

Title: Patient safety content and delivery in pre-registration nursing curricula: A national cross-sectional survey study.

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Abstract

Background

Patient safety is a core principle of health professional practice and as such requires significant attention within undergraduate curricula. However, patient safety practice is complex requiring a broad range of skills and behaviours including the application of sound clinical knowledge within a range of health care contexts and cultures. There is very little research that explores how this is taught within Australian nursing curricula.

Objectives

To examine how Australia nursing curricula address patient safety; identify where and how patient safety learning occurs; and describe who is responsible for facilitating this learning.

Design and Setting

A cross-sectional descriptive study of nursing undergraduate curricula using a nine-item survey tool. Participants were key informants from 18 universities across seven Australian States and Territories.

Conclusion

Although there is consensus in relation to the importance of patient safety across universities, and similarity in views about what knowledge, skills and attitudes should be taught, there were differences in: the amount of time allocated, who was responsible for the teaching and learning, and in which setting the learning occurred and was assessed. There was little indication of the existence of a systematic approach to

learning patient safety, with most participants reporting emphasis on learning applied to infection control and medication safety. Wide variation across universities, was reported, particularly in terms of how teaching occurred, in what setting and by whom. There was evidence of both integrated and explicit concentration on patient safety learning but also fragmentation. Little evidence of the systematic development of critical reasoning and patient safety knowledge and skills across the years of the nursing program and across the classroom/ laboratory and clinical environments was apparent.

Keywords: curricula, education, nursing, patient safety, survey

Contribution of the Paper

What is already known about the topic?

- Nurse education has a crucial role in developing the knowledge, skills and attitudes that promote patient safety.
- Evidence about how patient safety is addressed in healthcare professional curricula is limited.

What this paper adds

- Information about patient safety learning in Australian undergraduate nursing curricula.
- Understanding of the complexities associated with patient safety learning and the variability in the extent to which pre-registration nursing curricula integrate and support effective learning about this across academic and clinical learning environments.

Introduction

Patient safety is a growing area of concern in the healthcare arena (Ellis, 2009; Kohn, Corrigan & Donaldson, 2000; Leappe & Berwick, 2005; Waterson, 2014) as high numbers of adverse events cause unnecessary harm to patients (Soop, Frysmark, Koster & Haglund, 2009; Vlayen, Hellings, Claes, Peleman & Schrooten, 2012). Nurses are central to improving patient safety, because they work closely with patients in the clinical setting (Maeda, Kamishiraki, Starkey & Ehara, 2011). A key role of nurse educators and nurse education is to ensure nursing students are well prepared to implement evidenced-based safe practice in the clinical setting (Tella et al., 2014) and demonstrate the competencies necessary to ensure a quality of care and safety for patients (Firth-Cozens, 2001; Henderson, Forrester & Heel, 2006; Conway & McMillan, 2017).

Despite the increasing focus on patient safety in the clinical setting, patient safety content needs to be afforded greater significance, and be clearly and explicitly located in the undergraduate nursing curricula (Stevens, 2002; Weinger, Slagle & Jain, 2003; Tella et al., 2014). In fact, previous researchers have identified a gap between our knowledge of the extent and nature of university nurse education and clinical practice relevant to patient safety (Attree, Cooke, & Wakefield, 2008; Vaismoradi, Salsali & Marck, 2011).

Background

The international patient safety guidelines for healthcare education (EUNetPaS, 2010) outline the need for all healthcare workers to have the knowledge and skills relevant to promote safer environments for patients. Previous studies have shown variation in

both the content and process of teaching about patient safety. For example, studies have identified patient safety related content in nursing curricula to include learning from errors (Tella et al., 2014), teamwork (Tella et al., 2014; Lee et al., 2016), anticipatory actions in complex environments (Tella et al., 2014), evidenced-based practice (Lee et al., 2016), quality improvement (Lee et al., 2016), and patient safety-centred care (Tella et al., 2014). Similarly, patient safety teaching practices vary to include clinical practice, simulation (Tella et al., 2014; Lee, Jang & Park, 2016), lectures, role-play, group discussions (Lee & Kim, 2011) and, assignment (Lee et al., 2016). Furthermore, studies of patient safety content and teaching approaches have been found to vary across different school curricula (Steven, et al., 2014; Lee et al., 2016).

It is important to develop a better understanding of the inclusion of content and the teaching of patient safety in undergraduate nursing curricula to ensure students are well prepared for their future role in clinical practice. Given that the need to improve patient safety has been recognised as a key priority, both nationally and internationally, a study was undertaken to explore the inclusion of patient safety content in Australian undergraduate nursing curricula. This is an area not previously researched in Australia, therefore this study was undertaken to investigate the inclusion of patient safety content whilst examining the settings and how the content is both taught and assessed throughout undergraduate nursing curricula.

Methods

Study design

A descriptive, cross-sectional study using a web-based survey was conducted to evaluate the content included and teaching methods used in Australian pre-registration nursing curricula.

Survey instrument

The research team developed a survey based on available literature related to the inclusion of patient safety content in nursing curricula and relevant local documents related to patient safety (such as the National Patient Safety Education Framework, 2005). The survey instrument was revised a number of times in a Delphi type process by members of the research team to ensure face validity. The final instrument (see Appendix 1) includes a demographic section and nine questions. The questions relate to the approach to inclusion of patient safety as a stand-alone or integrated subject, where and how it is taught, who is responsible for teaching it, and how it is assessed within the course. The questionnaire asks course coordinators to list the three patient safety issues they consider to be the most important for student nurses to understand. After this section, the remaining questions focus on the topics that are covered and behaviours that are included as learning outcomes. It also includes a free text section where the participant is asked to add any further comment or content.

Sample

The sample consisted of nursing course coordinators or those responsible for the inclusion of patient safety content within a Bachelor of Nursing course at all relevant Australian universities. An email invitation to participate in the study was sent to each Australian University (n=32) offering an undergraduate Bachelor of Nursing (or equivalent) course (on campus) by the Council of Deans of Nursing and Midwifery in

2016, on behalf of the researchers. The email invitation contained a link to the survey, hosted on Survey Monkey. After two reminder emails were sent to the group, a follow up telephone call to those who had not responded was organised by the research team. Completed questionnaires were received from 50% ($n=16$) of Australian universities and, course coordinators at two universities completed at least 50% of the questionnaire, and their responses results were included in the analysis. Course coordinators at three universities started the questionnaire but did not complete beyond the demographic section. These and responses were excluded from the analysis.

Setting

Participating universities are located in seven Australian states and territories: New South Wales ($n = 6$), Queensland ($n = 5$), Western Australia ($n = 3$), Victoria ($n = 1$), Australian Capital Territory ($n = 1$), Northern Territory ($n = 1$), and Tasmania ($n = 1$). The number of campuses of each university range from one to seven, and all are located in Australia apart from one overseas campus located in Asia. Student enrolments at participating universities range from 600 to 3781 ($M = 1779$, $SD = 864$), with the majority studying on-campus. Five universities have students enrolled and studying on- and off-campus.

Ethical issues

Permission to conduct the study was received from the University of New England Human Research Ethics Committee (HE15-316) (2015-2017). Participation was voluntary and consent was implied by completion of the questionnaire.

Data analysis

Survey data were descriptively analysed (percent, mean (*M*), standard deviation (*SD*)) using SPSS v23 (IBM SPSS, Armonk, NY). Data are presented using tables and figures.

Results

Curriculum approach

All participants reported patient safety was integrated within subjects, and two participants reported patient safety being also taught as a stand-alone subject. No participants reported patient safety being offered as an elective subject. The number of hours specifically dedicated to teaching patient safety ranged from one to 120 ($M = 41$, $SD = 45$), however only nine participants specified a number of hours. Three participants did not respond, one was unsure, and five stated that this content was integrated within courses and that nearly every aspect of teaching in their institutions was focused on patient safety.

Responsibility for teaching patient safety

Participants were asked who was responsible for teaching patient safety (more than one response could be selected). All participants (18/18) reported that academic staff were responsible for teaching patient safety; 72% (13/18) reported clinical staff being responsible, and 44% (8/18) reported that academic or clinical staff specifically involved in the area of patient safety were responsible for teaching patient safety. One participant reported workshop demonstrators were also responsible.

Patient safety in clinical placements

Australian nursing students are required to complete a minimum of 800 hours of clinical placements over the period of the nursing course for registration (ANMAC

2012); however, the number of clinical placement hours a nursing student completes is dependent upon each university course. Thirty-three percent (6/18) of participants reported that patient safety learning was the focus of specific clinical placements. Only three participants advised a number of hours spent in these specific clinical placements; one participant reported patient safety clinical learning was mapped throughout the course, one reported 800 hours and another reported a total of 880 hours, suggesting it was seen as totally integrated into all aspects of clinical learning.

Teaching strategies used to teach patient safety

Participants reported the most common teaching strategies used to teach patient safety were laboratory sessions and tutorials/workshops. The least common strategy was seminars (Figure 1). The number of hours spent teaching patient safety in laboratory sessions ranged from two to 160 ($M = 46.5, SD = 7.0$), and tutorials/workshops ranged between two to 150 ($M = 31.0, SD = 58.5$) (Table 1).

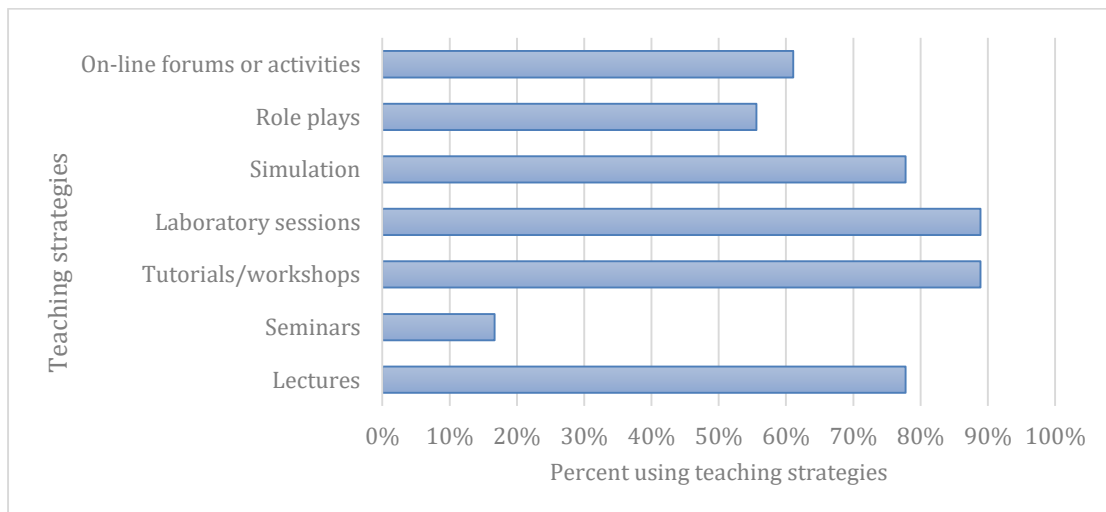


Figure 1 Teaching strategies used to teach patient safety

Table 1 Teaching strategies and mean number of hours spent teaching patient safety

Teaching strategy	Mean hours
Laboratory sessions	46.50
Tutorials/workshops	31.00
Simulation	22.75
Lectures	11.71
On-line forums or activities	8.33
Role plays	4.67
Seminars	0.50

Most important patient safety issues for student nurses to understand

Participants were asked to list the three patient safety issues they considered to be the most important for student nurses to understand. Three numbered free text boxes were provided for responses. Of the 15 participants who responded, 40% (6/15) nominated medication safety and/or infection control as the most important patient safety issues for student nurses to understand (Table 2). The second most important issue was medication safety (27%, 4/15), and the third most important was infection control (20%, 3/15).

Patient safety topics covered in undergraduate nursing course

Participants were asked to select from a list, the patient safety topics covered in their undergraduate nursing course (Table 3). The most frequently selected topics were infection prevention and control (89%), improving medication safety (89%), and exploring the meaning of patient safety (83%).

Patient safety behaviours included as learning objectives within curricula

The most frequent patient safety behaviours included as learning objectives within the curriculum were reported as communicating effectively (16/16), obtaining consent (16/16), being culturally respectful and knowledgeable (16/16) and inter-professional communication (15/16).

Patient safety content assessment

Patient safety content was reported as being assessed most frequently during clinical placement (14/16, 87.5%), by assignment (13/16, 81.2%) and by simulation (11/16, 68.7%). Three participants (3/16, 18.7%) reported that patient safety was not specifically assessed in their nursing course.

Patient safety covered adequately in undergraduate curricula

Seventy-three percent (11/15) of participants who responded to this question consider that patient safety was currently being covered adequately in their undergraduate curricula.

Discussion

Improving patient safety is recognised as a key national and international priority. In Australia, the ability to provide 'safe, appropriate and responsive quality nursing practice' is Standard 6 of the Registered Nurse Standards for Professional Practice (NMBA, 2016). It is therefore important that nursing students have the necessary knowledge and skills to facilitate safe environments for patients in the clinical setting. Our findings suggest approaches to teaching patient safety vary considerably between universities where patient safety tended to be integrated within undergraduate nursing course subjects rather than explicitly taught in separate, stand-alone subjects. Three-

quarters of the surveyed staff believed patient safety was currently being adequately covered in their undergraduate nursing curricula.

In this study, the findings indicate that nurse educators perceive the most important aspects of patient safety for student nurses to understand are individual safe clinical practices such as medication safety and infection prevention and control. This resonates with previous studies (Duhn et al., 2012; Lukewich et al., 2015; Usher et al., 2017), where these aspects are viewed as fundamental for safe practice, and are likely to be strongly reinforced across the curricula.

The emphasis on particular aspects of patient care such as medication safety, falls prevention and infection prevention and control may be related to the emphasis placed on these within the National Safety and Quality Health Service Standards (NSQHSS) (2012), as the Standards focus on areas where there are ‘a large number of patients involved, known gaps between the current situation and best practice outcomes, existing improvement strategies that are evidence-based and achievable’ (NSQHSS, 2012 p.4). Despite acknowledging the importance of human factors in patient safety and defining this as ‘The study of the interactions between humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimise human wellbeing and overall system performance’ (Carayon, 2007 cited in NSQHSS, 2012 p.10), there is limited reference throughout the NSQHSS to human factors as an essential aspect of safety for each standard. Explicit reference to human factors is only made in relation to two standards: *Patient Identification and Procedure Matching* and *Recognising and Responding to Clinical Deterioration in Acute Health Care*. Thus nurse educators may have a tendency to use the NSQHSS as a guide to what should be included in curricula without a full appreciation of the need to educate student nurses about

human factors in patient safety.

In this current study, academic and clinical staff were cited as those mostly responsible for teaching patient safety within the undergraduate programs and less than half reported that those responsible for teaching this content were actually involved in the area of patient safety. This, coupled with the use of the NSQHSS as a key document in informing nursing curricula, could account for the focus of patient safety teaching being viewed as a series of tasks rather than being seen as an opportunity to develop an understanding of how human factors impact patient safety or support the development of thinking about a systems approach to patient safety. Tregunno et al., (2014) in a Canadian study that focused on health faculty perceptions of the integration of patient safety into health curricula raised concerns regarding faculty knowledge of patient safety and how prepared or experienced faculty members and clinical preceptors were to teach in the area of patient safety.

There is growing recognition within the patient safety literature that the focus of patient safety content in undergraduate nursing programs needs to be on the influence of human sociocultural factors (Robson et al., 2013; Tregunno et al., 2014; Usher et al., 2017) and our findings support suggestions from Duhn et al. (2012), Lukewich et al. (2015) and Usher et al. (2017) that undergraduate nursing curricula reinforces individual clinical safety rather than human sociocultural issues of patient safety. In 2013, Robson et al., aimed to explore the integration of patient safety and human factors into undergraduate nursing curriculum within 20 Schools of Nursing in the UK, and found that there were aspects of human factors that are being missed in teaching and that human factors maybe interpreted too narrowly within curriculums. They identify an inconsistent approach to the use of interprofessional materials, such

as those produced by the World Health Organization (2009) and the Institute for International Healthcare Improvement (Robson et al., 2013) within teaching and call for a standardised and more coordinated approach to the patient safety in undergraduate curriculum. As well, Robson et al., (2013) found that faculty and clinical preceptors' knowledge of how to teach safety within the curriculum was lacking in relation to understanding of systems and workplace design. Thus, these authors recommend staff training in these aspects of patient safety and human factors.

Many participants in our current study identified patient safety content being integrated across the curriculum with learning objectives across current curricula frequently focused on the sociocultural factors related to patient safety behaviours (for example communicating effectively, obtaining consent, being culturally respectful and knowledgeable, and inter-professional communication). Tella et al., (2014) found that the integration of patient safety across the nursing curricula rather than in a discrete subject, poses a risk of patient safety content being rendered invisible, and may result in patient safety not being taught in a comprehensive way. However, opportunities for reinforcement and scaffolded learning are not well served through fragmentation of content into isolated subjects and perhaps what is needed is explicit identification of patient safety throughout the learning process and inclusion of aspects of patient safety beyond the standards within the NSQHSS. There is a need to enhance students' appreciation of other factors in the nursing work environment that cause errors and their familiarity with strategies to address these such as examining the workflow for points of failure and improving nurses' work flow by, for example, exception handling and decreasing interruptions (Fryer, 2012).

Tella (2014) identifies that multiple teaching methods are required if patient safety is to be effectively embedded within curricula, in order to provide nursing students with

the confidence and competence in communication about errors – specifically, reporting hazards and near-misses. Usher et al., (2017) found that students report feeling least confident in learning about the sociocultural dimensions of working in teams with other health professionals, managing safety risks and understanding the human and environmental factors related to patient safety. Specifically, Usher et al. (2017) reported that questioning decisions or actions of those with more authority, challenging poor practice, recognising, responding to and disclosing adverse events, including errors and near misses and negotiating difficult conversations with other health professionals were difficult for students. These authors recommended that nurse educators needs to have a focus on developing students' confidence and competence in this area of patient safety. Simulation education is one approach to preparing nursing students for safe practice and competence in these areas (Hayes et al., 2017). Headrick et al. (2012) has advocated for the use of interprofessional small group simulation learning as a teaching method to improve the integration of patient safety content across curricula, in particular to build confidence and competence in communication and working in teams. Although simulation is considered an effective teaching method to reduce the gap between university-based education and what happens in clinical practice regarding safety issues (Robson et al., 2013), in this study strategies used to teach patient safety were reported as mostly traditional methods of laboratory sessions and tutorials/workshops. One of the challenges to the use of simulation, and perhaps why simulation was identified to a lesser extent than traditional teaching strategies in this study, is that patient safety is not a stand alone set of content and to be competent in patient safety requires knowledge of other aspects of nursing. In addition, the resource implications for the use of this type of

pedagogy pose a barrier for education providers (Murray, Grant, Howarth & Leigh, 2008).

There was no consistency in this study regarding how many hours of clinical placement were directly related to learning outcomes and assessment specific to patient safety; and only a third of participants were able to identify patient safety as the focus of specific clinical placements, with one participant stating that patient safety was not assessed at all. Participants in this current study identified that patient safety was most frequently assessed during clinical placement. However, it was not clear from the data whether patient safety was specifically taught in the clinical setting other than through skill mastery and competence. Findings from Lukewich et al., (2015) indicated the importance of the practice environment on student's confidence in learning about patient safety. Their study found, as did Usher et al., (2017) that confidence in learning about sociocultural aspects of patient safety declines with increased clinical exposure and that many students are not comfortable speaking up about patient safety issues. Robson et al., (2013) identifies that training for clinical preceptors needs to include discussions about providing specific patient-safety and human-factors learning opportunities for students during the clinical placement experiences. They also identify a need to ensure clinical preceptors are confident to deliver specific patient-safety and human-factors learning opportunities for students in clinical settings. Training of this nature is particularly important given findings from Usher et al., (2017) where students reported low consistency in the teaching of patient safety by different preceptors, as well as perceptions of insufficient opportunities to learn and interact with members of interdisciplinary teams and 'system' aspects being covered within undergraduate programs.

However, both Robson et al., (2013) and Tregunno et al., (2014) found that one of the

key challenges of teaching patient safety in the clinical environment was the influence of a hidden curriculum shaped by the professional cultures and the culture of the organisations where clinical teaching and learning take place. Both studies found that students are exposed to variations in safety culture in various placements, and this can hamper students learning in the clinical environment. Robson et al., (2013) identified that interprofessional training and the use of dedicated clinical teaching units may be useful for overcoming negative aspects of the hidden curriculum and may help address the contextual influence of training in the clinical setting that weakens nurses' confidence in key sociocultural aspects of patient safety.

As Australian undergraduate nursing programs undergo curriculum renewal, faculty will need to consider a more comprehensive approach to patient safety that incorporates not only learning and practice around clinical tasks, such as infection control, pressure injury prevention and medication administration, but also a human factors and systems approach to patient safety and develop ways in which they can incorporate teaching strategies to develop students' confidence and competence in patient safety communication, reporting and detection of errors and recognising risks. Understanding of the preparedness of clinical preceptors and faculty to teach patient safety behaviours and promote a patient safety culture needs to be enhanced so that clinical preceptors and faculty can deliver specific patient-safety and human-factors learning opportunities for students. Based on the results of this study, it is recommended that patient safety curricula guidelines such as those provided by WHO (2011) that utilise the Australian Patient Safety Education Framework (Walton et al., 2005), be adopted by educational institutions to ensure a more comprehensive

integration and approach to patient safety across Australian undergraduate nursing curricula.

From the findings of this study it is evident that further research is needed to explore key aspects, such as the nature and efficacy of learning around patient safety in the clinical setting, in addition to tangible skill mastery and competency assessment.

More detailed mapping of patient safety content and assessments across the curricula is required to determine exactly how, in what settings and what content is taught and assessed in order to provide a more comprehensive picture. In addition, exploring the experience of clinical preceptors in regards to teaching and learning around patient safety knowledge, skills and attitudes within the clinical component of pre-registration curricula would provide insight into the culture of patient safety that students are exposed to in clinical practice.

Strengths and limitations

Several limitations have had an impact on this study. The issues of self-report and selection bias may have affected the results of this study. In addition, the research team developed the survey instrument used and while we determined it met the requirement for face validity, no further testing of the instrument was performed. The sample included 18 out of 32 university schools of nursing, and hence, the schools that were not included may have reported different findings.

Conclusion

This study demonstrated that patient safety content and teaching approaches varied across the participating nursing schools in Australia. It provides preliminary information suggesting a need for a more focused, whole of curriculum approach to the teaching and learning of patient safety for student nurses. This study points to the

need to examine and develop curricula and in particular learning frameworks that systematically include the incremental development of patient safety knowledge and practice, applied and assessed across a range of practice issues and contexts. This study will inform efforts to strengthen patient safety curricula for nurses through evaluation and benchmarking of pedagogical processes and the development of new models that incorporate explicit attention to patient safety and the integration and application of patient safety learning in clinical practice. It is critical that all those involved in facilitating student learning of patient safety share an understanding of the necessary key knowledge, skills and attitudes, together with an understanding of their own and others' role in achieving learning outcomes for students that translate effectively to safety for patients. More in-depth examination is warranted to better understand the mechanisms that facilitate and inhibit patient safety learning across schools.

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Appendix 1:

**Survey of inclusion of patient safety in undergraduate pre-registration
Nursing curricula in Australia.**

Please answer the following questions:

Location of University and campus

University _____

Campus/es _____

Number of undergraduate / preregistration students:

in the whole course Number _____

on campus Number _____

off campus Number _____

Please respond to the following questions:

1. Curriculum approach used to teach Patient Safety content within the undergraduate / preregistration curriculum:

- Stand-alone subject
- Integrated within subjects
- Elective patient safety
- Not covered

2. Overall (entire course) how many hours in total is specifically dedicated to Patient Safety in the preregistration curriculum?
_____ (state number of hours) (as closely as possible)

3. Who is responsible for teaching this information?

- Academics
- Clinicians
- Academic or clinician involved in the area of Patient Safety
- Other _____

4. Is Patient Safety the focus of any specific clinical placements within the undergraduate / preregistration nursing course?

Yes No

If yes, please indicate the number of hours _____

If yes, please also indicate the preferred type of setting _____

5. Which one of the following teaching strategies is used to teach the area of Patient Safety?

- Lectures hours _____
- Seminars hours _____
- Tutorials / Workshops hours _____
- Laboratory sessions hours _____
- Simulation hours _____
- Role Plays hours _____
- On-line forums or activities hours _____
- Other (please add) _____

6. Please list the patient safety issues you consider to be the most important for student nurses to understand:

- (i) _____
- (ii) _____
- (iii) _____

7. Which of the following topics is / are covered in your preregistration / undergraduate nursing course?

- Safe practice
- Handling medications
- Falls
- Communication, including between and within teams
- Creating a safe environment
- Infection control
- Risk assessment
- Incident Reporting
- Patient handling
- Handover
- Understanding complex situations
- Evidence based practice
- Ethical issues
- Other (please list) _____

8. Which of the following behaviours are included as learning objectives within your curriculum?

- Communicating effectively
- Involving patients as partners in health care
- Communicating risk
- Open disclosure
- Obtaining consent
- Being culturally respectful and knowledgeable
- Inter-professional communication
- Identifying, preventing and managing adverse events and near misses
- Understanding health care errors
- Managing risk
- Using evidence and information
- Providing continuity of care
- Managing complex situations
- Working safely
- Maintaining fitness to work or practice
- Managing fatigue and stress
- Being a team player
- Being a workplace learner

Adapted from the National Patient Safety Framework by Walton, Shaw, Barnet and Ross. 2006

8. How is Patient Safety content assessed in the course?

- Written exam
- Assignment
- Oral viva
- During clinical placement
- Presentation
- Peer review
- Simulation
- Not assessed
- Other (please add)_____

9. Do you consider that patient safety is covered adequately in your undergraduate curriculum?

Yes No

If No, what do you consider the barriers to appropriate inclusion of patient safety?

Any other comments?

Thank you for taking the time to complete this survey.