

# Do educational outcomes correspond with the requirements of nursing practice: educators' and managers' assessments of novice nurses' professional competence

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## Do educational outcomes correspond with the requirements of nursing practice: educators' and managers' assessments of novice nurses' professional competence

*Objective:* This study evaluated whether educational outcomes of nurse education meet the requirements of nursing practice by exploring the correspondence between nurse educators' and nurse managers' assessments of novice nurses' professional competence. The purpose was to find competence areas contributing to the acknowledged practice–theory gap.

*Design:* A cross-sectional, comparative design using the Nurse Competence Scale was applied.

*Subjects:* The sample comprised nurse educators (n = 86) and nurse managers (n = 141).

*Methods:* Descriptive and inferential statistics were used in the data analysis.

*Main outcome measures:* Educators assessed novice nurses' competence to a significantly higher level than

managers in all competence areas ( $p < 0.001$ ). The biggest correspondence between educators' and managers' assessments were in competencies related to immediate patient care, commitment to ethical values, maintaining professional skills and nurses' care of the self. The biggest differences were in competencies related to developmental and evaluation tasks, coaching activities, use of evidence-based knowledge and in activities which required mastering a comprehensive view of care situations. However, differences between educators' and managers' assessments were strongly associated with their age and work experience. Active and improved collaboration should be focused on areas in which the differences between educators' and managers' assessments greatly differ in ensuring novice nurses' fitness for practice.

**Keywords:** novice nurse, nurse competence, nurse educator, nurse manager.

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## Introduction

Nurse competence and its assessment are topical issues in current nursing education and practice in contributing to safety and quality of nursing care. Assessments are an important mean for educators, managers and nurses to gain information about nurses' professional strengths and weaknesses and consequently educational and developmental needs.

In terms of competence requirements, advancements in health technology, changes in population socio-demographics and economical issues affecting resource allocation are but a few examples of factors that have had a significant influence on health care including nursing and that have brought along new demands for the future nursing care (1–3). As a result, a need for new competencies has emerged exerting pressure on nurse educators to adapt the curricula to the changes of modern health care and on nurse managers to see that practicing nurses have competencies which meet the demands of the healthcare practice (4). Moreover, the current nursing curricula in Europe are based on the competence-based approach defined by European Union Directive, European Commission, and International Council of Nurses (5–7).

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The gap between nurse education and clinical practice is a well-acknowledged fact (8–10). It is also well known that novice nurses have feelings of anxiety and uncertainty about their competence. They lack confidence and need support and guidance in their professional development (11–14). Therefore, it would be important to know whether there are differences in nurse educators' and nurse managers' assessments of novice nurses' professional competencies and most importantly, where the differences in competencies appear, to provide evidence-based basis for targeted measures to diminish theory–practice gap and to enhance collaboration between education and practice. The comparison would also help to evaluate whether educational outcomes provide novice nurses with competencies which meet the requirements of current nursing practice.

## Literature review

Studies of novice nurses' competence have been mainly explored from the perspectives of Registered Nurses, nurse managers and novice nurses' themselves (11, 15–18), whereas studies focusing directly on nurse educators' views are lacking.

According to Wolff et al. (19) novice nurses' fitness for practice is a complex issue affected by various factors. This has resulted in different opinions as to what is meant by fitness for practice. These differing opinions are rooted in historical and social backgrounds within which nursing education and practice have evolved. Factors influencing nurses' and nurse managers' opinions have been their own professional educational background, which nurse generation they have identified themselves to represent, or how they have defined professionalism, that is, either as a developmental process or as a technically competent nurse as an end product. And finally, whether ultimate accountability of preparation of novice nurses belongs to education or practice sector. In a recent major study, the predominant view of main stakeholders including educators and clinical managers was that newly qualified nurses are fit for practice in general. The researchers concluded, however, that any studies reporting deficiencies in fitness have focused on measuring certain skills, not nurses' competence to practice in general (17).

Nevertheless, available research has indicated that nurses working in practice and education differ in their views of novice nurses' competence. Nurses working in practice complain of novice nurses' insufficient clinical and patient management skills, whereas educators claim to prepare 'beginners' rather than competent practitioners who are able to think critically and who are committed to lifelong learning (20). Thus, the point of registration is only the beginning of a journey of lifelong learning experience and development as a professional during which competence develops with practice and experience (17).

Nurse managers had low expectations of nurses' competencies, whereas novice nurses believed themselves competent in tasks for which they were sufficiently trained (4, 11). Managers considered inadequate education as an important factor contributing to satisfaction with nurse competence (21). Nurse education should keep pace with the competence requirements of the changing healthcare environment and develop the curricula accordingly, and students should have opportunities to practice new skills in the clinical contexts (4), which imply that there is place for improvement in these areas. Comparing managers' and senior nursing students' perceptions of the required competencies to perform successfully, the importance of practice-oriented education and power within and between education and practice were valued and helped to solve problems together (22). Improved communication and cooperation between practice nurses and education were needed to bridge the theory–practice gap (10, 23).

In summary, there is little direct research on nurse educators' assessments of novice nurses' competence or the differences between educators' and managers' views of novice nurses' competence. However, earlier research suggests that managers' assessments of novice nurses' competence in general seem to be at a lower level than what the education sector implies to produce.

## Methods

### *Aim and design*

This study explored the correspondence between nurse educators' and nurse managers' assessments of the level of novice nurses' professional competence, in order to evaluate whether educational outcomes correspond with the requirements of nursing practice. The aim was also to find out competence areas where the possible differences are.

Research questions were as follows:

- Do nurse educators' and nurse managers' assessments of novice nurses' professional competence differ from each other?
- In which competencies the possible differences are?
- What is the association between nurse educators' and nurse managers' socio-demographic variables and their assessments of novice nurses' competence?

A cross-sectional comparative design was used. The study was carried out in five universities of applied sciences providing basic nursing education programmes and in a major university hospital in southern Finland.

### *Instrument*

The Nurse Competence Scale (NCS) (8), a generic instrument developed to assess nurse competence was used in this study. The NCS contains 73 items organised into seven competence categories based on Benner's (24) and

Benner et al. (25) framework: helping role, teaching-coaching, diagnostic functions, managing situations, therapeutic interventions, ensuring quality and work role. Nurse competence is measured on visual analogue scale (VAS 0–100). VAS scores from 0 to 25 refer to low quality, >25–50 rather good quality, >50–75 good quality and >75–100 very good quality of action. The demographic data included sex, age, education, clinical field and the length of working experience in health care.

Despite the recognised value of nurse competence assessments, it is considered problematic due to the difficulties in operationalising the concept (2, 26). There are only few generic instruments to assess nurse competence (26, 27). NCS (28) has proven to be sensitive in differentiating nurse competence levels in various clinical settings and work experiences including the transition phase from a nursing student to a Registered Nurse (28–30). In studies using NCS, graduating and novice nurses have assessed their competence to be at a good level (28–31), but the levels have been clearly lower than in experienced nurses' self-assessments. (32–37).

#### *Sample and data collection*

The sample comprised two expertise groups. The first group was all nurse educators (N = 257) representing five universities of applied sciences providing basic nursing education in a university hospital area in southern Finland. The second group was nurse managers (N = 313) working in a major university hospital, henceforth referred to as educators and managers. The medical, surgical, paediatric/obstetric and psychiatric clinical fields were selected to the study to obtain a representative sample of nurse managers covering the university hospital function. Following the approval from the administration of the five universities of applied sciences and the hospital, the names and the e-mail addresses of the participants were obtained from the administration of these organisations. The data collection took place in September–October 2008. A cover letter explaining the purpose of and voluntary participation in the study was e-mailed to the participants jointly with the NCS questionnaire. To maintain anonymity and confidentiality, a liaison nurse, responsible of the electronic data collection procedures in the hospital, carried out the data collection. A reminder e-mail was sent 10 days after the initial data collection e-mail. From the total of 228 returned questionnaires, one was rejected as uncompleted. Of the 227 respondents, 86 (34%) were educators and 141 (45%) managers. The overall response rate was 40%.

#### *Ethical considerations*

A permission to conduct the study was obtained from the administrations of the five universities of applied

sciences and the hospital. Separate ethical consent from the ethics committee of the hospital was not needed to carry out the study, because the study did not involve patients. Approval for the use of the NCS instrument was obtained from the copyright holder. Participation in the study was fully voluntary, and consequently, returning the questionnaire was interpreted as consent to participate (38).

#### *Data analysis*

Data were analysed using SAS<sup>®</sup> Enterprise Guide<sup>®</sup> 4.0 for Windows (SAS Institute Inc., Cary, NC, USA) statistics software. Frequencies and percentages were used to describe the sample. Means and standard deviations were used to describe the level of competence. The sum variables were formed of the seven competence categories. The mean VAS score of each category was calculated as the mean of the individual scores in the category. The overall competence score was obtained by calculating the mean of all categories. Differences between the educators and managers were tested by two sample *t*-test. Two-way analysis of variance (ANOVA) was used to examine the interaction of demographic variables and expertise groups of educators and managers. Significance was set at  $p \leq 0.05$ . The internal consistency of the categories was analysed using Cronbach's  $\alpha$  coefficient, the values ranging from 0.93 to 0.97 (38).

## **Results**

#### *Participants*

More than a half of the educators (n = 54; 63%) and managers (n = 74; 53%) were 50 years or older. Nearly half of educators (n = 42; 49%) had over 20 years of work experience, whereas in the manager group, the majority (n = 100; 71%) had work experience less than 20 years. Most educators (n = 81; 94%) and about half of the managers (n = 69; 49%) had a Master in Nursing Science level education. When basic nurse education (RN) was transferred from colleges to universities of applied sciences in Finland in 1995, nurse educators in Finland were required to have a master's degree in nursing science. The same requirement was applied to nurse managers in university hospitals. However, managers permanently employed by the hospitals before this requirement were allowed to keep their positions until retirement, which explains the educational background of managers in this study. Managers represented all four clinical fields of the university hospital, surgical (n = 48; 34%), medical (n = 35; 25%), psychiatric (n = 30; 21%) and paediatric/obstetric (n = 28; 20%).

### *Nurse educators' and nurse managers' assessments of novice nurses' competence*

*Educators.* Educators assessed novice nurses' overall level of professional competence as good (VAS 60.1; SD 21.3). In five categories of helping role, ensuring quality, diagnostic functions, managing situations and teaching-coaching, the competence levels were fairly close to each other, VAS scores ranging between 64.5 and 59.6 (SD 23.6–20.2). Somewhat lower competence level was found in two categories of work role and therapeutic interventions, VAS scores ranging between 57.4 and 55.6 (SD 22.4–21.5). Of all items, competence was assessed as good in 77% ( $n = 56$ ) items, VAS scores ranging between 74.6 and 50.2, rather good in 21% ( $n = 15$ ) items, VAS scores ranging between 49.9 and 41.9, and very good in 3% ( $n = 2$ ) items, VAS scores ranging between 82.0 and 77.8.

In single item, educators assessed novice nurses' competence to be very good in utilising information technology (VAS 82.0) and maintaining professional skills (VAS 77.8). At a good level of competence, but with a fairly high VAS score, were activities which concerned immediate patient care, use of evidence-based knowledge, commitment to ethical care and care philosophy, and caring for self. In these items, VAS scores ranged between 68.0 and 74.6. Lower scores indicating to a rather good level of competence were related to coaching, guiding and mentoring activities as well as developmental and coordinating tasks. The VAS scores ranged between 41.9 and 49.7 (Table 1).

*Managers.* Managers assessed novice nurses' overall level of professional competence as rather good (VAS 43.7; SD 22.0). The highest competence was found in helping role category (VAS 55.0; SD 22.0) indicating good level of competence. Other six categories of ensuring quality, teaching/coaching, diagnostic functions, managing situations and therapeutic interventions were at a rather good level, VAS scores ranging between 45.6 and 35.4 (SD 23.7–22.7). Of all items, competence was assessed as good in 29% ( $n = 21$ ) items, VAS scores ranging between 70.5 and 51.1, rather good in 66% ( $n = 48$ ) items, VAS scores ranging between 48.7 and 25.1, and low in 2% ( $n = 6$ ) items, VAS scores ranging between 23.2 and 20.0.

In single item, managers assessed novice nurses' competence highest in utilising information technology (VAS mean 70.5). Other higher scores concerned maintaining of professional skills, commitment to ethical values and care philosophy, taking care of the self, and in activities related to immediate patient care. In these items, VAS scores ranged between 69.8 and 51.1. Managers assessed novice nurses' competence as low in coaching, guiding

and mentoring tasks. Also competence in providing expertise and consultation for care team was assessed low. In these items, VAS scores ranged between 23.3 and 18.5 (Table 1).

### *Correspondence between nurse educators' and nurse managers' assessments*

Educators assessed the level of competence systematically higher compared with managers' assessments. The differences were statistically significant in all competence categories ( $p < 0.001$ – $0.005$ ) at significance level  $p \leq 0.05$ . The overall mean difference including all categories was 16.4 VAS scores. The highest VAS mean differences (VAS 20.2) between educators' and managers' assessments were in therapeutic interventions and smallest in helping role (VAS 9.6) categories. Differences less than 10 VAS scores were found in 10% ( $n = 7$ ) and more than 20.0 VAS scores were found in 37% ( $n = 27$ ) of all items. However, the competence assessments were in line throughout the measurement (Fig. 1).

At item level, the smallest differences (VAS  $< 10$ ) between educators' and managers' assessments were in activities related to commitment to ethical values and care philosophy, in maintaining professional skills, in identifying patients' need for support, in the nurse caring for her own mental and physical resources, in acknowledging one's own limits and in regarding professional identity as a resource.

The most striking differences (VAS  $> 20$ ) were in activities related to developmental and evaluation tasks, coaching activities, use of evidence-based knowledge and activities in which mastering a comprehensive view of the care situation was needed. Many of these activities concerned working in multidisciplinary teams. There was also a clear difference between educators' and managers' assessments of novice nurses' ability to act autonomously (Table 1).

### *Demographic variables associated with the assessments of competence*

Educators less than 50 years of age assessed novice nurses' overall competence at a lower level than educators over 50 years of age. In the manager group, the case was the opposite. The results suggest that the interaction between age and expertise groups (educators and managers) must be examined more closely. Statistical test of the interaction effect by two-way analysis of variance, NCS overall score as the dependent variable, gives  $F_{1,172} = 18.6$ ,  $p < 0.001$ . The plot of means shows the two-way interaction of expertise and age in detail (Fig. 2). Thus, the difference in the assessments is very strongly associated with age.

**Table 1** Comparison of educators' managers' assessments of novice nurses' level of competence, (visual analogue scale (VAS)  $\leq 25$  low quality of action,  $>25$ – $50$  rather good quality of action,  $>50$ – $75$  good quality of action and  $>75$ – $100$  very good quality of action)

Competence category and items	Educators'	Managers'	Difference in VAS scores Mean 1–Mean 2	t-test p	Cronbach's alfa $\alpha$
	assessments N = 86 Mean 1 (SD)	assessments N = 141 Mean 2 (SD)			
I. helping role	64.5 (20.2)	55.0 (22.0)	9.6	0.005	0.93
Utilising nursing research findings in relationships with patients	63.3	48.7	14.6		
Supporting patients' coping strategies	71.2	58.8	12.4		
Planning patient care according to individual needs	69.2	58.0	11.2		
Developing the treatment culture of my unit	49.9	39.2	10.7		
Modifying the care plan according to individual needs	69.4	59.3	10.1		
Decision-making guided by ethical values	74.6	69.6	5.0		
Evaluating critically own philosophy of care	54.1	51.1	3.0		
II. teaching and coaching	59.6 (23.6)	43.3 (22.7)	16.3	$\leq 0.001$	0.97
Developing patient education in my unit	54.5	31.9	22.6		
Developing orientation programmes for new nurses in my unit	53.9	32.1	21.8		
Mastering the content of patient education	70.5	49.5	21.0		
Coaching others in duties within my responsibility area	58.5	39.3	19.2		
Supporting student nurses in attaining goals	61.5	42.9	18.6		
Taking student nurse's level of skill acquisition into account in mentoring	57.2	39.2	18.0		
Evaluating patient education outcome together with patient	60.0	42.8	17.2		
Coordinating patient education	45.6	28.8	16.8		
Acting autonomously in guiding family members	53.8	37.2	16.6		
Mapping outpatient education needs carefully	66.9	51.3	15.6		
Evaluating patient education outcomes with family	51.6	37.0	14.6		
Providing individualised patient education	67.2	53.7	13.5		
Evaluating patient education outcomes with care team	57.9	44.7	13.2		
Able to recognise family members' needs for guidance	56.0	43.7	12.3		
Finding optimal timing for patient education	60.3	48.7	11.6		
Taking active steps to maintain and improve one's professional skills	77.8	69.8	8.0		
III. diagnostic functions	61.0 (21.3)	42.6 (24.1)	18.5	$\leq 0.001$	0.93
Developing documentation of patient care	66.3	38.8	27.5		
Coaching other staff members in patient observation skills	52.3	28.8	23.5		
Coaching other staff members in use of diagnostic equipment	49.4	26.5	22.9		
Analysing patients' well-being from many perspectives	73.4	53.7	19.7		
Arranging expert help for patient when needed	70.5	53.2	17.3		
Able to identify family members' need for emotional support	56.0	44.9	11.1		
Able to identify patients' need for emotional support	60.7	52.2	8.5		
IV. managing situations	60.3 (24.6)	42.5 (26.1)	17.8	$\leq 0.001$	0.95
Arranging debriefing sessions for the care team when needed	50.2	25.9	24.3		
Coaching other team members in mastering rapidly changing situations	48.3	26.8	21.5		
Keeping nursing care equipment in good condition	60.7	39.3	21.4		
Planning care consistently with resources available	61.8	40.9	20.9		
Promoting flexible team cooperation in rapidly changing situations	56.3	39.0	17.3		
Able to recognise situations posing a threat to life early	71.8	59.0	12.8		
Prioritising my activities flexibly according to changing situation	63.5	51.3	12.2		
Acting appropriately in life-threatening situations	69.4	57.4	12.0		

Table 1 (Continued)

Competence category and items	Educators'	Managers'	Difference in VAS scores Mean 1–Mean 2	t-test p	Cronbach's alfa $\alpha$
	assessments N = 86 Mean 1 (SD)	assessments N = 141 Mean 2 (SD)			
V. therapeutic interventions	55.6 (24.4)	35.4 (22.7)	20.2	≤0.001	0.96
Coaching the care team in performance of nursing interventions	49.7	25.1	24.6		
Providing consultation for the care team	43.8	20.0	23.8		
Utilising research findings in nursing interventions	68.0	46.0	22.0		
Evaluating systematically patient care outcomes	60.9	39.7	21.2		
Coordinating multidisciplinary team's nursing activities	47.2	26.6	20.6		
Updating written guidelines for care	47.9	28.1	19.8		
Incorporating relevant knowledge to provide optimal care	53.7	34.0	19.7		
Contributing to further development of multidisciplinary clinical paths	47.2	30.4	16.8		
Making decisions concerning patient care taking the particular situation into account	68.0	51.7	16.3		
Planning own activities flexibly according to clinical situation	66.2	52.5	13.7		
VI. ensuring quality	62.2 (25.3)	45.6 (23.7)	16.6	≤0.001	0.94
Evaluating systematically patients' satisfaction with care	60.9	36.2	24.7		
Utilising research findings in further development of patient care	68.8	44.7	24.1		
Making proposals concerning further development and research	58.5	42.4	16.1		
Able to identify areas in patient care needing further development and research	60.8	45.4	15.4		
Evaluating critically my unit's care philosophy	54.5	42.2	12.3		
Committed to my organisation's care philosophy	70.0	62.8	7.2		
VII. work role	57.4 (21.5)	38.9 (23.0)	18.5	≤0.001	0.97
Orchestrating the whole situation when needed	51.4	23.2	28.2		
Developing patient care in multidisciplinary teams	58.4	31.0	27.4		
Mentoring novices and advanced beginners	41.9	18.5	23.4		
Coordinating student nurse mentoring in the unit	44.5	21.2	23.3		
Incorporating new knowledge to optimise patient care	72.8	49.8	23.0		
Providing expertise for the care team	45.3	22.5	22.8		
Guiding staff members to duties corresponding to their skill level	43.1	20.8	22.3		
Acting autonomously	66.4	44.8	21.6		
Coordinating patient's overall care	58.7	37.2	21.5		
Developing work environment	56.8	35.6	21.2		
ensuring smooth flow of care in the unit by delegating tasks	45.7	25.8	19.9		
Familiar with my organisation's policy concerning division of labour and coordination of duties	57.9	41.8	16.1		
Giving feedback to colleagues in a constructive way	58.5	42.8	15.7		
Acting responsibly in terms of limited financial resources	49.7	35.2	14.5		
Able to recognise colleagues' need for support and help	55.5	42.1	13.4		
Utilising information technology in nursing practice/work	82.0	70.5	11.5		
Taking care of self in terms of not depleting one's mental and physical resources	70.3	61.2	9.1		
Aware of the limits of one's own resources	67.7	58.8	8.9		
Professional identity serves as resource in nursing	63.7	56.1	7.6		
Overall	60.1 (21.3)	43.7 (22.0)	16.4	≤0.001	

Age is associated with the length of work experience. So, if instead of age the length of work experience classified into two categories (<10 years and >10 years) is used, the interaction of expertise and the length of work experience as an educator/manager gives  $F_{1,168} = 15.3$   $p < 0.001$ . The means of assessments are 48.6 (educators,

work experience < 10 years), 66.3 (educators, work experience  $\geq 10$  years), 48.0 (managers, work experience < 10 years) and 38.8 (managers, work experience  $\geq 10$  years). Thus, the difference in the assessments is strongly associated even with the length of work experience. Above NCS overall score has been used as the

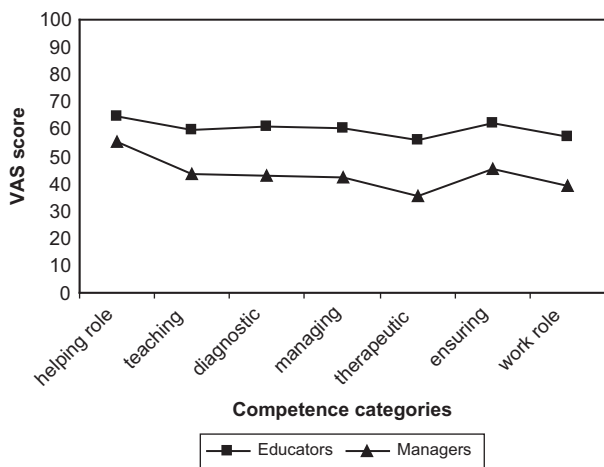


Figure 1 Educators' and managers' competence assessments.

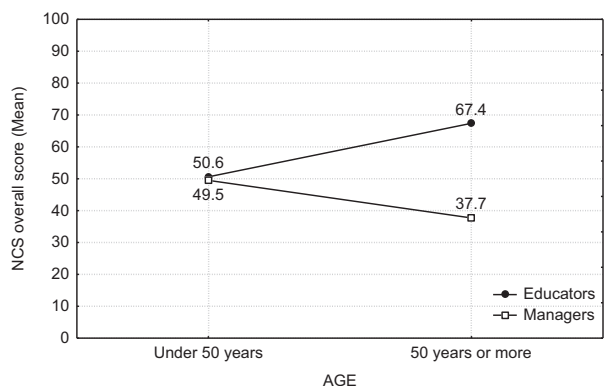


Figure 2 Educators' and managers' age and competence assessments.

dependent variable, but the same kind of interaction effect can be found in the seven competence categories.

### Discussion

The purpose of this study was to explore the correspondence between nurse educators' and managers' assessments of novice nurses' professional competence aiming to evaluate whether outcomes of nursing education meet the requirements of nursing practice. The purpose was also to find out competence areas where the possible differences are.

Findings indicate that educators' assessments of novice nurses' competence were significantly higher than managers' assessments, which is in line with earlier studies (11, 15) This finding may suggest that educators and managers have a different reference point in relation to the level of novice nurses' required competence. For example, educators may assess the competence against the official minimum competence requirements for a nurse to pass the professional registration, or they may

assess the competence from the viewpoint what is the possible level of competence to achieve during basic nursing education. Managers' assessments may be based on a competence level which a nurse should achieve to succeed in clinical practice, or what competences are expected of the nurse in their particular clinical setting. In university hospital settings, nursing care is also highly specialised, and managers' expectations may suggest that high level of competence is expected of nurses in these settings (3, 36, 37). Earlier studies have indicated that education and practice sectors' expectations of novice nurses' competence differ (11, 15, 20). Wolff et al. (19) have stated that novice nurses' competence is a complex issue which has its roots in historical and social contexts of nursing education and practice referring to assessors' personal backgrounds, definition of a competent nurse, and accountability of education and practice sectors in preparing novice nurses. However, the assessments were mainly in line with each other indicating similar opinions about competences in which novice nurses are good and in which competencies they need to improve their performance. This finding also adds to the validity of the study.

Educators' and managers' assessments were in most agreement in competencies related to direct patient care, maintaining professional skills and acting responsibly and ethically without forgetting to take care of the self. This suggests that the views of the educators and managers meet in the core tasks of nursing. This is positive from the viewpoint of quality care and patient safety and has been acknowledged also in other studies on novice nurses (14, 29). Moreover, in educators' and managers' assessments, the smallest differences were in categories with higher VAS mean scores and the biggest differences in categories with generally lower VAS mean scores. This may suggest that educators and managers have a unanimous view of the essential competencies needed in the beginning of career as well as of competencies which need time and experience to develop. Previous research has shown that competence develops with practice experience and that some competencies are achieved through practice (17).

The most striking differences between assessments were related to developmental and evaluation tasks, coaching and mentoring activities, the use of evidence-based knowledge and to activities in which a comprehensive view of the care situations is needed. It is obvious that in the beginning of the career, nurses' skills in these areas are fairly limited. This complies with Benner's (24) theory and other studies dealing with nurses' professional development (12, 13, 39) and suggests managers' realistic view of the situation. It is also an impossible task for educators to provide students with specific competencies that are fully developed and directly adaptable in every care setting. Educators teach the ideals of quality nursing

care. As Holland et al. (17) point out in their study, it is natural that novice nurses' are not fully competent in all care situations encountered in clinical practice. Novice nurses' competence depends on the viewpoint how it is looked at, whether it is seen as fitness in general or as a competence of specific skills.

Nevertheless, big differences in assessments may also mean that cooperation between education and practice is deficient referring to the recognised theory–practice gap (8). Several suggestions are presented to reduce the gap (9). Nursing education should keep pace with the competence requirements of changing healthcare practice environment and develop their curricula accordingly (4, 23). Education should be sufficiently practice-oriented. Communication between educational and practice sectors should be improved and emerging problems should be solved together (10, 22, 40). It might also be useful for educators to be familiar with clinical world and managers with academic environment and curricula (41). Particular attention should be paid to competence assessment processes (15, 42).

The most worrying of the findings was the difference concerning the use of evidence-based knowledge. Managers' low expectations may imply that use of evidence-based knowledge has not been embraced by nurses strongly enough during education after all, and educators' have too positive a view of their students' readiness to apply research knowledge. It may also imply that during nurses' socialisation process into their new work environment, the use of evidence-based knowledge is not supported enough by nurse supervisors. In the transition phase, nurses' work is known to be action-centred (24, 25, 39), but it should not mean that use of evidence-based knowledge could be neglected. Also managers' own competence in using evidence-based knowledge may need further exploring. In any case, nursing has already a long history in producing evidence-based knowledge, but its transfer to practice still seems problematic.

Of educators' and managers' socio-demographic variables, age and work experience seemed to have a strong impact on educators' and managers' competence assessments. Research indicates that experienced professionals have knowledge and more insight in relation to different phases of nursing education and nursing career. (24) However, it is interesting here why nurse educators' assessments of novice nurses' competence tend to improve and experienced managers' assessments worsen when their age and experience increase? This suggests that the difference between assessments between education and practice can be bigger or smaller depending on the age and experience of assessors and may not reflect necessarily a true picture of the level of competence.

One limitation of this study was a fairly modest response rate. Although low response rates in survey

studies are a recognised phenomenon (43, 44), low response rates can introduce uncertainty and bias in the results and seriously decrease the scientific value of the study (45, 46) by affecting representativeness of the sample and consequently generalisability of the findings (43). Even with acceptable response rates, nonresponse bias can occur, which bias naturally magnifies with low response rates (47). Therefore, issues related to low response rate should be taken seriously. Low response rates arise several practical questions. What are the non-responding participants thinking or doing in relation to the studied phenomenon? Do responders represent an atypical group in terms of activism, interest or some other characteristic? Literature acknowledges several factors contributing to nonresponsiveness as well as methods to increase response rates in survey studies (45, 46, 48). For example, personal contact between researchers and participants increases motivation to participate (48). In this study, the participants were contacted only by e-mail, although detailed instructions how to use the electronic questionnaire were provided, technical functions of the electronic data collection were pretested in both organisation without dysfunctions reported. Also the cover letter was carefully planned to inform and motivate the participants. Also the fact that educators and managers are continually burdened with a plethora of questionnaires to which they are expected to respond has caused them exhaustion and might play a role here. Another limitation is the subjectivity of assessments contributing to a possible social desirability bias (38). It is possible that educators unconsciously assessed not only the outcomes of education but also their own work, and managers wanted to convey their commitment to high-quality nursing care.

## Conclusions and implications

Nurse educators assessed novice nurses' professional competence to a significantly higher level than nurse managers throughout all competence areas. Most agreement was found in relation to core tasks of nursing, maintenance of professional skills and commitment to ethical care. Most disagreement was found in activities related to developmental and evaluation and coaching tasks, and in use of evidence-based nursing and managing a comprehensive view of care activities. More intensive collaboration between education and practice is needed to facilitate educators, managers and nurses in reaching a consensus about the required competence level and to find measures to develop nurses' professional competence consistently from beginning of education to the end of career. In this, competence assessment provides a good knowledge basis for educators in developing the curricula, for managers in developing supervisor programmes, continuing education and other supportive interventions to help nurses in their early career,



particularly in areas in which they need improvement. For nurses, competence assessment provides a mean to a continuous professional self-reflection and development. An approach combining educator, nurse and manager assessments is recommended to provide a more comprehensive view of the competence in the beginning of nursing career.

### Author contributions

ON, TL, RM and MH involved in the study conception and design; TL, ON and HI collected and analysed the data; ON and TL drafted the manuscript; RM and HL-K involved in the critical revisions of the manuscript for

important intellectual content; MH and RM supervised the manuscript; HL-K involved in the theoretical contribution and manuscript design.

### Ethical approval

A permission to conduct the study was obtained from the administrations of the participating universities of applied sciences and the hospital.

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