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Development and psychometric testing of the nursing student mentors' competence instrument (MCI): A cross-sectional study

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ABSTRACT

Background: Mentors require competence at a diverse array of skills to mentor students during clinical practice. According to the latest evidence, competence at mentoring includes: knowledge, skills and attributes of individual students' learning objectives, core elements of nursing, learning processes, a reciprocal and trustful relationship, feedback, evaluation, cooperation with stakeholders, and the mentor's personal qualities.
Objective: The purpose of the study was to test psychometric properties of a mentor's competence instrument developed to self-evaluate mentors' competence at mentoring nursing students in clinical practice.
Design: A cross-sectional, descriptive, explorative study design was used.
Settings: Data were collected from mentors at five university hospitals in Finland in 2016.
Participants: A total of 576 mentors participated in this study.
Methods: The instrument was developed through systematic review, experts' evaluations, and pilot versions of the instrument tested in previous studies. The construct validity and reliability of the instrument were tested using exploratory factor analysis (EFA) with promax rotation and Cronbach's alpha.
Results: A 10-factor model showed that the instrument has acceptable construct validity. Cronbach's alpha values for the subscales observed ranged from 0.76 to 0.90.
Conclusions: The instrument exhibited acceptable psychometric properties, thereby proving itself a valuable tool for evaluating mentors' competence at mentoring students. Further assessments of its reliability, validity and generality for measuring mentor's competence for mentoring students in different contexts and cultures are recommended.

1. Introduction

The mentor plays a significant role in supporting nursing students' learning process in clinical practice (Courtney-Pratt et al., 2011; Jokelainen et al., 2013; Hilli et al., 2014; Ford et al., 2016). Although student mentorship has frequently been investigated in nursing science studies, the studies focus on students' perceptions; clinical learning is seldom studied (Hooven, 2014; Vierula et al., 2016). Assessing the competence of nurses as student mentors is crucial for mentorship development and education, and assurance of high-quality mentorship for nursing students. However validated instruments for measuring the competence of nurses as mentors are still lacking. Such instruments would allow nurse mentors to self-evaluate their pedagogical competence at mentorship in clinical practice. This paper describes the development and initial psychometric testing of a mentorship competence instrument (MCI) that evaluates mentors of nursing students in clinical practice.

2. Background

In the European Union, it typically takes at least three years to attain a bachelor's degree in nursing, and about half of this duration involves clinical practice. Nursing students are mentored by professional nurses in their placement during these clinical practice periods (EU directive 2013/55/EU). No generally-accepted definition of 'mentor' can be found in the literature. The term refers to multiple concepts, including: 'supervisor' (Saarikoski and Leino-Kilpi, 2002), 'supervising nurse' (Courtney-Pratt et al., 2011; Ford et al., 2016), 'preceptor' (Hilli

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et al., 2014), 'clinical mentor' (Dobrowolska et al., 2016) and 'mentor' (Jokelainen et al., 2013). The term 'clinical facilitator' commonly refers to a registered nurse (RN) who mentors between 8 and 12 students simultaneously (Courtney-Pratt et al., 2011, Ford et al., 2016). Also, the mentorship structure and mentors' backgrounds, experiences, qualifications, and employment requirements vary by country. In many cases, student mentorship is offered by higher education institutions where mentors do not usually mentor students during clinical practice outside of organizing student clinical placement and introducing them to a new learning environment. In several countries, healthcare providers such as registered nurses, whose primary roles involve caring for patients, offer student mentorship regardless of the added clinical teaching responsibility (Dobrowolska et al., 2016). In this study, the term 'mentor' refers to a registered nurse working in a hospital for whom mentoring nursing students is a secondary assignment. A 'mentor' is responsible for mentoring students' clinical practice.

In this study the concept of competence at mentoring nursing students is based on a systematic literature review (Karjalainen et al., 2015; Kälkäjä et al., 2016; Tuomikoski and Kääriäinen, 2016). Mentors must be competent at mentoring nursing students in clinical practice. In this study, 'competence' includes the mentor's skills, knowledge, performance, and values when acting as a mentor in the clinical field (Cowan et al., 2007). A mentor must be aware of mentoring practices (Meretoja et al., 2006), collaborate with education organizations, and possess qualities like trustworthiness, patience, reliability, and respectfulness towards students (Courtney-Pratt et al., 2011; Jokelainen et al., 2013; Hilli et al., 2014). The mentor plays an important role in supporting students' learning processes during clinical practice. The mentor-student relationship is the main factor in a student's clinical practice experience, and should be trustful and reciprocal; the student should feel accepted, secure, and welcome in the clinical practice (Courtney-Pratt et al., 2011; Jokelainen et al., 2013; Hilli et al., 2014; Ford et al., 2016). The mentor must assist the student in setting realistic and achievable learning goals according to the student's identified level of competence (Jokelainen et al., 2013), and must support the student's professional development (Hilli et al., 2014). The mentor must be pedagogically competent, which enables them to give meaningful feedback and evaluation, and focus on concrete performance, progression, and the professional knowledge of the student (Jokelainen et al., 2013). In fact, students from a very recent study (Pitkänen et al., 2018) believed the mentoring relationship enhanced their learning when the mentors had frequent unscheduled discussions with them and planned their learning outcomes, and when the mentors were appointed and were not frequently replaced. Finally, the mentor should organize opportunities for students to develop competence and build confidence (Ford et al., 2016) and should support the student during the learning process in clinical practice (Jokelainen et al., 2013; Hilli et al., 2014).

The Clinical Teaching Competence Inventory for Nursing Preceptors, developed in Taiwan, measures the following four factors: 1) student evaluation, 2) goal setting and individual teaching, 3) teaching strategies, and 4) demonstration of organized knowledge (Hsu et al., 2014). Another instrument, the Support Instrument for Nurses Facilitating the Learning of Others (SINFLO), measures registered nurses' perceptions of the support they receive for fulfilling their role in supporting the learning of others. SINFLO includes five core elements: workload, communication, teamwork, preparation, and acknowledgement (Henderson et al., 2012). Hallin and Danielson (2009) developed an instrument for measuring a mentor's actions, and personal and clinical characteristics: preparation; support from teachers; and support from colleagues, chief nurses and registered nurses. Another tool, the Clinical Nursing Faculty Competence Inventory (CNFCI), was designed to evaluate clinical faculty members' core competence in China. Competence areas of the CNFCI include: leadership ability, problem-solving ability, educational intelligence, general teaching ability, and professional competence (Hou et al., 2011). These existing instruments were developed to assess mentors' competence at nursing student mentorship in clinical practice. However, none of these tools specifically assess extensive competence at mentoring nursing students in clinical practice.

3. The Study

3.1. Aim

The purpose of the study was to test psychometric properties of a mentor's competence instrument (MCI) developed to self-evaluate mentors' competence at mentoring nursing students in clinical practice.

3.2. Design

A cross-sectional survey design, involving a self-administered electronic version of the instrument, was used.

3.3. Participants

Mentors at all five university hospitals in Finland were surveyed. A sample of 25% of the total RN population ($N = 13,342$) was selected by stratified random sampling (Grove et al., 2013). Electronic questionnaires were sent to 3355 registered nurses who mentor students in the university hospitals; participants were randomly chosen. Samples drawn from the strata were proportional to the number of nurses in the university hospitals, and the following inclusion criteria were set: the respondent must be a registered nurse, be a hospital employee, and have experience mentoring students.

3.4. Data Collection

Data were collected via the Webropol program during the spring of 2016. Registered nurses from 5 hospitals were invited to participate in the survey via email. Two reminder emails were sent, at 2-week intervals following the initial survey, to registered nurses from three hospitals. One reminder email was sent to registered nurses at the remaining two hospitals. The number of emails received by each hospital was dictated by organizational practices: two hospitals allowed only one reminder email, while three hospitals allowed two reminder emails. A total of 576 registered nurses responded to the survey.

3.5. Instrument

The instrument was developed in three phases (see Fig. 1): 1) construction of the conceptual framework and item generation by systematic literature review (Karjalainen et al., 2015; Kälkäjä et al., 2016, Tuomikoski and Kääriäinen, 2016); 2) judgment quantification using an expert panel (Karjalainen et al., 2015; Kälkäjä et al., 2016; Tuomikoski and Kääriäinen, 2016); and 3) pilot testing prior to main data collection to test construct validity and reliability of the instrument (Karjalainen et al., 2015; Kälkäjä et al., 2016; Tuomikoski and Kääriäinen, 2016). Instrument development followed the recommendations of Streiner and Norman (2014).

The first phase of instrument development included construction of the theoretical framework using systematic literature review. After content analysis of the systematic review, 179 items were developed under eight main sub-dimensions. The second phase was completed by a panel of six experts from university hospital staff and clinical mentors. The content validation index was tested by reducing the number of items to 177. The third phase included pilot tests of the instrument using principal component analysis (PCA). PCA produced 13 factors and 85 items. This paper reports the main data collection and psychometric testing of the instrument conducted during the third phase.

The self-assessment instrument used in this cross-sectional study comprised a Mentors' Competence Instrument (MCI) (68 items) with background information. The survey was conducted in Finnish. Items