

ORIGINAL RESEARCH

Congruence between nurse managers' and nurses' competence assessments: A correlation study

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Abstract

Background/objective: Nurse managers have an important impact on nurses' competence. However, research on managers' and nurses' competence assessments using the same criteria is scarce. For quality care it is important that these assessments align. This study compared nurses' and their managers' competence assessments.

Methods: A cross-sectional, descriptive, comparative correlation design was applied. Participants were 1656 manager-nurse pairs conducting self-assessments and manager assessments respectively in a university hospital in Finland. The Nurse Competence Scale which measures nurses' generic level professional competence was used to collect the data. Means, range, frequencies, and standard deviations, and Mixed Models with Repeated Measures were used in data analysis.

Results: Both managers and nurses assessed the competence level as good, but managers assessed the level significantly higher than nurses themselves. However, the overall competence profiles between the groups aligned. Higher competence level and smaller Visual Analogy Scale (VAS) score differences between the groups were related to individualized patient care, and ethically committed and flexible action in care situations. Lower competence level and bigger VAS score differences between groups concerned consultation, guiding, and evaluation activities within care team, developmental tasks, and use of research knowledge.

Conclusions: Although the difference between managers' and nurses' competence assessments was significant in favour of managers, there is a strong congruence between the groups concerning core tasks of nursing. Competences with low scores, differences between groups, management's support, and factors influencing competence need further research for planning interventions to enhance competence development. Use of multiple assessment methods is recommended to add validity and reliability of the measurements.

Key Words: Evaluation study, Manager, Nurse, Self-assessment, Professional competence

1 Introduction

Nurses' professional competence, henceforth referred as competence, is defined as expected levels of knowledge, attitudes, skills, and values of the nurse.^[1] It is regarded as

a key element in providing high quality and safe nursing care.^[2] Due to the issues related to quality care and patient safety, added with the global shortage of professionally qualified nurses, interest in nurses' competence has in-

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creased.^[3-5] Consequently, assessment of competence is important in targeting available competence resources in an optimal way.^[3] It is also important that nurses' and their managers' competence assessments are realistic and aligned. In this way provision of relevant and adequate interventions to promote competence and rational use of nurse work force become possible.

Nurse managers have an important impact either on enhancing or impeding nurses' competence.^[3-6] Positive manager-nurse relationships,^[3] and managers providing support and empowering work environments to their nurses are strongly associated with nurses' self-assessed skills to deliver high quality care,^[5] whereas unjustified management behaviour decreases nurses' work motivation.^[3] Managers also need to recognize their own resources and shortcomings.^[7] They should be aware of their accountability in assessing the clinical competence of others. For example, recognizing an incompetent practitioner is the responsibility of the manager, and failing to recognize competence where it exists has an adverse impact on nurses' work motivation.^[8]

A common and popular way to measure nurses' competence has been based on various self-assessment scales.^[9-15] However, recent research focusing on managers' assessments of their subordinate nurses' competence using the same assessment criteria with the nurses has been fairly scarce. In Meretoja & Leino-Kilpi study^[16] managers assessed the overall level of nurses' competence significantly higher than nurses themselves. However, the overall competence profiles of both groups were aligned. In Bahreini *et al.* study^[17] managers' assessments of their nurses' competence were significantly lower than nurses' self-assessments, although the competence profiles were mainly in line. In earlier studies nurse's self-assessed competence has varied according to nurses' age and work experience, education, personal characteristics, clinical context, organization, and care climate and culture.^[13, 15, 18-21] There are also differences in managers' competence.^[22] Effective and competent managers have an essential impact on nurses' overall work performance and motivation to provide care.^[23, 24]

Regarding the pivotal impact of managers in influencing nurses' competence, it would be important to know whether there are differences between managers' and nurses' assessments, what areas of competence they concern, and whether the assessments support each other.

Purpose and research question

The purpose of this study was to compare nurse managers' assessments of their subordinate nurses' competence with nurses' self-assessments, thus providing knowledge of strengths and limitations in competence for development of relevant interventions to maintain and enhance nurses' competence. Answers were sought to the following research

question: Is there congruence between nurse managers' and nurses' competence assessments in terms of quality and frequency of action?

2 Methods

2.1 Research design, setting and sample

This study applied a cross-sectional, descriptive, comparative correlation design. The study setting was a major university hospital in Finland providing health services for about 1.5 million population in its area. A purposive sample of nurses (n = 2699) and their managers representing all clinical fields in the hospital were recruited on a voluntary basis. In this study the nurse refers to a registered nurse with a Finnish professional body and the nurse manager to a nurse's most immediate superior. Nurses, who had the minimum work experience of three months or minimum of six months to their retirement met the inclusion criteria. Participants were informed about the aim of the study, implementation of the assessment procedure, and the Nurse Competence Scale.^[10]

2.2 Instrument

The NCS (Nurse Competence Scale) instrument used in this study was developed to measure nurses' competence in terms of quality and frequency of action.^[11] The instrument comprises seven competence categories and seventy three items: Helping role (7 items), Teaching-coaching (16 items), Diagnostic functions (7 items), Managing situations (8 items), Therapeutic interventions (10 items), Ensuring quality (6 items), and Work role (19 items). The instrument is based on Benner's^[25] and Benner's *et al.*^[26] work, in which nurse's career development is described as a sequence from the novice to the expert level. The instrument's psychometric properties have been scientifically tested to measure nurse competence at generic level in different clinical settings and phases of work experience. Cronbach's alpha values for internal consistency have ranged from .72- to .96.^[10, 14, 15, 17-21, 27-29] In each item of the NCS, nurses assess both the quality and frequency of action. To assess the quality of action nurses use Visual Analogy Scale (VAS) from 0-100. VAS points from 0 to 25 indicate low quality, points >25 to 50 rather good quality, >50 to 75 good quality, and >75 to 100 points very good quality of action. To assess the frequency of action nurses use a four-point Likert scale (0 = not applicable, 1 = very seldom, 2 = occasionally, 3 = very often). Clinical field, age, education in health care, length of work experience in health care, length of work experience in current work unit, and employment status were the demographic variables measured in this study. Permission to use instrument was obtained from the copyright holder.

2.3 Data collection

Data collection took place between January 2007 and October 2008 and it was carried out electronically. The principal investigator (RM), who was responsible for the data collection in the hospital appointed seven research coordinators representing all clinical fields (medical, operative, paediatric, obstetric and psychiatric), who carried out the data collection from nurses and managers in their own specialty areas. The data were collected as a part of the hospital's annual manager review policy program. However, completing NCS instrument was fully voluntary. Therefore the use of randomized sampling was waived. Completing the questionnaire was regarded as a consent to participate. Nurses and managers in a total of 125 units were informed of the review procedure in about 100 briefing sessions. Moreover, the cover letter, separate to managers and nurses, and attached to the NCS questionnaire, informed the participants about the aim of the study, how to complete the questionnaire, and ethical issues concerning the study. Prior to data collection nurses and managers were informed that each nurse-manager pair will have an access to each other's assessments for the purpose of using the findings in manager review discussions. The participants completed and returned the questionnaire online to the research coordinators who distributed them to the managers, who saved the data in a locked cabinet in their ward unit. For researchers the data were anonymized after the permission to conduct the study.

2.4 Data analysis

NCSS 9 software was used to analyse the data. Frequencies, means, range, and standard deviations were used to summarize the data. An individual competence VAS score of a nurse was calculated as a mean value of average competencies assessed for the seven categories. Mixed Models with Repeated Measures was used to estimate the significance of differences between managers' and nurses' assessment means. Correlation between managers' and nurses' assessments was calculated using Pearson's correlation coefficient.

2.5 Ethical considerations

The hospital administration granted the approval to carry out the study. Separate ethical approval was not needed, because the target group did not involve patients. Managers and nurses were informed about the purpose of the study as well as researchers' commitment to research ethics throughout the research process. From the ethical viewpoint particular attention was paid to confidentiality of the participants. However, because the purpose of the study was to provide knowledge for manager reviews, an individual nurse's response was known to her/his manager and the manager's assessment to the corresponding nurse. This knowledge was kept confidential. Otherwise access to the data was limited only to the researchers and it was anonymized for the purposes of this study. Participation in the study was fully vol-

untary and completing the questionnaire was regarded as a consent to participate.^[30,31]

3 Results

3.1 Sample

A purposive sample of registered nurses ($n = 2699$) was recruited for the study. Nurses completed 2083 self-assessments. Corresponding manager assessments were traced yielding to a total of 1656 matched nurse-manager pairs covering 125 work units and all clinical fields. The majority of responding nurses were women ($n = 1517$; 93.0%). The biggest age group of nurses was 30-49 years old ($n = 994$; 60.8%), followed by age groups 20-29 years ($n = 343$; 21.0%) and >50 years ($n = 297$; 18.2%). Nurses work experience in health care ranged from <1 to 3 years ($n = 254$; 15.6%), from 4 to 15 years ($n = 733$; 44.8%) to > 15 years ($n = 647$; 39.6%), and in their current work unit from <1 to 3 years ($n = 693$; 40.4%), from 4 to 15 years ($n = 653$; 40.0%) to > 15 years ($n = 288$; 17.6%). Neither age nor work experience were provided by 1.3% ($n = 22$) of nurses. The majority of the nurses ($n = 1328$; 81.1%) worked as a staff nurse on a permanent status, 304 (18.6%) on a temporary status. The rest ($n = 24$; 1.4%) did not report their work status. Nurses had either a college level ($n = 931$; 56.2%) or polytechnic level ($n = 719$; 43.4%) educational background in health care. Six nurses (0.4%) had a university level Master's degree education in nursing science. Because the focus of the study was on assessing only nurses' competence, detailed demographic data was not collected from the managers.

3.2 Congruence between managers' and nurses' competence assessments

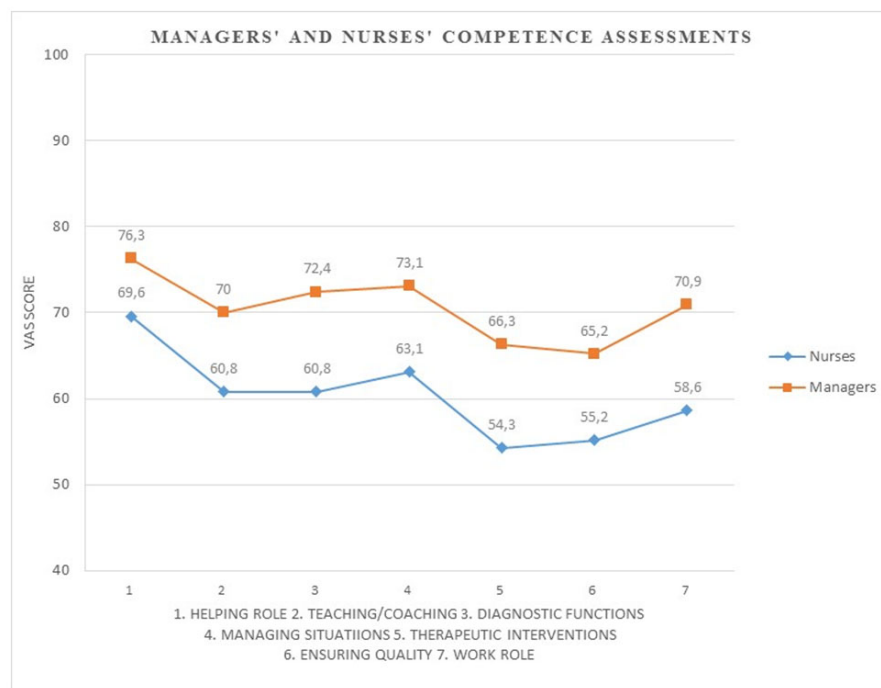
At category level the assessments showed statistically significant differences between the groups throughout the NCS measurement including both in quality and frequency of action. All p -values were $p < .001$ (see Table 1). Nurse managers assessed their nurses' competence (VAS score means) to a higher level than nurses themselves. Managers' overall mean in quality of action was 70.6 and nurses' mean was 60.6 VAS score points. In managers' and nurses' overall competence assessments the average mean difference between the groups was 10.2 VAS score points. In frequency of action the mean difference between the groups was 0.3 VAS score points. In all other categories except helping role, managers' assessment in frequency of action was higher than nurses.

Correlation between managers' and nurses' assessments in quality of action were mainly weak ranging from .156 to .278 in all categories except Work role category in which the correlation was moderate ($r = .324$). However, managers' and nurses' assessments were mainly in line with each other (see Figure 1).

Table 1: Managers' and nurses' category level VAS means, SD and Mixed Models with Repeated Measures of quality and frequency of action

Category	Managers n = 1656		Nurses n = 1656		Mixed Models with Repeated Measures		VAS mean difference
	Mean	**SD	Mean	†SD	F-value	p-value	
A. Quality of action							
1. Helping role	76.3	17.2	69.6	19.4	133.8	< .001*	6.8
2. Teaching/Coaching	70.0	19.1	60.8	21.2	239.7	< .001*	9.2
3. Diagnostic functions	72.4	20.0	60.8	21.8	224.6	< .001*	11.6
4. Managing situations	73.1	19.8	63.1	21.6	256.5	< .001*	10.1
5. Therapeutic Interventions	66.3	20.2	54.3	22.2	354.8	< .001*	11.9
6. Ensuring quality	65.2	21.2	55.2	23.0	212.6	< .001*	10.0
7. Work role	70.9	16.3	58.6	20.8	525.4	< .001*	12.3
All categories	70.6	16.9	60.6	19.3	330.4	< .001*	10.2
B. Frequency of action							Frequency of action mean difference
1. Helping role	2.7	0.3	2.8	0.4	304.9	< .001*	0.2
2. Teaching/Coaching	2.4	0.5	2.1	0.5	350.7	< .001*	0.3
3. Diagnostic functions	2.4	0.5	2.2	0.5	302.0	< .001*	0.3
4. Managing situations	2.4	0.5	2.1	0.5	344.8	< .001*	0.3
5. Therapeutic Interventions	2.3	0.5	2.0	0.5	413.5	< .001*	0.3
6. Ensuring quality	2.2	0.5	1.9	0.5	276.7	< .001*	0.3
7. Work role	2.4	0.4	2.1	0.4	573.1	< .001*	0.3
All categories	2.4	0.4	2.1	0.4	533.8	< .001*	0.3

*Significance level $p \leq .05$; ** SD = Standard deviation

**Figure 1:** Managers' and nurses' competence assessments

The ten biggest VAS score differences in single items between managers and nurses concerned consultation, coaching, guiding, mentoring, and evaluation activities within care team. Bigger differences were also related to developmental tasks, use of research knowledge or making propos-

als for new research. The biggest difference in VAS scores was 23.0 points in item "Providing expertise for the care team". Half of the items with bigger differences belonged to the Work role category (see Table 2).

Table 2: Comparison of managers' and nurses' greatest VAS means Mixed Models with Repeated Measures of quality of action

Item (Category)	Managers n = 1656		Nurses n = 1656		Mixed Models with Repeated Measures		VAS mean difference
	Mean	**SD	Mean	†SD	F-value	p-value	
(1. Helping role							
2. Teaching/coaching							
3. Diagnostic functions							
4. Managing situations							
5. Therapeutic interventions							
6. Ensuring quality							
7. Work role)							
1. Providing expertise for the care team (7)	70.3	30.2	47.3	36.3	554.0	< .001*	23.0
2. Making proposals concerning further development and research (6)	58.6	28.5	35.7	30.6	650.7	< .001*	22.9
3. Providing consultation for the care team (5)	68.9	29.0	46.6	34.3	566.6	< .001*	22.3
4. Orchestrating the whole situation when needed (7)	68.1	31.3	47.9	36.7	454.2	< .001*	20.2
5. Coaching other team members in mastering rapidly changing situations (4)	68.1	29.4	48.6	32.5	414.1	< .001*	1.6
6. Guiding staff members to duties corresponding to their skill levels (7)	63.5	30.8	44.1	34.6	373.0	< .001*	19.5
7. Mentoring novices and advanced beginners (2)	67.1	31.4	50.7	35.7	378.7	< .001*	16.7
8. Evaluating patient education outcome with care team (2)	66.1	29.9	50.0	32.5	268.7	< .001*	16.1
9. Incorporating new knowledge to provide optimal care (7)	63.4	27.9	47.7	30.4	306.2	< .001*	15.7
10. Developing work environment (7)	63.2	28.7	47.5	30.4	314.8	< .001*	15.7

Significance level $p \leq .05$; ** SD = Standard deviation

The ten smallest VAS score differences in single items between the groups concerned activities related to immediate patient care and patients' needs, taking into account the situational factors in the care context as well as adhering to ethical values in decision-making. There was also little difference in managers' and nurses' assessments concerning supporting student nurses, utilizing information technology as well as acting responsibly in using financial resources and taking care of care equipment. The smallest difference was 2.0 points in item "Decision-making guided by ethical values". In items with small differences none of the competence categories dominated (see Table 3).

The level of competence was generally higher in items in which VAS scores differences between groups were smaller

and lower in items in which the VAS score differences between groups were bigger. Similar tendency applied to standard deviations as well.

4 Discussion

4.1 Discussion of the findings

This study compared nurse managers' assessments and their subordinate nurses' self-assessments of nurses' professional competence using the Nurse Competence Scale. The overall level of nurse competence was good assessed by nurses themselves and their managers. However, managers assessed nurses' competence to a higher level than nurses

themselves. This is in accordance with an earlier smaller scale Finnish study.^[16] In a recent study conducted in Iran nurses assessed themselves more competent than their head nurses throughout the NCS measurement.^[17] However, cultural and educational differences in health care systems between countries, management styles,^[4,6,23,32] work environ-

ments, and work climates^[33] are factors which influence competence assessments and thus questions the relevance of direct comparability of findings between studies and warrants further research of factors which are related to competence.

Table 3: Comparison of managers' and nurses' smallest VAS means

Item (Category)	Managers n = 1656		Nurses n = 1656		Mixed Models With Repeated Measures		VAS Mean difference
	Mean	†SD	Mean	**SD	F-value	p-value	
(1. Helping role							
2. Teaching/coaching							
3. Diagnostic functions							
4. Managing situations							
5. Therapeutic interventions							
6. Ensuring quality							
7. Work role)							
1. Decision-making guided by ethical values (1)	84.6	18.7	82.6	21.4	8.9	.003*	2.0
2. Supporting student nurses in attaining goals (2)	72.0	30.3	69.3	30.4	11.3	.001*	2.7
3. Analysing patient's well-being from many perspectives (3)	82.5	20.6	79.7	22.0	16.8	< .001*	2.8
4. Providing individualised patient education (2)	82.7	21.1	79.7	24.3	16.2	< .001*	3.0
5. Planning own activities flexibly according to clinical situation (5)	83.8	16.6	80.6	20.8	27.6	< .001*	3.2
6. Making decisions concerning patient care taking the particular situation into account (5)	83.0	20.3	79.5	23.1	25.6	< .001*	3.5
7. Acting responsibly in terms of limited financial resources (7)	59.8	30.9	55.7	31.7	16.7	< .001*	4.1
8. Utilising information technology in my work (7)	78.9	19.9	74.7	25.8	30.4	< .001*	4.2
9. Prioritising my activities flexibly according to changing situations (4)	83.7	17.3	79.2	21.2	55.2	< .001*	4.5
10. Keeping nursing care equipment in good condition (4)	64.9	31.8	60.3	31.5	23.9	< .001*	4.6

Significance level $p \leq .05$; **SD = Standard deviation

There is no justified reason why managers' assessments of nurses' competence level should be higher than nurses' self-assessments. It is possible that managers and nurses had different views concerning the required level of competence, against which they assessed the competence, in this case managers setting the level lower than what nurses demanded of themselves. Managers' higher assessments may also im-

ply that they want to show appreciation and support to their nurses to maintain quality care and healthy work environment for the benefit of the patients, nurses, organization, and themselves. Good managers develop positive relationship with their nurses based on trust and respect, set clear expectations for performance, provide feedback, set goals and provide adequate resources, and are empowering.^[34] Man-

agers' position as the representative of both the organization and staff nurses may put managers in a situation in which it is in managers' interest to maintain a positive and competent image of their unit both to their nurses as well as to their own superiors. Furthermore, since managers carry out assessment reviews of their subordinate nurses, it is very likely that they have more experience in assessing nurses' professional competence than nurses assessing only themselves. It is also worth noting that correlations between managers' and nurses' assessments were mainly weak. This means that, for example, a single manager's high assessment does not necessarily predict a single nurse's high self-assessment. It is also possible that social desirability response bias^[30] referring to a tendency to provide answers in congruence with prevailing professional expectations and social norms, has contributed to both managers' and nurses' responses.

As to nurses' self-assessments the impact of various factors influencing nurses' professional development should not be neglected. Nurses have described work experience, challenging learning opportunities, work environment including positive ward climate, personal characteristics, such as willingness to know, motivation to nurse, and theoretical knowledge as prerequisites to competence development.^[31] Particularly managers' leadership style is seen as an enhancing or impeding factor in competence development.^[40] Empowering supportiveness is a characteristic of good managers, and good relationships between managers and nurses enhance nurses' motivation to provide quality care.^[3,5-7,23,32,35] Sense of achievement and self-regard also enhance nurses' motivation and professional development.^[36] It is difficult to know here, how much these factors were involved in nurses' self-assessments, but they offer good direction for further research.

Moreover, do nurses know well enough what managers expect or think of them, perhaps due to lack of adequate feedback? For example, in this study managers' seemed to have much more positive views of their nurses' competence in various coaching, guiding, consultation activities in team work or utilizing research knowledge than nurses did themselves. Research has reported scarce feedback and unresolved conflicts between nurses and their immediate management.^[37] Nurses should be allowed to speak up, and they have a need to be heard.^[38] Also, a certain modesty as a culturally typical feature, which regards self-praise as boasting, may play a role here to explain nurses' lower competence scores compared with those of their managers.

Finally, one feature worth noting here regarding the differences concerns the subjectivity of the assessments. Subjectivity has been acknowledged to be a problem in self-assessments.^[9] Although managers' assessments could be considered as more objective perceptions of their subordinate nurses' competence than nurses' self-assessments, both assessments are prone to subjectivity. However, because nurse managers have the responsibility to see that nurses

working under their management are competent enough for patients' safe care^[8] the reasons for significant differences between managers and nurses' assessments should be further studied from various viewpoints. For example, the use of multi-method approaches and clinical specialty-related assessment tools are highly recommended in nurse competence assessment to increase the validity and reliability of the measurement.^[12,39,40] Also factors which enhance and impede competence performance and its development should be further explored.

It was interesting in this study, however, that in all competence categories the assessment profiles of both groups were quite similar in that managers' higher mean scores corresponded with nurses' higher mean scores and likewise in the lower scores. It suggests that there was an agreement of those competence areas which are mastered, and those which may need development. This similarity of competence profiles adds to the reliability of the measurement. It may also suggest that the adverse effect of subjectivity inherent in self-assessment instruments is not very strong here.

The two areas in which managers and nurses assessed nurse competence to be at the highest level were Helping role and Managing situations. The lowest levels were Therapeutic interventions and Ensuring quality. The tendency of competence settling in this way is supported by several earlier studies,^[15,16,18,41] but there is also variation between studies concerning the order of highest and lowest score categories.^[17,19,22,28]

It could be considered as a positive finding that the item level score differences between the groups were smallest, practically negligible, in basic elements of nursing care, such as ethically committed, direct and individualised patient care. In these items also the competence was higher than in items where the differences in scores were bigger. Thus, it indicates that there is a high consensus about the level of the nurses' competencies concerning core nursing activities.

But, there were also items in which the score differences between managers and nurses were strikingly great. Similarly, in these items the general competence level in both groups was lower than in items in which differences were smaller. These items were mainly related to team work and developmental tasks. Nurses' low commitment to developmental work has been reported in earlier studies.^[42] Nurses or even managers may feel that developmental tasks are not directly their responsibility. It may also be a question of lack of resources, such as time, which prevents nurses' and managers' contribution to developmental tasks, or they may feel that their competence to manage development is not adequate. In measuring competence it is important to note that in order to be valid an assessment must measure what has been taught to the nurse and consequently, what competen-

cies the nurse is expected to master.^[8] Nevertheless, nursing in general and developmental tasks are often based on team work, consequently low esteem of competencies and discrepancies between managers' and nurses' assessments in this area need further exploring.

4.2 Validity and reliability of the study

The use of NCS instrument strengthens the validity and reliability of this study. The NCS instrument has been scientifically tested^[10] and been widely used both in Finland and internationally covering various health care contexts.^[14, 15, 17, 18, 21, 28, 29, 42, 43] Despite the significant differences in competence level between managers' and nurses' assessments, the similarity of competence profiles also strengthens the validity and reliability of the measurements. However, it should be noted that the defining and objective measurement of nurse competence has been proved to be difficult.^[40]

4.3 Strengths and limitations

For a nursing study the sample was large which adds to the reliability of the findings and provides a comprehensive description of nurse competence at a university level hospital representing all clinical fields, all age groups, educational backgrounds, and specialty competence areas of nurses. In university hospitals high demands are placed on the competence of its health care personnel in providing high quality and safe care. This also strengthens the generalizability of the findings in settings where care culture and hospital environment are fairly similar. This study was originally carried out to provide knowledge for manager reviews. This may cause social desirability bias in managers' and nurses' assessments to respond in most acceptable way because the total anonymity between nurses and their managers had to be somewhat compromised.^[30] However, collecting data in this way for manager reviews is a common human resource policy in the participating hospital. High response rate suggests that compromised anonymity did not prevent nurses from responding. The findings are in accordance with an

earlier Finnish study,^[16] in which manager–nurse assessment was carried out without access to each others' assessments suggesting that responding nurses in this study apparently were not much concerned about the mutual access, therefore not supporting the existence of noticeable social desirability bias in this data.

5 Conclusions

Nurse managers assessed practicing nurses' competence at a significantly higher level than nurses themselves. High mean VAS associated with small differences in scores between the groups suggest a high congruence concerning core tasks of nursing. Reasons for lower mean scores and bigger differences between the groups in developmental tasks and team work need further analysis.

Manager-nurse assessments are important in offering a wider, more realistic and constructive basis for manager reviews. They provide a tool for developing nurse competencies both individually and at unit level. Nevertheless, organization's and management's role in active support of nurse competence needs further research. Significant differences between managers' and nurses' assessments and the impact of factors influencing nurse competence and its development should be analysed for the basis of planning relevant and targeted educational programs and interventions to enhance nurses' professional competence. Multiple uses of various assessment methods are recommended to enhance validity and reliability of the measurements.

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All authors have agreed on the final version and meet at least one of the following criteria: 1) substantial contributions to conception and design, acquisition of data, its analysis and interpretation, and 2) drafting the article or revising it critically for important intellectual content.

Conflicts of Interest Disclosure

The authors declare that they have no conflicting interests.

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