RESEARCH ARTICLE

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Nurses' perspectives on technical skill requirements in primary and tertiary healthcare services

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Abstract

Aim: To explore nurses' perspectives on technical skill requirements in primary and tertiary healthcare services and their perspectives on where students should learn these skills.

Design: The study was conducted in Norway and had a cross-sectional, multicentre, descriptive design.

Methods: We used a questionnaire to explore registered nurses and intellectual disability nurses' perspectives on technical skill requirements and learning (*N* = 437).

Results: All the skills included in the university college curricula were reported to be required, and most skills should from the respondents' perspective be learned in the university college. There were significant differences between registered nurses and intellectual disability nurses about their perspectives on skill learning, but no significant differences between respondents in the interface between hospital and municipality wards.

Conclusions: Results from this study indicate that nurses need extensive technical skills in both primary and tertiary health care. Findings also indicate a need to modify the university college curricula.

KEYWORDS
competence, nurses, nursing, technical skills

1 | INTRODUCTION

Despite increasing treatment complexity and an increasing number of older patients and patients with chronic diseases, hospital length of stay is decreasing. The latter trend, in particular, has resulted in an increased need to offer accessible healthcare services both prior to and after hospitalization, as well as alternatives to acute hospitalization (Hall & Luheshi, 2017; OECD, 2018; World Health Organization & Unicef, 2018). Patient characteristics both in tertiary and primary healthcare services have changed, and this challenges the competence of healthcare workers (World Health Organization, 2010). The decentralization of specialist healthcare services and the complexity

of patient cases challenge both knowledge, training and competencies of healthcare personnel working in primary healthcare services. For example, there is an increasing use of medical–technical devices also outside hospitals (Gautun & Syse, 2013).

International organizations have claimed that educated nurses' competence is important to ensure quality and patient safety in healthcare services (Institute of Medicine, 2003, 2011; International Council of Nurses, 2012). It is essential that nurse competencies are compatible with the practice settings demands and that nurses can take part in inter-disciplinary teams across a wide range of healthcare environments. They should be able to offer conventional nursing services in addition to practice leadership, health advocacy and illness prevention (Fukada, 2018). Competence has been described as a combination of knowledge, fitness, assessments and attitudes (Cowan, Norman, & Coopamah, 2005; Cowan, Wilson-Barnett, Norman, & Murrells, 2008). The World Health Organization (WHO) describes nurses' professional competence as a framework of skills that reflects knowledge and attitudes as well as psychosocial and psychomotoric elements (World Health Organization, 2009). This has also been described as professional capability, defined as «the combination of knowledge, skills, personal qualities and understanding employed in an effective manner in not only predictable specialist contexts, but in unexpected and unstable circumstances» (Nagarajan & Prabhu, 2015). Moreover, capability includes an ability or skill that will be helpful in a task, where the learned skill or ability adds to a person's skill set (Nagarajan & Prabhu, 2015; Torabizadeh, Rakhshan, Freidooni, Beygi, & Bijani, 2019).

1.1 | Background

In Norway, nursing services are occupied by nurses with either a Bachelor of Science in Nursing (Registered nurse, RN) or a Bachelor of Science in Intellectual Disability Nursing (Intellectual disability nurse, IDN) degree. The curricula includes three-year full-time studies and results in a total of 180 ECTs (European Credit Transfer and Accumulation System). The intellectual disability (ID) field requires a synthesized approach to healthcare management that currently does not appear to exist across settings (Auberry, 2018). Continuous curricular modifications are an essential phenomenon in nursing academia to level learning in the rapidly evolving professional practice (Landeen et al., 2016b).

Informal feedback from healthcare personnel both in primary and tertiary healthcare services indicates that bachelor students do not have the required or expected competence when entering the

practice arena. To our knowledge, no studies have explored technical skill requirements for RNs and ID nurses (IDN) in primary and tertiary healthcare services or on which arena bachelor students ideally should learn these skills: in school or in practice. Consequently, the purpose of this study was to explore RNs and IDNs' perspectives on technical skill requirements in primary and tertiary healthcare services, as well as their perspectives on where students should learn these skills.

2 | METHODS

The study had a cross-sectional, multicentre, descriptive design, using a questionnaire to explore nurses' perspectives on technical skill requirements and learning in primary and tertiary health care.

2.1 | Setting

The study took part in a county in south-eastern Norway, with a catchment area of approximately 300,000 inhabitants. The county consists of 18 municipalities and includes one county hospital at the tertiary healthcare level, of which one department with acute services and one with elective services only. At the primary healthcare level, there are five decentralized acute care wards and five casualties. Moreover, there are 43 home-based nursing wards and 34 nursing homes. There is one university college in the county, which offer bachelor degrees in both nursing and intellectual disability nursing.

2.2 | The questionnaire

A questionnaire was developed through several iterations between six of the members of the research group, two ID nurses and four RNs, respectively. The questionnaire was based on the curricula at the university college: thirty skills that are introduced at the university college were listed, together with a description of when these are introduced, either 1., 2. or 3. year and to both nurses and/or ID nurses. At each skill, respondents were asked to assess whether this skill should be introduced: (a) at the university college; (b) in practice; and (c) at the university college at an earlier point or whether this skill was relevant in the respondents' workplace. Table 1 gives a description of the questionnaire structure. Moreover, the questionnaire included two free-text questions: "Please describe whether your work requires other technical skills

TABLE 1 Description of questionnaire structure

Procedure	Introduced in the university college	Introduced in practice	Introduced in the university college at an earlier stage	Not relevant
General oral care	—	—	—	—
Special oral care	—	—	—	—
Manual blood pressure	—	—	—	—

than listed above, that in your opinion should be introduced at the university college" and "Please describe whether your work requires other technical skills than listed above, that in your opinion should be introduced in practice." Finally, respondents were asked to respond to what kind of ward they worked in. In hospital, this included surgical, medical, mixed surgical/medical, emergency and speciality wards such as intensive care/anaesthesia/surgery/paediatrics, outpatient, psychiatric, psychiatric outpatient or "other." In primary health care, this included: nursing home, municipal acute care ward, short stay/intermediate, rehabilitation/palliation, home-based care, ID services or "other."

The questionnaire was piloted prior to use for relevance and application in the remaining members of the research group, six RNs and two IDNs, respectively, and no changes were necessary.

2.3 | Participants and procedure

We used a purposive, total sampling method, inviting all RNs/ID nurses working clinically in all of the wards in the county. In 2017, the county had approximately 1,700 nurses employed, which may represent the potential population. A sample size was not calculated. Invitations for participation were published through group emails in the hospital and the municipalities, respectively, including information about the study purpose and a link to the questionnaire. The University of Oslos' digital platform (nettskjema) was used to administer the questionnaire to the nurses/ID nurses and to collect responses.

2.4 | Analysis

Descriptive analysis was used to describe the respondents' demographics (frequencies and percentages). Since data were not normally distributed, non-parametric tests were used. Mann–Whitney U test was used to determine differences between RNs and IDNs, as well as between hospital and municipality wards. Cronbach's alpha was calculated to establish the reliability of the questionnaire. The data set was cleaned before analyses were conducted. The Statistical Package for the Social Sciences (SPSS) software version 25 was used to analyse the data. Content analysis was used on the free-text answers to identify themes in the data.

2.5 | Ethics

Research Ethics Committee approval for the study was granted by the university college Data Protection Authority, in accordance with the General Data Protection Regulation (The Norwegian Data Protection Authority, 2019). Respondents returned the questionnaire after making an autonomous and informed decision to partake without compulsion and return of the questionnaire implied consent.

TABLE 2 Description of wards and participants included (N = 437)

Ward	Participants, N (%)
Hospital, surgical	9 (2)
Hospital, medical	26 (5.9)
Hospital, mixed surgical/medical	2 (0.5)
Hospital, emergency	10 (2.3)
Hospital, specialized	53 (12)
Hospital, ambulatory	23 (5.2)
Hospital, psychiatric	23 (5.2)
Hospital, psychiatric emergency	11 (2.5)
Hospital, other	10 (2.3)
Municipality, nursing home	55 (12.4)
Municipal acute care ward	14 (3.2)
Municipality, short stay/intermediate	9 (2)
Municipality, rehabilitation/palliation	13 (2.9)
Municipality, home-based care	78 (17.6)
Municipality, services for disabled persons	69 (15.6)
Municipality, other	32 (7.2)

Note: N = number of respondents, percentage in parenthesis.

All data were treated as private and confidential, and no respondent indicated a wish to withdraw from the study.

3 | RESULTS

Cronbach's alpha was calculated to check the reliability of the scale (α = .93). A total of 437 RNs/ID nurses responded to the questionnaire, 167 from the hospital and 270 from the municipalities. Of these, 20% were ID nurses. Table 2 gives an overview of participation distributed on different wards.

3.1 | Technical skills learning and requirements

Table 3 gives an overview of responses to where students should learn technical skills: in school, in practice, in school, but earlier, or whether the skill was not relevant in the respondents' work.

Table 3 shows that respondents considered that most skills should be learned in school (47.4%–87.6%). The skills considered most relevant learning in practice were «feeding» (32.7%) and «Compression stockings» (33.9%). Few of the skills were considered not required (0.9%–24.5%). The skill considered least relevant was «foot and nails care». Few respondents considered that skills should be learned earlier in school.

Registered nurses and IDNs had significantly different perspectives on technical skills learning and requirements. There were no significant differences between hospital and municipality wards.

TABLE 3 Procedures and preferred learning location (N = 437)

Procedure	In the UC N (%)	In practice N (%)	Not relevant N (%)	In the UC, but earlier N (%)	p-value
General oral care[a]	249 (56.9)	9 (2.1)	72 (16.5)	45 (10.3)	**<.01**
Special oral care[b]	230 (52.6)	81 (18.5)	93 (21.3)	31 (6.9)	**<.01**
Manual blood pressure	344 (78.7)	47 (10.8)	15 (3.4)	35 (8)	.74
Respiration counting	294 (67.3)	74 (16.9)	32 (7.3)	38 (8.7)	.14
Temperature measurement[a]	277 (63.4)	83 (18.9)	24 (5.5)	54 (12.4)	.20
Pulse counting	321 (73.5)	69 (15.8)	12 (2.7)	39 (8.9)	.61
Cardiopulmonary resuscitation	383(87.6)	11 (2.5)	4 (0.9)	41 (9.4)	.54
Foot and nails care	213 (48.7)	100 (22.9)	107 (24.5)	19 (4.3)	**.04**
Body wash	262 (60)	92 (21.1)	57 (13)	30 (6.9)	**<.01**
Intimate washing[a]	240 (54.9)	99 (22.7)	57 (13)	30 (6.9)	.06
Blood sugar measurement	282 (64.5)	113(25.9)	16 (3.7)	28 (6.4)	.54
Displacement technique	280 (64.1)	80 (18.3)	46 (10.5)	34 (7.8)	**.01**
Medication management	325 (74.4)	73 (16.7)	6 (1.4)	32 (7.3)	.58
Bed-making	242 (55.4)	114 (26.1)	59 (13.5)	26 (5.9)	**.02**
Feeding	207 (47.4)	143 (32.7)	71 (16.2)	19 (4.3)	.08
Infusions[b]	274 (62.7)	81 (18.5)	68 (15.6)	14 (3.2)	**<.01**
Injections (subcutaneous/muscular)	346 (79.2)	61 (13.9)	15 (3.4)	20 (4.6)	.06
Intravenous injections[b]	261 (59.7)	79 (18.1)	68 (15.6)	21 (4.8)	**<.01**
Drawdown solid drugs	264 (60.4)	99 (22.7)	54 (12.4)	20 (4.6)	**<.01**
Drawdown fluid drugs	280 (64.1)	108 (24.7)	34 (7.8)	17 (3.9)	**<.01**
Compression stockings[a]	211 (48.3)	148 (33.9)	50 (11.4)	26 (5.9)	.42
Permanent urine catheter, insertion[b]	265 (60.6)	71 (16.2)	88 (20.1)	13 (2.9)	**<.01**
Intermittent catheterization, male[a]	252 (57.7)	86 (19.7)	80 (18.3)	22 (5)	**<.01**
Aseptic wound care[b]	299 (68.4)	79 (18.1)	43 (9.8)	18 (4.1)	**<.01**
Venous wound care[a]	267 (61.1)	97 (22.2)	54 (12.4)	19 (4.3)	.05
Suction naso/oropharynx[b]	231 (52.9)	93 (21.3)	97 (22.2)	17 (3.9)	**<.01**
Nasogastric tube, insertion[b]	231 (52.9)	93 (21.3)	97 (22.2)	17 (3.9)	**<.01**
Nutrition tube care[a]	233 (53.3)	108 (24.7)	85 (19.5)	13 (3)	**<.01**
Peripheral vein catheter, insertion[b]	268 (61.3)	55 (12.6)	93 (21.3)	24 (5.5)	**<.01**
Central vein catheter care[b]	243 (55.6)	76 (17.4)	97 (22.2)	17 (3.9)	**<.01**

Note: p-value: significant differences between registered nurses and intellectual disability nurses. Significant differences in bold.

Abbreviation: UC, university college.

[a]Only intellectual disability nurse students.

[b]Only nursing students.

3.2 | Free-text responses

Table 4 gives an overview of free-text answers to the question "Please describe whether your work requires other skills than listed above, that in your opinion should be introduced at the university college." There were no comments to the question: "Please describe whether your work requires other technical skills than listed above, which in your opinion should be introduced in practice.".

Other comments by respondents were basic care, inhalations, non-invasive ventilation, hygiene, pain management and septic shock prevention. Comments were also "need more training in general" and "bed-making should not be prioritized in school."

4 | DISCUSSION

Findings from this study give an insight into registered nurses and intellectual disability nurses perspectives on technical skill requirements in primary and tertiary healthcare services, as well as their perspectives on which arena students should learn these skills. Most of the skills included in the university college curricula were required and most of the skills should from the respondents' perspective be learned in school. There were significant differences between registered nurses and intellectual disability nurses about their perspectives on skill learning, but no significant differences between respondents in hospital and municipality wards.

TABLE 4 Overview of free-text answers indicating respondents' reports of further procedures needed introduced in the university college (N = 118)

Procedure	N (%)
Stoma different types	10 (8.4)
PICC line/Midline catheters	20 (16.9)
Blood sampling	10 (8.4)
Medication management	6 (5.1)
Tracheostomia	6 (5.1)
Wound assessment and care	5 (4.2)
Communication and supervision (IDN only)	4 (3.4)
Venous access ports	4 (3.4)
Nutrition	4 (3.4)
CADD pumps	4 (3.4)
Coercion (IDN only)	4 (3.4)
Observation and assessment	4 (3.4)
Conflict handling (IDN only)	3 (2.5)

Note: N = number of respondents commenting this, percentage in parenthesis.

Abbreviation: IDN, intellectual disability nurses.

Moreover, 118 respondents added skills they considered to be lacking in the university college curricula. Traditionally, hospital wards have required competence in more practical skills than the municipalities. A recent study showed that RNs in primary health care receive training in specific patient cases, such as ventilators, tracheostomia, palliation or dialysis (Leonardsen, Bjerkenes, & Rutherford, 2018). This is supported by a further study that emphasized a need for RNs in primary health care with advanced qualifications to adequately address the needs of frail older adults (Henni, Kirkevold, Antypas, & Foss, 2018). Nevertheless, these advanced skills are not implemented as part of the university college curricula. Continuous curricular modifications are essential in nursing academia to follow the rapidly evolving professional practice (Landeen et al., 2016a). To be able to meet healthcare practice expectations of technical skill requirements and where arena students should learn these, the curricula in the current university college needs to be modified.

Most skills were considered to be required across wards in hospital and in the municipalities, and there were no significant differences between hospital and municipality wards. This support the emphasis on a changing primary health care due to an increasing complexity and severity of patient conditions and the need to adjust nursing curricula accordingly (Fawaz, Hamdan-Mansour, & Tassi, 2018; Hall & Luheshi, 2017; Henni et al., 2018). Moreover, it seems like some nursing care skills, such as bed-making or feeding, are considered to be sufficiently learned in practice. Kitson et al. have introduced several initiatives to refocus nursing on central tenets of practice including "compassion" and "fundamental nursing care"(Kitson, Conroy, Wengstrom, Profetto-McGarth, & Robertson-Malt, 2010), defined as action to address safety, comfort, communication, dignity, respiration, privacy, eating and drinking, respecting choice,

elimination, mobility, personal cleansing and dressing, expressing sexuality, temperature control, rest and sleep (Kitson, Conroy, Kuluski, Locock, & Lyons, 2013). Studies have indicated that healthcare personnel in practice find that students lack fundamental skills competencies (Bisholt, 2012; Higgins, Spencer, & Kane, 2010; Wangensteen, Johansson, & Nordström, 2008). The nursing profession is continuously developing. The demographic changes, with an increasingly amount of older people and people with chronic and comorbid conditions, challenge the traditional roles of both healthcare levels and healthcare personnel (OECD, 2019; St Sauer et al., 2015). For example, the volume and complexity of the organizational elements of nursing have been emphasized (Allen, Purkis, Rafferty, & Obstfelder, 2019; Michael, Waelli, Allen, & Minivielle, 2017). In Norway, a new legislation for healthcare undergraduate programmes was implemented in 2019 (RETHOS 1) (Norwegian Department of Knowledge, 2019). The purpose was that students after completion of the undergraduate programme should be able to contribute to development of healthcare services in-line with demographic and technological changes. Nevertheless, decision-making is placed at the educational institution level, not a national level.

Registered nurses and IDNs had significantly different perspectives on fundamental skills learning and requirements. Today, there is no consensus about which technical skills and handling of medical devices should be included in the curriculum nor when these skills should be taught (Bland, Topping, & Wood, 2011). As a profession, IDNs have often come under scrutiny and been called into question and both education and service provision have changed over time (Doody, Taggart, & Slevin, 2012). The multifaceted needs of persons with ID and diverse practice settings RNs encounter create a fragmented system that is difficult to navigate. Evidence-based interventions to guide ID nursing practice are lacking (Auberry, 2018). Hence, this calls for a need to clarify the roles of RNs and IDNs, respectively, to better define differences and similarities and thereby secure an efficient distribution of tasks.

Technical skills in nursing are often described as simple and mechanical motor skills, but the performance of these skills is a complex action (Bjørk & Kirkevold, 2000; Reierson, Hvidtsetng, Wighus, Brungot, & Bjørk, 2013). This aligns with the concept of capability, where students need to obtain knowledge, skills, personal qualities and understanding and employ these in an effective manner (Nagarajan & Prabhu, 2015). A review of studies on nurse professional capability emphasizes the lack of research on this area also about professional nurses (Torabizadeh et al., 2019). It has been claimed that nursing education should emphasize technical skills that are commonly used, to increase the students' preparation for the profession, while the employer should provide regular training opportunities of technical skills used less frequently (Danebjørg & Birkelund, 2011; Ewertsson, Gustafsson, Blomberg, Holmström, & Allvin, 2015). In contrast, our findings show that nurses in practice would like students to be introduced to all relevant technical skills in the university college.

Consequently, this study adds to existing evidence including information from both registered nurses and intellectual disability nurses,

in both primary and tertiary healthcare services. Findings indicate that skill requirements are similar across healthcare service levels. Moreover, findings indicate a need for nursing curricula development, showing a need for, for example, education and training in non-invasive ventilation and septic shock prevention, which until recently has been assumed as "hospital procedures." In addition, responders indicated areas that may be removed from the curricula, such as "bed-making." The nursing curricula is already overcrowded, and the challenge is to decide what to include and what to exclude from the curricula. Moreover, there may be a need to review task shifting as an alternative, shifting traditional nursing tasks to other healthcare personnel, relatives or patients themselves. The European Commission emphasizes task shifting as an essential action to be able to deal with future healthcare challenges (European Commission, 2019).

4.1 | Limitations

This study has some limitations. Primarily, the number of possible participants who were invited was not precise; hence, the proportion of responses was not calculated. This may limit the generalization of results. Nevertheless, respondents from a wide range of wards both in primary and tertiary healthcare services were included, which may increase validity of the findings. Secondly, a validated tool was not used. Yet, Cronbach's alpha was excellent, which indicates proper internal consistency of the tool. Moreover, the pilot study indicated good content and face validity of the questionnaire.

5 | CONCLUSION

To our knowledge, this is the first study to assess RNs and IDNs technical skill requirements and learning in the interface between primary and tertiary healthcare services. This study contributes both registered nurses' and intellectual disability nurses' perspectives on requirement and learning of technical skills in primary and tertiary health care. Findings indicate a need to modify the university college curricula and support that nurses are in need of more advanced skills across the healthcare levels. This study can be seen as a background for additional research in discovering the present and possible roles and capabilities of RNs and IDNs, to achieve a more adequate distribution of tasks.

CONFLICT OF INTEREST

None of the authors have any conflicts of interest to report.

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