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Mentoring of nursing students – a comparative study of Japan and five European countries

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Title: Mentoring of nursing students - a comparative study of Japan and five European countries

Abstract (250 words):

Aims: This study aimed to explore mentoring competence in nursing student mentors during clinical practice by identifying different mentor profiles and connections between different competence areas among five European countries and Japan. ~~Japanese data comprised the primary analysis and European country data comprised the secondary analysis.~~

Methods: The study implemented a cross-sectional design in Finland, Italy, Lithuania, Slovenia, Spain, and Japan during 2016 and 2019. In total, 6208 mentors were invited, and 1862 participated from 58 healthcare organizations. The data was collected with survey questionnaire by including items of background questions and the Mentor Competence Instrument. K-clustering and structural equation modeling were used for data analysis.

Results: Four mentor profiles, A (43%), B (30%), C (18%), and D (9%), were identified according to the seven mentoring competence areas with high statistical significance ($p < 0.001$). Higher mentoring competence (mean >3.50) was observed among Finnish, Lithuanian and Slovenian mentors with university education in nursing, older ages, more work experience and previous education in mentoring. Lower competence (mean <2.49) was observed among Japanese and Italian mentors with diplomas in nursing, younger ages, less work experience and no previous education in mentoring.

Conclusion: Mentoring requires motivated, highly competent mentors since mentoring is a critical aspect of nursing education. Mentoring roles should be given to nurses with higher education and mentoring training. Younger, less experienced nurses without formal mentoring training may need support from senior nurses when performing mentoring roles and could also facilitate a more balanced workload between patient care and mentoring for senior nurses.

Keywords: clinical, competence, learning environment, mentoring, nursing students, nursing education, student placement

Introduction

Nursing education is frequently discussed in higher education research and development at the international level (Mamaghani et al., 2018; Raymond et al., 2018; Song & Tang, 2019). The most recent arguments focus on methods for recruiting and sustaining more nurses for work in healthcare organizations. The World Health Organization (WHO) is greatly concerned about a looming lack of nurses worldwide (WHO, 2020). Several studies have shown that nursing education, and clinical practice in particular, play an important role in preparing highly competent and motivated professionals (Fang et al., 2018; Kantek et al., 2017; Sibandze & Scafide, 2017).

According to the latest evidence, nurses worldwide face challenges comprising low satisfaction with their work, decreased wellbeing, high stress levels and low wages, causing feelings of underappreciation (Adnan, 2018; Niskala et al., 2020; Lopes et al., 2017). Nursing students already begin to experience higher stress levels with a greater percentage of turnover (i.e., nurses changing or leaving their jobs) during the final years of their nursing education (He et al., 2018; Ye et al., 2018). Educational factors are critical and must be reexamined and evaluated.

The most recent evidence showed that mentoring and colleague support is a key influential factor contributing to young graduate nurses keeping their nursing jobs (Dames, 2019; Kaihlanen et al., 2020). During their education, nursing students are already entering clinical practice to work alongside other nurses in healthcare organizations. Mentoring is fundamental for students' development of an understanding of nursing professional competence and of motivation (Kaihlanen et al., 2020; Tuomikoski et al., 2020).

In previous studies it was found that mentoring within nursing in European countries varies greatly, yet is directed by European Union (EU) regulations and guidelines contradicting the practice

(Mikkonen et al., 2019; Pramila-Savukoski et al. 2020). For example, only few countries provide compulsory mentors' education to registered nurses, who take the role of mentor by ensuring the successful clinical practice of nursing students. Nursing students are placed into clinical practice under the full supervision of registered nurses who have a mentoring responsibility (Pitkänen et al., 2018). The nursing teacher at a tertiary institution is completely removed from the learning process occurring during student clinical practice at a healthcare facility.

Contrary to Asian practices, the role of nursing teachers in the Japanese nursing education system as a clinical facilitator is essential for the learning process occurring during student clinical practice (Yang & Chao, 2018). Commonly, the clinical facilitator's task at tertiary institutions in Japan also involves managing academic duties such as teaching theoretical classes, research, and administration (Mamagani et al., 2018).

In this international comparison, we aim to examine and explore mentoring practices and the required competence of registered nurses for mentoring nursing students in clinical practice in five European countries and Japan. We believe this information can provide further guidance, instructions and collaboration areas between Europe and Japan on aspects of clinical practice and nursing student mentoring that require focus.

Background

According to EU directive 2013/55, nursing education involves at least three years (or at least 4600 hours) of theoretical education, and clinical practice which must comprise at least half of the total educational duration. In Asian countries such as Japan and Taiwan, students must have at least 3000 hours of clinical practice during the total three- to four-year-long nursing education program (Yang & Chao, 2018). Clinical practice is conducted in the clinic with authentic patients in both Europe and Asia.

European countries integrate students into clinical practice under the direct mentoring of registered nurses. Nursing teachers maintain an official connection between the tertiary institution and the healthcare organization (Mikkonen et al., 2019), and play a more passive role by holding responsibility for organizational purposes rather than actively participating in student learning during clinical practice (Mikkonen et al., 2017; Pitkänen et al., 2018).

In Japan, clinical nurse instructors collaborate closely with registered nurses to mentor nursing students during clinical practice (Yamada & Ota, 2012; Yang & Chao, 2018). The role of clinical nurse instructors is more relevant in Japan than in Europe. However, despite the more clearly defined role of nurse instructors in Asia, the challenges and lack of resources seen in Europe also exist in Asia (Yang & Chao, 2018).

For nursing students engaged in clinical practice, the mentors' role is significant for students' professional development and wellbeing (Pramila-Savukoski et al., 2019; Tuomikoski et al., 2020). Mentors need high levels of competence in professional nursing and, further, in mentoring while incorporating pedagogical factors to aptly mentor nursing students in clinical practice. Recent systematic reviews (Pramilla-Savukoski et al., 2019; Tuomikoski et al., 2020) showed that mentoring in nursing included mentors' competence in: supporting students' professional development; facilitating collaboration between a student and other mentor stakeholders; supporting students' learning; and taking strong initiative for building collaborative mentor-student relationships during clinical practice (Tuomikoski et al., 2020).

Elements comprising support of student learning include: understanding students' nursing curricula; assisting students with establishing learning outcomes; providing regular and constructive feedback; and participating in formative and summative student evaluation (Pramilla-Savukoski et al., 2019). Despite these elements, the studies presented in the abovementioned systematic review by Pramilla-Savukoski et al. (2019) showed that all mentors were not educated in mentoring outside of what they learned through their nursing education and work experiences.

Many studies have been conducted on nursing students' experiences with and perceptions of mentoring and the clinical learning environment (Antohe et al., 2016; Husebø et al., 2018; Kaihlanen et al., 2018; Mikkonen et al., 2016a). However, only a few studies examined mentors' experiences with and perceptions of mentoring nursing students (Mikkonen et al., 2016b; Pramilla-Savukoski et al., 2019; Tuomikoski et al., 2020).

Several systematic reviews found that students' experiences varied and was generally good but was highly dependent on the student-mentor relationship (Dickson et al., 2015; Husebø et al., 2018). Kaihlanen et al. (2018) reported that the quality of supervision and of the support system created in clinical practice was related to the successful transition of graduate nurses from student to work as a registered nurse. Mamaghani et al. (2018) and Mikkonen et al. (2016a) reported on more challenging experiences of nursing students with culturally and linguistically diverse backgrounds; for example, discrimination issues and learning challenges, unavailability of more diverse learning opportunities in clinical practice, the strain of being different, and even considerations of leaving nursing studies for other professions.

Previous studies examining mentors' perspectives and experiences revealed that mentors considered their competence levels high (Pramilla-Savukoski et al., 2019) and strongly emphasized the need for building mentorships with students (Tuomikoski et al. 2020). Moreover, mentors described challenges associated with having to mentor culturally and linguistically diverse students and not knowing how to treat them appropriately (Mikkonen et al., 2016b). Mentors highlighted the importance of the student's independence as a learner and of the outcome of their learning experiences in clinical practice (Mikkonen et al., 2016b), contradicting the recent study by Mikkonen et al. (2020a) which indicated the vulnerable position of the student when having to build mentor-student relationships and to influence the success of their learning during clinical practice.

In nearly all systematic reviews discussed above, a focus on collaboration between clinical practice at healthcare facilities and tertiary institutions is considered a limitation of the present reality

worldwide. Mentors assume the important responsibility of mentoring nursing students in their clinical practice, which requires them to have sufficient levels of nursing experience, motivation and, most of all, mentoring competence.

Methods

Study aim

This study aimed to explore mentors' competence in mentoring nursing students during clinical practice by identifying different mentor profiles and connections between different competence areas among five European countries and Japan.

Study design

The study was conducted according to the methodological standards of cross-sectional study in Finland, Italy, Lithuania, Slovenia, Spain, and Japan during 2016 and 2019. Data from the European countries were used for secondary analysis (authors-blinded), whereas data from Japan were used for the primary analysis.

Participants

The inclusion criteria for participation were mentors, registered nurses, responsible and/or undertaking mentoring duties with nursing students during their clinical practice. The exclusion criteria were nurse teacher educators employed by higher education institutions mentoring nursing students at the clinical practice. In total, 6208 mentors were invited from 58 inpatient and/or outpatient clinical facilities in health organizations from the six countries. Mentors were invited to participate once and received two reminders within two to three weeks from the contact person at each organization undertaking the study. The sample size in each country was predetermined using Cohen's *d* effect size value on the large effect size level (d=0.8) (Cohen, 1992) based on previous research studies on mentoring competence (Pramila-Savukoski et al., 2020). The aim of sample size was set at the level of 500 mentors in total in order to properly perform k-clustering (Wedel &

Kamakura, 2000). Moreover, in order to test the SEM model, given 100 parameters to estimate and a recommended participants: parameter ratio ranging from 10:1 to 20:1 (Kline, 2010; Schreiber et al., 2006), a sample size from 1000 to 2000 participants was necessary to test the model. The total response rate was 30%, varying between 10-30% among the countries.

Instrument

The Mentor Competence Instrument (MCI), a psychometrically validated self-assessment instrument with a Likert scale (ranging from 1 - fully disagree to 5 - fully agree), was used to measure mentors' competence. The MCI comprises seven sum variables and 43 items: workplace mentoring practice (6 items), mentor characteristics (7 items), mentor motivation (5 items), goal orientation in mentoring (6 items), reflection during mentoring (6 items), student-centered evaluation (9 items), and constructive feedback (4 items; Mikkonen et al., 2019; Tuomikoski et al., 2018). The instrument was forward-backward translated by four separate researchers of each country, according to the recommendations of scientific language translators, into six languages. The translations back into English has been examined by instrument developers (authors-blinded) to ensure the meaning of each item has not been lost after back translations. Validation of the MCI was reported for data from the five European countries by Mikkonen et al. (2020), and from Japan by Nakaoka et al. (2021). The Cronbach's alpha values for this study data varied from 0.86 to 0.94.

Data collection

Data was collected from 1862 registered nurse mentors at 58 healthcare organizations in five European countries and Japan. Mentors were invited to respond either to a paper or electronic version of a questionnaire comprising the 43 MCI items and 8 background questions (including gender, age, country of origin, work experience, education, job title, mentoring frequency, and previous education in mentoring). The data was collected via email or sealed envelope by a contact person provided by each healthcare organization to support the study. Researchers directly involved in the study had no direct contact with participants and did not directly receive participant identifying information.

Ethical issues

Permission to conduct research was requested and granted for all 58 organizations in all six participating countries according to the ethical standards of each country. In Japan, the primary research has been approved by the IRB of Osaka Prefecture University (approval number: 30-51); and for the use of secondary data, by the IRB of Osaka University (approval number: 20193). In Spain the Ethics Committee of the University of Alicante has granted ethical permission for international research with ID number: UA-2018-12-12. In Lithuania the Ethics Committee of the Lithuanain University of Health Sciences has granted ethical permission for international research with ID numbers: No. BEC-SL(B)-194 and No. BEC-SL(B)-230. There was no need for an ethical statement from the ethical committee in the rest of European countries involved in the study to conduct the research since the study did not violate physical integrity of the subjects; did not involve children under 15 years; did not involve harmful psychological or physical effects upon the participants; and did not involve a security threat towards participants (Medical Research Act 488/1999, 295/2004, 794/2010, Declaration of Helsinki 2013). The research permissions were obtained from each organization involved in the study of EU countries. Study participation was voluntary for all participants, and freedom for study withdrawal and anonymity were guaranteed. All participants received additional information about the study and provision of a questionnaire with their responses was considered consent agreement to participate in the study.

Data analysis

Data analysis was conducted using SPSS (IBM, 24v.) and Stata (StataCorp, V12.0) software. Descriptive data frequencies and comparisons among cluster groups were computed using Chi-square with categorical data and one-way analysis of variance (ANOVA) with Bonferroni correction for continuous data (Munro, 2005). K-clustering methods were used to classify mentor profiles by area of mentor competence. Several versions of mentor clustering were tested prior to determining the

four-group clustering of the profiles. The set rule was that each cluster had to score higher than 5% of the total sample. The four clusters were examined using one-way ANOVA (Rauf et al., 2012).

Furthermore, structural equation modeling (SEM) was performed to examine the theoretical model found and reported by Authors-blinded (2020) for the five European countries. The SEM model was validated using the following goodness of fit indexes: Root Mean Square Error of Approximation (RMSEA, ≤ 0.08), Standardized Root Mean Residual (SRMR, ≤ 0.08), Comparative Fit Index (CFI, ≥ 0.90), and Tucker-Lewis Index (TLI, ≥ 0.90; Kline, 2010). A coefficient of determination (CD) was calculated to identify the overall variance of the model explaining the phenomena. The statistical significance threshold was set at a p-value < 0.05 for all study analyses.

Results

Participants

Participants were distributed in this study as follows: 31% from Finland, 16% from Italy, 18% from Lithuania, 14% from Slovenia, 6% from Spain, and 15% from Japan. Among the participants: 76% were female; the most common age groups were 40-49-year-olds (34%) and 30-39-year-olds (26%); 87% had a university bachelor's degree in nursing; 90% were registered nurses; the average duration of work experience was 18 years, and 81% worked in an inpatient specialized healthcare area. Participants mentored students on a weekly (36%), monthly (23%) and yearly (30%) basis. Half of the participants (52%) had no previous education in mentoring of any kind.

Mentor competence in five European countries and Japan

This study identified four mentor profiles, A, B, C, and D, based on the seven areas of mentor competence (see Table 1). The differences between all four mentor profile competence areas and their characteristics were statistically significant ($p < 0.001$).

Profile A included the most competent mentors in all seven competence areas, with the lowest mean of 3.64 (SD 0.37) observed for workplace mentoring practices and the highest mean of 3.91 (SD 0.16)

for reflection during mentoring. Profile A comprised mainly Finnish (33%), Lithuanian (23%) and Slovenian (23%) participants and included most of the male participants (30%) compared to the other three profiles. Most Profile A mentors were 40-49 or 50-59 years old and had more work experience in years (M 20.24, SD 10.70), and 99% of Profile A mentors held a university degree. Profile A also included the highest percentage of public health nurses (7%) and managers (3%) compared to the other three profiles. Profile A had the highest percentage of mentors (59%) who had received education in mentoring.

Profile B mentors varied in competence with the lowest mean of 3.11 (SD 0.40) observed for student-centered evaluation and the highest mean of 3.59 (SD 0.34) for reflection during mentoring. Profile B comprised mainly Finnish (41%) and Lithuanian (21%) participants, most of whom were 40-49 years old and held a university degree (97%).

Mentors comprising profiles C and D presented poorer evaluations than mentors comprising profiles A and B. For Profile C mentors, the lowest mean (2.59, SD 0.50) was observed for workplace mentoring practices and the highest mean (3.00, SD 0.35) was observed for reflection during mentoring. For Profile D mentors, the lowest mean (1.80, SD 0.52) was observed for mentor motivation and the highest mean (2.35, SD 0.54) was observed for reflection during mentoring. Profile C mentors were predominantly from Japan (38%) and Italy (20%), while Profile D mentors were mainly from Japan (77%), Finland (24%) and Italy (14%).

Profiles C and D comprised primarily of female participants (C, 83%; D, 87%), and most participants were either 20-29, 30-39 or 40-49 years old. Mentors in both profiles had the least work experience in years (C, 15 years; D, 12 years). Profiles C and D had the most mentors with a vocational nursing diploma and no bachelor's degree (30% and 56%, respectively), and most mentors fitting these profiles mentored students weekly, compared to Profile A and B mentors. These profiles also

comprised the highest percentage of mentors with no previous education in mentoring (C, 61%; D, 76%).

Mentor competence areas and their connections in five European countries and Japan

The SEM model of the total sample (n = 1852) was further tested according to the evidence-based model computed and reported with the EU data presented by Authors-blinded (2020) by showing the goodness of fit with statistical significance of p-value < 0.001 ($p < 0.001$; $\chi^2 = 6035.052$); RMSEA = 0.058; SRMR = 0.070; CFI = 0.920; TLI = 0.915; CD = 0.944 (see Tables 2 and 3, and Figure 1). The following connections between mentor competence areas were identified. Characteristic area of mentor competence was associated with mentor motivation (0.85) and reflection during mentoring (0.38). Mentor motivation was associated with competence in workplace mentoring practices (0.76) and reflection during mentoring (0.48). Workplace mentoring practices were related to mentor competence in goal-orientated mentoring (0.36), which further led to competence in student-centered evaluation (0.83). Reflection during mentoring was related to competence in giving constructive feedback (0.59) and, also, to goal-orientated mentoring (0.59). All model parameters were statistically significant ($p < 0.001$).

Sensitivity analyses

Missing data and multivariate normality should be carefully managed to effectively perform SEM modeling as deleting multivariate outliers and missing data while improving SEM testing could remove useful information about cluster characteristics. Thus, in this study, we decided to keep the whole sample to perform both clustering and SEM modeling. We also managed missing data and multivariate outliers to ensure model validity, and treated the sample in order to achieve multivariate normality. Then we ran the SEM model again to determine possible differences between the re-run model and the model computed using the whole sample.

In detail, we checked for missing data characteristics in the sample and assessed multivariate normality requirements in order to perform SEM properly (Tabachnick and Fidell, 2006). Little's Missing Completely at Random (MCAR) test was used to check missing data with a rule that any data greater than 5% MCAR in each record be deleted (Graham, 2009; Little, 1988). In this study, use of Little's MCAR test demonstrated no statistical significance ($p = 0.193$; $\chi^2 = 1596.004$), providing the premise for a listwise deletion of missing data. Accordingly, missing data exceeding 5% were deleted, resulting in a sample of 1852 participants (10 records deleted; Graham, 2009).

Assessment and deletion of multivariate outliers are required to achieve multivariate normality in distribution and to properly perform multivariate statistics. Mahalanobis distances and p-values of chi-squared statistics were calculated, accounting for 43 degrees of freedom. Deletion of multivariate outliers yielded a sample of 1623 participants, and multivariate normality was demonstrated by a Mardia's kurtosis index of 1635.877, falling within the threshold value of 1935 necessary for multivariate normality (Lombardi and Pastore, 2012; Tabachnick and Fidell, 2006).

The model's fit indexes improved slightly with these sensitivity analyses. In detail, RMSEA = 0.057; SRMR = 0.063; CFI = 0.929; TLI = 0.925; and CD = 0.953. These indexes were similar to the whole sample model. Likewise, this model's parameters had the same pattern as that of the whole sample model (Table 2).

Discussion

This study aimed to explore mentor competence in mentoring nursing students during clinical practice by identifying different mentor profiles and connections between different competence areas among nurse mentors from five European countries and Japan. Four different mentor profiles were identified and analyzed for levels of mentor competence areas and for the backgrounds of mentors who fit these profiles. For the four different profiles and their associated mentoring areas, we found significantly different mentor characteristics.

Nurse educational background, varying between bachelor's degrees from a university/university of applied sciences and vocational nursing diploma colleges, influenced the mentor competence levels of the study participants. A growing change in nursing education level from diploma to university degree has been observed since the 1990s (Delaney & Piscopo, 2004). The worldwide lack of nurses has reopened discussions about whether nursing education should revert to the diploma level to accelerate the education of nurse graduates and increase the number of nurses internationally. However, according to the evidence, higher education in nursing encourages nurses to undertake continuous career development, raises nurses' personal and professional satisfaction and self-image, and creates better opportunities for job mobility and higher wages (Christiansen et al., 2018; Sultan et al., 2017).

Among study participants, most nurses with diplomas were from Japan, and Japanese nurses produced the lowest scores in mentoring competence. The EU established strict educational standards, regulated by the European Qualifications Framework (EQF), that have positively influenced nursing education since the start of the millennium (EQF, 2020). However, in Japan, the nursing career path may begin with any of several different educational options ranging from a three-year nursing college education without achieving a bachelor's degree to a nursing degree from a university (Japanese Nursing Association, 2016). Higher education in nursing is a critical factor for professional growth and leadership, and quality of patient care.

Furthermore, this study demonstrated that mentoring education was not a regular practice among the six countries. According to the results, mentors with education in mentoring gave higher self-evaluation scores for their competence in each mentoring area. The latest systematic review revealed that, commonly, mentors undertake the critical role of shaping the professional competence of future nurses despite having no mentoring education (Pramilla-Savukoski et al., 2019). Tuomikoski et al. (2020a) showed that education in mentoring significantly affected mentor competence growth and,

further, introduced the requirement that mentors receive basic education before undertaking the role of mentoring nursing students.

In this study, older and more experienced mentors presented higher competence self-evaluations, whereas younger, less experienced mentors provided lower mentoring competence self-evaluations. The support of older nurses with more work experience has proven to help younger nurses transition from student to registered nurse (Kaihlanen et al., 2013).

Profile D mentors scored the lowest in mentor motivation, yet they mentored students on a weekly basis, most frequently of all study participants. Motivation is an essential factor for mentors assuming a mentoring role, since it influences: students' wellbeing and willingness to continue in the nursing profession (Mikkonen et al., 2016a); mentors' ability to cover the gap between classroom education and clinical practice (Zohoorparvandeh et al., 2018); improvement of stress levels, reduction of loneliness, and enhancement of self-efficacy in students (Raymond & Sheppard, 2017).

Of the four profiles identified in this study, all mentors gave themselves the lowest scores for competence in workplace mentoring practices, and the highest scores for competence in reflection during mentoring. This finding support a novel view of mentoring competencies related to the role of the organizational environment in supporting mentoring and clinical learning: in order to enhance mentoring in the clinical settings, it is essential to consider the workplace and to support better integration of the mentors' role in the ward team (Mikkonen et al., 2020).

Workplace mentoring practices involve mentors' knowledge of quality requirements and criteria and of the social and healthcare systems of their country, and skills in their own tasks as a mentor and in clinical practice within their healthcare organization (Tuomikoski et al., 2018). The low score in workplace mentoring practices may be explained by the fact that more than half of study participants had no education in mentoring.

Reflection during mentoring involves elements of mentor-student dialogue about students' learning experiences and preset outcomes, mentor encouragement of student discussions about their learning process, as well as offers of empathetic acceptance and creation of a permissive and open atmosphere for these types of communications (Tuomikoski et al., 2018). Such elements of reflection have shown to motivate, orientate and encourage students, especially during their first years of studying nursing (Kol & Ince, 2018).

Moreover, in this study, we tested the evidence-based model reported by Authors-blinded (2020). The evidence-based model was found statistically significant for the total study sample. The model represents connections between mentors' individual competence and workplace interactions, such as the relationships between mentor characteristics, mentor motivation and workplace mentoring practices. Furthermore, the model encompasses the competence areas of reflection during mentoring, constructive feedback, goal-orientation and student-centered evaluation, which can be defined as mentor competence areas that support the student learning process.

Mentor characteristics and motivation were associated with mentors taking time to reflect with students, which further connected to provision of constructive feedback by the mentor. The model also showed an association with better student-centered evaluation and provided an overview of the mentoring process that could enhance students' clinical learning and competence mastery.

This study confirmed the validity of the model detected by Authors-blinded (2020) from a broader perspective by including an international sample from a non-European country. Our findings support an evidence-based view of a theoretical perspective that guides professional clinical learning and the mentoring process for nursing students.

Limitations

This study represents an international sample from five European countries and Japan. Generalization of results must be considered only for the six countries observed in the study. Additional data

collection from and comparisons of other larger international regions could offer a wider perspective on mentoring internationally. The low response rate and unbalance between sample of six countries, especially in Italy, Spain and Japan, is an additional limitation of the data analysis and reporting; but the study offers large effect outcomes regardless (Cohen's *d* effect size d=0.8 and above; Cohen, 1992). In order to enhance the validity and reliability of the study, the guidelines for reporting observational studies *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) statement has been used when conducting the research and reporting of the data (von Elm et al., 2007).

Implications for nursing education and practice

The study outcomes can be applied to nursing education by emphasizing higher education and additional career development opportunities for nurses. The mentor role is fundamental for nursing students' learning process and for their future professional development into registered nurses. Since the nurse teacher's role is distant from clinical practice, mentor competence must be guaranteed and must continually develop to sustain high quality mentoring practices. Mentors must be offered and should be required to undertake basic education in nursing student mentoring.

Conclusion

Mentoring proved to be an important competence for nurse mentors to have and maintain in each country observed in this study. Nursing student mentoring requires motivated, highly competent mentors, since mentoring is a critical aspect of nursing education. Mentoring roles should be given to nurses with higher education who are trained in mentoring. Younger, less experienced nurses may need support from senior nurses when performing mentoring roles and could also facilitate a more balanced workload, between patient care and mentoring, for senior nurses. Such support can sustain mentoring motivation for students and provide a positive attitude towards mentoring in a student-centered manner. This study could guide healthcare educational systems in the provision of effective nursing student learning during clinical practice, and could also advise healthcare organizations in

provision of an effective mentoring process for newcomer nurses (with special focus on inpatient clinical facilities).

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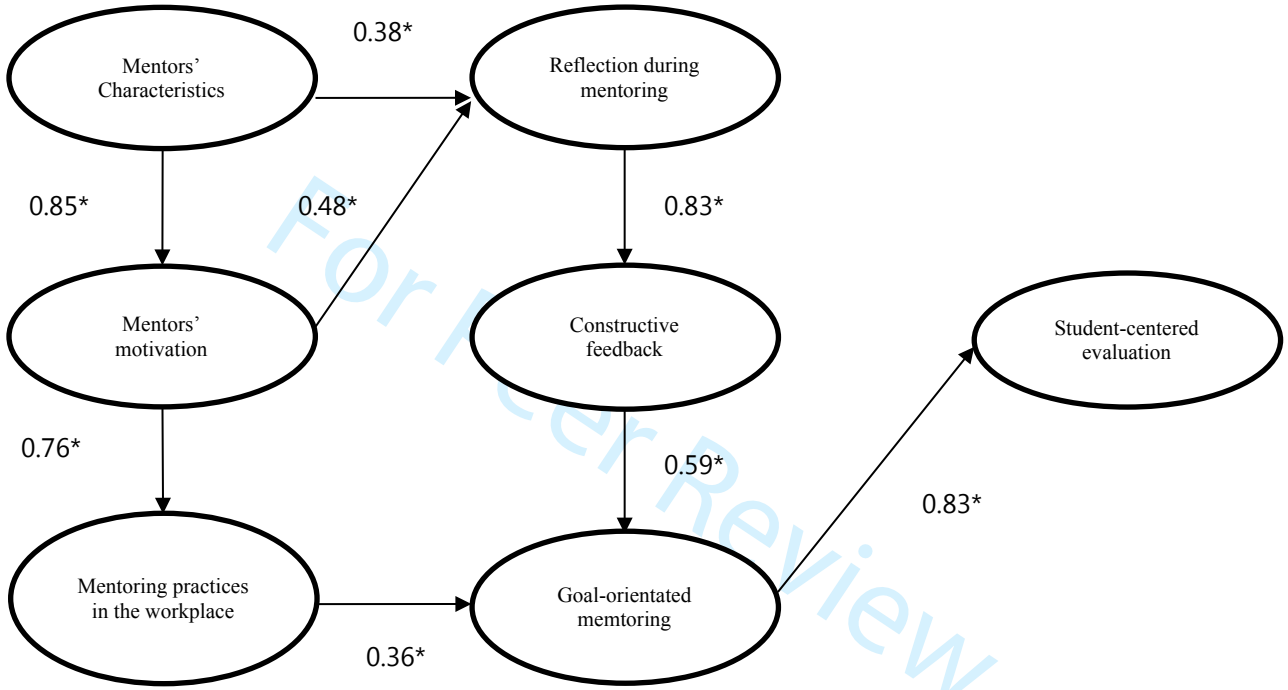

Figure 1. Estimation of SEM's parameters (n=1852).

* statistical significance <0.001

Table 1. Mentors' profiles, characteristics and mentor competence (n=1852).

	Profile A (n=794)	Profile B (n=561)	Profile C (n=335)	Profile D (n=164)	F* / χ2 **	p-value
Gender, n(%)					χ2=37.563	<0.001
Male	238 (30.0)	121 (21.6)	56 (16.7)	22 (13.4)		
Female	555 (69.9)	439 (78.3)	279 (83.3)	142 (86.6)		
Missing	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)		
Age					χ2=100.733	<0.001
20-29 years	68 (8.6)	87 (15.5)	46 (13.7)	41 (25.0)		
30-39 years	188 (23.7)	145 (25.8)	102 (30.4)	54 (32.9)		
40-49 years	263 (33.1)	189 (33.7)	135 (40.3)	51 (31.1)		
50-59 years	227 (28.6)	110 (19.6)	49 (14.6)	16 (9.8)		
60 and above years	43 (5.4)	26 (4.6)	2 (0.6)	1 (0.6)		
Missing	5 (0.6)	4 (0.7)	1 (0.3)	1 (0.6)		
Country					χ2=930.972	<0.001
Finland	263 (33.1)	230 (41.0)	80 (23.9)	3 (1.8)		
Italy	99 (12.5)	101 (18.0)	67 (20.0)	23 (14.0)		
Lithuania	183 (23.0)	119 (21.2)	30 (9.0)	2 (1.2)		
Slovenia	179 (22.5)	67 (11.9)	18 (5.4)	4 (2.4)		
Spain	65 (8.2)	26 (4.6)	13 (3.9)	5 (3.0)		
Japan	5 (0.6)	18 (3.2)	127 (37.9)	127 (77.4)		
Work experience in years (mean, SD)	20.24 (10.70)	17.23 (10.56)	15.54 (9.56)	11.80 (7.91)	F=3.264	<0.001
Education					χ2=638.899	<0.001
Graduate school or junior college	1 (0.1)	2 (0.4)	12 (3.6)	9 (5.5)		
Vocational nursing diploma college	3 (0.4)	14 (2.5)	100 (29.9)	90 (54.8)		
University / university of applied sciences	788 (99.2)	545 (97.1)	223 (66.6)	65 (39.6)		
Job title					χ2=161.528	<0.001
Registered nurse/midwife	713 (89.8)	522 (93.0)	299 (89.3)	131 (79.9)		
Public health nurse	53 (6.7)	23 (4.1)	6 (1.8)	1 (0.6)		
Manager	21 (2.6)	10 (1.8)	4 (1.2)	2 (1.2)		
Other	7 (0.9)	6 (1.1)	26 (7.8)	30 (18.3)		
Mentored last time					χ2=43.665	<0.001
Last week	275 (34.6)	171 (30.5)	143 (42.7)	82 (50.0)		
Last month	198 (24.9)	132 (23.5)	66 (19.7)	40 (24.4)		
On yearly frequency	243 (30.6)	195 (34.8)	90 (26.9)	21 (12.8)		
Less frequently	71 (8.9)	53 (9.4)	30 (9.0)	13 (7.9)		
Missing	0 (0.0)	10 (1.8)	6 (1.8)	0 (0.0)		
Education in mentoring					χ2=88.905	<0.001

Yes	468 (58.9.)	250 (44.6)	131 (39.1)	39 (23.8)		
No	326 (41.1)	311 (55.4)	203 (60.6)	124 (75.6)		
Mentor competence areas	M (SD)	M (SD)	M (SD)	M (SD)	F* / χ2 **	p-value
Mentoring practices in the workplace	3.64 (0.37)	3.12 (0.49)	2.59 (0.50)	1.90 (0.44)	F=929.180	< 0.001
Mentors' characteristics	3.81 (0.22)	3.50 (0.36)	2.91 (0.43)	2.10 (0.51)	F=1406.790	< 0.001
Mentors' motivation	3.73 (0.32)	3.37 (0.39)	2.71 (0.46)	1.80 (0.52)	F=1380.239	< 0.001
Goal-orientated mentoring	3.78 (0.27)	3.25 (0.42)	2.73 (0.40)	2.14 (0.46)	F=1242.006	< 0.001
Reflection during mentoring	3.91 (0.16)	3.59 (0.34)	3.00 (0.35)	2.35 (0.54)	F=1505.218	< 0.001
Students-centered evaluation	3.74 (0.30)	3.11 (0.40)	2.72 (0.35)	2.12 (0.44)	F=1286.781	< 0.001
Constructive feedback	3.77 (0.30)	3.27 (0.42)	2.83 (0.40)	2.11 (0.53)	F=1084.534	< 0.001

*One-way ANOVA F-test; multiple comparisons conducted with Bonferroni correction;
** Chi-square test, Fisher exact test performed if the expected frequency of cells was less than 20%.
The mean difference is significant at the $p < 0.05$ level.
Likert scale classification of mentor competence: >3.50 high competence; 2.50-3.49 moderate competence; <2.49 competence

Table 2. SEM model's parameters estimation and statistical tests in the whole sample (n=1852) and sensitivity analysis (n=1623). (z-test and p-values)

SEM model	Outcome variable	Explanatory variable	Parameter	Standard Error	z-test	p-value
Data (n=1862)	Mentors´ motivation	Mentors´ charactersitics	0.856	0.009	94.13	<0.001
	Reflection during mentoring	Mentors´motivation	0.489	0.036	13.43	<0.001
	Reflection during mentoring	Mentors´ characteristics	0.381	0.036	10.44	<0.001
	Mentoring practices in the workplace	Mentors´motivation	0.766	0.012	63.57	<0.001
	Goal-orientation	Mentoring practices in the workplace	0.366	0.021	16.72	<0.001
	Goal-orientation	Constructive feedback	0.599	0.020	29.18	<0.001
	Constructive feedback	Reflection during mentoring	0.831	0.009	84.10	<0.001
	Student-centered evaluation	Goal-orientation	0.837	0.008	94.34	<0.001
Data (n=1623)	Mentors´ motivation	Mentors´ charactersitics	0.882	0.008	108.54	<0.001
	Reflection during mentoring	Mentors´motivation	0.460	0.040	11.53	<0.001
	Reflection during mentoring	Mentors´ characteristics	0.430	0.040	10.81	<0.001
	Mentoring practices in the workplace	Mentors´motivation	0.783	0.012	66.35	<0.001
	Goal-orientation	Mentoring practices in the workplace	0.344	0.022	15.54	<0.001
	Goal-orientation	Constructive feedback	0.643	0.020	31.58	<0.001
	Constructive feedback	Reflection during mentoring	0.853	0.009	92.46	<0.001
	Student-centered evaluation	Goal-orientation	0.864	0.008	107.30	<0.001

Table 3. Model's fit indexes and Coefficient of Determination (CD) – whole sample and sensitivity analysis.

Model	Chi-square	p	RMSEA	SRMR	CFI	TLI	CD
Data (n=1852)	6035.052	<0.001	0.058	0.070	0.920	0.915	0.944
Data (n=1623)	5373.340	<0.001	0.057	0.063	0.929	0.925	0.953