

Use of technical skills and medical devices among new registered nurses: A questionnaire study



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SUMMARY

Background: One comprehensive part of nursing practice is performing technical skills and handling of medical equipment. This might be challenging for new registered nurses (RNs) to do in patient-safe way.

Objectives: The aim of this study was to describe and compare the extent to which new RNs perform various technical skills and handle medical devices in different settings, and to investigate their possibility for continued learning in this respect. A further aim was to describe their perceptions of incident reporting related to technical skills and medical devices.

Design: A cross-sectional study with descriptive and comparative design.

Participants: RNs who recently graduated from a nursing programme at three Swedish universities and had worked as a RN for up to 1 year were included in the study (n = 113, response rate 57%).

Method: Data were collected by means of a postal questionnaire.

Results: Half of the RNs reported that they performed several of the listed tasks every day or every week, regardless of workplace. These tasks were most frequently performed in surgical departments. The majority of the participants (76%) stated a need of continued practical training. However, less than half of them (48%) had access to a training environment. Several participants (43%) had been involved in incidents related to technical skills or medical devices, which were not always reported. Nearly a third of the participants (31%) did not use the existing guidelines when performing technical skills, and reflection on performance was uncommon.

Conclusions: This study highlights the importance of shared responsibilities between nurse educators and health care employers to provide learning opportunities for new RNs in technical skills, to maintain patient safety. To increase the safety culture where nursing students and new RNs understand the importance of using evidence-based guidelines and taking a reflective approach in the performance of technical tasks is needed.

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Background

One comprehensive part of nursing practice is the performance of technical skills and handling of medical equipment (Sandelowski, 2010). In order to provide adequate care and maintain patient safety, registered nurses (RNs) need to be equipped with proper skills in this respect (Norman, 2012). In this article, technical skills are defined as the portion of practical skills involving the use of equipment such as syringes, needles, catheters, probes, infusions, and masks. Technical skills in nursing are often described as simple and mechanical motor skills, but the performance of these skills is a complex action (Björk and Kirkevold, 2000; Reierson et al., 2013). A safe performance of technical skills requires both theoretical knowledge and the ability to take a

critical approach in order to adapt the performance to a specific situation (Benner et al., 2008; Reierson et al., 2013). In clinical practice, problems often arise that cannot be solved with a clear-cut answer. Theory learned through professional preparation is not always useful in solving these real-life problems. In the process of learning practical skills it is important to reflect both *in* and *on* action. Unexpected events generate reflection *in* practice by using current and past experiences and reasoning about unfamiliar events while they are occurring, but also reflection *on* practice while thinking back on what happened in a past situation. Key issues to consider in the development of professional competence are what has to be done, why, and in what way (Schön, 1991).

Today's increasingly technical and complex health care places high demands on new RNs. The transition from nursing student to RN is a challenging period. Experiences of a stressful work environment (Bisholt, 2012; Duchscher, 2009), feelings of not being able to meet workplace demands, and a fear of making mistakes (Higgins et al.,

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2010) can occur up to a year after graduation (Casey et al., 2004). It has been reported from both new RNs and their co-workers that new RNs are inadequately prepared and therefore lack competence in practical skills (Bisholt, 2012; Higgins et al., 2010; Wangensteen et al., 2008). This might lead to a risk of incidents related to the use of medical devices and performance of technical skills where patients are inadvertently harmed by errors in the care which was supposed to heal them (Keller, 2010).

The process of learning technical skills is initiated during undergraduate nursing education. It is an important task for nursing education to provide nursing students with adequate and sufficient amount of training (Benner et al., 2010). The educators decide which technical skills to prioritize and integrate in nursing curricula. However, today there is no consensus about which technical skills and handling of medical devices should be included in the curriculum, nor about when during the nursing education these skills are actually taught (Bland et al., 2011). It is also important for nursing education to enhance the understanding of the importance of reflection and using safe and evidence-based methods and following national guidelines when performing various techniques (Rudman et al., 2012).

There is also a need for continued learning of technical skills after graduation. Due to constant development and variation of medical and technical equipment, a life-long learning approach is required (Keller, 2010). Although employers have a responsibility to support new RNs, there are different prerequisites for learning technical skills in terms of both extent and structure (Bisholt, 2012; Jones et al., 2014). Access to a clinical skill laboratory (CSL) (Salminen et al., 2010), conscious discussions and evaluations regarding equipment and application principles (Mattox, 2012), and evaluations of incident reports (Vicente and Kern, 2005) can provide RNs with the opportunity to continue their learning and reduce the risk of incidents and errors in the clinical setting.

To our knowledge, there is no current study that has explored the extent to which various technical skills and medical devices are used in the clinical settings where new RNs frequently work. Filling this knowledge gap can provide guidance for nursing education in the selection of which technical skills and medical devices should be included in the education. It can also guide the choice of training activities that employers need to provide to secure the quality of care and patient safety. The extent to which RNs use guidelines in their performance of technical skills, and how incidents are reported, also gives a picture of their work in relation to technical skills. Therefore, the aim of this study was to describe and compare the extent to which new RNs perform various technical skills and handle medical devices in different settings, and to investigate their possibility for continued learning in this respect. A further aim was to describe the new RNs' perceptions of incident reporting related to technical skills and medical devices.

Methods

Design

This survey is a cross-sectional study with descriptive and comparative design carried out in Spring 2012, including RNs who had recently graduated from a nursing programme at three universities in Sweden. It is part of a comprehensive research programme in cooperation between the three universities investigating various aspects of clinical education within the nursing programme (Bisholt et al., 2014; Sundler et al., 2014) and aspects of work situation for new RNs (Blomberg et al., 2014).

Sampling an Settings

The participants had all worked as RNs for at most 1 year after graduation when the study took place, and were recruited from lists provided by the universities of those who had graduated in Spring

2011. These nursing programmes were 3 years in duration, had similar content, led to a Bachelor's degree, and followed regulations from the Swedish government and the Swedish Higher Education Authority. Approximately half the time of the nursing programmes consisted of courses with clinical training in both CSLs and clinical settings. A total of 207 RNs graduated from the universities in the relevant time period; 200 of them were eligible for the study, and 113 (57%) answered a questionnaire (Fig. 1).

Data Collection

Letters were sent to each RN's home address including information about the study, a request for written consent, and a questionnaire. The RNs were asked to return the questionnaire in an enclosed prepaid envelope. Those who did not answer within a month received a reminder letter, which increased the response rate.

Measurement

The questionnaire contained study-specific questions developed in discussion between researchers in the research group who had experiences of teaching technical skills and medical devices in the nursing programme, and of teaching and training hospital staff. After this initial step, the questions were discussed by researchers outside the research group, nurse teachers, and clinical RNs in order to achieve face validity (Polit and Beck, 2012) and to obtain opinions of whether the questions were realistic ones to ask and whether the layout was easy to use. The questionnaire was then revised and its layout was refined. The final version of the questionnaire that contained 17 questions was divided into four sections (Table 1). In addition to the 17 questions, information was collected about demographic characteristics such as age, gender, workplace, months of employment as a graduated RN, employment status, and work time/months.

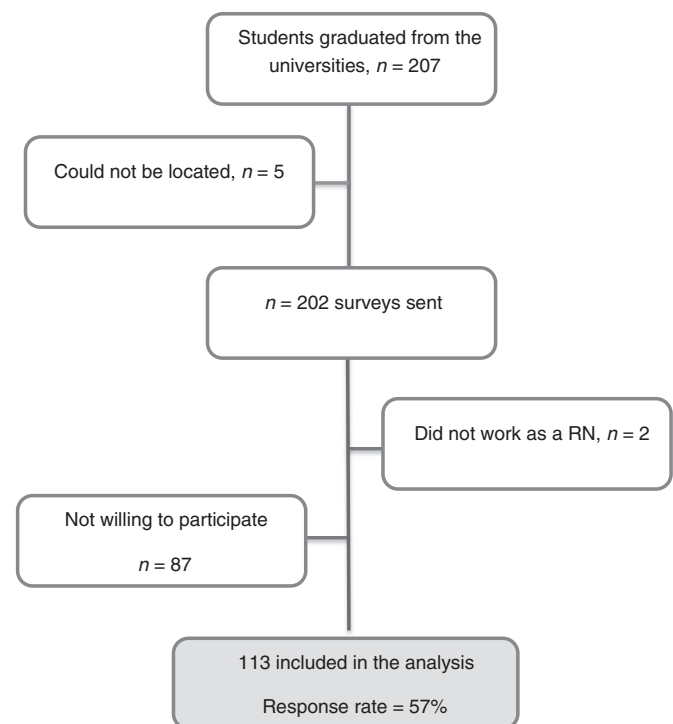


Fig. 1. Flow chart of participant recruitment.

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