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The development and evaluation of a preceptorship program using a practice development approach

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KEYWORDS

Preceptorship; Practice Development; emancipatory processes; nursing; midwifery

ABSTRACT

Objective
The aim of the research was to evaluate a Preceptorship Workshop for nurses and midwives structured using a Practice Development framework. The workshop was underpinned by an exploration of nurses and midwives attitudes, perceptions and concerns about being a preceptor.

Design
Emancipatory Practice Development guided this study.

Setting
The study was conducted in a 400-bed tertiary referral hospital in an Australian state.

Subjects
Ninety three nurses and midwives participated in the study.

Main outcome measures
Data collection was undertaken from July – December 2009. Participants' completed a self-assessment of six identified learning outcomes on a five point Likert scale pre and post workshop. Findings were further informed by qualitative data collected during and following the workshops.

Results
A paired samples t-test was used to compare pre and post workshop participant self ratings of knowledge, understanding and ability to apply preceptor skills. Statement four: *'My knowledge of the requirements of my role as a preceptor in relation to the structure of a range of nursing programs'* demonstrates the highest shift in self assessment. There was a significant difference in the scores pre test (M= 3.04, SD=.751) and post test (M=3.99, SD=.617). Statistically significant changes occurred across all six learning outcomes, confirmed by qualitative findings from participant input on the day.

Conclusion
Findings support the use of a Practice Development approach in the provision of a preceptor workshop, with clinicians indicating high acceptability that resulted in achievement of key learning outcomes.

INTRODUCTION

Nursing workforce pressures have resulted in increased numbers of enrolments in undergraduate programs and increased numbers of beginning level registered nurses entering practice. The preceptorship model is widely used in nursing and midwifery for supporting beginning level practitioners. It is now the case that nurses and midwives, irrespective of their years of experience or educational qualifications, can be required to supervise and support undergraduates, trainee enrolled nurses, refresher course nurses and new staff for a significant part of each working week.

This paper will report on a Practice Development initiative that was undertaken to develop and evaluate a Preceptorship Workshop for nurses and midwives. Responding to concerns of key stakeholders in the preceptor program at this research site, a new workshop was developed that drew on a Practice Development framework.

The Practice Development Unit – Nursing and Midwifery is a 'new look' Education Unit for the area health service where the study took place. Practice Development is a term historically used to describe a range of different approaches to improving health care. In the context of this research, we rely on Manley et al (2008) who claim key concepts underpinning Practice Development, particularly those with an emancipatory intent. They state '*emancipatory PD explicitly uses critical social scientific concepts on the basis that the emphasis on the development of individual practitioners, cultures and contexts within which they work, will result in sustainable change'* (p. 1). Further, the concepts rely on a willingness to participate in critical conversations and to pursue new knowledge in order to challenge embedded individual or group 'taken for granted understandings' of the way things are. In line with stated values we are committed to life-long learning and professional nursing and midwifery practice of the highest standard. In accordance with these values we support and promote the provision of high quality clinical placements for nurses and midwives from the university and polytechnic. These places have increased threefold in the past four years commensurate with rises in the numbers of places offered for undergraduate nursing to meet the projected shortfall of nurses.

The following assumptions informed the design of the Preceptor Workshop:

- Facilitation/teaching is an integral component of the role of professional nurses and midwives. Therefore, qualified nurses and midwives are not learning from scratch.
- The role of one to one preceptorship taken by clinicians is primarily one of demonstrating and explaining nursing and midwifery. It is more important to demonstrate high standards of nursing and midwifery practice than to have advanced knowledge of educational theory.
- Experiential learning is the most effective way to encourage critical reflection on and in practice to build a knowledge base and promote confidence amongst preceptors.

Guided by a Practice Development framework, the workshop is collaborative and interactive. A series of exercises engage participants and contributes to the agenda as the day progresses. Workshop content included discussion framed by reflections associated with three guided pre-readings; reflections on preceptor experiences; scenario based group work; and interactive sessions exploring feedback, competency based assessment and clinical decision making. Given the workshop departed from the more traditional structure of other courses across the State the decision was made to use an evaluation tool to measure change in participants' perception of their confidence and ability across the day. This enabled the team to be flexible locally in the style of delivery and still meet our statewide responsibility for standardisation of subject content. The evaluation was therefore able to include narrative and critical elements aligned with Practice Development approaches and meet clinical governance requirements.

LITERATURE REVIEW

A preceptor is a practicing nurse who provides individual clinical supervision and teaching predominantly on a one to one basis whilst undertaking a normal clinical workload (Health Workforce Australia 2010). Preceptors foster professional socialisation and act as role models with the aim of assisting beginning level practitioners in the transition to their role. The preceptor role is usually assumed for a period of time, in addition to existing clinical responsibilities (Bourbonnais and Kerr 2007; Mills et al 2005). Findings from the literature suggest that the role of preceptor can be quite varied (Usher et al 1999; Dibert and Goldenberg 1995) and there is a need for further research in this area (Bourbonnais and Kerr 2007).

Positive characteristics of preceptors include good communication skills, and being both approachable and supportive. Factors identified as important to the preceptor role include understanding the theoretical components of the student curriculum; maintaining current knowledge base; providing feedback; and assessment of practice (Heffernan et al 2009). The success of preceptorship is impacted by the welcome and orientation; providing clinical skills and experience; and linking theory to practice (Myall et al 2008). Strategies that facilitate preceptee learning include taking a 'hands on' approach; sequencing tasks; providing illustrations; assessment; observation; conversing and reflecting; and having a questioning attitude (Bourbonnais and Kerr 2007; Öhrling and Hallberg 2001).

The preceptor role is quite complex and on a background of a busy acute care environment, can require development of key skills. The literature highlights the importance of preparation and support for the preceptor role in order to facilitate engagement and skill development (Hallin and Danielson 2009; Charleston and Happell 2005; Gibson and Hauri 2000; Allen and Simpson 2000; Dibert and Goldenberg, 1995). Support for undertaking the preceptor role and preceptor programs themselves will vary between sites and individual settings within those sites. Studies report on preceptors' perceptions of levels of support - in general (Hallin and Danielson 2009; Fox et al 2006); by co-workers (Dibert and Goldenberg 1995) and by faculty (Gibson and Hauri 2000). Other studies report that preceptors did not perceive adequate support or recognition - in general (Myall et al 2008; Allen and Simpson 2000); from administration and faculty (Bourbonnais and Kerr 2007; Dibert and Goldenberg 1995); and from educators and co-ordinators (Usher et al 1999). Effective preceptorship can be adversely impacted by high workload, lack of time and high student numbers (Hallin and Danielson 2009; Myall et al 2008; Allen and Simpson 2000). In addition, the frequency of taking on a preceptor role and resultant fatigue can have a negative impact on preceptors, leading to preceptor burnout (Bourbonnais and Kerr 2007; Dibert and Goldenberg 1995). Other issues identified within the literature include the need for increased focus on values in nursing practice (Öhrling and Hallberg 2001); the lack of guidance from experienced preceptors (Bourbonnais and Kerr 2007); a lack of constructive feedback; and linking research findings to practice (Hallin and Danielson 2009). Preceptor programs can provide support to the role by allowing time to share experiences and demonstrate organisational commitment to the role.

There is a large body of literature related to the preceptorship role that focuses on the knowledge, skills and quality of support required from clinical nurses. However such discussions do not address the tensions that arise for nurses acting in the role when their focus of the working day is providing high quality safe patient care. We argue that clinical nurses often possess the knowledge and skill required yet are not routinely provided opportunities to discuss, reflect, and further develop their role, taking into account the local context, informed by personal and group experiences. Hence the workshop and analysis of workshop participation with a focus on sharing and exploring experiences, whilst also providing content related to the role that participants can critically explore and consider applying in practice. It is our contention that the preceptor workshop is just one part in the on-going preparation and support for preceptors. In a Practice Development environment we

encourage preceptors to learn in practice, critically reflect and apply new knowledge, engaging effectively with the university requirements and promoting a learning culture.

METHOD

Aim

The aim of the study was to develop and evaluate a Preceptorship Workshop for nurses and midwives. The specific objectives were to:

- explore nurses' and midwives' attitudes, perceptions and concerns about being a preceptor; and
- measure changes in participant self assessment of knowledge and ability to undertake preceptorship pre and post attendance at the preceptor workshop.

Findings from the study were used in two ways. Firstly they were used in each workshop to help focus the day and respond to the particular needs of participants. Secondly quantitative data was used to measure change in ability and confidence during the workshop.

Design

Following emancipatory Practice Development principles, where participation and critical dialogue is central, a methodology was chosen where participants were perceived as holders of knowledge and our aim was to strengthen the potential of all concerned (McCormack et al 2004).

Participants

All nurses and midwives who enrolled in the one day preceptor workshop delivered monthly in the period from July - December in 2009 were invited to participate. Ninety three individuals participated in the workshop and all contributed data to the research.

Data Collection

Demographic data was collected from participants and included the clinical area in which they worked; highest qualification; time worked as a nurse or midwife; and age group. A pre and post program evaluation comprised a self-assessment of learning outcomes from the program and the opportunity for general comments. The evaluation was completed at the beginning of the workshop and at the end of the day. Respondents were asked to self assess their ability, understanding and knowledge on a five point Likert scale with ratings from low to high. Six statements were used which represented the intended learning outcomes of the program. In keeping with the methodology, data from Practice Development exercises were used to generate data about the attitude, perceptions and concerns nurses and midwives have of preceptorship and about being a preceptor.

Participant data was also collected using an established Practice Development activity during the opening and focusing exercise, where all participants were asked to write on post-it notes their 'hopes'; 'fears' and 'expectations' for the day. Instructions were that hopes included what it was participants hoped to achieve by attending the workshop; fears were worries or concerns they may have about the program and/or the skills and knowledge they were to gain and put into practice; expectations included what participants considered the likely outcomes of their attendance and how they might practice their newly developed skills and knowledge. Post-it notes were placed by participants on pieces of larger paper to allow grouping according to themes.

Analysis

Qualitative findings were thematically analysed during the workshop as part of the Practice Development process. The themes were confirmed by participants in the workshop through discussion ensuring collaborative analysis and allowing checking with participants for meaning and further elaboration. Lather (1991:67) describes such a step of 'recycling description, emerging analysis and conclusions' to participants as enabling

face validity to be established. Quantitative data from the pre and post program evaluation was entered into the statistical software package SPSS for analysis. Descriptive statistics were used to provide summaries of the data and allow for the presentation of the basic features of the data in a simple and manageable form (Beanland et al 1999). A paired samples t-test was used to compare the means of related data and allowed for understanding the impact of the intervention in the group (Streiner and Norman, 2008). The test was conducted to compare participants self ratings of confidence, knowledge and ability to undertake the preceptor role. Statements were guided by the workshop learning outcome domains. The statements were ranked by respondents using a five point Likert scale from minimal to high immediately prior to, and on completion of the workshop (see table 1 for statements).

Table 1: Statements from pre and post program evaluation

1	My ability to use the Australian Nursing and Midwifery Council National Competency Standards for the Registered and Enrolled Nurse in practice is*
2	My ability to apply the Scope of Practice and Decision Making Framework to practice is*
3	My understanding of the role of a preceptor is*
4	My knowledge of the requirements of my role as a preceptor in relation to the structure of a range of nursing programs is*
5	My understanding of the principles of competency based assessment is*
6	My ability to use the Australian Nursing and Midwifery Council National Competency Standards for the Registered and Enrolled Nurse as a framework for assessment is*

* minimal to high using a five point Likert scale

Ethics

Formal ethics approval from the Human Research Ethics Committee (H10667) was obtained before data collection commenced. Participants were provided with written information outlining the research as part of the pre workshop information package distributed approximately four weeks prior to each program. Opportunity was provided at the beginning of the workshop to clarify participation and allow any questions to be answered. Participant responses were anonymous and refusal to participate in the research did not alter the level of participation in the program itself. All research participants signed a written consent.

RESULTS

Demographics

Table 2 contains general demographic information relating to participants.

The lower number of males to females and age ranges at both the younger and relatively mature ends of the employment age scales are consistent with the nursing demographics for the area. The relatively equal numbers of those who had preceptor preparation and those without can be explained by the two age groups with high representation. Further, the workshops are designed for groups of people with a range of education and experience.

Table 2: Demographics

N	93
No (%) Female	87 (94)
No (%) Male	5 (5)
Age group No (%)	
20-30	35 (38)
30-40	15 (16)
40-50	31 (33)
50-60	12 (13)
Highest Qualification	
Hospital Qualification	17 (18)
Degree	48 (52)
Graduate Certificate	11 (12)
Graduate Diploma	15 (16)
Masters	1 (1)
Experience	
0 to 5 years	38 (41)
6-10 years	11 (12)
More than 10 years	44 (47)
Previous Preceptor Education	
Yes	33 (35)
No	59 (63)

Qualitative Results

Pre workshop hopes reflected a desire to supervise and support students; to gain knowledge and understanding about the role; to develop facilitation skills and become well respected preceptors. The fears centred on the interactive nature of the workshop, the workload involved in precepting and fear of failure as a preceptor. Expectations for the day included issues participants wanted to be covered in the program and skills that would be acquired.

The post workshop comments reflected a very positive attitude to the day. Participants' confidence increased regarding their knowledge and ability to provide feedback as well as to facilitate and support other nurses. Despite some fears expressed in the pre-workshop data that the day would be too interactive, there were many positive comments about the quality of the discussion and the interactive nature of the workshop. Table 3 gives examples of the themes that emerged and the responses both pre and post workshop.

Table 3: Analysis Hopes, Fears and Expectations

	Category	Examples from pre-workshop data	Examples from post-workshop data
Hopes for the acquisition of Confidence and Ability	Supervising people	Improve confidence in dealing with students. I want to be able to apply my learning effectively in the workplace. Successfully assist new staff and hope they wish to work on a long term basis in our specialised area.	Gained knowledge in communication techniques … problem solving and fundamentally being able to provide best outcomes for patients.
	Knowledge and understanding of the role	I will learn skills to pass on knowledge and work effectively. Do you have anything on scope of practice and curriculum etc… Improve knowledge of the assessment process	Better understanding of how to teach and help people learn. Going through the competencies was really was really valid and helpful. I feel that I have a good overall picture of what's required.
	Facilitation skills	Understanding of precepting … Learn some new techniques. Creating positive experiences …	Gained knowledge about preceptor relationship. I discovered I had more knowledge and skills as a preceptor than I thought and have gained more.
	Reputation	… this is something I will be good at I will be remembered as a positive mentor.	I can do this!
Fears that … it is too much.	Learning in workshop	Jargon, buzz words. Bamboozled by the theory of precepting. Bad acting in role play.	… I liked the interactive nature of the day.
	Workload	Having to deal with lots of students at once. More work than expected.	… more confident, definitely more accepting of new students/grads not so intimidated.
	Failure	I feel inadequate at teaching I will learn that I have been a bad facilitator in the past. Undermined or not supported or respected by some peers.	Had more confidence and competence than [I] thought. More confident in being able to be a competent preceptor.

Expectations that the workshop will ...	Cover	How to precept a difficult personality ... dealing with difficulties relating to Preceptorship. ... know the paper work. How to access/perform [use] competencies.	Some good strategies for issues were highlighted. I have learnt more avenues to seek help for difficult student. Gained knowledge in communication techniques, preceptor relationship, problem solving and fundamentally being able to provide best/safest outcomes for patients
	Provide a learning environment	Relaxed learning environment, non judgemental and productive. Interactive day. Enjoy the day.	Workshop generated very valuable discussion about preceptorship. Supportive and inclusive environment.
	Enable	Be able to give feedback. Understand my role as a preceptor. To be a preceptor who I would like to have.	Comfortable to give feedback. I feel I have a good overall picture of what is required.

Pre and Post Evaluation Survey

Quantitative findings support findings discussed above and are shown in tables 4 and 5 below.

Table 4: Paired samples t-test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre_Q1 – Post Q1	-.602	.809	.084	-.769	-.435	-7.174	92	.000
Pair 2	Pre_Q2 – Post Q2	-.796	.891	.092	-.979	-.612	-8.607	92	.000
Pair 3	Pre_Q3 – Post Q3	-.903	.781	.081	-1.064	-.742	-11.152	92	.000
Pair 4	Pre_Q4 – Post Q4	-.946	.771	.080	-1.105	-.787	-11.831	92	.000
Pair 5	Pre_Q5 – Post Q5	-.839	.784	.081	-1.000	-.677	-10.314	92	.000
Pair 6	Pre_Q6 – Post Q6	-.828	.996	.103	-1.033	-.623	-8.017	92	.000

Table 5: Pre and post evaluation mean, SD and error (n=93 on all tests)

Statement	Mean		Std deviation		Std error mean	
	Pre	Post	Pre	Post	Pre	Post
1	3.16	3.76	.784	.682	.081	.071
2	3.14	3.94	.788	.719	.082	.075
3	3.42	4.32	.798	.645	.083	.067
4	3.04	3.99	.751	.617	.078	.064
5	3.06	3.90	.805	.627	.083	.065
6	3.03	3.86	.814	.760	.084	.079

The paired samples t-test comparing self-ratings of confidence, knowledge and ability to undertake the preceptor role demonstrates a significant difference across all domains. The evaluation utilised has supported the hypothesis that participation in the workshop would increase clinical nurses' confidence, knowledge and skill development in the area of preceptorship. In addition, findings suggest that participation in the workshop has provided participants with valuable insights into preceptorship and the application of underlying principles. Of

note, statement four: *'My knowledge of the requirements of my role as a preceptor in relation to the structure of a range of nursing programs'* demonstrates the highest shift in self assessment.

Limitations

This study was confined to one setting and analysis of data was contextually situated in time, place, culture and situation, therefore findings cannot be generalised. However, the work provides insights for others to reflect on and consider relevance for their own settings. As the pre and post test data occurred on the same day with nurses and midwives who attended holding an expectation of improvement in skills, knowledge and ability, it is possible the results could have been affected. A follow up to the post test at a longer time interval would assist in further analysis.

DISCUSSION

Results of the study indicate that participants wanted to provide quality experiences for learners and to increase their knowledge and skills as effective preceptors. They recognised their professional responsibility to those entering the profession and were committed to the development of these learners. In addition, participants were able to identify areas for their own development. At completion of the program, participants assessed themselves as having increased knowledge and skills of preceptorship including the expectations for the role and tools they will be able to draw upon in supporting preceptees. The program emphasises the facilitation role of preceptors and that preceptees are adult learners who also have a responsibility for their own learning. However, there is also an emphasis on the development of a culture that fosters and supports learning and the role participants have in supporting this.

Key elements of Practice Development are facilitation and participation of people, evidence based practice and critical enquiry. Practice Development has in common with emancipatory research the desire to be informed by, and respond to, the experiences and needs of the people involved, providing them with an opportunity to take control and generate understanding from doing. This project has succeeded by taking some of the mystery out of preceptorship and helped participants to recognise the talent for facilitation they already display in practice and the collegial support readily to hand. Emancipatory concepts and processes that were used to guide the project focus on the development of individual nurses and midwives, and the cultures and contexts in which they work, with transformative action embedded in the outcomes (Manley et al, 2008). In the workshop participants are challenged to critique their own and the team's ability to provide a context in which learners can thrive. Positive program outcomes included change for participants that has had a positive influence on the development of a learning culture within our organisation. Not only has nursing in the hospital provided the requested increase in the number of placements for undergraduates, they have been able to demonstrate a consistently high standard in the quality of the clinical placements taken up by undergraduates (Courtney-Pratt et al 2011).

CONCLUSION

Practice Development has a central interest in people, culture and practice rather than systems and processes. Clinicians' participation in the preceptor program has led to changes in nurses' and midwives' knowledge that will further enable them to support learners within the organisation (Manley et al 2008). There is evidence of an interconnectedness between the development of knowledge and skills of the nurses and midwives and the enabling strategies that are utilised in the delivery of the program. Once again, these features of the program are also features of a Practice Development approach.

An interactive workshop based program was demonstrated to provide the necessary support for nurses and midwives to undertake the role of preceptor. The nature of the workshop enabled nurses and midwives to recognise the skills and knowledge that were inherent to their current practice, to share this with fellow attendees, and to build on their confidence to fulfil the role. As such it empowered them to take responsibility and credit for the supervision and growth of students, beginning practitioners and new staff, building on capacity to support the next generation of nurses and midwives at the study site.

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The influence of personal characteristics on perioperative nurses' perceived competence: implications for workforce planning

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KEYWORDS
Australian, operating room, survey, experience, specialty education

ABSTRACT

Objective
To examine the influence of personal characteristics on perioperative nurses' perceived competence.

Design
A cross-sectional survey design was used.

Setting
A census of 3,209 operating room nurses who were members of the Australian College of Operating Room Nurses across all Australian states and territories was invited to participate.

Primary Outcome Measure
The Perceived Perioperative Competence Scale-Revised, a 40-item survey consisting of six subscales measuring the dimensions of perioperative competence was used.

Results
A total of 1,044 usable surveys were analysed representing 32.5% of the accessible population. Across the six subscales, demographic predictors accounted for 5% to 33% of the variance in nurses' perceived perioperative competence.

Conclusions
These results may inform workforce planning initiatives designed to address the needs of this diverse specialty group. Efforts to retain older nurses need to be centred on redesigning workplaces, increased remuneration and professional recognition, and integrating technology to promote efficiency and safety. Workforce planning should include strategies such as creating academic partnerships with universities, to provide perioperative nurses access to specialty education and advanced skills programs.

INTRODUCTION

Nurses comprise approximately 50% of the global healthcare workforce and represent 55% of the Australian healthcare workforce (Australian Bureau of Statistics [ABS] 2008, World Health Organization [WHO] 2006). As nurses comprise the majority of healthcare professionals in acute care facilities, providing safe and appropriate healthcare relies on a sustainable and competent workforce to deliver optimal patient outcomes (ABS 2008, Aitken et al 1998). Yet nursing shortages and skill mix deficits continue to undermine the effectiveness of any healthcare system (WHO 2006, Buchan 2007, Productivity Commission 2005). Of concern is the imminent exodus of Baby Boomer nurses, the majority of whom are set to retire in the next decade—which equates to around 50% of nurses currently employed in Australia, Canada, the United States of America, and the United Kingdom (ABS 2008, Buchan 2007, Oulton 2006, WHO 2006). This international trend is similar for the perioperative workforce, which is also ageing (Australian Institute of Health and Welfare [AIHW] 2011c, McNamara 2005).

In Australia, as in many other developed countries, the number of surgeries completed is also rising. For instance in Australia, 1.9 million surgical separations were recorded in 2009-2010, a yearly increase between 2005-2006 of 1.5% for public patients and 4.6% for private patients (AIHW 2011a). Consequently, it is imperative that an appropriately trained workforce of OR nurses is available. As a starting point, gaining an understanding of the capabilities of the perioperative workforce will inform workforce planning that will ensure the continuation of high quality patient care and take into account the demographic profile of this diverse group. Clearly, competence is a critical determinant of role performance, however its relationship is not direct, and the relative contribution of other factors to role performance is difficult to disentangle. In particular, demographic characteristics such as age, gender, years of clinical experience, education, nursing role and employment status also may play a major role in determining nurses' perceived competence.

This paper reports the results of a national study of Australian perioperative nurses that examined the relationships between demographic characteristics and domains of perioperative competence. Currently, there is limited understanding of the extent to which demographic characteristics contribute to perioperative nurses' perceived competence and its domains.

BACKGROUND

Across various clinical contexts, previous studies suggest that demographic characteristics such as age, gender, experience, education, nursing classification, hospital settings, and specialty area have a bearing on nurses' level of perceived competence (Gillespie et al 2011, Safadi et al 2010, Josefsson et al 2007, Lofmark et al 2006, Clinton et al 2005, Meretoja et al 2004, Tzeng 2004, Santiano and Daffurn 2003). While gender has been linked with competence previously, with male nurses posting higher levels of self-reported competence (Yang et al 2004), its influence remains fairly inconclusive given that more recent work has refuted this finding (Safadi et al 2010, Grönroos and Perälä 2008). Other research identified that older nurses reported higher levels of competence (Gillespie et al 2010, Grönroos and Perälä 2008, Clinton et al 2005). Nursing classification has been associated with the career development of nurses undertaking further education (Merretoja and Lieno-Kilpi 2003).

There is also a growing number of studies comparing nurses' competence on the basis of education, clinical experience and specialty area. Several studies conducted in Sweden and the UK have compared competence in relation to the level of educational attainment across generalist contexts (Josefsson et al 2007, Defloor et al 2006, Lofmark et al 2006, Clinton et al 2005). Yet others have examined specialty areas (i.e., critical care, perioperative) and found notable differences in nurses' levels of perceived competence (Gillespie et

al 2011, Safadi et al 2010, Defloor et al 2006, Meretoja et al 2004, Santiano and Daffurn 2003). However, the results of some of these studies were inconclusive, likely as a consequence of insufficient sample size.

In sum, the variation in study results highlighted here belies the need for a balanced staffing profile: Is this important? Indeed it would seem so. Because recruitment strategies may be influenced by the current staffing profile, it is essential to describe staffing profiles with respect to demographic and personal characteristics to ensure that appropriate recruitment strategies are implemented.

METHOD

A correlational survey design was employed and data were collected during 2010. The objective was to measure the relative contribution of demographic and personal background variables (age, gender, nursing classification, experience, education, employment status) in order to explain variation in perceived perioperative competence of OR nurses in Australia.

Sample

Nurses who were members of the Australian College of Operating Room Nurses (ACORN) were invited to participate in the survey. Registered Nurses (RNs) in both public and private hospitals who worked in clinical roles, education, management and/or combined perioperative roles were eligible to participate. Enrolled Nurses were excluded due to the differences in their scope of practice. Survey packets, with a reply paid envelope, were distributed to the 3,209 eligible nurses who were ACORN members at the time this study was undertaken. A reminder note was mailed to all respondents two weeks after initial distribution of survey packets.

It was estimated that a sample size of 372 was needed to achieve a power of .90 (alpha = .05) for an estimated R-squared of 0.05 in a multiple regression analysis (Polit, 2010). Assuming a conservative response rate of 25%, the number of nurse surveyed was deemed to be adequate.

Data Collection

In this study, the Perceived Perioperative Competence Scale – Revised (PPCS-R) was used to measure OR nurses' perceived competence. The iterative development and validation of the 40-item PPCS-R was based on a series of earlier qualitative and quantitative studies (Gillespie et al 2012, Gillespie et al 2011, Gillespie et al 2009, Gillespie et al 2008, Gillespie et al 2007). The scale uses items on a 5-point scale ranging from (1) 'never' to (5) 'always'. Total scale scores can range from 40 to 200, with higher scores indicating greater levels of perceived competence. The PPCS-R is comprised of six subscales that measure different dimensions of perioperative competence in two broad domains: 'Experiential Knowledge' (Foundational Knowledge; Proficiency; Professional Development) subscales and 'Social Interaction' (Leadership; Collaboration; Empathy) subscales. Pscyhometric testing of the PPCS-R provided evidence of construct validity and strong internal consistency reliability for both the overall scale (Cronbach's alpha = .96) and all subscales, with alphas ranging from .82 to .89 (Gillespie et al, 2012).

Within the 'Experiential Knowledge' domain, the subscale Foundational Knowledge has nine items that signify technical skills, such as knowledge of instruments and procedures (Gillespie et al 2012). The six items in the Proficiency subscale include behaviours that typify skills built on clinical exposure necessary to gain experience. The Professional Development subscale has six items that capture behaviours centred on maintaining practice standards based on current knowledge, reading journals and awareness of organisational policies.

Within the '*Social Interaction'* domain, the Leadership subscale contains eight items that indicate behaviours focused on mentoring staff, delegating tasks and conflict management (Gillespie et al 2012). The six items

in the Collaboration subscale indicate behaviours which characterise seeking and rendering assistance, tailoring communications to the situation, and respect for other team members. Finally, the subscale Empathy contains five items that characterise behaviours around providing reassurance to perioperative patients, actively listening and establishing rapport.

Demographic and personal background data in regard to age, gender, years of perioperative experience, specialty education, nursing role, employment status, and state association membership were also collected.

Institutional approval was given by the Human Research Ethics Committees of the university and the Australian College of Operating Room Nurses (ACORN) Board. Consent was implied by the return of the completed survey.

Data Analysis

Data were entered into Predictive Analysis Software (PASW Statistics®, version 18.0, Chicago, IL, 2010) for Windows, formally known as SPSS. Bivariate analyses were used to examine relationships between PPCS-R scores and individual nurse characteristics (Pearson's r for continuous variables such as age, ANOVA or t-tests for categorical variables such as gender). Variables that were significantly related ($p < .05$) to PPCS-R scores were included in the multivariate model. Bivariate results for multi-category nominal-level variables (e.g., employment status, nursing classification) were examined to ascertain how best to represent the characteristics as dummy variables for the multiple regression analysis. Insomuch as no nurse characteristics were considered theoretically 'a priori' to any other, simultaneous multiple regression was used to predict the total PPCS-R scores and the six PPCS-R subscale scores. Given the strong correlations among several predictor variables (e.g., age and number of years of OR experience), problems of multicollinearity were carefully examined. The criterion for acceptability of a variable was a tolerance of .10.

RESULTS

A total of 3,209 surveys were distributed and 1,178 usable surveys were returned, resulting in a response rate of 36.7%. Of the completed surveys, 40 of the respondents were ENs and a further 94 respondents were not currently employed in the perioperative setting; these were excluded from the analysis, leaving 1,044 usable surveys.

Table 1 displays the demographic and personal characteristics of the sample. The respondents were predominantly female (93.5%), and the average age was 47.8 ±9.7 years with a range from 22 to 73 years. Respondents had considerable OR experience, with an average 19.9 ±10.5 years (range 1 to 50 years). Around 45% of the nurses in this sample worked in Clinical Nurse, Nurse Educator or Clinical Nurse Specialist roles. The majority (70.5%) of the sample had perioperative specialty education. In terms of membership in a regional professional organisation, respondents were predominantly from New South Wales (34.8%), Victoria (22.3%), or Queensland (18.7%).

Table 2 presents the descriptive statistics and the subscale scores in each competence domain, including means, standard deviations, score ranges, and reliability estimates. Assessment of actual score ranges with theoretically possible score ranges reveals scores across all six domains were positively skewed — that is, respondents were more likely to perceive high rather than low levels of perioperative competence.

Table 1: Demographic Characteristics of Operating Room (OR) Nurses in the Sample (*N* = 1,044)

Demographic Characteristic	n*	%
Gender, female	996	93.4
Highest education		
Certificate or Associate's degree	187	17.6
Baccalaureate	127	11.9
Graduate certificate	443	41.5
Graduate diploma	219	20.5
Masters or doctorate	91	8.5
Received perioperative specialty education	754	71.0
Nursing classification		
RN	359	33.6
Clinical Nurse (CN) or CN specialist	389	36.4
Clinical Nurse Educator/Nurse Educator	98	9.1
Nurse Manager	200	18.7
Other	23	2.2
Employment status		
Full-time	541	50.6
Part-time	463	43.3
Casual	65	6.1
Professional Membership[a]		
NSWOTA	370	34.8
VPNG	237	22.3
PNAQ	199	18.7
ORNA	101	9.5
Other (SAPNA, TORN, NTPN)	155	14.6

*Missing values not replaced

Table 2: Means, Variability and Reliability for Subscales of the Perceived Perioperative Competence Scale—Revised (PPCS-R) (N=1,122)

Subscale Name (Number of items)	Mean (SD)	Actual range of scores	Possible range of scores	Cronbach's alpha
Foundational Knowledge (9)	39.6 (4.7)	11 – 45	9 – 45	.89
Leadership (8)	33.5 (5.3)	11 – 40	8 – 40	.89
Collaboration (6)	27.1 (2.6)	13 – 30	6 – 30	.81
Proficiency (6)	26.7 (3.0)	12 – 30	6 – 30	.84
Empathy (5)	22.4 (2.8)	8 – 25	5 – 25	.86
Professional Development (6)	25.4 (3.5)	13 – 30	6 – 30	.86
Total Scale (40)	174.7 (18.0)	68 – 200	40 – 200	.96

Regression Results

Virtually all nurse characteristics were significantly correlated with PPCS-R scale and subscale scores in bivariate analyses. An important exception was regional professional membership affiliation, for which group differences did not approach levels of statistical significance. Thus, membership affiliation was not entered in the multiple regression. The strong correlation between highest level of educational attainment and receipt of postgraduate perioperative specialty education led to the decision to omit general educational attainment in the multiple regression analyses.

Regression results for the total PPCS-R scale scores are presented in table 3. Demographic characteristics were moderately good predictors of overall levels of perceived competence, with 24% of the variance accounted for by 8 predictors ($p < .001$). Years of OR experience was an especially strong predictor of higher scores, as was having obtained postgraduate specialty education. With years of OR experience controlled, nurses' age was not a predictor of overall perceived competence, nor was current full-time employment. In terms of nurse role classification, having an RN classification was strongly associated with reduced PPCS-R scores ($p <.001$), whereas managers and educators had significantly higher scores, all else equal. Women had significantly higher overall perceived competency scores than men.

Table 3: Simultaneous Regression of Total Perceived Perioperative Competence (PPCS-R) Scale Scores on Nurses' Characteristics (*N* = 1044)

Nurse Characteristics	b	SE	Beta	t	p
Age, years	.09	.07	.05	1.25	.21
Gender[a]	4.89	1.97	.07	2.48	.01
Years of OR experience	.44	.07	.26	6.43	<.001
Nursing classification:					
RN	-9.51	1.21	-.25	-7.88	<.001
Manager	3.09	1.42	.07	2.18	.03
Educator	3.68	1.79	.06	2.05	.04
Has perioperative specialty education	3.44	1.11	.09	3.10	.002
Employed full time[a]	1.58	1.06	.04	1.50	.14
Constant	155.61	3.65		42.70	<.001

Note. Overall $R^2 = .24$, Adjusted $R^2 = .24$, F (8, 1035) = 41.26, $p < .001$.

[a]Females = 1, males = 0. [b]Nurses working a regular fulltime schedule = 1; part-time workers and casual workers = 0.

Table 4 summarises regression results for the three PPCS-R subscales in the '*Social Interaction*' domain (Leadership, Collegiality and Empathy), and table 5 shows regression results for the three subscales in the '*Experiential Knowledge*' domain (Foundational Knowledge, Proficiency, and Development). As these two tables show, different characteristics emerged as predictive of different competencies. Years of OR experience, for example, was strongly predictive of the three 'skill-set' subscale scores and of Leadership scores; yet, a nurse's age (but not OR experience) predicted high scores on Collegiality and Empathy. The older the nurse, the stronger the perception of competence in these two areas, even with experience held constant.

Gender was a significant predictor on three subscales: Foundational Knowledge, Professional Development and Leadership. On these three scales, women had significantly higher scores than men, net of other characteristics. Men and women did not differ, however, in their perceived degree of competence on the Proficiency, Collegiality, and Empathy subscales.

In terms of nursing classification, being classified as an RN was negatively and significantly associated with all six subscale scores, even when age, years of OR experience, and postgraduate specialty education were controlled. Being a manager predicted higher Leadership scores, and being an educator was associated with significantly higher Leadership and Professional Development scores.

Table 4: Simultaneous Regression of *Social Interaction* Subscales[a] of the Perceived Perioperative Competence (PPCS-R) Scale Scores on Nurses' Characteristics (*N* = 1044)

Nurses' Characteristics	Leadership		Collegiality		Empathy	
	Beta	p	Beta	p	Beta	p
Age, years	.00	.91	.12	.01	.22	<.001
Gender[b]	.07	.01	.05	.12	.04	.20
Years of OR experience	.27	<.001	.06	.19	-.06	.22
Nursing classification: RN	-.33	<.001	-.13	<.001	-.09	.02
Nursing classification: Manager	.12	<.001	.04	.22	.05	.17
Nursing classification: Educator or Clinical Nurse Educator	.08	.003	.02	.45	.06	.08
Has perioperative specialty education	.05	.04	.05	.09	.05	.11
Employed full-time[c]	.08	.004	-.04	.27	-.00	.87
R^2	.33		.06		.06	
Adjusted R^2	.33		.06		.05	
F (8, 1035)	63.77***		8.79***		7.57***	

[a]The three subscales of the PPC-R that focus on interaction with other staff (Collegiality and Leadership) and patients (Empathy). [b]Females = 1, males = 0. [c]Nurses working a regular fulltime schedule = 1; part-time workers and casual workers = 0.

***For all three subscales, the overall regression model was statistically significant at $p < .001$.

Table 5: Simultaneous Regression of *Experiential Knowledge* Subscales[a] of the Perceived Perioperative Competence (PPCS-R) Scale Scores on Nurses' Characteristics (*N* = 1044)

Nurses' Characteristics	Foundational Knowledge		Proficiency		Professional Development	
	Beta	p	Beta	p	Beta	p
Age, years	-.10	.01	-.02	.68	.13	.002
Gender[b]	.07	.01	.03	.26	.06	.03
Years of OR experience	.37	<.001	.31	<.001	.16	<.001
Nursing classification: RN	-.19	<.001	-.21	<.001	-.18	<.001
Nursing classification: Manager	.03	.31	.03	.36	.03	.38
Nursing classification: Educator or Clinical Nurse Educator	.01	.28	.02	.57	.10	.002
Has perioperative specialty education	.09	.002	.10	.001	.08	.004
Employed full-time[c]	.04	.23	.02	.52	.07	.02
R^2	.20		.20		.17	
Adjusted R^2	.20		.20		.16	
F (8, 1035)	33.05***		32.56***		25.91***	

[a]The three subscales of the PPC-R that focus on knowledge gained through clinical exposure. [b]Females = 1, males = 0. [c]Nurses working a regular fulltime schedule = 1; part-time workers and casual workers = 0.

***For all three subscales, the overall regression model was statistically significant at $p < .001$.

Having postgraduate perioperative specialty education positively predicted all the 'skills-set' subscale scores, and also scores on the Leadership subscale, similar to the results for years of OR experience. Postgraduate specialty education was not, however, associated with higher scores on the Collegiality and Empathy subscales. Finally, full-time employment (as opposed to casual or part-time employment) was associated with higher Professional Development and Leadership scores.

Taken together, the demographic characteristics used in these analyses were especially powerful in predicting perceived Leadership competence. For this subscale, the proportion of variance explained by the demographic variables was .33. Nurses' background characteristics were not especially powerful, however, in predicting Collegiality (adjusted R^2 = .06) or Empathy scores (adjusted R^2 = .05). Nevertheless, the large sample size in this study ensured that even modest values for R^2 were statistically significant (all six subscales, $p < .001$).

DISCUSSION

The overall aim of this study was to measure the relative contribution of demographic characteristics to nurses' perceived perioperative competence. The nurses in this study perceived they had relatively high levels of competence overall. These results suggest that demographic characteristics were generally good predictors of overall levels of perceived competence. To our knowledge, this is one of the first studies to assess the relative contribution of demographic characteristics to perceived perioperative competence and its domains. At the time that this study was conducted, there were approximately 19,303 nurses practising in perioperative settings Australia-wide (AIHW 2011b). Based on these national data, our accessible sample represents roughly 17% of the total number of perioperative nurses practising in all Australian states and territories. Having access to a considerably large sample of nurses allowed us to perform robust analyses using multiple regression and thus permitted the detection of small but significant statistical differences.

After controlling for the effects of clinical experience, nurses' age was not a predictor of overall competence in our study, which accords with earlier research findings (Grönroos and Perälä 2008, Tzeng 2004). At the time this study was conducted, the average age of Australian nurses practising across all specialities was 43.4 years (AIHW 2011b); several years younger than the perioperative nurses in our study sample. In this study, age was a predictor of four out of the six competence domains. It seems intuitive that older nurses reported higher levels of competence in the *'Experiential Knowledge'* domains of Foundational Knowledge and Professional Development; and two *'Social Interaction'* domains: Empathy and Collegiality. These results suggest that as perioperative nurses get older, they develop greater capacity to extend beyond the technical skills to those of 'caregiver', epitomised by a deeper understanding of, and compassion for, the patient on a psychological level (Gillespie et al 2009, Bull and FitzGerald 2006, Zhang et al 2001).

Interestingly, gender was both a predictor of nurses' overall competence and three of its domains—namely, Leadership, Foundational Knowledge and Professional Development. Our study showed that women reported significantly higher scores of perceived competence across these domains than their male counterparts. This result runs counter to earlier research where male nurses reported higher scores in applying knowledge and a strong desire for personal growth and professional promotion (Yang et al 2004). Our results also suggest that male and female nurses' perceptions of perioperative competence are not necessarily based on conventional conceptions of tasks and roles (Fisher 2011, Rozier 1996). Contrary to stereotypical gender-dominated assumptions, leadership is perceived to be central to perioperative competence for the female nurses in this study. Yet surprisingly, the proportion of males and females in management roles in the current study was slightly higher for men (20.5% and 19.4% respectively)—despite the much larger percentage of female respondents. Notably, males were underrepresented in this study, constituting 6.6% of the total sample as compared with the national average of 9.6% (AIHW 2011c). Additionally, female nurses posted higher levels of perceived competence in relation to Foundational Knowledge and this challenges former research that suggests male nurses have a greater capacity to demonstrate this domain of competence (Fisher 2011). Plausibly, the empirical results of the current study challenge traditional gender-based perspectives.

In our study, nursing classification (RN, Educator or Manager) predicted overall perceived competence, including the three *'Social Interaction'* subscales (namely, Leadership, Collegiality and Empathy), and one

'Experiential Knowledge subscale, viz, Professional Development. One might anticipate that perioperative nurses holding positions as educators and managers would, understandably, perceive themselves as more competent in the domains of Leadership and Professional Development—a finding echoed in previous research (Meretoja et al 2004, Meretoja and Leino-Kilpi 2003, Kondrat 2001). However, of some concern is that nurses who identified as 'RN' reported lower levels of perceived competence in the domains of Leadership and Professional Development than their counterparts in education and management. To our knowledge, this is the first study to discern the unique contribution of these nursing classifications to specific domains of perioperative competence. Lower levels of perceived competence in this subsample of RNs may, in part, be attributed to the paucity of mentoring opportunities available to perioperative nurses practising at the coalface to develop their leadership skills as part of succession planning, a view described elsewhere (Gillespie et al 2011, Redman 2006). Implicitly, nurses working 'at the coalface' may either lack the opportunity or the motivation to participate in professional development activities such as hospital, vocational or university-based education programs.

Years of OR experience and specialty education were especially strong predictors of overall competence in our sample, and corroborates the litany of earlier work (Gillespie et al 2011, Grönroos and Perälä 2008, Meretoja et al 2004, Tzeng 2004, Santiano and Daffurn 2003). This study extends these understandings by disentangling potential confounding variables and specifically delineating domains of perioperative competence. In particular, years of OR experience predicted competence in Leadership, and in all of the three subscales- Foundational Knowledge, Proficiency, and Professional Development in the *'Experiential Knowledge'* domain. While specialty education was a powerful predictor of four of the six competence subscales, it did not contribute to the variability in the subscales of Empathy and Collegiality — a finding that is, seemingly, conceptually congruent.

Study Limitations

This study has several limitations. First, the cross-sectional survey design of this study does not allow the temporal order between predictors and outcomes to be determined; thus, causal relationships cannot be established. Second, the accessible population for this study was comprised of perioperative nurses who were members of ACORN. Conceivably, it is possible that selection bias occurred as a result of the inclusion of a specific subset of perioperative nurses that may not be representative of all nurses working in ORs across Australia. Previous research has shown significant statistical differences in relation to age, experience, and speciality qualifications in nurses who belong to a professional association, and those who do not (Gillespie et al 2010). However, respondents in this study practised in a variety of clinical settings including public and private facilities around the country. Thus using a professional association was the only feasible way of obtaining a national sample. Third, a response rate of around 35% is less than optimal, and responders may in some way be different to non-responders. Nevertheless, the sample size was sufficient to detect statistically significant results in multivariate analyses. Fourth, we measured nurses' perceived perioperative competence rather than their *actual* competence. That is, we did not perform structured observations to assess nurses' performance in the clinical environment. Yet, in spite of the criticism given to using self-report measures of competence (Brazen 2008, Watson et al 2002), such measures encourage reflective practice and should be used in conjunction with other forms of assessment. Finally, the survey results may have been influenced by other events that had occurred at the same time the survey was being completed. For instance, the possibility that some respondents had recently had either very positive or very negative experiences in the OR during the survey period. Therefore, 'history' may have contributed to the ways respondents answered the survey (Polit and Beck 2010).

Implications for Recruitment and Workforce Planning

Quantifying competence in relation to a national demographic profile of perioperative nurses may inform future workforce planning policies. Beyond nursing numbers shrinking in size, the perioperative workforce, as with the other nursing specialties, will continue to grow older. Thus, efforts within the organisation to retain older nurses need to be centred on redesigning workplaces (e.g., flexible rostering, providing ergonomic environments), increased remuneration and professional recognition, and integrating technology to help with efficiency and safety (Oulton 2006, Bleich et al 2003, Cowin and Jacobsson 2003). Such strategies may increase nurse retention.

Clearly, for nurses to be deemed competent in high dependency areas such as the OR, specialty education and experience are paramount; their role has previously been confirmed as key structural variables that have the potential to affect patient outcomes (Doran et al 2006, Doran et al 2002). Saliently, as a consequence of the nursing shortage and changing models of care, some nursing work and roles have been devolved to other categories of healthcare staff. The result: an increasing trend to 'up-skill' lesser trained staff—not necessarily nurses (Gillespie et al 2009, Cowin and Jacobsson 2003). Possibly, this has the potential to erode staff skill mix. These results have indicated that RNs, who perform direct patient care, reported lower levels of perceived competence than other nursing classifications (manager, educator). From an organisational perspective, this signifies that workforce planning should include long-term strategies, such as creating academic partnerships with universities, to provide perioperative nurses (and other staff) access to specialty education and advanced skills programs. These programs could also be tailored to cater for new recruits, and thus provide staff development. Additionally, hospital -based mentorship programs as a means of succession planning and developing the 'next generation' of perioperative nurses will become crucial.

CONCLUSIONS

Although this national survey only included perioperative nurses who were members of a professional association, it has provided valuable insights into the demographic profile and clinical roles undertaken by Australian perioperative nurses. Arguably, while some demographic characteristics may not be amenable to change, obtaining data will help to predict emerging trends in the workforce profile of perioperative nurses. Over the next decade, the demand for competent, highly skilled nurses is likely to outstrip supply. Clearly, there is a need to attract younger nurses into the perioperative specialty to replace an ageing workforce. However, it seems equally important to harness the talents, skills and abilities of older, more experienced perioperative nurses. As a means of addressing both of these situations, it is imperative to implement workforce planning initiatives in pre-registration education and post-basic training.

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The challenges for families managing an adolescent with an intellectual disability and type 1 diabetes

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KEY WORDS

type 1 diabetes; intellectual disability; independence; responsibility, parents, families

ABSTRACT

Objective
This paper describes the experiences of two families caring for their adolescent sons who have type 1 diabetes (T1D) and an intellectual disability.

Design
This paper arises from a larger study and reports on the findings from four parents, (two couples), who have adolescent sons with both type 1 diabetes and intellectual disability. Case study analysis of these interviews gave a more in-depth understanding of management of these dual conditions from the perspective of the parents.

Setting
The interviews occurred in the parents homes.

Subjects
Family one consisted of a mother, father, and three children aged 16 to 20 years. Family two comprised both parents and four children attending secondary school. At the time of the study all siblings were living at home. The two adolescent men with intellectual disability and T1D were 19 year old, still living at home and attending sheltered employment.

Main Outcome Measures
This paper describes the experiences of two families caring for their adolescent sons who have T1D and an intellectual disability.

Results
Independence was the major issue. Obtaining independence was hindered on several fronts: having an intellectual disability and having to manage T1D concurrently, and the short and long-term effects this management has on the family now and in the future.

Conclusion
The complex management of T1D coupled with intellectual disability makes independence more difficult to attain for these adolescents. The parents in this study accepted that full independence may not be possible for their sons and voiced concern for their future wellbeing.

INTRODUCTION

People take on the role of parenthood with the understanding and acceptance that they will be responsible for the care and development of their offspring until they are able to function independently. It is important to understand what effect it has on families when total independence is unlikely because the child is diagnosed with a chronic disorder. This paper describes the challenges of caring for two adolescents who have intellectual disability and type 1 diabetes mellitus (T1D).

A person is regarded as having an intellectual disability if they have a low intellectual functioning and significant limitations in adaptive behaviour and the condition is present from childhood (defined as age 18 years or less). The Australian Institute of Health and Welfare (AIHW) have stated that the disability policy currently in Australia supports a multidimensional approach that includes assessment of the need for assistance as one of the components and classifications of disability (Australian Institute of Health and Welfare 2003). The causes and range of intellectual disability are many and varied, and people may have a concurrent syndrome, such as, Down syndrome.

T1D is described as the destruction of beta - cells by an autoimmune process that leads to the dependence on exogenous insulin (AIHW 2009). In Australia, the diagnosis of diabetes has risen largely because of the increase in the prevalence of Type 2 diabetes although the prevalence of T1D is also on the rise (AIHW 2009). Catanzariti et al (2009) indicate that the incidence of T1D has increased from 19.8 in 2000 to 23.4 per 100,000 in 2006. This incidence was higher in boys aged 0–4 years and 10–14 years than in girls of a similar age. The occurrence of T1D among 0–14-year-olds in Australia is high compared with data from many other countries. This rise in incidence cannot be explained simply by changes in genetic susceptibility.

There is a paucity of research about the combined effects of T1D and an intellectual disability. Roizen (1996) and Smith (2001), indicate that people with Down syndrome, experience other disorders including endocrine disorders, such as, T1D and Type 2 diabetes mellitus (T2DM). Lammer and Welmann (2008) indicate that people with Down syndrome have an increased risk of developing autoimmune diseases compared with the general population. Gillespie et al (2006) concluded that this was because diabetes-associated class II haplotypes are increased in children with Down syndrome.

The management of T1D places heavy daily demands on people with diabetes and their families. These demands include insulin injections; a dietary plan; balancing exercise; food intake and insulin dosage; and/or urine and blood testing (Meltzer et al 2003). However, maintaining a healthy range of blood glucose values is more complex than simply balancing the three major elements of management. T1D has acute complications, the most common being hypoglycaemia, which can cause seizures and loss of consciousness. Another may be hyperglycaemia leading to ketoacidosis, which is a serious life threatening condition (Meltzer et al 2003). People with an intellectual disability might not be able to identify the symptoms of either hypo or hyperglycaemia in the same manner as those with diabetes who do not have this impairment. People with T1D are susceptible to long term complications including blindness, kidney failure, varied neuropathies, peripheral vascular disease and foot problems. These complications occur at a much younger age in those with T1D (AIHW 2009). The management of T1D may be further complicated when the patient has little understanding of the need for a treatment regime or dietary restrictions as in the case of a coexisting intellectual disability.

METHOD

Research design

This paper reports on the findings from four parents (two couples) who have adolescent sons with both T1D and intellectual disability. Case study analysis of the interview data was completed and themes were uncovered.

Case study analysis allows for exploration of the complex phenomenon of caring and is a comprehensive strategy for exploring multiple realties (Baxter and Jack, 2008; Jones and Lyons, 2004). This approach is frequently used to explore cases of interest in an all-inclusive and meaningful manner (Luck, Jackson and Usher 2006). Case study analysis allows for a more in-depth understanding of management of these dual conditions from the perspective of the parents.

Setting and sample

Participants were recruited from two self-help support groups - The Juvenile Diabetes Foundation and Diabetes Australia and snowballing. Family one consisted of two parents and their three children aged 16 to 20 years. Family two comprised both parents, and their four children whose ages ranged from 12 to 19 years. Both of the adolescents with intellectual disability and T1D were males 19 years of age, still living at home and attending sheltered employment. Both families lived in Sydney, New South Wales, Australia, one in the inner city and the other in the south west. At the time of the study all siblings were living at home.

Data Analysis

Interviews were audio taped and transcribed verbatim. The transcripts content were analysed using both manifest and latent content (Berg 2007) and key issues were uncovered.

Ethical considerations

The Human Ethics Review Committee of the University of Western Sydney granted ethical approval. Participants were given an information sheet about the study and consent was obtained before interview. All transcript data were de-identified and the names of participants were kept separately from the interview transcripts and tapes. Although, at times, the interviews raised some distressing issues, none of the participants required the interview to be terminated or were referred for counselling. In keeping with confidentiality agreements, the participants in this study are referred to using pseudonyms. The first author conducted the initial interviews. The other authors only had access to de-identified transcripts.

FINDINGS

The parents highlighted the key issues from their perspectives of living with their adolescent son. Adolescence is generally accepted as a testing time as family members begin to question and juggle parental involvement against the child's developing autonomy and desire to assume responsibility for their own care (Palmer et al 2004). Often, having an adolescent son who also has T1D and a moderate to severe intellectual disability, presents a unique challenge for parents beyond that experienced by parents of sons with only one of these conditions.

Issues

The overarching issue mentioned by parents was their son's independence. The definition of independence used in this paper is the desire to be autonomous with self-determination, decision making and taking a greater control of one's own affairs. Independence as a concept was viewed as a point on a continuum with dependence at one end and independence at the other. The effects that these two conditions have on the two families are profound because the ability and responsibility for the management becomes shared among other family members.

Independence and Intellectual Disability

Individuals who have an intellectual disability strive for independence in much the same way as everyone else. An intellectual disability, as well as, T1D was seen as a double blow. One parent stated that when her son was diagnosed with T1D she was:

stunned, because aside from his diabetes he has a lot of other medical and physical problems so it was just another one on top of all the rest (P)

Another parent shared comments made by others:

because Down Syndrome is obvious, people just say oh my God poor thing!, and he has to cope with both, sort of reaction. . . it's a double whammy and they feel sorry for X and us (K)

The parents explained that their child needed support in many activities of daily living as a result of his intellectual disability. The intellectual disability crossed over into the area of diabetes management. Even though each adolescent had some understanding of the routine and equipment requirements for blood glucose testing, they had little comprehension of the implication of what that blood glucose level meant.

he'll never be able to live independently and even in group homes, . . there's always got to be somebody, an adult person there because Y's got no idea, no idea whatsoever about his diabetes or even, I mean he'll turn on the machine, he knows what to get out, all of the equipment, but he doesn't actually know how to draw the insulin or how to do his blood tests (J)

Independence and Diabetes Management

The management of T1D can be challenging for everyone. Both of the families in this study had already experienced the usual reactions of grief and loss, such as shock and denial, to having a child with an intellectual disability. When they spoke of receiving the diagnosis of T1D, they said:

we're quite good at crises we sort of deal with them, you learn all about it and understand it all and do it all and it isn't till later the full impact sort of sits with you, like the reality (K)

When diabetes is coupled with an intellectual disability, many cope by including other people, both inside and outside of the family in assistance and responsibility for the day to day management. The following example illustrates the range of individuals and organisations involved with their adolescent's care.

it means that one or other of us has to be [there], or the kids... I mean... we've been away for weekends and either N or her older brother B will do it for us or friends might, or he goes to school camp and the teacher's aid does it all, fantastic they are, very good, respite care people do blood tests and if they go on camp, ...but it means ... everything becomes a bigger deal (P)

Parents indicated that dependence was caused by the T1D more so than the intellectual disability.

If X didn't have diabetes and just had Down Syndrome well his life would be somewhat different I think, and in so far as his independence is concerned, I mean there'd still be issues about independence, but it wouldn't be based around his exercise, food intake and so on, and if he was with some friends and went to town and they were going to stay on and whatever, well he'd just ring up and that'd be fine (P and K)

Having T1D meant that independence was restricted, and both families grappled with the dilemma of whether to keep their children safe by attending to all of their needs personally or to allow them to take certain risks in the pursuit of learning and independence.

Our hope is that you know he'll be in a situation where he will be able to be independent. I think it's a little bit of tug of war between letting go totally and keeping him but the problem with keeping him home is that he loses that independence but he has other securities so I think it's a balancing act as to what is more important at any particular time.., because of his other disabilities, management of the diabetes is a major problem for him so he needs somebody else to manage it (P and K)

The parents described some physical complications that added to the cognitive impairments.

> *He's just beginning to actually have enough oomph in his fingers to use the pen [injecting devise for insulin] [it] takes quite a bit of oomph to push the thing in, well he did it this morning quite well but I wouldn't trust him to dial up the right dose or anything (J and M)*

The other parents also found that their son had difficulty with the syringes and paraphernalia.

> *His right hand, particularly his thumb, he can't do the blood tests correctly, he can't possibly do the insulin you know, like draw up the insulin (J and M)*

Both parents reported their sons' lack of understanding regarding the clinical symptoms of diabetes. One parent was asked whether her son would be able to help himself out of an impending hypoglycaemic episode.

> Interviewer: He doesn't carry jelly beans with him?
>
> *No, he wouldn't sort of correlate, probably eat them before. K)*

The other parents agreed.

> *Because he can't manage it himself, and he doesn't recognise the symptoms himself, he could be having, a high or a low, he doesn't know what it is, because he doesn't know what it is he can't take the appropriate action so if people around him also don't recognise what's going on, they could mistakenly take him for something totally different (P)*

Each parent told of times when the spontaneity of life was hampered by their sons' diabetes. These examples show how it is not just their sons' independence that is curtailed but theirs as well.

> *You've got to take it [diabetes management] into account when you're planning stuff.*
>
> *X is fairly easily distracted by things that turn him [on], particularly arcade games. He was working at a cafeteria and he had to walk across the park to the end of [a busy road] and wait for the bus there and catch the bus down [this busy road]. He's got to be home to get his afternoon tea… come about six o'clock he still wasn't home… he was found at the bus stop at [this busy road] sort of on the verge of a hypo, so you know that's the worry (K)*

There were also positive aspects described by both sets of parents. Their sons adapted to the routine of blood tests and meals well.

> *talking to people, with so called normal teenagers, it seems in some ways easier, X really likes routine, and he really is quite compliant about things…I mean we would wake him up and make him have breakfast where if you did that with a normal 19 year old they'd tell you where to go (K and P)*

Independence and Responsibility

The families described the necessity for others, both inside and outside the home, to be involved in the care and to assume some responsibility for the management of their son's T1D. Their siblings have been involved in this management for a long time.

> *..there're situations where we're not home but he's home with his brothers and sister… from a very early age they were taught how to manage the blood test and the drawing up of the insulin and give the injection, they have to be able to recognise [and know] what to do about a hypo (J and M)*

The parents always bear at least part of the responsibility for the management of their son's diabetes. Over the years they have had to educate various carers and teachers, and this continues even after their child has left home as the following example shows.

When he went to [residential facility]...the phone calls and, the fear... if they were cooking something new, they'd ring up and say we're having honey chicken tonight, how will that affect Y or we're going to such and such a place and I'd just say that's fine. He was there for 5 years so they got the hang of it, it wasn't the same people all the time, and we had to train a couple of different people (J and M)

The need to have a responsible adult on hand was raised by both sets of parents. This has implications for possible future residential accommodation, employment prospects and social activities for their son. The following example shows the reluctance of others to accept responsibility for the wellbeing of a person with both an intellectual disability and T1D.

there's virtually no one who will, who has volunteered, or we've been game to ask, who will have X overnight (K and P)

Thus, these parents remained ultimately responsible for the care of their sons even though the sons were becoming young adults.

DISCUSSION

Gaining independence for many people who have intellectual disability can be a challenge in itself, but it can be further complicated for people who have T1D. Independence is contingent on the ability to understand the disorder as well as to be able to perform the skills necessary for responsible diabetes management.

Parents teach their children to become independent in preparation for the day when they leave the family home and start their own life (Palmer et al 2004). One of the major issues arising from this study was the families' acceptance that total independence for their sons may never eventuate.

Obtaining independence was hindered on several fronts. This included having an intellectual disability in the first instance, having to manage T1D concurrently, and the short and long-term effects of the management on the family now and in the future.

People with an intellectual disability are encouraged to be as independent as possible with their activities of daily living. The autonomous performance of activities of daily living skills empowers an individual and assists them to be included and valued in the community. This paper shows that independence is complicated by the presence of T1D. The carers' role becomes more complex because of the need to manage both the treatment regimes as well as the age-specific developmental tasks.

The parents interviewed in our study did not emphasise the burden of caring for their sons or the effect that this caring, had on their health. By contrast parents, in a study into intellectual disability, did describe the extra burden they felt in the management of their children and their need for support from external services (Maes et al 2003). Bourke et al (2008) explored the impact of Down syndrome on the physical and mental health of mothers. They found mothers experienced poorer mental health and required more support in behavioural management. Wang et al (2007) found morbidity increased in those with intellectual and developmental disability. The incidence of cardiovascular, neurological, visual and hearing impairments increased with age, thus adding to the burden of care.

The effect that a child with a disability has on a family unit naturally varies from family to family, and it varies according to each stage of the family life cycle. Adolescence is a key time when families may experience disruption as their children strive for independence and begin to make choices for themselves. These challenges are compounded for adolescents who have a disability and their families (Spear and Kulbok, 2004). Schneider et al (2006) found families face additional challenges with their disabled children during adolescence. They found it is important to balance the needs of all of the family members. However, it is

difficult for families because they are often fighting for the rights of their disabled children or are involved in their activities. At the same time the siblings require parental attention and this can have a negative effect on the cohesiveness of the family. The families in this study have the usual challenges of adolescence and the added challenges associated with disabilities and chronic health problems.

CONCLUSIONS

Parents play a vital role in the care of their children with T1D and an intellectual disability. It is important that carers be seen as equal partners with health professionals. Supporting the carers thus requires commitment from health professionals, who can act as enablers and facilitators. This support involves implicit recognition that the carers are the ones who are actually doing the caring fulltime. When offering support, it is useful to know that the type of support will vary between carers.

RECOMMENDATIONS

- Parents have an extended burden of caring for their child with both T1D and an intellectual disability and they should have access to appropriate respite to help them manage this complex task.
- Workers in group homes and schools should be given access to diabetes management education.
- Health professionals should be provided with access to education programs that provide information on intellectual disability, working with families and managing chronic health issues.

LIMITATIONS

A limitation of this study is the small sample size. As with all qualitative research, it cannot be generalised to the wider population of people with intellectual disability and T1D. However, this small study does point to the necessity of further research into this area.

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To investigate the concerns and benefits of job sharing a community based Clinical Nurse Consultant role

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KEY WORDS

Clinical Nurse Consultants, job sharing

ABSTRACT

Objective
The purpose of this study was to identify concerns and benefits of job sharing the Clinical Nurse Consultant (CNC) Youth Health team role and how these impact on job sharing a nursing leadership role.

Design
A qualitative descriptive method was used in this study.

Setting
Primary care.

Subjects
The sample comprised of key stakeholders of the Youth Health care team including members of the multidisciplinary team and health care referrers to the Clinical Nurse Consultants as well as the Clinical Nurse Consultants whom share the role.

Main outcome measures
Identification of needs required to assist in developing recommendations for nursing leadership job share models for a changing workforce in healthcare.

Results
The study identified several themes needed to ensure successful job sharing of a leadership role: effective communication, compatibility, support, teamwork, mentoring and flexibility in care provision. Implementing systems that support and encourage these are necessary.

Conclusion
Results suggest that concerns do exist for organisations when staff job share a leadership role. However, several key points can aid in successful job sharing for organisations and nurses as well as improved patient outcomes. These results should help nurses to develop and facilitate increased success for job sharing of leadership roles and contribute to the current need to be flexible in workforce models of nursing.

INTRODUCTION

This is an account of a qualitative descriptive study of the concerns and benefits of job sharing the Clinical Nurse Consultant (CNC) Youth Health team role.

The role of the Clinical Nurse Consultant was established in New South Wales, Australia in 1986. Since its inception the role has taken on differing role practices and expectations differ for each CNC role. It is, however, agreed that the CNC role has several focus points. These include leadership, clinical practice, consultation, education and research (O'Baugh et al 2007, pp 12-21).

The Youth Health team Clinical Nurse Consultant role was developed in 1998 and was developed initially to meet an identified need to provide health care and support to homeless and at risk of homelessness young people in the community. The Youth Health team aims to improve the health outcomes of young people with complex health and social needs in the community.

The Youth Health team CNC is a member of a multidisciplinary team that provides service across the continuum of inpatient and community services by the provision of advice and support in the management of complex clinical issues. The ability to job share a leadership role such as CNC is often maligned by organisations. The perceived perceptions of split leadership and reduced accountability are just a few concerns purported by nursing organisations as detrimental to patient care with job share roles.

This study provided the opportunity to investigate the concerns and benefits of sharing the CNC Youth Health team role.

LITERATURE REVIEW

Gliss (2000) describes job sharing as a situation in which two employees share the responsibilities and benefits of a single full-time position. A search of the literature found a scarcity of Australian literature on job sharing within the nursing leadership roles. The Clinical Nurse Consultant role is widely accepted to be a full time, one nurse role. Much literature can be found on the need to be innovative in staffing within the constraints of staff and skill mix shortages in nursing today, however, the instigation of job sharing roles for nursing leaders remains rare. The perceived perceptions of split leadership, reduced accountability and poor communication processes are just a few concerns purported by nursing organisations as detrimental to patient care with job share roles.

Graham and Gibbs (1998) argued over a decade ago that job sharing allowed flexible hours which boosted nursing staff retention and allowed flexibility within the workplace. They also suggested that a report from Nursing Recruitment and Retention Taskforce in 1996 identified job sharing as an issue that would benefit nursing retention in the future. This suggestion to now has not been greatly taken up by nursing management for nurse leader roles.

Much literature does agree however, that the need for innovative work practices in a time of nursing shortages is necessary but not all job structures are workable for every nursing role (Branine 2003; Graham and Gibbs 1998; Gliss, 2000; Cooper and Spencer, 1997). Themes within the literature recognised several components that may impact on successful job sharing of a leadership role. A study conducted by Dubourg et al (2006) at a large surgical hospital in Australia, asked staff for their perceptions of the job sharing role and its impact on organisational systems, they found communication, leadership, teamwork and mentoring to be key components to success.

An English perspective on job sharing is found in Branine (2003) who asked managers and staff about their opinions on job sharing of health staff. Branine (2003) also proposes reasons for job sharing varied with

many citing family commitments as well as economic considerations. This study found that most of the job sharing workers were not clinical leaders or managers within the health system as this was not an encouraged work practice. However it was recognised that organisational flexibility was needed for successful job sharing. With this flexible work environment it was found that staff retention improved and that organisations got the experience of two staff for the price of one (Branine 2003, pp61). One down side to sharing described by Branine (2003); Cooper and Spencer (1997) was the incompatibility of job sharers as impacting on job sharing success. They believed that compatibility was the cornerstone to the job share experience working for the organisation and the job sharers. However, whilst citing these challenges they found the benefits outweighed the disadvantages and led staff to increased self esteem and job satisfaction.

The relationship between job satisfaction, commitments and workloads as discussed by Lee and Cummings (2008) in their systematic review on job satisfaction in front line managers highlights the importance of flexibility in job sharing and the importance of job satisfaction in retaining these nursing leaders. Lee and Cummings (2008) also noted that many of the studies from their review were conducted well over a decade ago and new research into this topic is needed to grasp more current concepts of job satisfaction and retention for nursing leaders.

A final theme the literature describes is the importance of succession planning for leadership roles and suggests that a process of orientation, coaching and mentoring whilst the experienced nurse is available to share the role, particularly allowing for the transference of corporate knowledge held by the incumbent nurse is not only important for organisations but also for the professional development of nursing (Stichler 2008; Brunero et al 2009).

The literature, although small, has shown the varied perceptions of job sharing a nursing leader role. Compatibility, communication, support, mentoring and job satisfaction are a few of the challenging themes to come from the literature. This study will endeavour to ascertain the concerns and benefits of job sharing in the CNC role to allow for nurses to realise their professional and personal goals.

METHODOLOGY

A qualitative descriptive approach was utilised for this study. Semi-structured interviews of key stakeholders (8) of the Youth Health team and reflective journals kept by the incumbent job sharing CNC's on their experiences of the role were studied to ascertain benefits and concerns regarding the job share position and to evaluate the impact of job sharing on the Youth Health CNC role. Thematic analysis was conducted on eight (8) semi-structured interviews and participant CNC's reflective journals.

Table 1: Semi-structured interview guide

What are your perceptions of CNC role?
What are your perceptions of CNC job share role?
What do you see as the impact of the job share role on the youth health service?
What are your perceptions of the difficulties from a stakeholder perspective?
What are your perceptions of the benefits from a stakeholder perspective?

ETHICS

The health service governance framework was adhered to and upon consultation with the Human Research Ethics Committee the study was deemed to be no risk to participants and was accepted as a quality improvement project.

ANALYSIS

Qualitative data was analysed using thematic analysis (Braun and Clarke 2006). Responses were read to allow familiarity with the data. The data was studied and patterns identified in the interviews and journals. The interviewees own words were coded, similar meanings labelled and grouped into shared similar themes. Following analysis and synthesis of the data it was possible to verify emerging themes.

LIMITATIONS

Due to the size of this study, generalisations of findings to other areas may be limited. However, this study highlights the importance of the need for further research into job sharing in differing nursing leadership roles.

FINDINGS

Eight (8) semi-structured interviews (see table 1) were undertaken with key stakeholders of the Youth Health team. Findings from the analysis identified several key points. Stakeholders provided many descriptions of the personal qualities that each CNC brought to the role. All stakeholders also acknowledged the complex nature of the CNC Youth Health team role.

To assist in understanding the context of this leadership role, stakeholders described two key functions of the CNC Youth Health role. These were: liaising with care providers to support, consult and case manage young persons, and collaboration with health teams, non government organisations and schools to ensure young people have access to health and well-being services. These are verified by the following quotations from stakeholders:

> *They work with the multidisciplinary team in a collaborative role linking youth to services.*
>
> *They provide links from community with the hospital and play a role in the discharge process from the acute unit.*
>
> *They have high need young people as clients and they help them to negotiate the health system by connecting and supporting them to access and link with appropriate services as well as providing education on health issues to assist young persons to reengage with mainstream society.*

The study findings identified benefits and concerns by stakeholders regarding the CNC Youth Health team job share role.

Concerns

Two main themes were highlighted as concerns that arise in job sharing the CNC role.

Communication

Communication was identified as a concern and a benefit to the job sharing role (6). The findings highlighted the need for strong communication processes to be developed. The risk of communication breakdown when two persons are operating within the role, can ultimately lead to a breakdown of the role and fragmentation of the service provided by the CNC role. To aid in preventing this, the interviewees suggested that allocated time for communication and exchange of ideas occur between the two incumbents. One interviewee described*; "I guess communication breakdowns could occur more easily in a job share role."* However, this was tempered by others, with the statements that it had not actually been experienced within the studied role. As another interviewee put forwarded; *"But this does not occur within this role."* The CNC reflective journals indicated that they had developed strategies to ensure the lines of communication were developed and maintained.

Compatibility

Another concern expressed by interviewees (2) was that the sharing of a role may not always be effective for example in the situation that personalities may not get along. The interviewees agreed that "*incompatibility could be the primary cause for job sharing being unsuccessful*" and *"I have seen it before some staff cannot work together"*. This highlights the importance of ensuring compatibility on recruitment. Interviewees commented on this issue as a concern however did not view this as an issue in the current context, one stating; *"It may be a limitation if the job sharers don't get on, but that doesn't appear to be the case here".*

Benefits

Without exception, all interviewees (8) identified benefits of the CNC Youth Health team role being job shared. The incumbent CNCs reflective journals also mirrored these themes.

Communication

As previously described, the study findings indicate the importance of communication. As described by Cooper and Spencer (1997) in their own experience of job sharing the dominant theme of effective communication as necessary for the job share role was also important to the study interviewees (6). A large component of the studied job share role includes communication with clients and all stakeholders. Interviewees expressed there were more opportunities for effective communication and discussion with the job share role than previously experienced as one interviewee described; *"You feel like you see more of them than other CNC roles..... which increases opportunities to discuss clients face to face.....and has a good impact on the ward."*

Supportive Model

All interviewees (8) expressed the benefits of a supportive work model that the CNC job share role brings to the Youth Health team. Five (5) interviewees identified the stressors that come with the role and expressed that sharing the role had supportive benefits for the incumbents and stakeholders alike. The job share role was found to provide a strong sense of support for both incumbents of the position. The position model has been developed to allow for the CNC's to contend with stress in the workplace by supporting each other and sharing coping mechanisms to deal with role stress. Their comments included;

> *"This work can be emotionally taxing and exhaustive and having two people in the role assists in balancing out that experience and from my perspective aids in reducing stress for the nurses."*
>
> *"There is not a lot of opportunity for nurses to take on leadership roles that are not full time. Job sharing allows the opportunity for nurses to experience a leadership role allowing for other life commitments"*
>
> *"In these type of roles nurses often work alone, job sharing this role has helped with support and sharing of information and from an external perspective has appeared to reduce isolation of the nurse."*

These comments acknowledged the ability of job sharing the role to support and reduce stressors on any one person.

Increased skills

Another benefit described by interviewees (8) was the bringing of increased skills to the role by two nurses. In recent years due to the increasing demand for cost-effectiveness and patient outcomes there is a need for increased utilisation of resources (Crossan and Ferguson, 2005). Nursing skills are a health resource. All interviewees (8) noted that having a job share role with two experienced nurses offers a wider range of skills and knowledge than a singular role can. Interviewees noted that the ever increasing complexities and flexibility needed for the CNC Youth Health team role were able to be met by the job share role due to the increased knowledge and skills the two incumbents bring to the role. A strong theme expressed by interviewees as one described; *"Two people bring differing skills that benefit the role by the ability to provide increased skills for our young people"*

Mentoring

The theme of mentoring and succession planning was identified by three (3) interviewees as well as both incumbents of the role as having important relevance to job sharing.

The interviewees and incumbent CNC's describe the development of skills and networks as well as a sense of ownership for the team being a benefit to the team and organisation. This was described by interviewees as;

> *"So many networks and practical issues to be aware of..... to come to a role without someone to help would be very difficult for a new person, job sharing allows learning a role in a supportive environment."* and *"Job sharing the role allows for the two personalities to work to each strengths and weaknesses um that is to build on strengths and reduce weaknesses."*

Workplace support

A number of interviewees (4) expressed the benefits of backfilling the position for sick leave and annual leave. This was particularly important for members of the multidisciplinary team. This replicates Branine (2003) findings as a major organisational benefit of job sharing. The interviewees describe*, "There are benefits of backfill particularly as this assists us and other members of the multidisciplinary team, we don't need to pick up with skills we don't have or ask clients to wait until the nurse is back to provide a service."* And another interviewee expressed the importance of*; "We always know one of them will be there to meet our needs."*

Shared resources

A significant part of a CNC role as described by interviewees (8) is the participation in formal and informal education programs. In this study the incumbent CNC's stressed the importance of two staff being available to provide education to young people, thus sharing their skills and personal resources. Interviewees suggested the ability to present education to this challenging group, share ideas and reinforce information with the support of a peer, has added dimensions to the education the CNC's can provide to young people, for example the utilisation of an open forum environment with both CNC's present, which enables the CNC's to allow adolescents to explore these challenging topics in an interactive but safe and informative environment for presenters and participants. Interviewees (6) also describe the difficulties of providing effective harm minimisation education to young people. The ability of the job share role to be flexible and with increased resources enables the provision of this education to have a broader knowledge base.

Impact on Young People

The final key point discussed by interviewees related to the perceptions of stakeholders on the impact of job sharing on outcomes for young people. All interviewees (8) described how the role enhances access for young people to the service and increases the services ability to provide and maintain necessary networks and connections for young people. Each interviewee described the abilities of the CNC's to assist young people in dealing with self care and connection to other services as being pivotal to the Youth Health team. Members of the multidisciplinary team interviewees (4) describe how they refer to the nurses often on many of their own areas of concern, and the availability of two members in the role with skills and knowledge provides a broader team perspective and ability to provide an extended service.

DISCUSSION

The study provided a valuable perspective on job sharing leadership roles. According to comments received the CNC role is an extensive and stressful one. Concerns exist within organisations when job sharing a leadership role. The literature also suggests that job sharing leadership roles can fail due to incompatibility

of job sharers due to personality conflicts, split leadership, reduced accountability and inconsistencies in working may have a negative effect on a leadership role. The study findings found several functions important for the success of job sharing such a leadership role and reinforced observations found in the literature. Firstly communication, support and skill sharing enable job sharing. Implementing systems to ensure these functions occur are paramount when establishing the role. Chang et al (2005) in a review of stress in nurses found the relationship between models of nursing work and the characteristics of nursing work to be an important indicator in levels of stress experienced by nurses. As Branine (2003) also describes in his study of job sharing in Britain there is the potential for job sharing to allow for less stress and more time to give to other commitments, so too this study found how the sharing of the role enabled the nurses to balance an extensive workload and home life thus reducing stressors.

Another interesting finding of the study was the need for compatibility of the CNC's, as Cooper and Spencer (1997) also suggest that it may be useful for job sharers to self- identify to ensure compatibility. Self-identification was not the process used for the Youth Health team job share recruitment however compatibility of the incumbents is one indicator of success of the Youth Health team CNC role. Organisations may benefit from considering compatibility when contemplating a job sharing position.

An important aspect of a job sharing role highlighted by the study is the need for establishing solid rules of working to ensure that identified functions and commonalities exist to encourage a successful job sharing arrangement and this should be considered when implementing a job share role. This study indicates this has occurred between the CNC's of the Youth Health team. A prescriptive position description and development of ways of working by the incumbent CNC's supports the job share arrangement. This finding is a useful guide for organisations when developing future job sharing arrangements.

The identification of the importance of mentoring and succession planning highlight how fostering a workplace that encourages the building of nursing professional development ensures increased job satisfaction, retention and aids to secure leaders for nursing's future. This ability to learn in the job share environment has assisted the new incumbent CNC to capitalise on the strengths of the existing CNC and allow the development of knowledge of organisation, parameters of the role, practical strategies and application of the role in a supportive environment. Enabling incumbent staff to orientate and mentor another is of great advantage for organisational knowledge retention.

This study also highlights the speciality work of a CNC. One example as O'Baugh et al (2007) suggests in their study of CNC's is identifying, collaborating and participating in development and delivery of education programs as core business of the CNC role. The sensitive nature of the work of the Youth Health Team CNC leads to the need for innovative education models, for example the utilisation of an open forum environment with both CNC's present during youth education. As Tandon et al (2008) found, young people who disconnect from education settings have considerable health risks, and the finding of ways to integrate health education into settings can aid in uptake of information by young people. Sharing the role and sharing their combined knowledge with youth enables the CNC's to allow adolescents to explore these challenging topics in an interactive but safe and informative environment for both presenters and youth participants. This finding emphasises the importance of the specialisation of the CNC role and the benefits job sharing brings to the role by increasing opportunities for youth to obtain differing knowledge and perspectives as well as the effective utilisation of staff as a resource.

In summary, this study has allowed the CNC's to reflect on their role and practice in job sharing. They have been able to identify concerns and benefits to allow them to implement constructive ways to reduce challenges the role encounters. It has also showed how success is possible when sharing a leadership role.

CONCLUSIONS

The role of the Youth Health team CNC is significant in contributing to a quality health service for disconnected young people in the community. The findings from this study demonstrate that the CNC role can be job shared effectively and provide added benefits to staff and organisations. This is demonstrated in improved communication, increased access to skills, mentoring and the ability to provide flexible service provision. The benefits to the employee are also identified in this study by the knowledge the job share role provides increased provision of support and mentoring with the added benefit of reducing stress within an ever increasing role. This study supports the premise of job sharing within nursing leadership roles.

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Practice-based simulation model: a curriculum innovation to enhance the critical thinking skills of nursing students

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KEY WORDS

Nursing, simulation, critical thinking, curriculum development, pedagogy.

ABSTRACT

Objective
The purpose of this paper is to describe the Practice-Based Simulation Model (PBSM) as a pedagogical framework that enables the integration of simulation in a way that ensures critical thinking skills are explicitly taught as part of the processes and outcomes of students' learning.

Setting
The PBSM is an innovative pedagogical strategy that offers greater flexibility; one that can be applied to various types of educational contexts and delivery modes, while simultaneously ensuring desired learning outcomes.

Primary argument
The use of simulation has been gaining popularity because of its capacity to provide effective experiential learning as a method of enhancing learners' critical thinking skills. Despite ample literature that highlights the need for the integration of simulation into nursing curricula, there are few papers demonstrating simulated learning experiences that are underpinned by sound pedagogy. This paper asserts that simulated learning experiences need to be integrated into a curriculum underpinned by sound pedagogy, such as the PBSM, in order to ensure that learning facilitates the development of the critical thinking abilities deemed essential for nursing.

Conclusion
The PBSM demonstrates an example of effective integration of simulation into a curriculum, and highlights the importance of the integral relationship of simulation as a key component of curriculum.

INTRODUCTION

Contemporary health care environments require nurses to possess critical thinking abilities in order to tackle the complexities of practice – which can often be compounded by increasing patient acuity – advancing technologies and a growing consumer demand for quality of care (Fero et al 2010). In Australia, as elsewhere, the importance of critical thinking abilities for registered nurses has been well supported (ANMC 2005). The National Nursing Competency Standards endorsed by the Australian Nursing and Midwifery Council (ANMC) includes as one of its four main domains of national nursing competencies, "critical thinking and analysis"; in addition to "professional practice provision", "coordination of care", and "collaborative and therapeutic practice" (ANMC 2005, p.2). Competency for the purpose of this curriculum reform was defined as "an attribute of a person which results in effective performance" (Australian Nursing Council 2002, p.1). Since education providers are obligated to demonstrate that intended graduate outcomes are in line with the ANMC National Competency Standards (Ryan 2009), Australian nursing curricula must be structured in such a way as to elicit and make explicit critical thinking behaviours. The challenge is to develop a curriculum model based on sound pedagogy which results in clinical competency augmented by the ability to think critically in clinical decision-making and problem-solving processes.

Contemporary approaches in simulation are centred on its capacity to provide effective experiential learning as a method of enhancing learners' critical thinking skills (Fero et al 2010; Brannan et al 2008; Rush et al 2008). Despite recent calls for the integration of simulation into nursing curricula, there is little in the literature that demonstrates simulated learning experiences underpinned by a sound pedagogy (Parker and Myrick 2009). This paper describes the main features of the PBSM as a pedagogical framework that enables the integration of simulation in a way that ensures critical thinking skills are explicitly taught as part of the processes and outcomes of students' learning.

Critical Thinking and Simulation

Martin's (2002) definition of critical thinking, the "thought process used by nurses for clinical decision-making" (p. 243) is utilised for the purpose of this curriculum model development. While it is necessary to acknowledge that critical thinking is needed for problem-solving and complex decision-making, it is also essential to recognise that critical thinking is not an independent skill, but rather one that develops in the context of domain knowledge. Learners' abilities in decision-making and problem-solving are best improved through repeated experiences, or practice with thinking as it relates to specific knowledge domains (Rush et al 2008).

Although clinical placement provides the best opportunity for students in repeated exposure to practice, the efficacy of current approaches to clinical education has been frequently questioned. It is acknowledged that given the increasing dynamics of health settings, the likelihood that student nurses develop competence and critical thinking skills for practice in those environments is limited (Lunney 2008; Jeffries 2007; Watson et al 2002). Simulation, on other hand, enables the repetition of clinical experiences that are considered infrequent but critical, or events where students are unable to participate due to patient safety concerns. Simulation as an educational method provides an opportunity to structure learning systematically to help students acquire deep content knowledge and to facilitate the development of critical thinking processes (Brannan et al, 2008; Schumacher 2004). Simulation contextualises various types of clinical practice situations, the most common being to provide an opportunity to present patients with deteriorating conditions. This requires learners to recognise, interpret and integrate new information with their previous knowledge so as to make decisions about the course(s) of action to follow (Liaw et al 2011; Watson et al 2002). Following the simulation, debriefing allows learners to be challenged and to critically review their decision-making processes and performances

and to identify further learning needs. Therefore, it is argued that simulation learning experiences encourage the development of critical thinking skills and help learners become more competent in the care of patients and complex conditions (Decker et al 2011; McGaghie et al 2010).

Despite the overwhelming expectation of simulation effects on learners' critical thinking skills, the evidence to support this expectation seems insufficient. Recent experimental studies (Massias 2010; Brown and Chronister 2009; Ravert 2008) have failed to prove whether simulation-assisted learning is more effective than non-simulation-assisted learning in improving learners' critical thinking skills. Lapkin et al (2010), in their systematic review of the literature, also report mixed findings. This current literature review found only two experimental studies (Howard 2007; Schumacher 2004) which showed significant improvement in the critical thinking abilities of nursing students after exposure to simulation activities. Another study, by Fero et al (2010) examined the relationship between critical thinking skills and simulation-based performance using videotaped vignettes and a high-tech patient simulator. This study employed the California Critical Thinking Disposition Inventory and the California Critical Thinking Skills Test, and reported a statistically significant correlation between performance in simulation and overall critical thinking disposition scores. Despite these recent studies suggesting a positive correlation, the methodological limitations of these studies, such as small sample size and use of convenience sampling, has resulted in insufficient evidence to support a concrete correlation between the uses of simulation and improved critical thinking skills. The difficult task of demonstrating the effectiveness of simulation in improving critical thinking skills with significant randomised sample sizes has been deemed impractical (Lapkin et al 2010). In addition, designing experimental studies that require extensive periods of time and allow sufficient exposure to simulation before testing is challenged by the difficulty related to meeting ethical underpinnings of research and those principles of assessment that centre on equity for all students.

This paper argues that simulation, when incorporated into structured learning, creates an opportunity for educators to provide a framework to enable students to develop a full suite of skills; to be team players, to work collaboratively with others, to engage in determining solutions in particularly challenging situations, to make decisions based on sound judgments, and to develop critical thinking in a safe supportive environment. However, it is important to note that as not all experiences lead to meaningful learning, and that learners' exposure to simulation does not always result in the desired learning outcomes, including critical thinking skills. Critical thinking is best developed through repeated exposures to practice where learners' thinking processes are supported by integrated contextual knowledge, skills, and behaviours (Helsdingenet al 2011; Simpson and Courtney 2002). Simulation, therefore, that is integrated into a curriculum based on sound pedagogy will ensure that learning facilitates the development of the critical thinking abilities.

There is a dearth of literature demonstrating the integration of simulated learning experiences in nursing curricula underpinned by a pedagogy (Schlairet 2011; Parker and Myrick 2009). A number of authors have suggested merging simulation into an integrated Problem Based Learning (PBL) curriculum (Murphy et al 2010; Park et al 2009; Wong et al 2008). PBL has long been recognised as a mechanism to provide an integrated approach to acquiring the knowledge, skills, and behaviours required for effective clinical practice, and therefore having the potential to enhance critical thinking skills (Oja 2011); however, many models of PBL do not achieve this outcome (Hmelo-Silver et al 2007). A totally integrated PBL curriculum, focusing mainly on the classroom activities is impractical, particularly when considering the competing challenges associated with the shortage of nursing academics and increasing student enrolment, challenges which have driven an emphasis on cost-effectiveness in educational delivery and an emerging on-line presence (Howard et al 2011). Therefore, there is a need for an innovative pedagogical strategy that offers greater flexibility; one that can be applied to various types of educational contexts and delivery modes, while simultaneously ensuring desired learning outcomes.

The Practice-Based Simulation Model (PBSM)

The Practice-Based Simulation Model was initially conceptualised by the first author, drawing both on the literature and professional expertise gained through leading the development, implementation and evaluation of the Simulation-Problem Based Learning (S-PBL) curriculum in Korea (Park et al 2009). The PBSM was then further refined through an action based project involving a series of trials and modification of the model during 2009-2010 by the authors at one Australian university. The PBSM is currently employed in five undergraduate courses in a Bachelor of Nursing program, and within two postgraduate nursing programs. The results of the evaluation study of the PBSM implementation is being prepared for later publication.

The PBSM is based on constructivist learning theory which asserts that knowledge is not passively transferred from educator to learner, but constructed by the individual learner through the processing of experiences and interactions with their environment (Parker and Myrick 2009). Constructivist learning theory is operationalised through valuing concepts of active learning, authentic or situated learning, and collaborative learning (Pritchard and Woollard 2010).

The PBSM is a learner-centred curriculum model that was developed with the aim of achieving effective simulation integration, and to clearly demonstrate the integral relationship of simulation as a potentially key component of curriculum. The learning of critical thinking skills is explicit to the PBSM as linked to the process of planning, implementation and evaluation of curriculum in order to achieve these skills as part of the desired outcomes.

Elements of the Practice-Based Simulation Model

The PBSM as a curriculum model is composed of a series of learning modules. Each learning module is organised around one practice situation, which is carefully selected to represent a cluster of key learning concepts. One or two learning modules collectively form a subject and these are mapped out to reflect achievement of the desired outcomes of the entire curriculum. The PBSM has five elements: practice situation, simulation, structured learning, inquiry process, and assessment. All of these elements are interlinked and work together, as shown in figure 1, to systematically guide and effectively drive the learners' knowledge construction. This section provides the rationale for each element and elaborates their role within the Practice-Based Simulation Model.

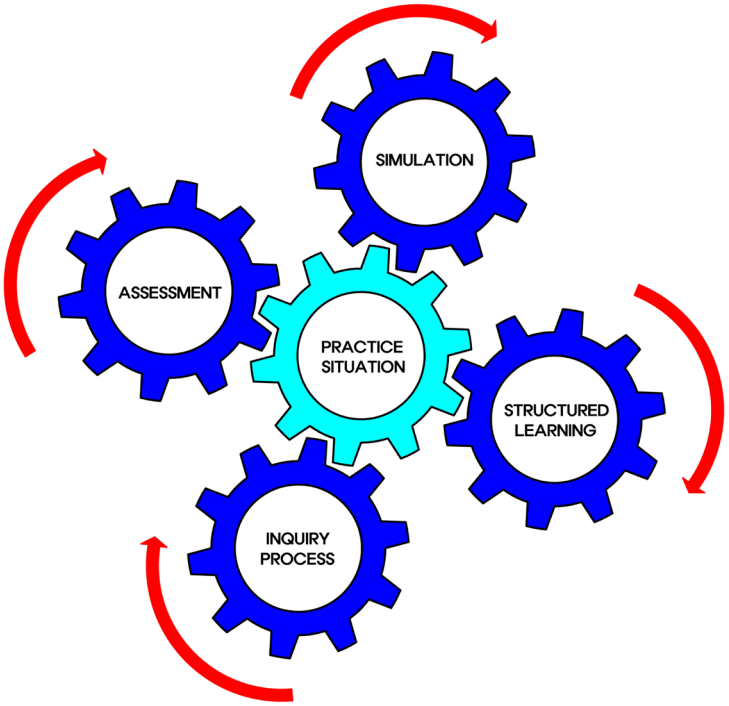

Figure 1:

The interlinking of elements in the Practice-Based Simulation Model.

Practice Situation

The practice situation is the core of curriculum design and the main thread holding each of the elements together. It provides the focus for learning and assures the clear integration of learning concepts within the framework of nursing professional practice (Conway et al 2000). To develop an effective PBSM learning module, a quality practice situation must be designed and integrated into the curriculum. The quality design of practice situation and aligned simulation learning experiences 'integrate thinking and doing' during learning processes and inform action-oriented decision-making by learners. The materials replicating practice situations should: be authentic and reflect real world practices; provide specificity and direction for learners around time, place and role; include social, political, and ethical components; and recognise the potential for multimedia to enhance the fidelity of simulation (PROBLARC 2000).

A practice situation is often referred to as a case and involves a 'problem', a 'patient case', or a 'scenario' depicting various people and/or situations. In the PBSM, the term 'practice situation' is used to emphasise the point that the stimulus material should not merely be a patient case, but should include practice context surroundings in which the patient and the nurse are physically, socially, and emotionally located (Fero et al 2009). Even a quality practice situation taken from real-world practice often requires re-structuring to guide the learning process. This re-structuring includes situation descriptions, formulation of relevant cues, and their effect on priorities. During this process, clinicians' involvement is critical to ensure the similarity to real-world situations in content, importance, and direction of the relationships (Chiarella et al 2008).

Simulation

Although various types of simulation technologies are employed in the clinical laboratory sessions, simulation as an element of this model refers to a form of immersive simulation where learners are required to take the role of a clinician within a replication of real practice situation. The learners are required to analyse the clinical situation, to formulate appropriate care, to prioritise and to deliver the care within the real-time practice environment. Simulation in this model, therefore, provides a venue for training learners' ability to think critically and engage in clinical reasoning.

The "practice situation" in the PBSM provides a full description of a nurse-patient encounter, while the simulation scenario represents a snap shot of a particular portion of that situation. Depending upon the purpose of the learning module, one or a series of snap shots can be taken and employed as simulation scenarios in a learning module. The scenarios are usually sequential in order to imitate the changing, contingent situations of a nurse-patient encounter. These sequential multiple encounters enable and reinforce learners' ability to recall previous knowledge and to apply this to new experiences. This allows learners to construct a deeper level of processing, therefore improving their clinical reasoning skills (Hoffman et al 2011).

A typical immersive simulation session within this model includes a process of 10-15 minutes of pre-briefing, 10-15 minutes of simulation encounter, and 20-30 minutes of debriefing. A remedial follow-up is arranged when considered necessary. Debriefing allows a venue for the teaching of critical thinking skills in the context of specific subject matter (Dreifuerst 2010). The debriefing process involves a learner's critical review and discussion of the decision-making process within the simulation encounter and a reflection of the learners' own cognitive strategy. This is considered as a typical, but very effective mode for the instruction of critical thinking skills (Helsdingen et al 2011).

The PBSM suggests that various forms of debriefing be used, according to the learner's level of preparation, and in order to meet the objectives of the learning module. A facilitator guided debriefing is useful for beginners to be trained in learning from reflection. The debriefing facilitator encourages learners to collaboratively engage in constructive processing by redirecting their attention, pushing them to think deeply, and modelling the

clinical reasoning process that clinicians would perform in real practice (Dreifuerst 2010; Hmelo-Silver et al 2007). Peer debriefing in the PBSM is used to promote learners' engagement in structured observation, to critically evaluate, and to provide peer feedback, in a professionally appropriate manner. A written form of debriefing is particularly useful in providing learners with time to reflect on their performances and emotions. This allows educators to have access to the individual learner's perceived learning through the simulation (Petranek 2000).

Practice situation and simulation are the elements of the PBSM emphasising the goals of authenticity. The PBSM employs real-world practice situations as the focal point of all learning and assessment strategies, and further reinforces authenticity through the use of immersive simulation. This approach then locates learners' performance within a realistic encounter with an imitated practice situation. Therefore, the PBSM increases the chance of transferability of on-campus learning to clinical settings.

Structured Learning

Structured learning in this model refers to that element concerned with the way the learning of the essential content of a curriculum is achieved. It is important that educators achieve a consensus on the essential learning content of the profession and how this can be best transferred to their learners. The PBSM includes regular, structured learning sessions such as lectures, tutorials, clinical skill labs, and web-based interactive learning sessions. One criticism of constructivist learning approaches, such as PBL and Inquiry Based Learning (IBL), has been that certain models used by these approaches place too much emphasis on the discovery journey of learning, but provide minimal instructional support. Such an approach has been reported to be less effective and efficient than conventional instructional approaches that provide sufficient guidance to student learning process (Kirschner et al 2006). While the importance of learners being engaged in the self-directed and collaborative construction of knowledge is still valued, the PBSM endeavours to reduce excessive cognitive loading for the learners by providing a more focused approach through the use of various types of direct and indirect instructions. The PBSM supports the inclusion of direct instruction such as regular lecture sessions, but these must be provided in a timely manner; generally once learners have identified their learning gaps and understand the relevance of the information through analysing the practice situation.

Indirect instruction is presented during tutorials, clinical laboratory sessions, and online interactive activities, as a type of scaffolding activity. For example, clinical laboratory sessions in the PBSM are designed to a foster collaborative learning environment using vignettes and multimedia content. The educator acts as a facilitator to discuss a vignette – often one that directly relates to the practice situation – so that skills are taught within the context of the practice situation. Ideally learners will have access to computers to retrieve relevant information and to learn collaboratively with their peers. The facilitator assists learners' understanding and development by prompting learners to explain or identify the limits of their knowledge and skills. Direct skill demonstration is given once the collaborative learning is undertaken and considered necessary to articulate complicated procedures. Such timely direct and indirect instruction promotes knowledge construction in a way that makes knowledge available for future use in relevant contexts (Edelson 2001). Structured learning sessions in the PBSM aim to encourage learners to move beyond their limitations and engage in complex tasks that would otherwise be beyond their current abilities (Hmelo-Silver et al 2007).

Inquiry Process

Concurring with Facione's (2011) views on critical thinking as a vital tool for inquiry, the inquiry process in this model is an element which focuses on enhancing learners' critical thinking skills and preparing them to be life-long learners. The strategies to promote learners' inquiry processes are distributed in each element of the PBSM and across the curriculum, so as to focus on gradual improvement in learners' critical thinking

skills. For example, the choice of appropriate debriefing method directly relates to elements of the inquiry process. The selection and design of inquiry process strategies are guided by a set of core critical thinking skills and sub-skills identified by an international group of experts in critical thinking through a Delphi study conducted by Facione (Facione 2011, 1990); this is outlined in table 1.

Table 1: Core Critical Thinking Skills and Sub-skills, adapted from Facione (2011)

Core critical thinking skills	Sub-skills
Interpretation	Categorise, decode significance and clarify meaning
Analysis	Examine ideas, identify arguments, and identify reasons and claims
Inference	Query evidence, conjecture alternatives, and draw conclusion using inductive or deductive reasoning
Explanation	State results, justify procedures, and present arguments
Self-regulation	Self-monitor and self-correct

One of the main features of the PBSM model is its use of pre- and post-concept mapping as a mean to aid learners' self-evaluation of their learning needs and outcomes. Concept mapping has been reported as an effective tool in helping learners develop problem solving and critical thinking skills (Hsu and Hsieh 2005; Wheeler and Collins 2003). Pre-concept mapping assists learners in the engagement of cognitive processes such as organising, categorising, analysing, evaluating, and reasoning critically (Taylor and Wros 2007; Rafferty and Fleschner 1993). During pre-concept mapping, learners' decisions are based on the recognition of aspects of the practice situation, matching recognised aspects with previous knowledge and experiences. The learners are required to formulate set of care decisions to manage the situation. These decisions are often incomplete or inconsistent because of missing information, insufficient evidence, and unproven assumptions (Helsdingen et al 2011). The result of pre-concept mapping therefore reinforces learners' impetus towards identifying their learning needs and motivates their seeking for further information. Pre-concept mapping aims to foster the core critical thinking skills of interpretation, analysis, and inferences (table 1).

Post concept mapping aims to promote learners' self-reflection on 'knowing' and the 'process of knowing' by allowing learners to revisit the practice situation and compare their pre- and post-concept maps. This process allows learners to engage in the core critical thinking skill of explanation (table 1). A 'reflective summary' – an individual written assignment – replaces the post-concept mapping for experienced learners. Towards the close of a module, following an immersive simulation and debriefing, learners are required to revisit the practice situation and reflect upon their decisions, decision making processes and performances, and to rationalise or critique their decisions based on scientific evidence. Therefore, a reflective summary aims to foster learners' self-reflection on 'knowing and doing' and provides opportunities to learn the core critical skill of self-regulation (table 1). The authors suggest that educators make explicit the objectives of the strategies to learners during the implementation of inquiry process, so that the value of the activities is well-accepted in order to motivate learners' participation, particularly when the strategies are not incorporated as part of formal assessment.

Assessment

Assessment as one of the five elements of the PBSM displays close links to the practice situation so learning is re-directed to the specific context. Assessment, and assessment strategies that direct students' learning, must be congruent with the goal of the curriculum (which in the case of undergraduate nursing education is most often the achievement of professional competency as provided by the registration body) (Ryan 2009). Competency builds on a foundation of basic clinical skills, scientific knowledge, moral development, and cognitive functions, such as critical thinking (Epstein 2007). As Epstein (2007) emphasises, it is vital to have

multiple methods of assessment to cover all dimensions of competency, particularly by using a longitudinal approach within a curriculum and so avoid excessive testing at any one point in time. This will allow educators to monitor gradual improvement of learning outcomes and learners' knowledge base, and assess improvements in levels of skill against criteria informed by statements and standards within a suite of nursing competencies.

The PBSM advocates the use of simulation in assessing the clinical component of the curriculum as it allows educators to formatively assess in ways that are consistent with the knowledge, skills, and attitudes underpinning competent performance. Epstein and Hundert (2002) argue that conventional methods of assessment may "underemphasise some important domains of professional practice, including interpersonal skills, life-long learning, professionalism, and integration of core knowledge into clinical practice" (p. 226). Most on-campus assessment methods in health professional education still evaluate a single dimension of competency, such as knowledge or skills, rather than integrating both and explicitly assessing the processes which underpin them (Epstein 2007; Epstein and Hundert 2002). Simulation has been recognised as a desirable method for assessing competency as it allows for the evaluation of learners' performance in real-time and in a realistic practice situation (Decker et al 2011; Scalese et al 2008). Simulation-based assessment allows educators to simultaneously examine numerous learners, all exposed to identical scenario conditions, that can be reproduced over time and are highly realistic; thereby creating fairer grounds for assessment, while at the same time eliminating threats to patient safety (Spunt 2007; Boulet et al 2003).

Although simulation has been reported as an effective way of assessing learners' practical skills and other non-vocational qualities, scepticism towards using clinical simulation in learner assessment still exists (Donoghue et al 2009; Ryan 2009; Brannan et al 2008). Boulet et al (2003) criticise the reliability of simulation assessment as being strongly influenced by the types and number of simulation encounters. Thus, in the PBSM it is advocated that accommodations be made for multiple simulated encounters to encompass a broader range of practice domains in order to effectively and accurately assess learners' abilities in clinical settings. Although the PBSM actively utilises various forms of simulation for formative assessment and feedback for students across the curriculum, the use of immersive simulation as a summative assessment is recommend only in the final year of a program. This is to ensure that learners have had sufficient exposure to simulation and spent adequate time to prepare for a fair and accurate appraisal of their readiness for transition to the workforce. It is also essential to create reasonable expectations about the demands of these assessment tasks for both educators and learners.

There is an ongoing need for staff development in all aspects of the PBSM, but particular emphasis needs to be focused on assessing the processes that learners develop during a program. Unless nurse educators are able to agree on behaviours that reflect critical thinking and to design assessment activities that elicit both the process of developing critical thinking and the outcomes of its application to nursing practice, the evidence that nurses can and do think critically will continue to be questioned. In times of diminishing resources within universities there has been a tendency to rationalise assessment methods to product-oriented, summative assessment, such as written assignments or essays, knowledge tests, or observation of performance of clinical procedures. Those involved in nurse education need to develop valid, reliable, efficient, and effective tools for assessing critical thinking as a process integral to both practice and learning.

CONCLUSION

In summary, the Practice-Based Simulation Model is an innovative curriculum model underpinned by constructivist pedagogy that is designed in such a way as to ensure critical thinking skills are explicitly

taught as part of the processes and outcomes of students' learning. The interlinking of five elements of this model – practice situation, simulation, structured learning, inquiry process, and assessment – provides a framework for educators to use in the process of design, implementation and evaluation of a curriculum and to systematically assist knowledge construction of learners.

The PBSM demonstrates an example of effective integration of simulation into a curriculum, and highlights the importance of the integral relationship of simulation as a key component of curriculum. The authors assert that simulated learning experiences need to be integrated into a curriculum underpinned by sound pedagogy, such as the PBSM, in order to ensure that learning facilitates the development of the critical thinking abilities deemed essential for nursing.

One of the critical features of this model is its flexibility to be applied into various types of educational contexts and delivery modes. Since its development in 2010, the PBSM has been utilised for various courses and programs of undergraduate, postgraduate, and clinical education. The informal and formal evaluations of these efforts strongly support its value and usefulness for simulation integrated teaching and learning practice. A longitudinal study examining the effect of the PBSM is needed to support the correlation between the use of simulation and enhanced learners' critical thinking skills.

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