Delgado:** Formal analysis, Investigation, Methodology, Resources, Writing – review & editing. **Elaine Haycock-Stuart:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Writing – review & editing. **Andrea Solgajová:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – review & editing. **Imane Elonen:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – review & editing. **Miko Pasanen:** Data curation, Formal analysis, Investigation, Methodology, Resources, Software, Validation, Writing – review & editing. **Heli Virtanen:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – review & editing. **Leena Salminen:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Writing – review & editing.

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### Ethical review statement

The ethical review of the study was conducted by the Ethics Committee of University of Turku (Decision: 5/2021, 16.02.2021).

### Informed consent statement

An electronic informed consent was obtained from all subjects involved in the study.

### Declaration of competing interest

None.

### Data availability

The data presented in this study, excluding personal identifiers, will be available in the Finnish Social Science Data Arcieve (FSD) after all the results from the project have been published.

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