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THE NURSE PROFESSIONAL COMPETENCE (NPC) SCALE: SELF-REPORTED COMPETENCE AMONG NURSING STUDENTS ON THE POINT OF GRADUATION

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None of the authors declare a conflict of interest.

THE NURSE PROFESSIONAL COMPETENCE (NPC) SCALE: SELF-REPORTED COMPETENCE AMONG NURSING STUDENTS ON THE POINT OF GRADUATION

ABSTRACT

Background International organisations, i.e. WHO, stress the importance of competent Registered Nurses (RN) for the safety and quality of healthcare systems. Low competence among RNs has been shown to increase the morbidity and mortality of in-patients.

Objectives To investigate self-reported competence among Nursing Students on the Point of Graduation (NSPGs), using the Nurse Professional Competence (NPC) Scale, and to relate the findings to background factors.

Method and participants The NPC Scale consists of 88 items within eight Competence Areas (CAs) and two overarching themes. Questions about socio-economic background and perceived overall quality of the degree programme were added. Totally 1,086 NSPGs (mean age 28.1 [20-56] years, 87.3% women) from 11 universities/university colleges participated.

Results NSPGs reported significantly higher scores for Theme I “*Patient-related Nursing*” than for Theme II “*Organisation and Development of Nursing Care*”. Younger NSPGs (20-27 years) reported significantly higher scores for the CAs “*Medical and Technical Care*” and “*Documentation and Information Technology*”. Female NSPGs scored significantly higher for “*Value-based Nursing*”. Those who had taken the Nursing Care programme at upper secondary school before the Bachelor of Science in Nursing (BSN) programme, scored significantly higher on “*Nursing Care*”, “*Medical and Technical Care*”, “*Teaching/Learning and Support*”, “*Legislation in Nursing and Safety Planning*” and on Theme I. Working extra

paid hours in healthcare alongside the BSN programme contributed to significantly higher self-reported scores for four CAs and both themes. Clinical courses within the BSN programme contributed to perceived competence to a significantly higher degree than theoretical courses (93.2% vs 87.5% of NSPGs).

Summary and conclusion Mean scores reported by NSPGs were highest for the four CAs connected with patient-related nursing, and lowest for CAs relating to organisation and development of nursing care. We conclude that the NPC Scale can be used to identify and measure aspects of self-reported competence among NSPGs.

Key words

Nurses' competence, professional nursing, nursing education, nursing students, graduate nurses, quality in care, safety in care, NPC Scale

INTRODUCTION

The rapid development and complexity of international healthcare systems demands a high level of competence among all healthcare professionals.^{1,2} The World Health Organisation (WHO)³, the International Council of Nurses (ICN)⁴ and the Institute of Medicine in the USA⁵ have identified Registered Nurses (RNs) as a professional group that is crucial for providing high quality and safe care. Aiken and colleagues have shown in a randomised, controlled trial that low professional competence with regard to educational level among nurses leads to increased mortality in patients treated in hospitals.⁶ This finding has been reconfirmed in further studies.⁷⁻¹³

Although there is strong evidence that high professional competence such as BSN degree among RNs promotes patient safety¹³, there is a lack of sufficient numbers of

RNs with a BSN or a master's degree, to meet and ensure the demands of patient safety for future healthcare systems. A lack of opportunities for professional competence development has been identified as a factor that negatively influences the turnover rate of RNs.¹⁴ This high turnover rate has in turn has been identified as a major challenge for future healthcare systems.¹⁴⁻¹⁷

In addition, the concept of “nurses’ professional competence” is imprecise, as no common, international definition exists.¹⁸⁻²⁰ In the USA, the Faculty of “Quality and Safety Education for Nurses” (QSEN) and the National Advisory Board have defined quality and safety competencies for nurses²¹ based on core professional competencies described by the Institute of Medicine (IOM).⁵ QSEN has proposed targets for knowledge, skills and attitudes to be developed for each of the following competencies: patient-centred care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. The six competencies are suggested to serve as guidelines for the curricular development of formal academic programmes, transition to practice and continuing study programmes²¹. More recently in Finland, eight competence areas of importance for nursing students have been identified: i) professional/ethical values and practice, ii) nursing skills and intervention, iii) communication and interpersonal skills, iv) knowledge and cognitive ability, v) assessment and improving quality in nursing, vi) professional development, vii) leadership, management and teamwork, and viii) research utilisation²². Despite the lack of consensus regarding the concept of “nurses’ professional competence”, generic components such as problem-solving and critical thinking skills are usually included, as these also seem appropriate for nursing students’ competence,²² and the WHO describes “nurses’ professional competence” as a framework of skills reflecting knowledge, attitudes and psycho-social and psycho-motor elements²³.

Since 1993, the required education to become an RN in Sweden has been a 3-year programme leading to the degree of Bachelor of Science in Nursing (BSN), which is both a professional qualification and a Bachelor's degree in nursing science. The current BSN is regulated by a national framework set up by the Swedish Higher Education Authority²⁴, stating that the programme should consist of equal parts of evidence-based theoretical and clinical courses. Each university/university college must conform to the national competence requirements but it is possible to include local, specific learning outcomes. This procedure allows for slight variation in the construction of BSN curricula in Sweden.

Background to the study

In 2005, The National Board of Health and Welfare in Sweden published a document specifying detailed and formal national competence requirements for RNs²⁵. These requirements reflect what the government and society expect from RNs regarding professionalism, competence, attitudes towards other human beings and professional tasks. In addition, there is a strong emphasis on a holistic view and ethical conduct in nursing. The document is supposed to serve as a basis for decisions when developing BSN curricula, as well as competence requirements for clinical work as an RN.²⁵

Although the national competence requirements have been in force for 10 years they have never been formally evaluated. Therefore a new instrument, named the Nurse Professional Competence (NPC) Scale, based on the formal competence requirements was developed and psychometrically tested.²⁶ Several instruments measuring nursing students' and/or RNs' competence have been developed over the years, e.g. the Nurse Competence Scale²⁷ or the European Healthcare Training and Accreditation Network Questionnaire Tool (EQT).²⁸ However, many instruments are based on Benner's description of knowledge in

clinical practice²⁹, while the NPC Scale²⁶ is based on formal competence requirements, as described above.²⁵

The main aim of this study was to investigate the self-reported competence of nursing students who were on the point of graduation, using the NPC Scale. A further aim was to relate the findings to socio-economic background factors.

MATERIAL AND METHODS

Sample

NSPGs at 11 out of totally 25 universities/university colleges (henceforth called higher educational institutions, HEIs) in Sweden were invited to participate in the study. Only those NSPGs who had completed and passed all theoretical and clinical examinations of their 3-year, full-time BSN were eligible for participation. The HEIs were purposively selected to include both universities (n=5) and university colleges (n=6), and to be evenly geographically located across the country. Totally 1,086 NSPGs participated by responding to the NPC Scale, resulting in a response rate of 77%.

Instrument

The NPC Scale consists of 88 competence items distributed in eight competence areas (CAs) and two overarching themes.²⁶ Investigation of the psychometric properties of the NPC Scale has shown satisfactory results regarding data quality, validity and reliability. Table 1 gives a structural overview of the NPC Scale including names of the different CAs and their Cronbach's α -values.

(Insert Table 1 about here)

Self-reported competence for each of the 88 items was stated on a scale with four response alternatives: *1=To a very low degree; 2=To a relatively low degree; 3=To a*

relatively high degree; 4=To a very high degree. In addition, respondents were asked for socio-economic background information (7 items); age, sex, education at upper secondary school level, university studies and work experience in healthcare studies prior to entering the BSN programme, paid work experience in healthcare alongside the BNS programme and, if so, the number of paid working hours/week. The NSPGs were also asked about their perception of the overall quality of the BSN at their respective HEIs, the latter by the following three questions:

- “To what extent do you perceive that the theoretical courses within the BSN have contributed to your achieving the formal competence requirements to be an RN?” with the response alternatives *1= To a very low degree, 2=To a relatively low degree, 3=To a relatively high degree and 4=To a very high degree.*
- “To what extent do you perceive that the clinical courses within the BSN have contributed to your achieving the formal competence requirements to be an RN?” with the response alternatives *1= To a very low degree, 2=To a relatively low degree, 3=To a relatively high degree and 4=To a very high degree.*
- “Overall, what is your perception of the quality of the BSN programme you will graduate from?” with the response alternatives *1=Very low, 2=Relatively low, 3=Relatively high and 4=Very high.*
- “Would you recommend the BSN programme you will graduate from to another person who wants to become an RN?” with the response alternatives *1=I would not recommend the BSN, 2=I am likely to recommend the BSN and 3=I would definitely recommend the BSN.*

Data collection

The NPC Scale together with the socio-economic background and quality questions were handed out in the format of a questionnaire by a lecturer at each HEI during the last days of

the semester prior to graduation, and the NSPGs were given time during a lecture to respond to the questionnaire. The lecturer at the specific HEI provided information about the study and about the voluntary notion of participation. The lecturer was present to ensure that responses to the questionnaire were individual, without any collaboration between students, and to answer any questions.

Statistical measures

Data were described with descriptive statistics and analysed with inferential statistics using the SPSS Statistics 22.0 by IBM for Windows (SPSS Inc., an IBM Company, Chicago, IL, US). Statistical significance was set at $p < 0.01$.

Mean scores were calculated for all CAs and the two themes. The mean scores were then transformed into a 1-100 scale, with higher scores indicating higher competence. The internal dropout was low, between 0 and 1.2% across all separate items, and missing item values were replaced by the imputed mean for the total group for that item.

The group was dichotomised regarding age using the median for further analyses of differences. Comparisons of proportions between groups were calculated using the chi-square test. Student's t-test was applied in order to compare means of two unpaired groups, and one-way analysis of variance (ANOVA) with Bonferroni post-hoc tests was used for comparing unpaired means of three or more groups.

Ethical considerations

According to the Swedish law of research ethics³⁰, it is not necessary to apply for approval from an Ethical Committee to collect data regarding students' self-rated competence. A written enquiry was sent to the principals at the 11 HEIs and they all gave their permission to perform the study. Potential respondents were informed about the study. By filling in the

questionnaire, the participating NSPGs were considered to have given their informed consent to participate. The questionnaire was answered anonymously.

RESULTS

Characteristics of the respondents

The mean age of the 1,086 NSPGs was 28.1 years, ranging from 20 to 56 years, and the majority of the respondents were women (87.3%).

All participants had an upper secondary school education before they entered the BSN programme, as this is a compulsory requirement; 54% had taken a 3-year theoretical programme in Natural or Social Science, 15.8% had taken a 3-year programme in nursing care, which qualified them for a paid position as a level-two nurse. A further 30.2% answered that they had an upper secondary school education; however, the exact type and length of the education was not stated. Approximately one-third (36.2%) of the NSPGs had studied different courses at university level before entering the BSN programme.

A majority of the participants (61%) had previous experience of working in healthcare as assistant nurses, level-two nurses or personal assistants. Totally 69.9% of the NSPGs reported that they had also chosen to work paid hours in healthcare facilities while they were studying on the BSN programme. Of these, 94.1% had been working at least 20 hours/week.

Self-reported competence

Table 2 shows the NSPGs' self-reported competence. The two highest mean scores were found for "*Value-based Nursing*" (mean score 89.9) and "*Documentation and Information Technology*" (mean score 85.9). The two lowest mean scores were found for "*Education and Supervision of Staff and Students*" (mean score 69.9) and "*Legislation in Nursing and Safety Planning*" (mean score 75.5).

A significant difference was found between the two themes “*Patient-related Nursing*” and “*Organisation and Development of Nursing Care*”, in that the students scored the former theme higher in comparison with the latter (mean scores 82.5 vs 74.0, $p<.001$).

(Insert Table 2 about here)

Self-reported competence and background factors

Several significant associations were found between self-reported competence and the background factors age, sex, prior education, working in healthcare prior to entering the BSN and paid work experience in healthcare facilities parallel with the BSN programme (Table 3).

(Insert Table 3 about here)

Self-reported overall quality of the BSN Programme

A significantly larger proportion of the NSPGs reported that the clinical courses during the BSN programme had contributed to a higher degree than the theoretical courses, to their reaching the formal competence requirements for RNs (93.2% vs 87.5% of the NSPGs, $p<.001$).

A total of 1,019 NSPGs answered the question regarding their perception of the quality of the BSN programme they had completed; 178 (17.5%) rated the quality as very high and 697 (68.4%) as relatively high, whereas 134 (13.1%) considered the quality to be low, or even very low, $n=10$, (1%).

About half of the 1,047 stated that they would definitely recommend the BSN programme they had completed to another person ($n=498$, 47.6%); almost as many, 475 (45.4%), said that they were likely to recommend it; and 74 (7.1%) that they would not recommend the BSN programme that they themselves had taken.

DISCUSSION

The professional competence of newly graduated RNs entering today's complex healthcare systems has become a crucial issue relating to clinical skills, the quality of nursing care and patient safety, including the risk of in-hospital mortality.^{6-13,16,23}

In the current study, more than 1,000 nursing students were asked during the last few days of a 3-year BSN programme to assess their competence with respect to 88 items. The respondents did not know to which CA the different items belonged and could thereby not be influenced to answer differently for the different CAs. Overall, the NSPGs reported their competence as high, or even very high. It is known that NSPGs may have unrealistically high perceptions of their levels of competence directly prior to entering the world of work,^{31,32,33} and that self-reported competence scores may decrease over time.²²

Evaluating the mean score results for the eight CAs in the current study, the NSPGs reported the highest scores (>80 points, Table 2) for the four CAs connected with patient-related nursing: "*Nursing Care*", including e.g. items about independently applying the different steps of the nursing process, and managing changes in the patient's physical and/or psychological status; "*Value-based Nursing Care*", including e.g. items about showing respect for patient autonomy, integrity and dignity, and also contributing to a holistic view of the patient; "*Medical and Technical Care*", including e.g. items about independently performing or participating in examinations and treatments, follow-up on patients' conditions after examination and treatments, and managing drugs and drug administration with knowledge of clinical pharmacology; "*Documentation and Information Technology*", including e.g. items about the ability to enter documentation in patient records according to current legislation, making use of relevant patient data from the patient record, and use of information technology as a support in nursing care. The higher self-reported competence in these four CAs is also reflected in the significantly higher self-reported competence for

Theme I "*Patient-related Nursing*". The competences covered by the four CAs described above can be looked upon as an absolute prerequisite for basic patient-related nursing, and patient safety. Thus, this supports previous findings that nurses seem to be most competent in actions related to immediate, individualised patient care and commitment to nursing ethics.³⁴

The lowest CA score (<70 points, Table 2) was found for the CA "*Education and Supervision of Staff and Students*", including e.g. items about participating in supervision of staff/students in development activities for improved care, and enabling multi-professional education activities to optimise patient care. This CA is included in Theme II "*Organisation and Development of Nursing Care*", which also includes competences in leadership, taking decisions and developing nursing care, including education of future nurses.

The findings above, i.e. that the NSPGs reported higher competence for the CAs focusing on Theme I "*Patient-related nursing*" and lower competence for Theme II "*Organisation and Development of Nursing Care*", seem reasonable, as the CAs included in Theme II are very complex and it is not possible to fully develop this competence during only a three-year programme. More complex competences are also to a high degree related to the individual's personal traits and development of maturity³⁵. Kajaner-Unkuri *et al.* (2014) have presented results where graduating nursing students had the highest self-reported level in nursing care activities, such as helping patients to cope and providing ethical and individualised care, and the lowest level in acting collegially, accountably and autonomously.²² Also Wangenstein *et al.* (2012) have presented results where newly graduated nurses reported that they were least competent in evaluating outcomes and in activities for developing nursing care.³⁴

It was found that several background factors influenced the self-reported competence (Table 3). It is of interest to notice that the single factor influencing the highest number of self-reported CAs (7 out of 8) was "*Paid work experience in healthcare alongside*

the full-time BSN Programme"; the 69.9% NSPGs working extra paid hours reported significantly higher competence scores on all CAs except "*Value-based Nursing*". They also reported significantly higher scores on both themes. The number of paid working hours also influenced self-reported competence; those NSPGs who worked more than 20 hours/week reported higher competence scores on the CAs "*Nursing Care*" and "*Legislation in Nursing and Safety Planning*".

It is likely that this extra participation in healthcare work taken on outside the ordinary clinical courses in the curriculum leads to a training of clinical skills and also an exposure to additional care contexts, and a wide range of examples of complex nursing care situations including ethical dilemmas. It is not uncommon for nursing students to take on paid hours alongside the BNS programme; for example, approximately 80% of Finnish nursing students have been found to do this,²² but whether working alongside the nursing education has an impact on academic performance is an issue under debate. Based on four previous studies, Pitt *et al.* (2012) state that BNS full-time students working >16 hours/week have poorer academic performance³⁶ and Dante *et al.* (2013) have shown that students who work while studying are most likely to fail.³⁷ Conversely, no significant relationship was found between the hours of employment and academic performance in a US associate degree programme.³⁶ As no studies have been identified that examine the impact of working extra paid hours in healthcare during attending the full-time BNS programmes, it has been concluded that this should be a focus of future research.³⁶

Many studies have used different instruments to measure self-reported competence among nursing students.^{18-20, 31-34} Self-reported data are considered valid,³² however, it would be of great interest to relate the overall high self-reported competence NPC scores to theoretical knowledge and clinical tests.

This study has shown the usefulness of gathering self-reported competence data among NSPGs, in order to investigate the complexity, and multifaceted nature, of nurses' professional competence, and to relate these data to different background factors. Furthermore, the NPC Scale has so far been used to show i) that nursing students with international study experience report higher competence at graduation,³⁸ and ii) that differences in NSPGs' self-reported quality of the BNS programmes at different HEIs can be identified.³⁹ It also shows how NSPGs and RNs handle conflict management,⁴⁰ how NSPGs and RNs manage disasters (Nilsson *et al.*, submitted data) and the effects of an educational intervention (Theander *et al.*, submitted data). The NPC Scale has an international applicability and is in the process of being translated to English.

Methodological considerations

The NPC Scale has shown satisfactory results regarding data quality, validity and reliability.²⁶ Almost 80% of the NSPG responded to the NPC Scale. According to Polit and Beck, this high response rate is satisfactory for the reliability of the study.⁴¹ The current study is based on a comprehensive sample representing about 50% of the HEIs in Sweden; it can therefore be assumed that the results are generalisable for a Swedish context. The generalisability for other countries remains to be further investigated. However, based on the Bologna Declaration⁴² and other international documents such as the Munich Declaration¹ by the WHO, the higher educational system should enhance common learning objectives and the quality goal of the BNS programmes in Europe. For further studies using the NPC Scale among NSPGs it is important to stress that the scale measures self-reported data on competence and not actual competence *per se*. To obtain knowledge about actual competence and skills among the NSPG it is important to combine the NPC Scale with more objective measures, e.g.

observational studies and/or written tests. However, it is possible to use the scale for gathering information regarding professional competence perceived by another party.

To summarise, self-rated competence among NSPGs was rated quite high, but differed in some areas of the complex professional RN competence that the students are supposed to achieve during their education. The study showed that the NSPGs reported the highest mean scores for the four competence areas connected with patient-related nursing, while the lowest mean scores were found for the competence areas relating to organisation and development of nursing care. Also background factors such as age, gender, educational background and clinical experience were associated with higher rated competence in various areas. To conclude, the NPC Scale differentiates self-reported competence and can be recommended for identifying and measuring aspects of self-reported, professional competence in eight competence areas among nursing students who are on the point of graduation.

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Table 1. Structural overview and names of the different competence areas (CAs) of the Nurse Professional Competence (NPC) Scale.

Theme I Patient-related Nursing			Theme II Organisation and Development of Nursing Care		
Competence areas (CAs)	Number of items	α -values	Competence areas (CAs)	Number of items	α values
1: Nursing Care	15	0.90	7: Leadership in and Development of Nursing	26	0.94
2: Value-based Nursing Care	8	0.85	8: Education and Supervision of Staff and Students	5	0.88
3: Medical and Technical Care	10	0.85			
4: Teaching/Learning and Support	11	0.89			
5: Documentation and Information Technology	4	0.75			
6: Legislation in Nursing and Safety Planning, 9 items, α -value 0.84 ¹					

¹ CA6 loaded equally in both themes.²⁶

Table 2. Self-reported competence among 1,086 nursing students on the point of graduation. Mean and SD values are shown for the eight competence areas and the two overarching themes.

Competence areas (CAs) and themes	Self-reported competence	
	Mean	SD
CA1: Nursing Care	81.1	9.38
CA2: Value-based Nursing Care	89.8	8.58
CA3: Medical and Technical Care	84.0	9.32
CA4: Teaching/Learning and Support	78.4	9.41
CA5: Documentation and Information Technology	85.9	11.16
CA6: Legislation in Nursing and Safety Planning	75.5	10.54
CA7: Leadership in and Development of Nursing	76.6	9.42
CA8: Education and Supervision of Staff and Students	69.9	13.29
Theme I: Patient-related Nursing	82.5	7.69
Theme II: Organisation and Development of Nursing Care	74.0	9.55

Table 3. Self-reported competence in relation to socio-economic background factors among nursing students on the point of graduation. The higher the score, the better the self-reported competence (100= “To a very high degree”). Data are given as mean scores for each competence area (CA) and the two overarching themes. P-values are given and significant differences are shown in bold.

	CA1	CA2	CA3	CA4	CA5	CA6	CA7	CA8	Theme I	Theme II
Age, n=1,079										
20-27 years (61%)	81.5	89.5	84.6	78.1	86.9	74.9	76.6	69.7	82.6	73.7
	80.5	90.3	83.0	79.0	84.4	76.3	76.5	70.1	82.2	74.3
28-56 years (39%)	n.s.	n.s.	p<.01	n.s.	p<.001	n.s.	n.s.	n.s.	n.s.	n.s.
Student's unpaired <i>t</i> test										
Sex, n=1,083										
Women (87%)	81.3	90.1	84.0	78.6	85.9	75.3	76.6	69.6	82.5	73.8
Men (13%)	80.0	87.4	84.1	77.6	86.2	76.9	76.1	72.0	82.0	75.0
Student's unpaired <i>t</i> test	n.s.	p<.001	n.s	n.s.	n.s.	n.s	n.s.	n.s.	n.s.	n.s.
Education at upper secondary school level prior to entering the BSN Programme, n=1,083										
1. 3-year theoretical programme in Natural Science (22)	79.2	88.7	84.1	76.6	86.0	74.5	76.5	69.8	81.5	73.6
	81.6	90.3	84.0	79.0	87.4	75.1	76.8	68.9	82.9	73.6
	83.8	90.4	85.9	80.8	85.1	78.0	77.7	72.7	84.0	76.1
2. 3-year theoretical programme in Social Science (32%)	80.6	89.7	82.9	78.0	84.7	75.3	75.8	69.6	81.9	73.6
	p<.001	n.s.	p<0.01	p<.001	p=0.01	p<0.01	n.s.	n.s.	p<0.01	n.s.
	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
3. 3-year programme in Nursing Care (16%)	p<.001	n.s.	n.s.	p<.001	n.s.	p<0.01	n.s.	n.s.	p<0.01	n.s.
	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
4. Other programmes (30)	n.s.	n.s.	n.s.	n.s.	p<0.01	n.s.	n.s.	n.s.	n.s.	n.s.
	p<0.01	n.s.	p<0.01	p<0.01	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
One-way										

ANOVA with Bonferroni post-hoc test:										
Natural Science vs Social Science										
Natural Science vs Nursing Care										
Natural Science vs other programmes										
Social Science vs Nursing Care										
Social Science vs other programmes										
Nursing Care vs other programmes										
University studies prior to entering the BSN Programme, n=1,084										
University studies (36%)	80.2	90.0	83.7	78.5	86.4	75.0	77.4	70.1	82.3	74.2
	81.6	89.7	84.2	78.4	85.7	75.8	76.1	69.8	82.6	73.9
No university studies (64%)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Student's unpaired <i>t</i> test										
Work experience in healthcare prior to entering the BSN Programme, n=1,083										
Experience of working in healthcare (61%)	81.7	90.0	84.0	78.9	85.7	75.6	76.9	70.7	82.7	74.4
	80.1	89.5	83.9	77.6	86.2	75.2	76.0	68.6	82.1	73.3
	p<.01	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
No experience of working in healthcare (39%)										
Student's unpaired <i>t</i> test										
Paid work experience in healthcare alongside the BSN Programme, n=1,057										
Paid working hours in healthcare facilities (70%)	81.7	89.9	84.4	78.8	86.5	76.2	77.1	70.8	82.9	74.7
	79.9	89.8	83.3	77.6	85.0	73.8	75.4	67.5	81.6	72.3
	p<.01	n.s.	n.s.	n.s.	n.s.	p<.001	p<.01	p<.001	p<.01	p<.001
No paid working hours in healthcare facilities (30%)										
Student's										

unpaired <i>t</i> test										
Number of paid working hours/week alongside the BSN Programme, n=729										
<20 hours/ week (94%)	81.2	89.9	84.2	78.5	86.3	75.8	76.9	70.5	82.7	74.4
83.6		89.5	84.8	80.5	87.1	78.7	78.1	72.5	84.0	76.4
≥20 hours/week (6%)	p<.01	n.s.	n.s.	n.s.	n.s.	p<.01	n.s	n.s	n.s	n.s.
Student's unpaired <i>t</i> test										

CA1=Nursing Care, CA2= Value-based Nursing Care, CA3= Medical and Technical Care, CA4=Teaching/Learning and Support, CA5= Documentation and Information Technology, CA6= Legislation in Nursing and Safety Planning, CA7= Leadership in and Development of Nursing, CA8= Education and Supervision of Staff and Students. Theme I=Patient-related Nursing and Theme II=Organisation and Development of Nursing Care.

Research highlights

- We used the NPC Scale to investigate self-reported competence among nursing students.
- Highest competence was reported for “Patient-related Nursing”.
- Lowest competence was reported for “Organisation and Development”.
- Clinical courses contributed to a higher degree than theoretical courses.
- Working extra paid hours in healthcare contributed to higher competence.