

Social, health care and rehabilitation educators' competence in professional education—Empirical testing of a model

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Abstract

The social and health care educator's role in educating future professionals need to be stronger emphasised and deserves international recognition. The purpose of this study was to develop and test an empirical model of social and health care educators' competence in higher and professional education. The presented research employed a cross-sectional study design. Data were collected using HeSoEduCo-instrument from 28 educational institutions in Finland. The model was empirically tested with confirmatory factor analysis through Structural Equation Modelling that applied the Full Imputation Maximum Likelihood estimator. A total of 422 social and health care educators participated in the study. The empirical model of social and health

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care educators including eight competence areas: leadership and management, collaboration and societal, evidence-based practice, subject and curriculum, mentoring students in professional competence development, student-centred pedagogy, digital collaborative learning, and cultural and linguistic diversity. All of the connections between concepts of the empirical model were found to be statistically significant. There were strong connections between most of the identified competence concepts; however, two weak connections were found, namely, the link between competence in evidence-based practice and competence in subject and curriculum, along with the link between competence in digital collaborative learning and competence in student-centred pedagogy. The presented empirical model can help stakeholders identify which areas of social and health care educators' curricula should be further developed. The model is also relevant for improving continuous education, allowing educators to assess their competence levels and evaluating educators' performance at the organisational level.

KEYWORDS

competence, educator, health care, higher education, rehabilitation, social care, vocational education

1 | INTRODUCTION

Social and health care education is essential for preparing future professionals to guarantee high-quality, people-centred care (WHO, 2016). During the last decade, the World Health Organization (WHO) has urged the international community to develop a well-functioning, gender equal health care system that is available to all and integrates the best technological solutions with people-centred care (WHO, 2010, 2014, 2018). Recent research has largely ignored the role of social and health care educators and rather focussed on determining the effectiveness of learning approaches in diverse educational settings (Griffiths et al., 2019; Jesse, 2016; Mc Menamin et al., 2014; Palominos et al., 2019). Social and health care educators bear a significant responsibility for educating highly competent future professionals. The high attrition rates witnessed among students and graduates in social and health care educational areas (He et al., 2018; Lopes et al., 2017; WHO, 2013) highlight the importance of motivating and mentoring students towards a committed attitude of professional work and continuous learning. For instance, in a systematic review by Lopes et al., (2017), it was reported that among healthcare professionals, nurses had a highest percentage of volunteer attrition varying from 4.9% (average taken from African countries) to 44.3% (in New Zealand). World Health Organization predicted that in 2035 there would be a shortage of 12.9 million healthcare workers worldwide (WHO, 2013). According to WHO prediction, 40% of nurses will leave their position in developed countries in the next decade (WHO, 2013).

The social and health care higher education prepares Bachelor (180 ECTS, European Credit Transfer and Accumulation System) degree and Master (120 ECTS) degree students with providing them a

What is known about this topic?

- Social and health care educators bear a significant responsibility for educating highly competent future professionals.
- The high attrition rates witnessed among students and graduates in social and health care educational areas.
- Social and health care educators' roles and competence in educating future professionals need stronger emphasis and recognition on the international level.

What this paper adds?

- Social and health care educators require to have multidimensional competence areas to educate future professionals.
- Educators' competence in evidence-based practice related weakly to subject- and curriculum competence.
- Educators' competence in digital collaborative learning related weakly to student-centered pedagogy.

qualification of professional registration. In Finland, higher social and health care education is regulated by University of Applied Sciences Act (2014) which defines professional accreditation at the Bachelor degree levels in the areas of prosthetist, medical technology, paramedic, physical therapy, dental technology, podiatrist, rehabilitation counselling, midwifery, naprapathy, optician, osteopath, radiography, registered nursing, social services, dental hygiene, public health nursing, and occupational therapy. Educators in Finland need to have

or, in some cases, are recommended to have, 60 ECTS credits related to pedagogical education in health sciences, 3 to 5 years of working experiences in social or health care and educational level of at least master level in health sciences (University of Applied Science Act 932/2014). Internationally, educators in social and health care fields are required to have a certain amount of years of experience in social and health care professions, a certain level of accreditation in educational competence, and achievements in scholarship. (National League for Nursing, 2019; University of Applied Science Act 1129/2014; WHO, 2016). For example, in the United States, nurses need to have at least 3 years of working experience, a degree in nursing and postgraduate education prior to teaching in higher education (NLN, 2019). In the United Kingdom, nurses most commonly are required to have a doctoral degree in order to be able to teach at a university level, need to be registered nurses and are recommended to have education in teaching (Nursing & Midwifery Council, 2018). In order to teach at the university level commonly, a doctoral degree is also required in Spain, Ireland and Iceland (Salminen et al., 2021). In Europe, pedagogical education of social and health care educators is rarely directly required and lacks a clear description of educational competence areas (Salminen et al., 2021; WHO, 2016).

In this study, we argue that social, health care and rehabilitation educators' roles and competence in educating future professionals needs stronger emphasis and recognition on the international level. An evidence-based model is a viable approach for identifying which concepts are central to pedagogical competence and explaining the connections between these concepts. A clear representation of the diverse concepts related to social and health care educators' competence may be pivotal to developing interventions and curriculum which will ensure that educators possess the correct professional skills for educating and mentoring nursing students. Furthermore, the findings from this type of research approach may help educators plan their continuous education and professional growth in a more precise manner. Employers can use the model to evaluate educators' development and identify areas that need improvement according to the organisational strategy. This study describes the development and testing of an empirical model of social, health care and rehabilitation educators' competence in higher and professional education.

2 | BACKGROUND

Previous systematic reviews of international studies on social and health care educators' competence have found that none of the previous studies examined educators' competence as a combination of knowledge, skills and attitudes (Korppi et al., 2020; Mikkonen et al., 2018). In the qualitative inductively design by Mikkonen, Koskinen, et al., (2019), nine distinct competence areas based on the experiences of 48 social, health care and rehabilitation educators have been identified. Educators described their competence on the multidimensional level and acknowledged that there are strenuous requirements, including extensive pedagogical and theoretical knowledge, for the ability to be a successful educator. The

educators also highlighted the importance of ethical competence, along with management, organisational, innovation and development, collaboration, and cultural and linguistic skills. The educators also identified continuous professional development as a key part of their role, stating that this helps them to maintain a sufficient level of expertise (Mikkonen, Koskinen, et al., 2019). Social, health care and rehabilitation educators' competence has previously been discussed on the level of knowledge, skills and/or attributes, with this approach being predominantly applied between 2007 and 2013 (Mikkonen et al., 2018). For instance, educators' subject knowledge has been one of the focus areas (Kell & Jones, 2007), as this aspect is important to preparing future social, health care and rehabilitation professionals. Another common research area has been pedagogical skills, namely, the ability to handle and implement versatile teaching and learning methods (Coplen et al., 2011; Kell & Jones, 2007; Salminen et al., 2013), evaluate students' learning outcomes (Kell & Jones, 2007) and enhance students' critical thinking (Coplen et al., 2011).

The measurement of learning outcomes in the context of social and health care education, which started from the perspective of knowledge, skills, and student attributes and later transformed into assessments of competence, has changed significantly over the last 25 years (Telling & Serapioni, 2019). The empirical model developed and tested for this study contains eight distinct areas of social, health care and rehabilitation educator competencies. The eight areas were defined primarily by conducting two systematic reviews, firstly, of quantitative studies, synthesizing and tabulating six international studies (Mikkonen et al., 2018), and, secondly, qualitative studies, synthesizing of 12 international studies (Korppi et al., 2020). Secondly, qualitative descriptive study design was conducted with inductive content analysis approach to receive an in-depth data of social and health care educators' experiences on competence required of educators to prepare future social and health care professionals (Mikkonen, Koskinen, et al., 2019).

More specifically, these eight areas of competence were leadership and management; collaboration and societal; evidence-based practice; subject and curriculum; mentoring students in professional competence development; student-centred pedagogy; digital collaborative learning; and cultural and linguistic diversity (see Table 1). Competence in leadership can be describe as the ability to manage tasks and lead people (Salminen et al., 2012), while simultaneously adapting to changes in the educator's work tasks and abiding to national and international legislation (Grunberg et al., 2018). Collaboration and societal competence encompasses knowing how to positively influence society by utilising internal and external networking opportunities along with interprofessional collaboration (Banks et al., 2019; Bolger, 2018). Competence in evidence-based practice can be defined as the ability to search for evidence, critically evaluate it for relevance to the professional setting, utilise it in teaching, and guide students on how to integrate it into decision-making. This area of competence extends to the ability to continuously develop one's competence (Koivula et al., 2011; Lam & Schubert, 2019; Wonder &

TABLE 1 Social, health care and rehabilitation educators' competence in professional education

Competence area	Definition	References
Competence in leadership and management	Competence in leadership can be described as the ability to manage tasks, lead people and manage one's own work. The educators need to have an ability to adapt to rapid changes in the educators' work tasks and support their own, students' and their colleagues' well-being. Additionally, they need to be able to abide to national and international legislation and be able to complete financial tasks related to their work.	Grunberg et al., 2018; Mikkonen, Koskinen, et al., 2019; Salminen et al., 2012
Competence in collaboration and societal	Collaboration and societal competence encompass knowing how to positively influence society by utilising internal and external networking opportunities and interprofessional collaboration. It involves educators' ability to collaborate with the public sector, third sector, and companies. Educators need to have to know how to exploit diverse opportunities with working life while supporting students' learning and integrating theory into practice.	Banks et al., 2019; Bolger, 2018; Duphily, 2011; Mikkonen, Koskinen, et al., 2019
Competence in evidence-based practice	Competence in evidence-based practice can be defined as the ability of educators to understand the global social- and health care challenges, to search for high-quality evidence, critically evaluate it for relevance to the professional setting, utilise it in teaching, and guide students on how to integrate it into the decision-making of patient care. Educators need to be active in evidence transfer and implementation not only on the level of education, but also health care settings.	Felicida-Reynaldo and Utley, 2015; Fraser et al., 2011; Koivula et al., 2011
Competence in subject and curriculum	Competence in subject and curriculum describes an educator's professional knowledge and competence of the subject they are teaching and their ability to transfer their know-how upon the future social and health care professionals. Educators need to have the ability to develop, evaluate and implement the curriculum of the students in higher education.	Coplen et al., 2011; Mikkonen, Koskinen, et al., 2019
Competence in mentoring student into professional competence development	Competence in mentoring students into professional competence development includes educators' ability to combine theoretical knowledge with professional practice, and involves the interactive collaboration between students and mentors from the on-the-job related learning environment.	Iqbal et al., 2014; Kell & Jones, 2007; Mikkonen, Koskinen, et al., 2019
Competence in student-centered pedagogy	Competence in student-centred pedagogy covers utilising student-centred teaching methods and the ability to guide, motivate, constructively support, and collaborate during different stages of the learning process. Educators need to have the ability to know-how to recognize individual students' competence levels during their learning process and guide them constructively towards the set learning outcomes in order to be able to achieve successful professional growth of a student.	Bulman et al., 2014; Cassum et al., 2016; Coplen et al., 2011; Kell & Jones, 2007; Salminen et al., 2013
Competence in digital collaborative learning	Competence in digital collaborative learning involves educators' ability to design versatile virtual learning environments and manage digital technology, which promotes students' collaboration, interaction, and communication and helps them develop their professional identity.	Coplen et al., 2011; Kell & Jones, 2007; Mikkonen, Koskinen, et al., 2019
Cultural and linguistic diversity competence	Competence in cultural and linguistic diversity describes an educator's ability to have distinctive cultural awareness and knowledge of their own culture and others' culture, their ability to show cultural empathy and sensitivity towards diversity. Additionally, they need to know how to deal with culturally challenging situations by having skills in communication and collaboration.	Beard, 2013; Hansen, 2015; Mikkonen, Koskinen, et al., 2019

Spurlock, 2019). Competence in subject and curriculum describes an educator's knowledge of the subject they are teaching, as well as their ability to develop the curriculum based on any deficiencies they may have recognised from their students (WHO, 2016).

Since social, health care and rehabilitation education stresses on-the-job learning, competence in mentoring students is the skill that has been most commonly studied from the perspective of students' learning

outcomes (Tuomikoski et al., 2019). This skill encompasses the ability to combine theoretical knowledge with professional practice, and involves the interactive collaboration between students and mentors (Pramila-Savukoski et al., 2019; Tuomikoski et al., 2019). Competence in student-centred pedagogy covers utilising student-centred methods in teaching and the ability to guide, motivate, constructively support, and collaborate during different stages of the learning process (Bechter

et al., 2019; Männistö, Mikkonen, Kuivila, et al., 2019). Competence in digital collaborative learning has recently become more important to education, and focusses on harnessing technological solutions to design versatile virtual learning that will promote collaboration, interaction, and communication among students and help them develop their professional identity (Männistö, Mikkonen, Vuopala, et al., 2019). Competence in cultural and linguistic diversity describes an educator's ability to provide equal treatment to culturally and linguistically diverse students and colleagues. Cultural diversity is currently a politically relevant issue in many countries, especially in Europe; as such, cultural competence has become an increasingly discussed topic in nursing and nursing education (Oikarainen et al., 2019).

3 | METHODS

3.1 | Purpose

The purpose of this study was to develop and test an empirical model of social, health care and rehabilitation educators' competence in higher and professional education.

3.2 | Hypothesis

The following hypothesis were tested (see Figure 1):

Hypothesis H1. *Competence in leadership and management is positively related to the collaboration and societal competence (H1a) and competence in evidence-based practice (H1b).*

Hypothesis H2. *Collaboration and societal competence is positively related to the competence in subject and curriculum.*

Hypothesis H3. *Competence in evidence-based practice is positively related to competence in subject and curriculum.*

Hypothesis H4. *Competence in subject and curriculum is positively related to competence in mentoring students into professional competence development.*

Hypothesis H5. *Competence in mentoring students into professional competence development is positively related to competence in*

student-centred pedagogy (H5a) and competence in digital collaborative learning (H5b).

Hypothesis H6. *Competence in digital collaborative learning is positively related to competence in student-centred pedagogy.*

Hypothesis H7. *Competence in student-centred pedagogy is positively related to competence in cultural and linguistic diversity.*

3.3 | Design

The presented research implemented a cross-sectional survey design.

3.4 | Participants

A total of all 2,330 social, health care and rehabilitation educators from all 21 universities of applied sciences and geographically randomly selected seven vocational colleges were invited to participate in the study during the autumn of 2018. The response rate was 18%, with a total of 422 educators taking part in the survey. The inclusion criterion for participation was part-time or full-time employment as an educator at a social, health care or rehabilitation department of an educational organisation. Before the study, a statistical power analysis was conducted by counting effect size according to Cohen's *d*, two-tailed test, significance at $p < .05$ value, power 0.8, based on the previous studies with educators in Finland (Koivula et al., 2011). In order to reach a larger effect size in the sample ($d = 0.8$), data of $n = 506$ participants was aimed to be reached. With the expectation of a 22% response rate of the total, 2,330 participants have been invited. A low response rate has been commonly observed in the previous studies with educators (Mikkonen et al., 2018). In order to respond to the research purpose of this study, the sample size was deemed sufficient, as the minimum sample size ($n = 215$) was based on recommendations that there should be at least five participants per factor ($n = 43$ in this study) to reliably perform a confirmatory factor analysis employing structural equation modelling with the Full Imputation Maximum Likelihood (FIML) estimator (DeVon et al., 2007).

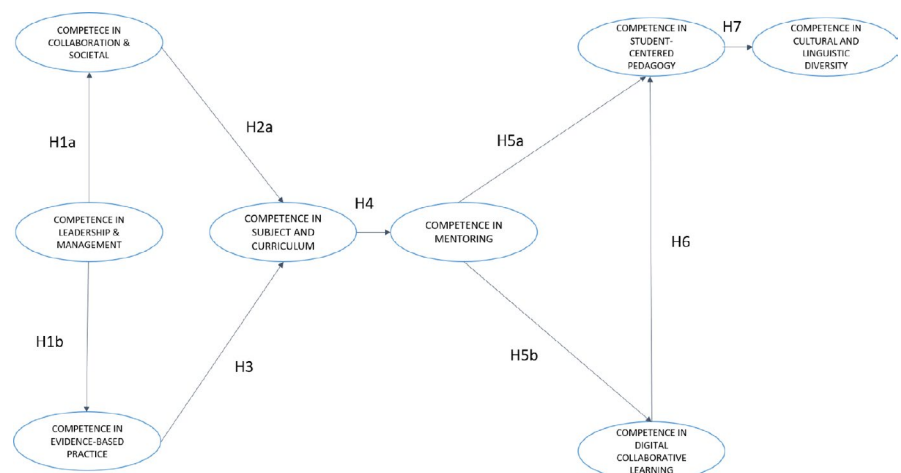


FIGURE 1 Hypothetical connections of concepts representing empirical model

3.5 | Data collection

During the data collection phase, questionnaires were sent to a contact person at each educational organisation, who then forwarded the questionnaire via an invitation e-mail to all of the educators at their organisation. This phase lasted from October to December 2018. At one organisation the invitation was sent directly to educators' email addresses. The invitation to take part in the study was sent to participants once and included 3–4 reminders. The invitation letter described the purpose and benefits of the study, along with the inclusion criterion for participation, and included a link to the questionnaire as well as information about the funding and the project coordinator. Furthermore, the letter emphasised the ethical principles of the study and participants' autonomy in participation.

3.6 | Instrument

The questionnaire included background information items and the Health and Social Care Educator's Competence (HeSoEduCo) instrument. The instrument included eight factors and a total of 43 items, more specifically, competence in: evidence-based practice (8 items); digital collaborative learning (5 items); student-centred pedagogy (8 items); collaboration and societal (5 items); leadership and management (6 items); cultural and linguistic diversity (4 items); mentoring students in professional competence development (4 items); and subject and curriculum (3 items). Respondents scored each item using a 4-point Likert scale (from 1 "fully disagree" to 4 "fully agree"). The face, content and construct validities of the instrument have previously been tested, with detailed information provided in Mikkonen, Tuomikoski, et al., (2019). The Cronbach's alpha for the eight-factors varied between 0.70 and 0.89.

3.7 | Ethical considerations

Ethical research principles were strictly adhered to throughout the study process (Declaration of Helsinki, 2013). Research permissions were requested from, and granted by, all 28 organisations taking part in the study. A participant's decision to open the study link and answer the questionnaire after reading the information in the invitation letter was taken to mean informed consent. All of the collected data were stored as secured computer files according to GDPR (2016) and Personal Data Act (523/1999) guidelines.

3.8 | Data analysis

The data were examined for missing values using the Missing at Random (MAR), Missing are Completely at Random (MCAR) and Missing Not at Random (MNAR) methods. The threshold for listwise deletion was set at $\geq 5\%$ missing data. There were no instances of

missing data in the study. Multivariate outliers were confirmed by calculating Mahalanobis distances, with $p < .01$ set as the threshold for an outlier. Mardia's kurtosis coefficient (threshold set at 3,017.86) was used to examine the normality of the data. The calculated coefficient of 3,248 demonstrated that the data showed sufficient normality (Graham, 2009; Lombardi & Pastore, 2012).

The model was empirically tested by confirmatory factor analysis with a Structural Equation Model (SEM) that applied the Full Imputation Maximum Likelihood (FIML) estimator. The model was tested running numerous versions of the SEM model by finally identifying the optimal fit fitting the theoretical support. The following fit indexes were measured (with associated cut-off values shown): Root Mean Square Error of Approximation (RMSEA) < 0.08 ; Standardised Root Mean Residual (SRMR) < 0.08 ; Comparative Fit Index (CFI) > 0.90 ; and Tucker-Lewis Index (TLI) > 0.90 (Loehlin & Beaujean, 2016). The goodness of fit indexes provides measurements showing the fit between the hypothetical model and the observed covariance model. The data analysis was performed with IBM SPSS (V25.0, IBM Corporation, Armonk, NY) and Stata (V12.0, StataCorp, College Stations, TX).

4 | RESULTS

4.1 | Participants

A total of 422 educators participated in the study, reflecting a response rate of 18%. For the purpose of empirical model testing, 32 multivariate outliers were removed in order to achieve data normality, which left 390 data points for subsequent analyses. The mean age of the participants was 51 years (SD 8.54). A clear majority, 90%, of the educators were female. In terms of educational background, 78% of the educators held a master's degree while 21% had completed a doctoral degree. The remaining 1% held a Bachelor's degree, while 0.3% had finished vocational college education. All of the educators except one had completed the teacher training (pedagogical education of 60 ECT credits) which is currently required for educators by Finnish law (University of Applied Science Act 2014/932). Of the total participants, 80% were employed at a university of applied sciences while the remaining 20% were employed at vocational colleges. The educators had an average of 14 (SD 8.78) years of work experience. The majority of the educators were lecturers (69%), with the rest holding positions of principle lecturers (10%), head of degree programmes (2%), and part-time or full-time teachers (19%). Of the 390 educators that were included in empirical model testing, 63% represented the health care field, 20% represented social services and 8% represented rehabilitation.

4.2 | The empirical model

The structure of the empirical model of social health care and rehabilitation educators' competence is presented in Figure 2. *Competence in leadership and management* was found to be positively connected

to *collaboration and societal competence* (0.72) and *competence in evidence-based practice* (0.41). Meanwhile, *collaboration and societal competence* was positively connected to *competence in subject and curriculum* (0.77). *Competence in evidence-based practice* was found to be positively connected to *competence in subject and curriculum* (0.17), while *competence in subject and curriculum* showed a positive association with *competence in mentoring students into professional competence development* (0.89). Furthermore, *competence in mentoring students into professional competence development* was positively connected to *competence in student-centred pedagogy* (0.75) and *competence in digital collaborative learning* (0.56). *Competence in digital collaborative learning* showed a positive association with *competence in student-centred pedagogy* (0.14). The performed analysis found *competence in student-centred pedagogy* to be positively connected with *competence in cultural and linguistic diversity* (0.50). All of these connections between concepts of the empirical model were statistically significant ($p < .01$) (see Figure 2 and Table 2). The goodness of fit indexes were found to be adequate for valid SEM model: chi-square = 1903.124 ($p < .01$), DF = 1,018, RMSEA = 0.056 (cut-off was set at the level of <0.08), SRMR = 0.082 (cut-off was set the level of <0.08), CFI = 0.845 (cut-off was set at the level of >0.90), TLI = 0.836 (cut-off was set the level of >0.90).

4.3 | Discussion

The purpose of this study was to develop and test an empirical model of social, health care and rehabilitation educators' competence in professional education. The performed analyses revealed that all of the model hypothesis set on previous literature showed positive relationships to other concepts, with all of these connections statistically significant. The first triangle of the module included competence in leadership and management, which was positively connected with collaboration and societal competence and competence in evidence-based practice. This is consistent with the published literature, as leadership has been shown to have a strong connection with collaboration and multidisciplinary teamwork in several studies (Aufegger et al., 2019; Shirey et al., 2019). Furthermore, good leadership has

been shown to enhance team behaviour and provide team members with social support, situational awareness, and psychological safety (Aufegger et al., 2019). Furthermore, authentic leadership increased collaboration by improving employee self-awareness, reinforcing clearly defined moral values and creating an open culture characterised by transparency and communication. Teams working in such an environment demonstrated higher performance and cooperation levels (Shirey et al., 2019). In this study, educators' competence in leadership and management was shown to be positively connected to competence in evidence-based practice. An integrative review by Bianchi et al. (2018) stated that a leader's role in health care settings is pivotal to the implementation of evidence-based practice into patient care. Furthermore, Amer et al. (2018) found that improvements in healthcare quality following the adaptation of evidence-based guidelines were enhanced by the commitment of leadership and continuous staff education.

Both collaboration and societal competence and competence in evidence-based practice were positively related to educators' competence in subject and curriculum. It is essential to point out that competence in evidence-based practice only showed a slight association with competence in subject and curriculum, which can be interpreted to mean that educators faced challenges when combining their competence in evidence-based practice with subject and curriculum competence. Social and health care professionals today must base their decision-making on evidence-based knowledge (rather than, e.g., culturally specific practices) to avoid unnecessary risks in patient safety (Amer et al., 2018). For this reason, a clear understanding of evidence-based practice is essential to the daily work of educators. Numerous studies of nursing educators have shown that educators with doctoral degrees include evidence-based knowledge and teaching in their daily work significantly more than educators with master's degrees (Bullin, 2018; Koivula et al., 2011). Furthermore, previous scholarly work in the field of education was shown to influence the extent to which educators implement evidence-based practice in their daily work with students (Koivula et al., 2011).

The second triangle of the module, which clearly represented pedagogical competence areas, connected competence in subject

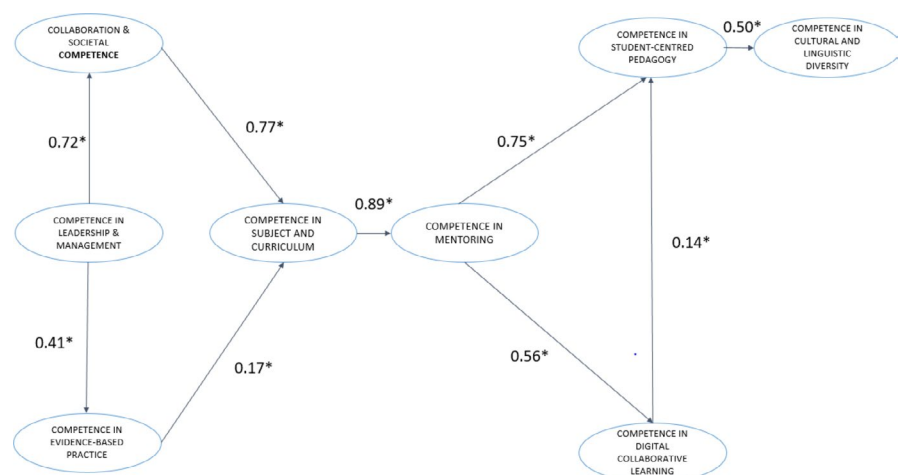


FIGURE 2 Connections between competence concepts represented in the empirical model. *Statistical significance ($p < .001$; $n = 390$)

TABLE 2 Empirical model's parameters estimation

Outcome variables		Explanatory variables	Parameters	Standard error	z-test	p value	95% CI
Competence in collaboration and societal	←	Competence in leadership and management	0.72	0.041	17.46	<0.001	0.65–0.80
Competence in evidence-based practice	←	Competence in leadership and management	0.41	0.053	7.56	<0.001	0.29–0.50
Competence in subject and curriculum	←	Competence in collaboration and societal	0.77	0.044	17.19	<0.001	0.69–0.85
Competence in subject and curriculum	←	Competence in evidence-based practice	0.17	0.051	3.43	<0.001	0.09–0.28
Competence in mentoring student into professional competence development	←	Competence in subject and curriculum	0.89	0.037	24.08	<0.001	0.80–0.93
Competence in student-centered pedagogy	←	Competence in mentoring student into professional competence development	0.75	0.049	15.40	<0.001	0.64–0.83
Competence in digital collaborative learning	←	Competence in mentoring student into professional competence development	0.56	0.048	11.04	<0.001	0.45–0.63
Competence in student-centered pedagogy	←	Competence in digital collaborative learning	0.14	0.055	3.11	0.015	0.09–0.30
Cultural and linguistic diversity competence	←	Competence in student-centered pedagogy	0.50	0.048	10.35	<0.001	0.41–0.60

and curriculum to competence in mentoring students in professional competence development. Educators should be skilled at helping students transfer what they have learned in an academic environment to professional competence by practising job-related skills. For this reason, job-related learning is an essential part of every social, health care and rehabilitation education programme in Europe (European Directive 2013/55/EU). Recent research has shown that the role of educators in job-related learning environments has decreased in conjunction with cuts in resources (Warne et al., 2010); this trend has greatly challenged clinical mentors (Mikkonen et al., 2019) and negatively influenced students' satisfaction with their learning (Pitkänen et al., 2018). Student-educator collaboration has been shown to be an essential part of: first, successfully motivating students to stay in the profession after graduation (Brook et al., 2019); and then, supporting them in challenging situations (Juntunen et al., 2016).

In the presented model, competence in mentoring students in professional competence development was positively related to the competence areas of student-centred pedagogy and digital collaborative learning. Educators' competence in digital collaborative learning was weakly linked to competence in student-centred pedagogy. This suggests that educators face difficulties when attempting to connect digital collaborative learning with student-centred teaching. A quasi-experimental study with health care students recently tested how effective digital collaborative learning actually is (Männistö, Mikkonen, Vuopala, et al., 2019). The results showed that students' satisfaction with educators decreased significantly following the completion of the course; however, the students in the experiment showed higher grades than other students, demonstrating that digital collaborative learning is more effective than traditional teaching

(Männistö, Mikkonen, Vuopala, et al., 2019). Hence, the digital collaborative learning environment can provide significant benefits, but social, health care and rehabilitation organisations must ensure that educators receive training and education about diverse situations, that is, not only face-to-face classroom teaching (Gan et al., 2015).

The presented results also showed that the student-centred pedagogy and cultural and linguistic diversity competence areas were strongly connected. In today's world, cultural and linguistic diversity is strongly present in social, health care and rehabilitation education settings (Mikkonen et al., 2016a, 2016b; Pitkäljärvi et al., 2013) and can cause both benefits and challenges for culturally diverse students, educators, and their clinical mentors. Previous studies have shown that cultural competence is strongly linked to empathetic human behaviour (Zarei et al., 2019), ethical decision-making (Nielsen et al., 2019), and the creation of a receptive learning atmosphere that fosters mentor/educator-student relationships (Mikkonen, Meriläinen, et al., 2019).

4.4 | Limitations

The model should be further tested with larger sample to improve the fit indexes, which are harder to reach with limited number of participants. The empirical model needs to be further tested in international contexts, as information from diverse settings will provide more evidence for the connections and correlations between concepts. The validity and transparency of the study were enhanced by adherence to the STROBE Statement–Checklist (von Elm et al., 2008).

According to Mikkonen, Koskinen, et al., (2019), the ethical competence of educators' is an important element of the multidimensional competence framework. In this study, ethical items were integrated into the factor of competence in student-centred pedagogy. The additional development of items related to ethical competence would enrich the content of the instrument and emphasise the importance of ethics in education.

5 | CONCLUSION

The presented model included eight competence areas that are relevant for social, health care and rehabilitation educators. The performed SEM analysis demonstrated that the empirical model is valid. The model, which was created through an evidence-based research approach, identifies various social, health care and rehabilitation educators' competence concepts and describes the connections between the concepts. Two weak connections between the concepts were identified, namely, the links between competence in evidence-based practice and competence in subject and curriculum as well as competence in digital collaborative learning and competence in student-centred pedagogy. These weak connections should be taken into consideration when developing education to ensure that social, health care and rehabilitation educators have the highest possible competence. Evidence-based practice should remain the central focus of educator training, and must be especially stressed when discussing subject and curriculum competence. Furthermore, the results suggest that additional resources could be used to ensure that education for social, health care and rehabilitation educators includes sufficient information on how to provide student-centred pedagogy while utilising digital environments.

The presented empirical model can help various stakeholders understand precisely which aspects of social, health care and rehabilitation educators training should be further developed. The model can be further used to develop social, health care and rehabilitation educator curricula, improve the current state of continuous education, and accurately evaluate educator competence at the organisational level.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

KM, HMK, TS, HK, CK, MK, MK, MLL, TS, MS, LS, HMH, OW, AH, AMT, MK made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; involved in drafting the manuscript or revising it critically for important intellectual content; have given final approval of the version to be published (each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content); and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

DATA AVAILABILITY STATEMENT

Data sharing is not permitted by organizations participating in the study.

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REFERENCES

- Amer, Y. S., Wahabi, H. A., Abou Elkheir, M. M., Bawazeer, G. A., Iqbal, S. M., Titi, M. A., Ekhzaimy, A., Alswat, K. A., Alzeidan, R. A., & Al-Ansary, L. A. (2018). Adapting evidence-based clinical practice guidelines at university teaching hospitals: A model for the Eastern Mediterranean Region. *Journal of Evaluation in Clinical Practice*, 25(4), 550–560. <https://doi.org/10.1111/jep.12927>
- Aufegger, L., Shariq, O., Bicknell, C., Ashrafian, H., & Darzi, A. (2019). Can shared leadership enhance clinical team management? A systematic review. *Leadership in Health Services*, 32(2), 309–335. <https://doi.org/10.1108/LHS-06-2018-0033>
- Banks, S., Stanley, M. J., Brown, S., & Matthew, W. (2019). Simulation-based interprofessional education: A nursing and social work collaboration. *Journal of Nursing Education*, 58(2), 110–113. <https://doi.org/10.3928/01484834-20190122-09>
- Beard, K. (2013). Teaching in a multicultural society: How nurses educators describe their role. *Journal of the National Black Nurses Association*, 24(2), 64–71.
- Bechter, B. E., Dimmock, J. A., & Jackson, B. (2019). A cluster-randomized controlled trial to improve student experiences in physical education: Results of a student-centered learning intervention with high school teachers. *Psychology of Sport and Exercise*, 45, 101553. <https://doi.org/10.1016/j.psychsport.2019.101553>
- Bianchi, M., Bagnasco, A., Bressan, V., Barisone, M., Timmins, F., Rossi, S., Pellegrini, R., Aleo, G., & Sasso, L. (2018). A review of the role of nurse leadership in promoting and sustaining evidence-based practice. *Journal of Nursing Management*, 26(8), <https://doi.org/10.1111/jonm.12638>
- Bolger, J. (2018). Inter-professional education/learning across social work education provision in Scotland. *Journal of Further and Higher Education*, 44(5), 705–715. <https://doi.org/10.1080/0309877X.2019.1576861>
- Brook, J., Aitken, L., Webbab, R., MacLarena, J., & Salmona, D. (2019). Characteristics of successful interventions to reduce turnover and increase retention of early career nurses: A systematic review. *International Journal of Nursing Studies*, 91(3), 47–59. <https://doi.org/10.1016/j.ijnurstu.2018.11.003>

- Bullin, C. (2018). To what extent has doctoral (PhD) education supported academic nurse educators in their teaching roles: An integrative review. *BMC Nursing*, 17, 6. <https://doi.org/10.1186/s12912-018-0273-3>
- Bulman, C., Lathlean, J., & Gobbi, M. (2014). The process of teaching and learning about reflection: Research insights from professional nurse educator. *Studies in Higher Education*, 39(7), 1219–1236. <https://doi.org/10.1080/03075079.2013.777413>
- Cassum, S., Allana, S., & Dias, J. (2016). Experiences of adopting blended pedagogies in health assessment course in post RN Baccalaureate program of nursing in Karachi Pakistan. *Journal of Education and Training Studies*, 4(1), 221–228. <https://doi.org/10.11114/jets.v4i1.1168>
- Coplen, A. E., Klausner, C. P., & Taichman, L. S. (2011). Status of current dental hygiene faculty and perceptions of important qualifications for future faculty. *Journal of Dental Hygiene*, 85(1), 57–66.
- Declaration of Helsinki. (2013). Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., Savoy, S., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, 39, 155–164.
- Duphily, N. (2011). The experience of novice nurse faculty in an associate degree education program. *Teaching and Learning in Nursing*, 6, 124–130. <https://doi.org/10.1016/j.teln.2011.01.002>
- European Directive 2013/55/EU. (2013). European Parliament and of the Council 20 November 2013 amending Directive 2005/36/EC on the recognition of professional qualifications. *Official Journal of the European Union*, 354, 132–170.
- Felicida-Reynaldo, R., & Utely, R. (2015). Reflections of evidence-based practice in nurse educators' teaching philosophy statements. *Nursing Education Perspectives*, 36(2), 89–95. <https://doi.org/10.5480/13-1176>
- Fraser, D., Avis, M., & Mallik, M. (2011). The MINT-project – an evaluation of the impact of midwife teachers on the outcomes of pre-registration midwifery education in the UK. *Midwifery*, 29, 86–94.
- Gan, B., Menkhoff, T., & Smith, R. (2015). Enhancing students' learning process through interactive digital media: New opportunities for collaborative learning. *Computers in Human Behavior*, 51(10), 652–663. <https://doi.org/10.1016/j.chb.2014.12.048>
- Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, 60, 549–576. <https://doi.org/10.1146/annurev.psych.58.110405.085530>
- Griffiths, A., Royse, D., Murphy, A., & Starks, S. (2019). Self-care practice in social work education: A systematic review of interventions. *Journal of Social Work Education*, 55(1), <https://doi.org/10.1080/10437797.2018.1491358>
- Grunberg, N. E., Barry, E. S., Callahan, C. W., Kleber, H. G., McManigle, J. E., & Schoemaker, E. B. (2018). A conceptual framework for leader and leadership education and development. *International Journal of Leadership in Education*, 22(5), 644–650. <https://doi.org/10.1080/13603124.2018.1492026>
- Hansen, A. (2015). Crossing borders: A qualitative study of how occupational therapy educators and scholars develop and sustain global partnership. *Occupational Therapy International*, 22, 152–162.
- He, F. X., Turnbull, B., Kirshbaum, M. N., Phillips, B., & Klainin-Yobas, P. (2018). Assessing stress, protective factors and psychological well-being among undergraduate nursing students. *Nurse Education Today*, 68, 4–12. <https://doi.org/10.1016/j.nedt.2018.05.013>
- Iqbal, S., Gul, R., Lakhani, A., & Rizvi, N. F. (2014). Teachers' accounts of their perceptions and practice of providing written feedback to nursing students on their assignments. *International Journal of Higher Education*, 3(3), 70–80.
- Jesse, M. A. (2016). Influences of sociocultural factors within the clinical learning environment on students' perceptions of learning: An integrative review. *Journal of Professional Nursing*, 32(6), 463–486. <https://doi.org/10.1016/j.profnurs.2016.03.006>
- Juntunen, J., Ruotsalainen, H., Tuomikoski, A. M., & Kääriäinen, M. (2016). Mentors' perceptions of unsafe student situations and dealing with them in clinical practice (in Finnish). *Nursing Sciences*, 28(2), 123–136.
- Kell, C., & Jones, L. (2007). Mapping placement educators' conceptions of teaching. *Physiotherapy*, 93, 273–282. <https://doi.org/10.1016/j.physio.2006.11.011>
- Koivula, M., Tarkka, M. T., Simonen, M., Katajisto, J., & Salminen, L. (2011). Research utilisation among nursing teachers in Finland: A national survey. *Nurse Education Today*, 31, 24–30. <https://doi.org/10.1016/j.nedt.2010.03.008>
- Korpi, H., Sjögren, T., Mikkonen, K., Piirainen, A., Ojala, T., Koskinen, C., Koskinen, M., Salminen, L., Koivula, M., Lähteenmäki, M. L., Saaranen, T., Sormunen, M., Koskimäki, M., & Kääriäinen, M. (2020). A systematic review and metasynthesis of qualitative studies on the competencies of health and rehabilitation science educators. *NERP*, 10(2), 42–51.
- Lam, C. K., & Schubert, C. (2019). Evidence-based practice competence in nursing students: An exploratory study with important implications for educators. *Worldviews on Evidence-Based Nursing*, 16(2), 161–168. <https://doi.org/10.1111/wvn.12357>
- Loehlin, J. C., & Beaujean, A. A. (2016). *Latent variable models: An introduction to factor, path, and structural equation analysis*, 5th ed. : CRC Press. <https://doi.org/10.4324/9781315643199>
- Lombardi, L., & Pastore, M. (2012). Sensitivity of fit indices to fake perturbation of ordinal data: A sample by replacement approach. *Multivariate Behavioral Research*, 47, 519–546.
- Lopes, S. C., Guerra-Arias, M., Buchan, J., Pozo-Martin, F., & Novem, A. (2017). A rapid review of the rate of attrition from the health workforce. *Human Resources for Health*, 15(1), 21. <https://doi.org/10.1186/s12960-017-0195-2>
- Männistö, M., Mikkonen, K., Kuivila, H. M., Virtanen, M., Kyngäs, H., & Kääriäinen, M. (2019). Digital collaborative learning in nursing education: A systematic review. *Scandinavian Journal of Caring Sciences*, <https://doi.org/10.1111/scs.12743>
- Männistö, M., Mikkonen, K., Vuopala, E., Kuivila, H., Virtanen, V., Kyngäs, H., & Kääriäinen, M. (2019). Effects of a digital educational intervention on collaborative learning in nursing education: A quasi-experimental study. *Nordic Journal of Nursing Research*, 39(4), 191–200. <https://doi.org/10.1177/2057158519861041>
- Menamin, R. M., Grath, M., Cantillon, P. M., & Farlane, A. (2014). Training socially responsive health care graduates: Is service learning an effective educational approach? *Medical Teacher*, 36(4), 291–307. <https://doi.org/10.3109/0142159X.2013.873118>
- Mikkonen, K., Elo, S., Tuomikoski, A., & Kaariainen, M. (2016a). Mentor experiences of international healthcare students' learning in a clinical environment: A systematic review. *Nurse Education Today*, 40, 87–94. <https://doi.org/10.1016/j.nedt.2016.02.013>
- Mikkonen, K., Elo, S., Kuivila, H., Tuomikoski, A., & Kaariainen, M. (2016b). Culturally and linguistically diverse healthcare students' experiences of learning in a clinical environment: A systematic review of qualitative studies. *International Journal of Nursing Studies*, 54, 173–187. <https://doi.org/10.1016/j.ijnurstu.2015.06.004>
- Mikkonen, K., Koskinen, M., Koskinen, C., Koivula, M., Koskimäki, M., Lähteenmäki, M. L., Mäki-Hakola, H., Wallin, O., Salminen, L., Sormunen, M., Saaranen, T., Kuivila, H. M., & Kääriäinen, M. (2019). Qualitative study of social and health care educators' perceptions of competence in education. *Health and Social Care in the Community*, <https://doi.org/10.1111/hsc.12827>
- Mikkonen, K., Meriläinen, M., & Tuomietto, M. (2019). Empirical model of clinical learning environment and mentoring of culturally and

- linguistically diverse nursing students. *Journal of Clinical Nursing*, 29(3-4), 653–661. <https://doi.org/10.1111/jocn.15112>
- 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 teachers – A systematic review of quantitative studies. *Nurse Education Today*, 70, 77–86. <https://doi.org/10.1016/j.nedt.2018.08.017>
- Mikkonen, K., Tuomikoski, A. M., Sjögren, T., Koivula, M., Koskimäki, M., Lähteenmäki, M. L., Mäki-Hakola, H., Wallin, O., Sormunen, M., Saaranen, T., Koskinen, C., Koskinen, M., Salminen, L., Holopainen, A., & Kääriäinen, M. (2019). Development and testing of an instrument (HeSoEduCo) for health and social care educators' competence in professional education. *Nurse Education Today*, <https://doi.org/10.1016/j.nedt.2019.104239>
- National League for Nursing. (2019). *National League for Nursing website*. National League for Nursing. Retrieved from: <http://www.nln.org/>
- Nielsen, D. S., Korsholm, K. M., Mottelson, I., & Sodemann, M. (2019). Cultural competences gained through an education program as ethnic patient coordinator: A qualitative study. *Journal of Transcultural Nursing*, 30(4), 394–402. <https://doi.org/10.1177/1043659618823923>
- NLN (National League for Nursing). (2019). *Certified Academic Clinical Nurse Educator (CNE cl) 2019 Candidate Handbook*. National League for Nursing. <http://www.nln.org/docs/default-source/default-document-library/cnecl-handbook-july-2019.pdf?sfvrsn=0>
- Nursing & Midwifery Council. (2018). Standard for Nurses. <https://www.nmc.org.uk/standards/standards-for-nurses/pre-2018-standards/standards-for-pre-registration-nursing-education/>
- Oikarainen, A., Mikkonen, K., Kenny, A., Tomietto, M., Tuomikoski, A. M., Meriläinen, M., Miettunen, J., & Kääriäinen, M. (2019). Educational interventions designed to develop nurses' cultural competence: A systematic review. *International Journal of Nursing Studies*, 98, 75–86. <https://doi.org/10.1016/j.ijnurstu.2019.06.005>
- Palominos, E., Levett-Jones, T., Power, T., & Martinez- Maldonado, R. (2019). Healthcare students' perceptions and experiences of making errors in simulation: An integrative review. *Nurse Education Today*, 77, 32–39. <https://doi.org/10.1016/j.nedt.2019.02.013>
- Pitkääjärvi, M. A., Eriksson, E., & Pitkala, K. (2013). Culturally diverse health care students' experiences with teaching strategies in Finland: A national survey. *Nurse Education Today*, 33(6), 590–595. <https://doi.org/10.1016/j.nedt.2012.07.004>
- Pitkänen, S., Kääriäinen, M., Oikarainen, A., Tuomikoski, A., Elo, S., Ruotsalainen, H., Saarikoski, M., Kärämänoja, T., & Mikkonen, K. (2018). Healthcare students' evaluation of the clinical learning environment and supervision – A cross-sectional study. *Nurse Education Today*, 62, 143–149. <https://doi.org/10.1016/j.nedt.2018.01.005>
- Pramila-Savukoski, S., Juntunen, J., Tuomikoski, A. M., Kääriäinen, M., Tomietto, M., Kaučić, B. M., Filej, B., Riklikiene, O., Vizcaya-Moreno, F., Perez-Cañaveras, R. P., De Raeve, P., & Mikkonen, K. (2019). Mentors' self-assessed competence in mentoring nursing students in clinical practice: A systematic review of quantitative studies. *Journal of Clinical Nursing*, 29(5-6), 684–705. <https://doi.org/10.1111/jocn.15127>
- Salminen, L., Lindberg, E., Heinonen, J., & Leino-Kilpi, H. (2012). Nurse teachers' attitudes and competence in entrepreneurship (in Finnish). *Nursing Sciences*, 24(3), 244–254.
- Salminen, L., Stolt, M., Koskinen, S., Katajisto, J., & Helena, L. K. (2013). The competence and the cooperation of nurse educators. *Nurse Education Today*, 33, 1376–1381. <https://doi.org/10.1016/j.nedt.2012.09.008>
- Salminen, L., Tuukkanen, M., Clever, K., Fuster, P., Kelly, M., Kielé, V., Koskinen, S., Sveinsdóttir, H., Löyttyniemi, E., & Leino-Kilpi, H. (2021). The competence of nurse educators and graduating nurse students. *Nurse Education Today*, 98, 104769. <https://doi.org/10.1016/j.nedt.2021.104769>
- Shirey, M., White-Williams, C., & Hites, L. (2019). Integration of authentic leadership lens for building high performing interprofessional collaborative practice teams. *Nursing Administration Quarterly*, 43(2), 101–112. <https://doi.org/10.1097/NAQ.0000000000000339>
- Telling, K., & Serapioni, M. (2019). The rise and change of the competence strategy: Reflections on twenty-five years of skills policies in the EU. *European Educational Research Journal*. <https://doi.org/10.1177/1474904119840558>
- Tuomikoski, A. M., Ruotsalainen, H., Mikkonen, K., & Kääriäinen, M. (2019). Nurses' experiences with competence at mentoring nursing students during clinical practice: A systematic review of qualitative studies. *Nurse Education Today*. Article in press.
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P. (2008). The strengthening the reporting of observational studies in epidemiology (STROBE) statement: Guidelines for reporting observational studies. *PLoS Medicine*, 6(4), 344–349. <https://doi.org/10.1371/journal.pmed.0040296>
- Warne, T., Johansson, J. B., Papastavrou, E., Tichelaar, E., Tomietto, M., Van den Bossche, K., Moreno, M. F. V., & Saarikoski, M. (2010). An exploration of the clinical learning experience of nursing students in nine European countries. *Nurse Education Today*, 30, 809–815. <https://doi.org/10.1016/j.nedt.2010.03.003>
- WHO. (2010). *Key components of a well functioning health system*. World Health Organization. Retrieved from: https://www.who.int/healthsystems/EN_HSSkeycomponents.pdf?ua=1
- WHO. (2013). *Global health workforce shortage to reach 12.9 million in coming decades*. : World Health Organization.
- WHO. (2014). *WHO compendium of innovative health technologies for low-resource settings*. World Health Organization. Retrieved from: https://www.who.int/medical_devices/innovation/compendium/en/
- WHO. (2016). *Nurse educator core competencies*. World Health Organization.
- WHO. (2018). *Achieving universal health coverage: From the past to the future*. Prince Mahidol Award Conference, Bangkok, Thailand. <https://www.who.int/dg/speeches/2018/achieving-universal-health/en/>
- Wonder, A. H., & Spurlock, D. (2019). A national study across levels of nursing education: Can nurses and nursing students accurately estimate their knowledge of evidence-based practice? *Nursing Education Perspectives*, 41(2), 77–82. <https://doi.org/10.1097/O1.NEP.0000000000000528>
- Zarei, B., Salmabadi, M., Amirabadizadeh, A., & Vagharseyyedin, S. A. (2019). Empathy and cultural competence in clinical nurses: A structural equation modelling approach. *Nursing Ethics*, 26(7-8), 2113–2123. <https://doi.org/10.1177/0969733018824794>

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