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The evaluation of a framework for measuring the non-technical ward round

skills of final year nursing students: an observational study

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ABSTRACT

Background: The importance of non-technical skills (NTS) to patient outcomes is increasingly being recognised, however, there is limited research into how such skills can be taught and evaluated in student nurses in relation to ward rounds.

Objectives: This pilot study describes an evaluation of a NTS framework that could potentially be used to measure ward round skills of student nurses.

Design and Methods: The study used an observational design. Potential key NTS were identified from existing literature and NTS taxonomies. The proposed framework was then used to evaluate whether the identified NTS were evident in a series of ward round simulations that final year general nursing students undertook as part of their training. Finally, the views of a small group of qualified nurse educators, qualified nurses and general nursing students were sought about whether the identified NTS were important and relevant to practice.

Results: The proposed NTS framework included seven categories: Communication, Decision Making, Situational Awareness, Teamwork and Task Management, Student Initiative and Responsiveness to Patient. All were rated as important and relevant to practice.

Conclusion: The pilot study suggests that the proposed NTS framework could be used as a means of evaluating student nurse competencies in respect of many non-technical skills required for a successful ward round. Further work is required to establish the validity of the framework in educational settings and to determine the extent to which it is of use in a non-simulated ward round setting.

Key Words: Simulation; Ward round; Non-Technical Skills; nursing students

Highlights:

- Non-technical skills (NTS) are important for patient outcomes
- We describe the evaluation of a ward round NTS framework for student nurses.
- This had seven categories, which were rated as important and relevant by participants
- It could potentially be used to evaluate skills and educational interventions

INTRODUCTION

Both analysis of critical events (Gawande et al., 2003) and observational studies (Atwal and Caldwell, 2006) suggest that non-technical skills (NTS), such as communication and teamwork, play an important role in determining patient outcomes. It has been argued that ward rounds present one of the main opportunities for nursing staff to influence patient care (see Hill, 2003), however they also present a series of complex and challenging tasks which require a high level of both technical and non-technical skills. There has been a recognition from research with various health staff professionals that NTS contribute to the overall quality of ward rounds (Department of Health, 2000) and that, in turn, ward round errors can result in poor patient outcome (e.g. Pucher et al., 2013).

NTS have been defined as:

“the cognitive (such as decision making and situation awareness), social, (such as communication, team working and leadership) and personal resource skills (such as coping with stress and fatigue) that complement technical skills, and contribute to safe and efficient performance.” (Flin et al., 2008, p.1)

There has been a growing interest in teaching NTS to a range of health professionals and there is evidence that such teaching can result in improved patient outcomes (e.g. Mazzocco et al., 2009; Neily et al., 2010; Pucher et al., 2014). There has, however, only been limited work exploring the measurement of such skills in nursing staff in general and nursing students in particular (e.g. Lewis et al., 2012; Pearson and McLafferty, 2011).

A recent review by Lewis et al. (2012) on the impact of simulation on the NTS of nursing staff concluded that simulation as an educational approach was related to

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significant increases in communication skills at patient handover; helped to facilitate important leadership skills and improved team work in a range of clinical settings. The authors, were, however, only able to identify 16 studies that met their criteria for review. The reviewed studies included both nursing staff and other health professionals and both qualified staff and students. In addition, the studies covered a range of different clinical environments including trauma, paediatric and obstetric services. This makes it difficult to identify the specific impact of educational interventions on nursing students alone and specifically in ward round settings. This is particularly important as it is recognised that in order to both teach and evaluate NTS in any given clinical setting, there is a need to first identify the NTS that are specific to that setting (Maran et al., 2013).

A further difficulty with generalising the results of the review by Lewis and colleagues (2012) specifically to the NTS required in a ward round setting is that many of the reviewed studies only examined a single NTS, such as team-work or communication, rather than a range of NTS within the one research study. A ward round is a complex and dynamic context (O'Hare, 2008) which requires staff to draw on and display competence in a range of NTS. To begin to capture this dynamic process there is a need to measure a range of NTS, rather than focusing on individual skills in isolation.

In order to achieve this goal, a number of researchers have adapted the broad taxonomy of NTS which was first developed by Flin and colleagues (2008) to a range of contexts, including anaesthetics, surgery, and the resuscitation room (e.g. Andersen et al., 2010; Fletcher et al., 2003; Kim et al., 2006). Recently Harvey et al. (under review) developed an adapted framework to use to evaluate the ward round NTS of final year medical students. As yet, however, research has not established an NTS

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framework that can be used to evaluate the skills required by nursing students in order to successfully participate in a ward round.

Study aim: this pilot project, therefore, aimed to explore whether a NTS framework could be developed which was:

- seen as relevant to the clinical practice of nursing students during a ward round.
- could potentially be used to evaluate the NTS of students in educational and clinical settings

The project represented a first step in the longer term aim of improving these ward round NTS in nursing students and staff.

METHOD

Ethics

Approval for the study was obtained from the second author's educational establishment.

Design and procedure: Identifying ward round NTS and developing a framework

The pilot project had an observational (cohort) design i.e. the researchers did not implement an intervention but gathered data from participants in a pre-existing situation, in this case a cohort of final year nursing students in a ward round simulation

Firstly, key literature and policy documents were reviewed to identify NTS that would be likely to be important and relevant to student nurses in a ward round setting.

Flin et al. (2008) had previously developed a generic NTS framework, which had

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subsequently been adapted for use with a range of health professionals (e.g. Armour Forse et al., 2011). Harvey et al. (under review) also used this generic framework to develop a specific ward round NTS framework for medical students. This latter framework was used as a basis for developing the NTS ward round framework in the present project.

Two members of the project team utilised this framework when viewing recorded ward simulation sessions to identify possible ward round NTS that were relevant to nursing. Examples of each generic NTS category were noted. The final framework was then evaluated in terms of content validity as measured by the extent to which it was rated as relevant to clinical practice by education and qualified nursing staff and nursing students.

Design and procedure: Ward simulation

A ward simulation exercise was undertaken by approximately 200 Year 3 Adult field nursing students as part of their training at the participating university. Groups of students (on average 25 per group) were allocated to each 4 hour simulation session. Detailed information about the students was not available, as this was not collected as the ward simulation represents part of their routine training, however, the student cohort was predominantly female. The sessions themselves adopted an intermediate fidelity approach, recognised in the literature to improve the students' knowledge and clinical skills (Alinier et al, 2006; Brannon and Bezanson, 2008).

The simulations involved a variety of learning challenges that reflected scenarios that the student would be likely to face in practice and were set within a medical admissions environment to foster the opportunity for multiple professional and interpersonal interactions and clinical skills to be rehearsed and modelled. This

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included opportunities to demonstrate care management, communication and organisational skills in a real time fluid situation as preparation for future professional practice.

Students were presented with a variety of simulated medical patients including those with respiratory problems, dementia, diabetes and Never Events such as an Addisonian crisis. Within the sessions the students role-played nurses, patients and relatives, supported by facilitators who role-played senior staff and other professional groups. As the exercise developed the staff responded to the students' actions, making each session unique to the group while addressing the session's learning outcomes.

The teaching sessions, which are routinely recorded as part of teaching practice, were reviewed by two members of the project team and used to evaluate whether the NTS skills which were included in the proposed NTS framework were displayed by the student nurses and appeared relevant to their practice. Following the recommendations of Hogan et al. (2012) the raters did not have a nursing background, as it was felt to be important to identify skills that related to general clinical care (NTS) rather than specialist nursing or technical issues.

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Design and procedure: Evaluating content validity

Three education staff, including two nurse educators, then reviewed the proposed framework to evaluate whether it appeared relevant to both the ward round context and student nurse population. Finally, a small group of second ($n = 3$) and final year ($n = 4$) adult general student nurses (1 male, 6 females, mean age = 29.6, SD = 7.6) and qualified nursing staff ($n = 10$, 3 males, 7 females, mean age = 43.3, SD = 8.8, mean number of years since qualification = 5.5, SD = 2.53) were asked to rate the

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proposed NTS framework on a 5 point scale (1 = not at all, 5 = very) in terms of how relevant and important each category of NTS was to nurses working on a ward round.

RESULTS

Evaluating the NTS framework

Following analysis of the ward simulation footage, the following categories from the original NTS framework developed by Flin et al. (2008) were retained as they were felt to reflect NTS that would be relevant to nursing students: Communication, Decision Making, Situational Awareness, Teamwork and Task Management. In addition, the two extra categories identified by Harvey et al. (under review) from work with medical students were included to reflect that the learners were student nurses rather than qualified staff (Student Initiative) and to reflect recommendations in recent UK policy documents such as the recent Berwick, (2013), Francis (2013) and Keogh (2013) reports about the importance and fundamental need to listen to the feedback, views and needs of the patient (Responsiveness to Patient).

Content validity

Table 1 illustrates the nursing students' mean scores in terms of the relevance and importance of each set of NTS to nurses working on a ward round.

Table 1: Nursing student ratings of the importance and relevance of each of the NTS categories to nurses working on a ward round

DISCUSSION

The project aimed to develop a framework that could be used to measure those NTS that were important for nursing students to display during ward rounds and which were rated as important and relevant by nursing students, nurse educators and qualified nursing staff. The final NTS framework included most of the categories identified by Flin et al. (2008) and reflected the additional categories found by Harvey et al. (under review) to be useful for junior doctors in training.

The first of these additional categories, ‘Student Initiative’ recognised that the original ‘Leadership’ category proposed by Flin and colleagues (2008) did not accurately reflect the position and remit of a student nurse, in terms of the expectation that he or she would take on a leadership role within a ward round. Instead ‘student Initiative’ recognises opportunities for the student nurse to act without prompting, where appropriate, and use their initiative in responding to situations while operating within their sphere of knowledge and competence. This category, while originally developed for medical students, appears to be equally applicable for student nurses.

The second additional category, ‘Responsiveness to Patient’ acknowledges the important message, common to the Berwick, (2013), Francis (2013) and Keogh (2013) reports into failures in patient care, about the crucial need to routinely listen to the patient voice in order to understand patient needs and perspectives. Such active listening is seen as a fundamental skill of nurses and one of the key competences that student nurses must learn in training (e.g. Sherman, 2009).

The framework was found to have content validity, as assessed by nursing students and e staff, with the mean student ratings for importance and relevance of each individual NTS category being 4.7 or above. This suggests that the framework is

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capturing a range of NTS that are perceived as key by both nursing education professionals and students.

The framework has the additional strength that it can measure multiple NTS skills rather than focusing on individual skills. This provides some ecological validity, reflecting that ward rounds serve a range of different purposes (O'Hare, 2008) which require a variety of different skills, depending on the particular requirements of the situation.

In terms of limitations, the NTS framework was developed from a ward simulation rather than deriving from actual ward rounds in clinical practice. As such it could only approximate the range of complex situations that are likely to require NTS in a ward round context. As the pilot project has demonstrated that the development and application of an NTS framework to a simulated ward round is possible, future projects could evaluate its use in a real ward round setting as a measure of changes in perceived and actual student skills in these areas. There is also the potential to subsequently adapt it to apply to the ward round NTS of qualified nursing staff. The framework may, therefore, prove useful as a basis for measuring and evaluating changes over time in ward round NTS as a result of educational interventions, clinical placement experience or continuing professional development. As the final NTS framework was both based on, and consistent with, that suggested by Harvey and colleagues (under review) for use with junior doctors in training, this also opens up the possibility of using it to evaluate the impact of multi-disciplinary training on ward round NTS. This may be particularly relevant given the increasing recognition of the benefits of multi-professional training (Morison and Boohan, 2003).

A further limitation of the study was that the final framework was only evaluated by a relatively small number of nursing students from only one institution.

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While all of the students consistently rated the NTS as important and relevant to practice, further evaluation with a bigger sample across institutions is required to know if these responses are generalizable.

Finally, the pilot study only evaluated two aspects of the NTS framework in respect of its content validity. Future work exploring further aspects of the validity and reliability of the framework, utilising existing guidance (e.g. Cook et al., 2013) is needed, to confirm whether it has wider utility in educational and/or clinical practice.

Conclusions and recommendations

In conclusion, the study found that a NTS framework, based on existing taxonomies could be applied to the NTS ward round skills displayed by student nurses in a ward round simulation. The NTS categories included in the framework were all identified as relevant to and important for practice by student nurses. Given the importance of NTS in influencing patient outcomes, these findings potentially have important implications as a means of increasing nursing competencies in key NTS. Specifically, the results of the pilot study are potentially important to nurse education as they indicate that the framework can capture multiple NTS that are seen as relevant to practice by nursing educationalists and student nurses. This offers the opportunity for the framework to be used as a means of evaluating changes in student NTS following educational interventions, of highlighting student strengths and areas where improvement is needed and of measuring student performance in practice

As the study was only an initial pilot, it is recommended that further research is undertaken to establish the utility of the framework in educational and practice settings. Such research might include evaluating whether student NTS improve following a ward round simulation or clinical placement; exploring the extent to

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which the framework captures the key NTS of qualified nursing staff and which adaptations would be needed to make it applicable for this group.

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