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New graduate registered nurses' knowledge of patient safety and practice: A literature review

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NEW GRADUATE REGISTERED NURSES' KNOWLEDGE OF PATIENT SAFETY AND PRACTICE: A LITERATURE REVIEW.

AIMS AND OBJECTIVES. To critically appraise available literature and summarise evidence pertaining to the patient safety knowledge and practices of new graduate registered nurses.

BACKGROUND. Responsibility for patient safety should not be limited to the practice of the bedside nurses, rather the responsibility of all in the healthcare system. Previous research identified lapses in safety across the healthcare, more specifically with new practitioners. Understanding these gaps and what may be employed to counteract them is vital to ensuring patient safety.

DESIGN. A focused review of research literature.

METHODS. The review used key terms and Boolean operators across a five-year time frame in CINAHL, Medline, psycINFO and Google Scholar for research articles pertaining to the area of enquiry. 84 articles met the inclusion criteria, 39 discarded due to irrelevant material, and 45 articles were included in the literature review.

RESULTS. This review acknowledges that nursing has different stages of knowledge and practice capabilities. A theory practice gap for new graduate registered nurses exists, and transition to practice is a key learning period setting new nurses on the path to becoming expert practitioners. Within the literature, there was little to no acknowledgement of patient safety knowledge of the newly registered nurse.

CONCLUSIONS. Issues raised in the 1970's remain a concern for today's new graduate registered nurses. Research has recognized several factors affecting transition from nursing student to new graduate registered nurse. These factors are leaving new practitioners open to potential errors and risking patient safety.

RELEVANCE TO CLINICAL PRACTICE. Understanding the knowledge of a New Graduate Registered Nurse upon entering clinical practice may assist in organisations providing appropriate clinical and theoretical support to these nurses during their transition.

KEY WORDS: patient safety, new graduate nurse, readiness, theory-practice gap, transition.

INTRODUCTION

Responsibility for patient safety should not only be viewed as limited to the scope of practice of the nurses at the bedside, rather, patient safety is the responsibility of all people in the healthcare system (World Health Organization [WHO], 2015). Previous research has identified lapses in safety across the health profession, more specifically with new practitioners (Benner, 1984; El Haddad, Moxham, & Broadbent, 2013; Myers, Reidy, French, McHale, Chisholm, & Griffin, 2010). Understanding these gaps and what may be employed to counteract them is vital to ensuring patient safety. While the literature acknowledges the gap between theoretical knowledge and clinical skills, the NGRNs knowledge and understanding of patient safety is unclear (Twigg & Atree, 2014). Due to the vulnerability of the population for which nurses are caring, the clinical practice standards of nurses in relation to patient safety and clinical practice should be at their optimum to ensure high quality patient outcomes. To this end, investigation of patient safety knowledge, understanding and behaviours of our new graduate nurses and those responsible for their practical learning will benefit the nursing profession as a whole and provide a baseline for patient safety curricula within university courses going forward.

BACKGROUND

Patient safety is a worldwide issue brought to light by Kohn, Corrigan and Donaldson (2000) who reported adverse events as a result of medical mismanagement caused more deaths in American hospitals annually than those caused by motor vehicle accidents. The costs of these adverse events extends into the billions of dollars nationally through lost income, loss of household production, healthcare costs and disability (Kohn et al., 2000). In Australia, the Australian Patient Safety Council was formed in 1987 to promote patient safety and conduct research into the area of advancing patient safety (Runciman, 2002). Following Kohn et al. (2000), incident reporting systems were introduced throughout the world with a good uptake however, incident reporting remains under utilised worldwide mostly by the medical profession. For both nurses and doctors, there remains a negative stigma attached to the reporting of incidents, or adverse events (Hor, Iedema, Williams, White, Kennedy & Day, 2010; Kohn et al., 2000). Australian hospitals have not been immune to patient safety problems with major inquiries being held at Bundaberg Base Hospital in Queensland, Campbelltown and Camden Hospitals in New South Wales, King Edward Memorial Hospital in Western Australia, and the Canberra Hospital in the Australian Capital Territory (Dunbar, Reddy, Beresford, Ramsey, & Lord, 2007). Currently, medical errors have led to under-dosing of chemotherapy in St Vincent's Hospital, Sydney (NSW Ministry of Health, 2016). Similarly, in South Australia, errors in chemotherapy dosing have been identified spanning

ten years with inquiry findings included errors in governance; non-compliance to policy and procedure; and clinicians who lacked "adequate knowledge, skill, care and judgment" (Marshall, Lindeman, Newman, Carrington, Kerrins, & Marker, 2015).

AIMS AND OBJECTIVES

The aim of this review was to critically appraise the contemporary research literature and summarise the evidence pertaining to the patient safety knowledge and practices of NGRNs. The objective of this review was to gain an understanding of the clinical safety knowledge of NGRNs upon transition from nursing student to registered nurse through published literature.

METHODS

Using the 12 step approach as described by Kable, Pich, and Maslin-Prothero (2012), the researcher used a structured process to search for articles, assess retrieved articles for relevance, and conduct a quality appraisal of relevant articles. The following databases were used to search for the literature: CINAHL, Medline and psycINFO. A Google Scholar search was also conducted for related missed evidence-based literature. Final articles were searched by hand to detect any other literature not previously identified.

Inclusion Criteria

Prior to the search, inclusion and exclusion criteria were determined to provide consistency and rigor to the literature review. Articles were included if they were written in English; they had a direct relationship to NGRNs; they describe the perceptions of NGRNs real experiences, and those related to the complexity of care in relation to NGRN; and were published between January 2010 and December 2015.

Exclusion Criteria

Articles were excluded if they were not originally published in English. Papers were also excluded if they described nurses' perceptions of simulated experiences or not directly related to NGRNs or Registered Nurses (RNs). While simulation is valuable to mimic real outcomes, they do not invoke the same response as it would when dealing with a real patient.

The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used to guide the Boolean search with the following operators included in the search terms:

- Patient safety AND registered nurses.

- Patient safety AND new graduate registered nurses.
- New graduate nurses OR newly licenced nurses.
- New graduate registered nurse AND understanding
- Understanding OR knowledge OR comprehension OR insight OR awareness OR familiarity.

The initial search of the databases identified 49 articles that met the inclusion criteria, the Google Scholar search identified a further 27 articles totaling 76 articles meeting inclusion criteria. A manual search of these 76 articles yielded a further 8 articles for inclusion. Of these 84 articles, 39 were discarded following a review of their abstracts. The number of articles retained was 45 and included in this review (Figure 1). Of these 45 articles, 18 were from the United States of America (USA), 13 from Australia, four from the United Kingdom (UK), two from Canada and one each from Oman, Singapore, Sweden, Switzerland, China, Belgium, United Arab Emirates (UAE) and The Netherlands.
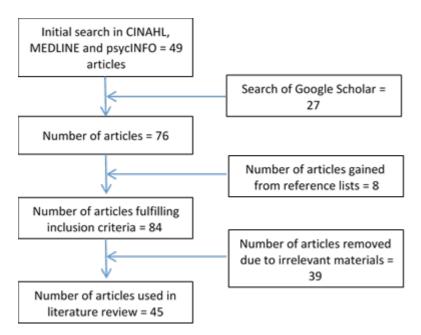

Figure 1: PRISMA flow diagram of article retrieval

APPRAISAL OF THE LITERATURE

Quality appraisal was conducted for the literature listed in Table 1. The McMaster Critical Review form – Quantitative studies, and the McMaster Critical Review form – Qualitative studies were used to assess the quality of the selected papers (Lets, Wilkins, Law, Stewart, Bosch, & Westmorland, 2007). Papers were given a grading of high, medium or low (H/M/L) depending on the content meeting the criteria specified in the McMaster guidelines for critical review forms (Lets et al., 2007). The papers graded medium to low

quality remain in the table to provide an example of the appraisal process. Articles by Benner, while rated medium to low by way of the quality appraisal, are included in the literature review due to their seminal nature and importance as a background to the study.

Definition of a New Graduate Registered Nurse

This review is focused on the NGRN. Literature from the United States of America (USA), Europe and the United Kingdom (UK) uses terminology such as newly licensed nurse, newly qualified nurse, and new-to-practice RN when discussing this position. In this literature review the term NGRN will be used in preference to any other (international) nomenclature, however it will apply to the same standard and level of nurse.

For the purpose of this paper, the definition of the NGRN is:

- a person who has completed the undergraduate nursing degree;
- has met Australian nursing registration requirements; and
- is in their first 12 months of full time (or equivalent) clinical practice (Australian Nursing and Midwifery Accreditation Council, 2014).

This definition does not include enrolled nurses and/or licensed practice nurses.

Definition of Patient Safety

The World Health Organization defines patient safety as the "the prevention of errors and adverse effects to patients associated with health care" (2016). This review seeks to develop an understanding of patient safety as a concept underpinning nursing practice.

KEY THEMES FROM THE LITERATURE

Patient safety

Patient safety came to the forefront of literature in the year 2000 when the United States of America's (USA) Institute of Medicine's (IOM) report, edited by Kohn et al. (2000) highlighted the fact that medical errors caused more deaths in healthcare the USA than motor vehicle accidents. This report highlighted deficiencies in quality and safety in healthcare worldwide. Since the IOM report, studies have focussed on the risk factors associated with compromised patient safety (van Beuzekom, Boer, Akerboom, & Hudson, 2010), and concerns that NGRNs have in regards to providing safe patient care (Myers et al., 2010). Van Beuzekom et al. (2010) reviewed literature behind latent risk factors of patient safety defining a person's knowledge and its application to procedures as well as technical skills are risk factors in human error. Myers et al. (2010) conducted focus groups to identify safety concerns that nurses, in particular NGRNs, associate with their ability to provide safe patient care. Both of these studies complement each other by identifying key areas associated with medical errors and compromised patient safety. Also supporting these

studies was research conducted by Montgomery, Killam, Mossey, and Heerschap (2014) using Q methodology to gain the viewpoints of final year nursing students that resulted in students recognised lack of readiness, misdirected practices and negation of professional boundaries as threats to their safety practices. A multi-method qualitative study by Steven, Magnusson, Smith, and Pearson (2014) indicated that undergraduate nursing students view patient safety as underpinning nursing practice even when patient safety was not identified as a consistent theme within undergraduate curricula.

To address the issue of worldwide patient safety, the World Health Organisation (WHO) instigated patient safety initiatives such as the surgical safety checklist and the Hand Hygiene Initiative that have each decreased mortality (WHO, 2015). In Australia Hughes, Pain, Braithwaite and Hillman (2014) reviewed the 'Between the Flags' rapid response system, a patient safety program implemented in New South Wales (NSW) Hospitals in 2008 to increase escalation of care for the deteriorating patient. Australia's Commission for Safety and Quality in Health Care, established in 2006, nationally coordinate improvements in quality and safety by working with clinicians, consumers, patients, managers, and healthcare organisations with the objective to "achieve a sustainable, safe and high-quality health system" (Australian Commission on Safety and Quality in Health Care [ACSQHC], 2016).

Readiness for practice

Readiness for practice was a prominent theme that has been widely discussed in the literature. Benner (1982, 1984) conducted seminal studies in the 1970's regarding the skill acquisition process of nurses leading into later research by Duchscher (2001, 2003, 2008); Duchscher and Cowin (2006); Burger, Parker, Cason, Hauck, Kaetzel, O'Nan, and White (2010); Watt and Pascoe (2013); El Haddad et al., (2013); Casey, Fink, Jaynes, Campbell, Cook, and Wilson (2011); and Wolff, Regan, Pesut, and Black (2010). This research varied from exploratory and interpretive qualitative studies to mixed method descriptive studies across Canada, Australia and the USA. Readiness for practice is a topic that has been identified and discussed regardless of the various nurse training methods over the last 40 years. Readiness for practice is often discussed alongside the theory-practice gap.

Theory-practice gap

Bendall (1976) conducted an observational study of 321 student nurses across 19 hospitals that acknowledged the existence of a theory-practice gap between the theoretical knowledge of student nurses and the physical clinical care provided. This study is backed up by recent research highlighting the same theory-practice gap being identified by the nurses of today (El Haddad et al., 2013; Flood & Robinia, 2014; Maben, Latter, & Macleod Clark,

2006; Monaghan, 2015; Nematollahi & Isaac, 2012; Roth, Mavin, & Dekker, 2014; Scully, 2011). All of these authors support the role that transition programs or mentorship programs have to play in bridging the gap between university theory and clinical practice in the workplace. Research conducted by Casey et al., (2011) identified that nursing students had difficulty with skills that NGRNs acknowledged having difficulty with upon entering practice. However, their Readiness Survey examining the readiness for practice perceptions of baccalaureate nursing students in their final year found that these nursing students have a perception of readiness for practice, which contradicts the perceptions of NGRNs.

Transition to practice

Transition to practice is a widely researched concept with this review taking in Benner's (1982) use of the Dreyfus model of skill acquisition to explain the concept of a nurses' transition from novice to expert. Recent research has supported new graduate transition programs through qualitative methods such as hierarchical regression modelling (Chappell, Richards, & Barnett, 2014), phenomenology (Duchscher, 2001) concept analysis (Nematollahi & Isaac, 2012) longitudinal naturalist enquiry (Maben et al., 2006), and interpretive paradigm (Ostini & Bonner, 2012). During a 10-year span, Duchscher (2001, 2003, 2008, 2009) compiled a cumulative knowledge of qualitative research on role adaption, developing the transition shock model recognising the process of transition and the needs and thought processes of NGRNs throughout the first 12 months of practice.

Leadership

The relationship between leadership and patient safety has been recognised as important, however, leadership is thought of as only the role of senior nurses. Literature has indicated that leadership behaviours can be developed by any nurse regardless of seniority. Hendricks, Cope, and Harris (2010) explored the integration of a leadership program within an undergraduate nursing course that had positive developments for the participants who were able to improve knowledge of leadership to take forward into their careers. Later, Hendricks, Cope, and Baum (2015) explored the concept of postgraduate nurses' linking leadership with patient safety, conducting a content analysis with Master's degree students. Few participants linked leadership and patient safety.

The concept of 'ensuring patient safety through effective leadership behaviour', was systematically reviewed by Kunzle, Kolbe, and Grote (2010), finding that leadership is considered vital for maintaining patient safety. This has been supported by a cross sectional survey by Lievens and Vlerick (2014), which informed transformational leaders to have a positive influence on safety knowledge and activities. Hierarchical regression modelling used by Chappell et al. (2014) found that NGRNs who completed a graduate transition program

had greater clinical leadership skills than those who did not, or for those who have only completed a short program. Ekstrom and Idvall (2015), using qualitative descriptive research, found that NGRNs understand leadership qualities as the ability to recognise one's own weaknesses, coping with one's feelings, and taking responsibility of one's own development, and that they have an understanding of what it takes to be a leader.

DISCUSSION

This literature review has revealed the worldwide issue that is patient safety. The WHO acknowledged deficiencies in patient safety and developed the WHO International Conceptual Patient Safety framework to provide a guideline on addressing incidents within healthcare (WHO, 2015). Deficiencies in quality and safety in healthcare were highlighted in the late 1990's in the USA by the Institute of Medicine (IOM) and since patient safety has become a major concern for healthcare worldwide (Ammouri, Tailakh, Muliira, Geethakrishnan, Phil, & Al Kini, 2015; Djukic, Kovner, Brewer, Fetehi, Berstein, & Aidarus, 2013; van Beuzekom et al., 2010). Not only do preventable medical errors cause significant physical and psychological discomfort to the patients and health professionals, they increase patients' length of stay and thus hospital costs (Kohn et al., 2000). Due to the seminal finding of Kohn et al. (2000), the healthcare industry as a whole has moved to increase patient safety across all areas by decreasing the instance of errors (van Beuzekom et al., 2010; Myers et al., 2010). Myers et al. (2010) suggested that in light of this, increasing the safety of the system into which NGRNs practice is a priority of the nursing profession as a whole.

Wolff et al. (2010) exploratory research investigated the new graduates' readiness for practice. This qualitative project produced four common themes, one of which was the readiness to provide safe client care. The NGRN participants defined safe practice in four ways: following policy and procedures, knowing one's own limitations and know when to seek assistance, prevent harm or injury by employing priorities and strategies, and "being aware of principles behind nursing actions" (Wolff et al., 2010). Watt and Pascoe (2013) also researched the preparedness for practice of student nurses and found a majority of the participants reported the biggest contributing factor for their preparedness was the quality of the undergraduate clinical experience.

The theory practice gap is not a recent concept within nursing. Bendall (1976) identified that a gap existed in what was required of nursing schools compared with that required of the job. She observed that students were falling back on textbook answers for exams that did not reflect the reality of care required (Bendall, 1976). This has been supported more recently by Nematollahi and Isaac (2012), Maben et al. (2006), Scully (2011), and Monaghan (2015) who have all identified the same issue in nursing today. While

this gap can pertain to any area of nursing, it is most closely linked to NGRNs upon transition from student nurse to RN (Monaghan, 2015). Roth et al. (2014) researched the theory practice gap across many professions, especially those that learn in a formal educational institution, such as a university. Being educated in this way, the predilection is for "knowing of practice" rather than "knowing in practice" (Roth et al., 2014, p. 522). They recognise that 'in theory' no such gap would exist; what is learned should be applied during practicum placements. Upon investigation, however, they found that the gap does exist due to differences between knowledge assessed by theory examinations and those practical competencies required 'on the job' (Roth et al., 2014).

There is a large volume of literature pertaining to the area of the NGRNs transition to practice (Benner, 1982, 1984, 2001; Benner & Wrubel, 1982; Chappell et al., 2014; Duchscher, 2001, 2003, 2008, 2009; Duchscher & Cowin, 2006; Maben at al., 2006; Nematollahi & Isaac, 2012; Ostini & Bonner, 2012). There is little information in the way of the relationship between NGRNs and patient safety. Following Benner's lead, other researchers have shown that NGRNs have not developed the critical thinking skills or the situational awareness to be able to act at a sufficient level to provide the expected level of care (Duchscher, 2003, 2008; Fore & Sculli, 2013; van Beuzekom et al., 2010). Moreover, others have recognised that quality and patient safety is a vital educational requirement at the undergraduate level (Benner, 1982, 2001; van Beuzekom et al., 2010; Myers et al., 2010; Fore & Sculli, 2013).

Benner (1982, 2001) and Benner, Tanner and Chesla (2009) noted that advanced beginners (NGRNs) have a tendency to prioritise care in a linear fashion regardless of the clinical situation faced; they are unable to look beyond the requirements of the tasks meaning these beginners have minimal capacity to provide holistic care, unable to care for a patient as a whole person, but rather only caring for a patients' condition. There are times during the advanced beginners' caregiving where their own anxieties take over their abilities to grasp the patients' condition preventing them to meaningfully process any information given to them by other nurses (Benner et al., 2009; Burger et al., 2010). Advanced beginners require support in the clinical setting to help set priorities as they are only starting to recognise recurring patterns in their clinical practice. They rely on making lists of tasks to be completed throughout their shift and while they do express concern over the patients' condition, they have trouble working outside of their lists, or guidelines, to care for the patient as a person (Benner et al., 2009).

Benner's work, having been acknowledged across literature regarding the trajectory of skill acquisition for nursing, has had few critiques. English (1993), Cash (1995), Hargreaves and Lane (2001) and Gobet and Chassy (2008) have all published a critique regarding Benner's concept of the expert nurse. While these critiques are important and

valid for that level, the focus of this review was on the transition from novice to advanced beginner and thus the level of expert nurse is not within the scope of this review.

Along with the NGRNs transition to practice, the literature revealed transformational leadership as an influence on patient safety (Ammouri et al., 2015; Chappell et al., 2014; Hendricks et al., 2010; Hendricks et al., 2015; Kunzle et al., 2010; Lievens & Vlerick, 2014). With the aging nurse population, NGRNs are being relied upon to take leadership roles, however it has been noted that NGRNs struggle with several aspects of clinical care that may compromise patient safety (Benner, 1982, 1984; Benner et al., 2009; Myers et al., 2010).

RELEVANCE TO PRACTICE

Due to the vulnerability of the population for which nurses are caring, researching the patient safety knowledge, understanding and behaviours of our new graduate nurses will benefit the nursing profession as a whole as it will allow for strengthening of any areas of deficit, or reinforcement of and enhancement in other areas. It may also provide a basis for universities patient safety curriculum. Exploring NGRNs knowledge of medical errors and patient safety during their transition may influence the current trends in nursing as we push toward safer and more positive patient outcomes.

CONCLUSION

Patient safety cannot be achieved by way of a single action; it incorporates governance, education and many facets of care, both directly and indirectly. In nursing, literature suggests that patient safety begins with nursing education at the under graduate level and should continue in all post-graduate nursing education. This review has acknowledged that in nursing there are different stages of knowledge and practice capabilities as Benner collected works have described. There is a theory practice gap for NGRNs, and transition to practice is a key learning period for NGRNs that sets them on the path to becoming one of Benner's experts. While the literature acknowledged that NGRNs have a limited skill set that may compromise patient safety, there was little to no acknowledgement of the patient safety knowledge of the newly registered nurse.

DISCLOSURE

Table 1: Quality appraisal of literature retrieved

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
1.	Aiken, L., Sermeus, W., Van den Heed, K., Sloane, D., Busse, R., McKee, M., Bruyneel, L., Rafferty, A M., Griffiths, P., Moreno-Casbas, M T., Tichelman, C., Scott, A., Brzostek, T., Kinnunen, J., Schwendimann, R., Heinen, M., Zikos, D., Strømseng Sjetne, I., Smith, H L., & Kutney-Lee, A. (2012). "Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States". *British Medical Journal* **344**(e1717). United States of America (USA)	Multicentre cross sectional survey of patients and nurses. Nursing outcomes related to job satisfaction, intention to leave, staffing levels, burnout, patient safety, and quality of care. Patient outcomes related to satisfaction of care and inclination to recommend the hospital.	1105 acute general hospitals (488 in 12 European countries & 617 in USA). 61258 nurses and 131318 patients in total	Quality of work environment and nurse staffing was significantly associated to patient satisfaction, quality and safety of care and nurse workforce outcomes. Patients and nurses rated their hospitals similarly	H
2.	Ammouri, A.A., Tailakh, A.K., Muliira, J.K., Geethakrishnan, R., Phil, M., & Al Kindi, S.N. (2015) "Patient safety culture among nurses". *International Nursing Review* **62**, 102-110. Oman	Descriptive and cross sectional using self-reporting questionnaires to investigate nurses perceptions of patient safety culture and its maintenance.	414 RNs responded across 4 hospitals in Oman	Nurses associated higher rates of patient safety culture when working in an environment focused on teamwork and communication. Other areas highlighted were effective leadership, organisational learning and continuous improvement and communication	H
3.	Bendall, E. (1976) "Learning for reality". *Journal of Advanced Nursing* **1**, 3-9. United Kingdom (UK)	Observational study of student nurses	321 student nurses in 19 hospitals	There was a poor relationship between student nurses' behaviours/actions compared to their written responses about caring for patients in reality. Acknowledging the theory-practice gap in nursing	M
4.	Benner, P. (1982). "From novice to expert". *American*	Based on previous unpublished study		Benner applies the Dreyfus model of Skill Acquisition to nursing explaining that to	L

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	Journal of Nursing, 82(3), 402-407. USA			develop skills nurses need to go through 5 stages of proficiency: novice, advanced beginner, competent, proficient, and expert.	
5.	Benner, P. & Wrubel, J. (1982). "Skilled clinical knowledge: the value of perceptual awareness". *Nurse Educator.* USA			The paper points out the difference between 'knowing that', or theoretical knowledge, and "knowing how", or practical knowledge. They concluded that in 1982 hospitals focused staff development on new staff orientation and on knowledge utilisation. There was little understanding of clinical knowledge or skilled knowledge. They describe experience as "the transformation of preconceived notions and expectations by means of encounters with actual practical situations.". It relies on the development of perceptual awareness singling out the significant from the irrelevant to comprehend a situation as a whole.	M
6.	Benner, P. (1984). *From novice to expert: excellence and power in clinical nursing practice (Commemorative edition).* New Jersey: Prentice-Hall. USA	Book		In depth explanation of the transposition of the Dreyfus model of skill acquisition to the nursing profession.	L
7.	Benner, P., Tanner, C. & Chesla, C. (2009). *Expertise in nursing practice – caring, clinical judgement, and ethics* (2nd Ed.). New York: Springer Publishing Company. USA	Book		The authors documented their findings through interviews with nurses talking through the stages of novice to expert. Gauging feelings, coping mechanisms, orders of thought and work processes/organisation. The thought processes of setting priorities through the stages.	L
8.	Burger, J., Parker, K., Cason, L., Hauck, S., Kaetzel, D., O'Nan, C., & White, A.	A mixed method descriptive, comparative design.	Cardiac telemetry units of five acute care	Explored the differences in how advanced beginners, competent, and expert nurses prioritize patient care & identify	H

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	(2010). "Responses to work complexity: the novice to expert effect". *Western Journal of Nursing Research 32(4) 497-510.* USA	*Survey *Priority list *Observation *Interview	hospitals. Purposely sampled advanced beginner, competent and expert nurses (n=23)	factors that influence their change in plans and reprioritisation. Identifies lineal prioritisation of advanced beginners opposed to non-lineal experts.	
9.	Casey, K., Fink, R., Jaynes, C., Campbell, L., Cook, P., & Wilson, V. (2011). "Readiness for practice: the senior practicum experience". *Journal of Nursing Education 50(11).* USA	Mixed method descriptive approach. Casey-Fink Readiness for Practice Survey to examine the perceptions of baccalaureate nursing students in a senior practicum course assessing perceptions of readiness for practice.	429 senior nursing students from 3 nursing programme s in a Western US state.	Skills that students found difficult correlate to those that NGRNs report difficulty in mastering. Students confident in communication skills and asking for help. Lacking in confidence in management of care, delegation of tasks, handling multiple patients, calling medical staff, responding to change in patient condition, and caring for the dying. Student nurses perceive readiness for professional practice – a mismatch with the perceptions of NGRNs	H
10.	Chappell, K., Richards, K., & Barnett, S. (2014). "New graduate nurse transition programs and clinical leadership skills in novice RNs". *Journal of Nursing Administration 44(12).* USA	Hierarchical regression modelling to evaluate predictors of CLS among individual characteristics of RNs and characteristics of NGNTPs. Online survey tool.	306 participants with <24 months post graduate experience from 23 hospitals.	NGRNs who participate in a good quality New Graduate Nurse Transition Program (NGNTP) have higher Clinical Leadership Skills (CLS). It was found that the CLS of NGRN was dependant on the length of the NGNTP.	H
11.	Cleary, M., Horsfall, J., Jackson, D., Muthulakshmi, P., & Hunt, G.E. (2013). "Recent graduate nurse views of nursing, work and leadership". *Journal of Clinical Nursing 22, 2904-2911.* Singapore	Qualitative interviews: assessing nursing skills and qualities, transition, support, leadership and role models, career development and retention of the NGRN.	17 new graduate registered nurses	Highlights a blaming culture among nursing and retention related problems of NGRNs	M
12.	Djukic, M., Kovner, C.T., Brewer, C.S.,	Cross-sectional, descriptive,	Cohort 1: n=453	There was some reported improvement to educational	H

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	Fatehi, F.K., Bernstein, I., & Aidarus, N. (2013). "Improvements in educational preparedness for quality and safety". *Journal of Nursing Regulation 4(2).* USA	comparative design to examine difference in reported readiness between 2 cohorts of NGRNs across 15 US states.	Cohort 2: n=424 After exclusions.	preparedness for quality and safety in undergraduate nursing courses. NGRNs felt prepared in safety and patient centred care. Less prepared in QI models and processes, teamwork, and collaboration.	
13.	Duchscher, J.B. (2001). "Out in the real world – newly graduate nurses in acute-care speak out. *Journal of Nursing Administration, 31*(9). 426-439. USA	Phenomenological qualitative approach – perception of first 6 mths of nursing	5 newly graduated nurses	Identified 3 main themes: 1. doing nursing 2. the meaning of nursing 3. being a nurse	H
14.	Duchscher, J.B. (2003). "Critical Thinking: perceptions of newly graduate female baccalaureate nurses". *Journal of Nursing Education, 42*(1), 14-27. USA	Combined phenomenological and feminist research – nurses' perception of critical thinking. Interviews and reflective journaling	5 newly graduated baccalaure ate nurses	The NGRNs have a lineal way of thinking and approaching tasks. They saw critical thinking as arising during certain situations. Socialisation of NGRNs into professional practice is a natural inhibitor the critical thinking by the adherence to the medical model of knowledge generation inhibiting the development of critical ways of thinking. Critical thinking and thus critical questioning can be misinterpreted by more senior nurses as a personal challenge of knowledge and potentially alienate the new nurse.	H
15.	Duchscher, J.B. (2008). "A process of becoming: the stages of nursing graduate professional role transition". *The Journal of Continuing Education in Nursing, 39*(10), 441-450. USA	Interpretive inquiry – exploration of the transition process during first 12 months of practice	14 female new graduates from the same 4 yr baccalaure ate nursing program	The stages of transition theory explains how NGRNs evolve over a 12mth period following graduation. Three stages identified as: Doing, Being and Knowing. Suggests that supporting NGRNs through the adjustment develops their thinking and practice expertise.	H
16.	Duchscher, J.B. (2009). "Transition	Cumulative knowledge	n/a	The 'transition shock' theory gives meaning to the NGRN	H

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	shock: the initial stage of role adaptation for newly graduate Registered Nurses". *Journal of Advanced Nursing, 65*(5), 1103-1113. USA	encompassing 4 qualitative studies spanning the previous 10 yrs		transition to practice process and the needs of NGRNs during the process of adjustment.	
17.	Dunbar, J.A., Reddy, P., Beresford., Ramsey, W.P., & Lord, R.S.A. (2007). "In the wake of hospital inquires: impact on staff and safety". *Medical Journal of Australia 186(2).* Australia	Review	4 Australian hospital inquiries.	Common theme found: loss of trust in administrators and clinical colleagues, from patients and communities	L
18.	Ekström, L. & Idvall, E. (2015). "Being a team leader: newly registered nurses relate their experiences". *Journal of Nursing Management 23,* 75-86. Sweden	Explorative qualitative: interviews and qualitative content analysis. How NGRNs experience their leadership role in a ward based environment.	12 nurses from four wards in one hospital in Sweden.	5 themes: *feeling stranded *forming well functioning teams *learning to lead *having the courage, strength, and desire to lead *ensuring appropriate care. Lack of support for leadership, experience gap, NGRNs have difficulty prioritising, leading and managing nursing care. High levels of horizontal violence toward NGRNs	H
19.	El Haddad, M., Moxham, L., & Broadbent, M. (2012). "Graduate registered nurse practice readiness in the Australian context: An issue worthy of discussion". *Collegian 20, 233-238.* Australia	Literature review		Reviews transfer of education to tertiary institutions and practice readiness with NGRNs questioning their own preparedness upon graduation	L
20.	Flood, L.S., & Robinia, K. (2014). "Bridging the gap: strategies to integrate classroom and clinical	Review	Nursing students	Recommendations for bridging the gap between classroom and clinical teaching. Strategies for faculties, clinical course coordinators and	L

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	learning". *Nurse Education in Practice 14,* 329-332. USA			socialisation strategies and benefits to integrate into the workplace preventing isolation.	
21.	Fore, A.M., & Sculli, G.L. (2013) "A concept of analysis of situational awareness in nursing". *Journal of Advanced Nursing 69(12),* 2613-2621 USA	Concept analysis: situational awareness examined using Walker and Avant's eight step method of analysis.	Literature review & case studies	Failures in perception, comprehension, and projection reduces accuracy of patient care decisions. Patient safety impacted by inadequate level of situational awareness. Suggests recognition of situational awareness as a key factor in the delivery of patient care.	M
22.	Halcomb, E.J., Salamonson, Y., Raymond, D., & Knox, N. (2012). "Graduating nursing students' perceived preparedness for working in critical care areas". *Journal of Advanced Nursing 68(10),* 2229-2236. Australia	Cross-sectional survey: examine association between student characteristics and experience, and their preparedness to seek employment in critical care.	577 final year nursing students form a multi campus Australian University.	Students who went to critical care areas for more than 1 week were significantly more likely to apply for a critical care position due to the varied and challenging work, perceived prospects for professional development, and the positive aspects of working one-on-one with patients.	H
23.	Hendricks, J., Cope, V., & Baum, G. (2015). "Postgraduate nurses' insights into the nursing leadership role. Do they intuitively link the role to patient safety?". *Journal of Nursing Education and Practice, 5(9),* 72-77. Australia	Concept analysis: to describe the role of a nurse leader in today's healthcare environment	146 RNs enrolled in Masters award course 2009-2011	Post graduate nursing students do not link leadership with patient safety and quality leading to the conclusion that the emphasis of safety leadership as being owned by all nurses irrespective of level/seniority.	H
24.	Hendricks, J.M., Cope, V.C., & Harris, M. (2010) "A leadership program in an undergraduate nursing course in Western Australia: building leaders in our midst". *Nurse Education Today 30,* 252-257	Review of Pilot study: leadership program implemented to develop leadership in undergraduate nursing students	10 student nurses	Participants perceived that important components of leadership are: the ability to communicate with people at all levels; the ability to set goals; the ability to be positive to change; the ability to view problems as opportunities; and having the confidence to lead. Developing self-awareness in undergraduate students provides the opportunity to	M

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	Australia			reflect on personal strengths and weaknesses in order to facilitate leadership skills and knowledge.	
25.	Hor, S., Iedema, R., Williams, K., White, L., Kennedy, P., & Day, A.S. (2010). "Multiple accountabilities in incident reporting and management". *Qualitative Health Research 20(8)* 1091-1100 Australia	Ethnographic study: incident reporting by health professionals	Physicians, nurses, allied health workers, and clerical staff.	The presence of local processes of accountability that are used alongside and interact with the system of accountability operationalized through the incident reporting system and policy. Importance needs to be placed on understanding how clinicians manage incidents and protect patient safety will develop our understanding of how incident reporting might be better facilitated in clinical practice.	L
26.	Hughes, C., Pain, C., Braithwaite, J., & Hillman, K. (2014). "'Between the flags': implementing a rapid response system at scale". *BMJ Quality and Safety 23*, 714-717. Australia	Review: rapid response systems in hospitals	220 hospitals	A rapid response system piloted in NSW hospitals has decreased mortality and cardiac arrests by approx. one third. The system empowers clinicians to call for help earlier with better patient outcomes.	M
27.	Künzle, B., Kolbe, M., & Grote, G. (2010). "Ensuring patient safety through effective leadership behaviour: a literature review". *Safety Science 48*, 1-7. Switzerland	Literature review: using the input-process-output (I-P-O) model to review leadership behaviour in critical care teams	40 articles met criteria and reviewed	The literature suggests that leadership is considered vital for maintaining patient safety. Many factors go toward the making of a good and effective leader that creates positive team environments.	H
28.	Li, L., Duan, Y., Chen, P., Li, J., Mao, X., Barraclough, B.M., & Zhang, M. (2012). "Knowledge, skills, and attitudes of medical students to patient safety: a cross-sectional pilot investigation in China". *Journal of Evidence-Based Medicine 5, 124-133.*	Quantitative survey of medical students based on 2008 WHO study for a patient safety curriculum guide.	405 completed surveys from yr 3 and 4 medical students in China	The survey highlighted the poor patient safety knowledge of medical students in china. While the students have poor knowledge, skills and attitudes related to patient safety, they are very willing to learn about it. Recommendations were made to establish a patient safety culture from the beginning of undergraduate training to instil its importance.	H *questio nnaire to be used in quantitat ive arm of this research

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	China				
29.	Lievens, I., & Vlerick, P. (2014). "Transformational leadership and safety performance among nurses: the mediating role of knowledge-related job characteristics". *Journal of Advanced Nursing 70(3), 651-661.* Belgium	Cross-sectional survey: to report the impact of transformational leadership on two dimensions of nurses' safety performance.	152 nurses in a Belgian hospital	Transformational leaders in nursing has a positive influence on the safety knowledge and activities of subordinates both directly and indirectly.	M
30.	Maben, J., Latter, S. & Macleod Clark, J. (2006). "The theory-practice gap: impact of professional-bureaucratic work conflict on newly-qualified nurses". *Journal of Advanced Nursing 55(4), 465-477.* UK	Longitudinal study: naturalistic enquiry. The extent to which the ideals and values of the preregistration nursing course are adopted by individual newly educated RNs.	72 nursing students and 26 post graduate nurses.	Results showed a definite gap in theoretical knowledge and practical abilities of NGRNs. High levels of professional nursing ideals and values were thwarted in practice both by nurses and organisations. The implications of this are low morale, poor job satisfaction and retention.	H
31.	Manion, J. (2015). "The leadership relationship. Part 1: understanding trust". *Journal of Perianesthesia Nursing 30(2), 153-156.* USA	Concept analysis		Leadership only exists in a relationship. It is based on trust, competence, congruence, and constancy.	L
32.	Monaghan, T. (2015). "A critical analysis of the literature and theoretical perspectives on theory-practice gap amongst newly qualified nurses within the United Kingdom". *Nurse Education Today.* UK	Systematic search /Literature review		NGRNs in the UK feel underprepared for clinical practice and lack confidence which confirmed the continuing existence of the theory-practice gap. Preceptorship programs (NGRN programs) were beneficial to the transition to practice.	M
33.	Montgomery, P., Killam, L., Mossey, S. & Heerschap, C.	Q methodology: describe 3rd yr nursing student'	34 student nurses from one	3 main viewpoints resulted from the Q statements. *Lack of readiness	H

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	(2014). "Third year nursing students' viewpoints about circumstances which threaten safety in the clinical setting". *Nurse Education Today 34, 271-276.* Canada	viewpoints of the circumstances that threaten safety in the clinical setting.	baccalaure ate nursing program, Ontario Canada.	*misdirected practices *negation of professional boundaries The students recognised these as threats to safety in practice	
34.	Myers, S., Reidy, P., French., McHale, J., Chisholm, M. & Griffin, M. (2010) "Safety concerns of hospital-based new-to-practice registered nurses and their preceptors". *The Journal of Continuing Education in Nursing 41(4).* USA	Focus groups	19 NGRNs 22 Preceptor RNs	Four conceptual themes emerged from focus groups: *role and skill development *preceptor teaching strategies *critical thinking *communication Safety concerns highlighted by NGRNs and preceptors: *technical aspects of nursing *critical thinking *providing holistic patient care Stress can be greatly diminished by consistent and frequent feedback from preceptor RNs	H
35.	Nematollahi, R. & Issac, J.P. (2012) "Bridging the theory practice gap: a review of Graduate Nurse Program (GNP) in Dubai, United Arab Emirates". *International Nursing Review 59, 194-199.* UAE	Concept analysis	Dubai Health Authority	A GNP was introduced following the introduction of a local (Dubai) bachelor degree in nursing to address the shortfall in nurses in the country. Of the 56 graduates, 8 left within the first year or did not commence work at all. Those that left cited lack of support from hospital administration, unit managers, and preceptors. Lack of respect and acceptance from coworkers.	M
36.	Ostini, F. & Bonner, A. (2012). "Australian new graduate experiences during their transition program in a rural/regional acute care setting". *Contemporary Nurse 41(2), 242-252.*	Interpretive paradigm used to understand NGRNs meanings that they have attached to certain events during their transition to practice year.	NGRNs who had completed their graduate program at a Western NSW regional	Findings confirmed previous studies into the topic and highlighted four main themes: *being supported *being challenged *reflections on being a NGRN *reflections on a rural new graduate program.	M

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
			base hospital.	The study identified that graduate programs are beneficial in aiding the transition of NGRNs into clinical practice	
	Australia				
37.	Roth, W-M., Mavin, T. & Dekker, S. (2014). "The theory-practice gap: epistemology, identity, and education". *Education & Training 56(6), 521-536.* Australia	Concept analysis: to theorise the theory-practice gap		Knowing what and knowing how across all industries. Understanding that the gap exists and in what form.	L
38.	Scully, N.J. (2011). "The theory-practice gap and skill acquisition: an issue for nursing education". *Collegian 18, 93-98.* Australia	Personal reflection	Post graduate student point of view.	Highlights the importance of the clinical educator and of reflective practice. Students also need to possess the motivation to utilise resources	L
39.	Spector, N., Blegen, M.A., Silvestre, J., Barnsteiner, J., Lynn, M.R., Ulrich, B., Fogg, L. & Alexander, M. (2015). "Transition to practice study in hospital settings". *Journal of Nursing Regulation 5(4).* USA	Longitudinal, randomised, multisite design to determine whether graduate programs improved safety and quality outcomes	105 hospitals, 1088 NGRNs across 3 US states	Programs that had been established for more than 2 years reported fewer errors and negative safety practices, less stress, higher competency levels and more job satisfaction. In direct comparison, newly established transition programs reported the opposite and had a higher turnover.	L
40.	Steven, A., Magnusson, C., Smith, P. & Pearson, P.H. (2014). "Patient safety in nursing education: contexts, tensions and feeling safe to learn". *Nurse Education Today 34, 277-284.* UK	Multi-method: knowledge contexts and illuminative evaluation. Case study	4 undergradu ate nursing degree curricula; interviews with 8 programme leaders; case study focus groups of 24 student nurses, 12 RNs, 6 service	Programme documentation was poorly represented in the curricula however all participants viewed patient safety as a concept that underpins nursing practice Tensions between academia, organisational, and practice contexts were demonstrated. A theory-practice gap was reported by student nurses	M

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
			users; 4 episodes of practical placement observation s; interviews of 4 health service managers.		
41.	Taylor, C. (2002). "Assessing patients' needs: does the same information guide expert and novice nurses?". *International Nursing Review 49, 11-19.* Australia	Qualitative methodology	80 sets of data collected, 33 sets used for final analysis. Acute med-surg and rehabilitatio n hospitals.	Inexperienced, or novice nurses, access several information sources prior to meeting with a patient but there is a difference as to the interpretation of the information between a novice nurse and an experienced nurse. Inexperienced nurses get little information from a handover due to lack of understanding of medical terminology and information overload.	M
42.	Twigg, D. & Attree, M. (2014). "Patient Safety: Committing to learn and acting to improve". *Nurse Education Today 34, 159-161* Australia	Guest editorial		Call to change for workplaces to actively promote safe practice by creating open learning environments and promote teamwork, shared values and respect. Commitment to education to develop knowledge, attitudes, values, skills behaviours and practices that promote patient safety.	L
43.	Van Beuzekom, M., Boer, F., Akerboom, S. & Hudson, P. (2010). "Patient safety: latent risk factors". *British Journal of Anaesthesia 105(1), 52-59* The Netherlands	Literature review		Latent risk factors Staffing, training, communication, team work and team training, procedures/protocols, situational awareness, incompatible goals, planning and organisation, housekeeping.	M
44.	Watt, E. & Pascoe, E. (2013). "An exploration of graduate nurses'	Interpretive descriptive – exploring the impact of university	10 NGRNs completing their new graduate	Attending the university based clinical school of nursing within the hospital allowed the student nurses to direct their	M

	Author (year) Country	Study design	Sample size and sites	Comments/key findings	Quality apprais al H/M/L
	perceptions of their preparedness for practice after undertaking the final year of their bachelor of nursing degree in a university-based clinical school of nursing". *International Journal of Nursing Practice **19,** 23-30.* Australia	based clinical school of nursing experience on graduate nurses' perceptions of their preparedness for practice.	programme in the same hospital where they attended the university-based clinical school of nursing.	attention to learning rather than fitting in to the physical environment as they worked along side their preceptor over a whole semester. This situation aided the transition to practice by bridging gaps between university life and clinical expectations.	
45.	Wolff, A., Regan, S., Pesut, B. & Black, J. (2010) "Ready for what? An exploration of the meaning of new graduate nurses' readiness for practice". *International Journal of Nursing Education Scholarship **7(1).*** Canada	Exploratory with qualitative approach to explore the perspectives of nurses in the education, practice and regulatory sectors about the meaning of readiness as it pertains to new graduate nurses.	150 nurses in 15 focus groups across British Columbia, Canada.	Readiness for practice will evolve and change to reflect education and health care trends. Successful transition to practice of NGRNs requires a shift in culture of current practice environments. Nurses who work in a supportive practice environment have more realistic expectations of NGRNs readiness for practice and the level of preparedness required.	H

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