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Author: A. Bonner

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Abstract: Aims and objectives. This purpose of this study was to describe the process of expertise acquisition in nephrology nursing practice. Background. It has been recognized for a number of decades that experts, compared with other practitioners in a number of professions and occupations, are the most knowledgeable and effective, in terms of both the quantity and quality of output. Studies relating to expertise have been undertaken in a range of nursing contexts and specialties; to date, however, none have been undertaken which focus on nephrology nursing. Design. This study, using grounded theory methodology, took place in one renal unit in New South Wales, Australia and involved six non-expert and 11 expert nurses. Methods. Simultaneous data collection and analysis took place using participant observation, semi-structured interviews and review of nursing documentation. Findings. The study revealed a three-stage skills-acquisitive process that was identified as non-expert, experienced non-expert and expert stages. Each stage was typified by four characteristics, which altered during the acquisitive process; these were knowledge, experience, skill and focus. Conclusion. This was the first study to explore nephrology nursing expertise and uncovered new aspects of expertise not documented in the literature and it also made explicit other areas, which had only been previously implied. Relevance to clinical practice. Of significance to nursing, the exercise of expertise is a function of the recognition of expertise by others and it includes the blurring of the normal boundaries of professional practice.

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Author Address: abonner@csu.edu.au

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ABSTRACT

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Background

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Design

This study, using grounded theory methodology, took place in one renal unit in New South Wales, Australia and involved 6 non-expert and 11 expert nurses.

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Simultaneous data collection and analysis took place using participant observation, semi-structured interviews and review of nursing documentation.

Findings

The study revealed a three stage skills-acquisitive process that was identified as non-expert, experienced non-expert and expert stages. Each stage was typified by four characteristics which altered during the acquisitive process; these were knowledge, experience, skill and focus.

Conclusion

This was the first study to explore nephrology nursing expertise and uncovered new aspects of expertise not documented in the literature and it also made explicit other areas which had only been previously implied.

Relevance to clinical practice

Of significance to nursing, the exercise of expertise is a function of the recognition of expertise by others and it includes the blurring of the normal boundaries of professional practice.

KEYWORDS

Renal
Grounded theory
Australia

INTRODUCTION

It has been recognised for a number of decades that experts, compared to other practitioners in a number of professions and occupations, are the most knowledgeable and effective, in terms of both the quantity and quality of output. Nurses' interest in the nature and acquisition of expertise has been gaining momentum since Benner (1984) first applied the Dreyfus' model of expertise to clinical nursing. Benner suggested that nurses pass through five levels of competence in clinical practice. These levels are novice, advanced beginner, competent, proficient and expert. An expert nurse is a person who displays advanced levels of skill and knowledge (Jasper 1994) gained through experience (Benner 1984) with the ability not only to apply but also to move beyond theoretical principles. This ability distinguishes experts from non-experts, and many nurses see the pinnacle of achievement as the attainment of expertise (Jasper 1994).

Nephrology nursing has evolved into a distinct specialty area of nursing in responses to the complex health care needs of people with renal failure (Parker 1998, Bevan 1998, Polaschek 2003), and it encompasses several subspecialty areas such as general nephrology, peritoneal dialysis, haemodialysis and renal transplantation (Stewart & Bonner 2000). In a practice-oriented specialty such as nephrology nursing, it is important to understand how nurses practice and, more importantly, how expertise is acquired because experts achieve the best patient outcomes (Benner 1984). While studies relating to expertise have been undertaken in a range of nursing contexts and specialties (see for example Benner et al 1992, Greenwood & King 1995, Cioffi & Markham 1997, King & Macleod Clark 2002, Reischman & Yarandi 2002) to date none

have been undertaken, in Australia or elsewhere, which focus on nephrology nursing. This study was the first to do so.

Aim of the Study

The aims were: 1) to understand the characteristics of nephrology nursing expertise and the process through which it was acquired; and, 2) to explain how expert nephrology nurse practice differed from that of non-expert nephrology nurses.

THE STUDY

This grounded theory study was conducted in one renal unit in New South Wales, Australia. The renal unit consisted of several in-patient and out-patient areas; acute and chronic renal replacement services including renal transplantation; and home training facilities for haemodialysis and peritoneal dialysis patients. Following ethics approval by both the Area Health Service and University Human Ethics Committees, nurses who worked permanently in each of these areas were invited to participate in this study.

Initially a grounded theory study requires the researcher to make preliminary decisions about participants; this is termed purposive sampling (Glaser 1978, McCann & Clark 2003, Strauss & Corbin 1998) which is then superseded by theoretical sampling as the researcher begins to analyse the data and the theory develops (Cutcliffe 2000). In addition, Morse (1995) suggests that a clearly defined sample in a grounded theory study is likely to increase the opportunity for theoretical saturation to occur. In the present study participants' selection criteria (see Table 1) were devised from existing literature (Benner 1984, Jasper 1994) and included formal nephrology nursing postgraduate qualification, length of experience, personal characteristics, level of

practice (Dunn et al. 2000) and whether nursing peers recognised them as an expert nurse. A panel of senior nurses assisted in this process and all nurses working within the renal unit were classified as either non-experts or experts. When a nurse agreed to participate in the study, s/he was informed whether s/he had been classified as an expert or a non-expert. The final sample consisted of 6 non-expert nurses and 11 expert nurses.

[Insert Table 1]

Data Collection And Analysis

Data collection involved participant observation, informal, open-ended interviewing and analysis of nursing documentation. Data consisted of a total thirty-two episodes (103 hours) of participant observation, thirty-seven (24 hours) interviews, and ten episodes of nursing documentation (report writing rather than merely charting). Participant observation occurred in all areas of the renal unit and field notes were recorded during all observational episodes. Interviews followed every observational episode and information was sought from participants to clarify the focus of their nursing actions and, more importantly, their rationales for these actions. Interviews were tape recorded and transcribed verbatim. The analysis of documentary sources, such as patient's health records, is common but due to specific contextual factors, only a limited amount of data was collected by this method.

In grounded theory research (Glaser & Strauss 1967, Glaser 1978, 2001) data collection and analysis proceed simultaneously using the processes of substantive and theoretical

coding. Initially data was collected purposively from three expert nurses, and a line by line analysis was undertaken. The emerging codes guided subsequent data collection. Questions about the similarities and dissimilarities between expert and non-expert nephrology nursing practice were developed and explored in subsequent data collection episodes with both groups. Using the technique of theoretical sampling to continually check and expand developing categories, it gradually became apparent that there were similarities in the practice of expert nurses. Simultaneously data collection from non-expert nephrology nurses also occurred. It became clear during continued open coding of the non-expert data that their level of ability and depth of knowledge were different and could be contrasted with those of experts. There were nurses, however, who did not fit neatly into either group. These nurses constituted a third group, that of experienced non-experts. Eventually no new categories emerged and a sense of closure of data collection (i.e. theoretical saturation) was achieved.

In the final stage of the constant comparison data analysis technique used in a grounded theory study, the process of linking categories through the use of theoretical codes results in at least one core category (Glaser 1978, Glaser & Strauss 1967). In addition, Glaser (1978) argues that some core categories indicate, through the use of gerunds, change or movement which is occurring over time; that is the final substantive grounded theory explains a Basic Social Process (BSP).

FINDINGS

In this study the data revealed a substantive grounded theory which explicates a BSP of expertise acquisition and its exercise. Three core categories conceptualized the process

through which nephrology nurses acquire expertise. These were the non-expert, experienced non-expert and expert stages (Bonner 2001, Bonner 2005). Each stage consisted of four interrelated conceptual categories which described how the nurse practiced. These categories or characteristics of nephrology nurses were knowledge, experience, skill and focus.

The first stage was the non-expert stage. Non-expert nurses demonstrated superficial nephrology nursing knowledge and limited experience; they were acquiring basic nephrology nursing skills and possessed a narrow focus of practice. The second or experienced non-expert stage revealed that these nurses had sufficient nephrology nursing knowledge and adequate experience while they exercised routine nephrology nursing skills and their focus of practice was changing. The third and final stage of the acquisition and exercise of nephrology nursing expertise was the expert stage in which nurses demonstrated extensive nephrology nursing knowledge and vast experience; they exercised advanced nephrology nursing skills and were patient focused. Diagram one schematically represents each of the conceptual categories and the BSP of nephrology nursing expertise acquisition.

[Insert diagram one]

In this study, a nurse's knowledge was conceptually defined as an understanding of the facts, values, and procedures related to the context and practice of nephrology nursing. The level of domain-specific knowledge possessed by a nephrology nurse ranged from superficial (non-expert nurse) through to extensive (expert nurse). A nurse's level of

knowledge informed her or him about what to do, when to do it, with whom, when, why and how, and the likely consequences of their actions. Experience, the second conceptual category of nephrology nurses, was conceptually defined as the number, frequency and types of encounters a nurse had with a person with a renal disorder and its associated treatment. A nurse's experience was on a continuum ranging from limited (non-expert) through too vast (expert). Experience specifically provided the nurse with opportunities to observe and practice what to do, with what, why, to whom, when, where and how.

In this study, skill was conceptualized as the demonstration or actual performance of nursing actions. Skills were influenced by knowledge, experience and to a lesser degree, focus. Skills were acquired through continued practice (i.e., exercise) and from feedback (i.e., explicit and implicit) for a given task situation. In particular, skills were a reflection of practical ability, motivation, intellect and the nurses' ability to process, store and retrieve information. Skill levels ranged from non-expert nurses who practiced in a restricted, limited and rule-bound manner through to expert nurses who clearly demonstrated autonomous, self-directing and flexible nursing actions.

The fourth conceptual category of nephrology nurses' practice was termed focus. This category explains the nurses' centre of attention or what they concentrated on while they were undertaking nursing activities. The focus ranged from inexperienced non-expert nurses concentrating predominantly on the task at hand (e.g., cannulation of a fistula) to viewing actions (and their possible consequences) more broadly, globally and holistically (expert nurses).

Non-Expert Nephrology Nurses

Non-expert nephrology nurses were not proficient in this specialised area of nursing: that is, their understanding of what it is to be a nephrology nurse and how to practice nephrology nursing is limited. Non-expert nurses possessed relatively little domain specific nursing knowledge, and they tended to rely on general nursing knowledge. The extent of domain-specific (nephrology) knowledge of non-expert nurses was apparent during observation episodes and, then in the subsequent interviews, in which questions were asked directly relating to what was observed. Many of these questions probed for nephrological bases for practice and this revealed that non-expert nurses repeatedly relied on general or non-specialised nursing knowledge to support their practice. As a result of possessing only superficial nephrology nursing knowledge, the non-expert nurses frequently provided sketchy or insufficient rationales for their practice, and their responses when interviewed were often incorrect or revealed knowledge gaps. For instance, one nurse who, although she had many years experience as a nurse, had only a few months nephrology nursing experience viewed the purpose of testing urea and creatinine levels in haemodialysis patients as assessing 'how much kidney function remained' (Alexis). Urea and creatinine levels can reflect kidney function in the normal person but in renal units, these tests are routinely conducted to determine the adequacy of haemodialysis treatment.

It is during this stage that non-expert nephrology nurses learn the ward routines, begin to understand typical patient issues or problems that arise, and what nursing actions to implement, and can start to identify the rationales underpinning those actions. They are

learning what to do, when to do it, with what, with whom, where and how to do it by observing other, more experienced nurses and by practising. These nurses recognised that their short length of experience in nephrology nursing limited their ability to practice. The length of experience tended to dictate the type of nursing activities non-expert nephrology nurses could undertake and, generally, these included ordinary, routine nursing activities. Cannulation of a fistula was a typical example of a situation in which non-expert nurses needed to gain significantly more experience. They were only allowed (by expert nurses) to cannulate "easier" fistulae before moving onto cannulating increasingly more difficult ones. One non-expert nurse remarked during an observation period that she would not cannulate the next patient as he has a new fistula and 'no one has been allowed to cannulate him except [an expert nurse]' (Judy). Later, during the subsequent interview, she explained the reason why she was not allowed to cannulate that patient's fistula. 'I haven't cannulated a brand new fistula as I don't have enough experience'.

Non-expert nurses were also easily distracted from what they were doing. In the middle of completing a task, they would stop what they were doing and rush off to do something else only having to come back to finish the first activity. It was readily apparent when observing these nurses that they seemed flustered and disorganised. During interviews questions relating to how non-expert nurses organised their workload invariably evoked responses such as that they felt "rushed," "not organised" and that providing nursing care in busy periods was difficult. One non-expert nurse remarked

> I just sometimes feel like people going around their work so peacefully and comfortably and doing things, you know, relatively fine and then I just seem to be running around in circles (Helen).

Non-expert nurses, felt insufficiently competent to perform many specialised nephrology nursing tasks. They were in the process of acquiring basic (or routine) nephrology nursing skills. They were learning how to apply existing and newly acquired knowledge. Although non-expert nephrology nurses believed that the focus of their attention was on the patient, it became apparent during observational data collection that their focus was clearly on *trying to complete essential nursing tasks*.

> My focus was basically to try and get the medications done and maintain all the proper charts and, you know, do fistula obs[ervations], also BSL's [blood sugar levels] and giving insulin, and complete the fluid balances (Alexis)

The length of time spent in the first stage of expertise acquisition was dependent on a number of influencing factors such as breadth and depth of domain knowledge, number and frequency of encounters with people with renal disorders, and aptitude for nephrology nursing. Several expert nurses commented that having other expert nurses around them when they first became a nephrology nurse was crucial to being provided learning opportunities to acquire nephrology nursing expertise. Expert nurses recognise this potential to become an expert and respond by providing more opportunities to learn from increased exposure to, or encounters with, increasingly more complex clinical

situations and skills. Being recognised by expert nurses as having an aptitude for nephrology nursing was necessary for the progression of the nurse to the next stage. For instance, Norma reflects on expert nephrology nurses who recognised her potential to develop into an expert nurse early in her career and who provided her with learning opportunities.

> *Luck's the main* [thing and] *timing, I started off with a good nurse educator, a good clinical nurse consultant and a brilliant nursing unit manager of dialysis who all in some way or other, have taken me under their wings and sort of shaped me*.

Experienced Non-Expert Nephrology Nurses

In the second stage the nurse is an experienced non-expert nurse. Their routine nursing practice has become fluid, rapid and automatic. Routine nephrology nursing has become easier as most tasks are very familiar, demanding less concentration to perform them. Proceduralisation of underpinning knowledge and skill has occurred and, at times, this makes it difficult to distinguish between the practice (i.e. observable skill performance) of an experienced non-expert and that of an expert. Experienced non-expert nurses have gained more specialised nephrology nursing knowledge from a number of sources including formal post-graduate nephrology nursing courses and informal, on-the-job learning. Experienced non-expert nurses were able, in more obvious ways, to integrate the routine skills with more sophisticated theoretical knowledge. Undertaking a formal nursing course in the specialised domain of nephrology nursing, while not a necessary criterion for moving into the experienced

non-expert stage, fast-tracked those nurses who completed it. A nurse, who has completed such a course, would have been exposed to all areas of nephrology nursing which would not necessarily have been the case if the nurse only worked in one area (e.g. haemodialysis unit). When questioned during interviews, all nurses recognised the importance of undertaking a formal course of study in nephrology nursing; non-experts believed the course would contribute to their ability to understand what they were doing, and experienced non-expert and expert nurses believed that it actually had done so. In particular, experienced non-expert nurses, reflecting back on the value of having completed a nephrology nursing course, agreed that the course influenced their nephrology nursing abilities to a great extent.

> *It gives you the ground work; yes I think it's certainly helped. I know before I did the certificate you think, oh compared to some of the* [staff] *you're reasonably experienced, what you would class as an experienced nurse, but I did learn a lot on the course and I think doing the course you realise how little you do know* (Sam).

By this stage nurses have acquired adequate experience and were very good at "doing" or exercising many routine skills required of nephrology nurses. Greater opportunity to practice (i.e. repetition) assisted in developing their skills and provided time to develop strategies to avoided problems for patients.

> *I guess it does come down to experience too, I've been doing* [cannulation] *a long time…Because like I said 'cause I've needled* [this patient] *and a lot of the others so many times like you do know their access and you just get this instant visual that you know what's going on inside there* (Leonie).

Repetition of particular nephrology nursing skills developed automaticity and freed up cognitive functions for other aspects of their work. Their focus was devoted less on performing individual tasks and shifted toward *making things easier* for themselves while undertaking these routine skills.

> No, well I suppose there's certain routine that I try…and make things easier…Every shift would have routine things that we do … you've got a certain routine and you find things would flow along a lot quicker, a lot better (Stacey)

Experienced non-expert nurses were able to guide and direct less experienced nurses in routine nephrology nursing care activities and to cope with most of the patient issues that arose. *Beginning to take a leading role* reflected far more than being a shift team-leader, which was commonly performed by nurses in all three stages; it was a leadership role in terms of being a resource for other nurses as well as being a valuable and reliable team-member. For instance, Leonie, who on this occasion was not the team-leader, prioritised not only her own workload but also that of the entire dialysis unit. She did this by being able to focus her thoughts and actions on a wider range of activities so that the unit was able to function optimally.

> *Well you just prioritise, like this morning…in the back of your head you've got this man that you need to dialysis cause and he's a priority, and so you know that you put all the other patients on first* [i.e., get their haemodialysis treatment started] *and just be prepared, organised* (Leonie).

Progression to the final stage of expertise acquisition could only be achieved when several prerequisites had been satisfied. These were conceptualized as recognition of expertise [by others], having an obligation and commitment to and having motivation for and enjoyment of nephrology nursing. The non-expert nursing data did not demonstrate any of these prerequisites, that is, it could not be coded into any of these categories. Data from experienced non-expert nurses could be coded into these prerequisites in a limited way. Expert nursing data, in contrast, could be readily coded into all of these categories; they were seen frequently during observation episodes and were referred to frequently during interviews.

By having a *motivation for and enjoyment of nephrology nursing*, nurses were able to develop an obligation and commitment to people with renal failure. For one expert nurse "attitude [was] a big thing [and] if you've got a bad attitude you can't be an expert really, cause you haven't got that insight" (Sandra).

Expert Nephrology Nurses

The third and final stage is the expert nephrology nurse stage. The entire focus of nurses in this stage was on achieving high quality patient care for people with renal failure. Expert nurses possessed extensive knowledge and vast experience which enabled them to be self-directing in their practice. Expert nephrology nurses have developed extensive knowledge from both formal and informal learning opportunities. This provided greater knowledge to support their practice (rationales) and allowed them to be at the forefront of nephrology nursing.

> Oh it depends on what [type of peritoneal] membrane you've got. You might increase the volume, maybe change them round to different percentage of glucose, maybe change the times of the exchanges, maybe shorter dwells or longer dwells, maybe they might be more suitable to CCPD [Continuous Cycling Peritoneal Dialysis]. At least you know what you're dealing with and how you can change what your options are (Sam).

Secondly, experiential learning from the many years spent performing nephrology nursing skills has provided them with precise knowledge about what to do, when to do it, with what and how to do it. Having more experience provided expert nurses with a positive feedback loop in which experience increased confidence in the practice of nephrology nursing; as they developed more confidence, the more advanced nursing they undertook (and were allowed to undertake). Eventually, as experience in dealing with multiple patients and situations increased, expert nurses come across relatively few situations which they had not experienced previously. That is, for these nurses:

> A lot of the time [it's not new]. I mean usually its things you've seen and [non-expert nurses] haven't…so it's that and experience and, you know, you sort of think along the right lines while you're working, whereas they are not thinking…[It] sort of automatically [comes to me, I] don't think about it, …so that is really experience together with theoretical knowledge I suppose (Prue).

Exercising advanced nephrology nursing skills, the third characteristic, was a function of: firstly, the recognition of expertise by patients, other nurses and medical staff:

> Patients feel that it's you who has made a difference rather than any other nurse, I mean you build up a rapport and people get to trust you so that it does become your expertise that makes the difference (Fran).

In addition, expert nurses felt an obligation and commitment to their patients and other nurses (see below) and they were the only ones in this study who consistently demonstrated these features which enabled them to blur the boundaries of nursing practice and optimally manage the workload of the renal unit

> They [doctors] trust us to change medication, to cease medication if we thought it was appropriate especially when people are new to dialysis and you have to wean them off certain tablets when they start (Sandra)

The final characteristic, which was related to their sense of obligation and commitment, revealed the different focus of attention of expert nephrology nurses by comparison to other nurses in this study. Expert nurses were *patient-focused* in their practice. They regarded that being there and keeping a close eye on were important strategies within their practice to protect patients and to provide quality nursing care.

> I mean basically it all centres around the patient, without the patient you've got no unit, no staff, no anything... everything you do for in terms of planning and staffing and managing, everything basically in the end comes back to patient centred practice (Prue)

DISCUSSION

The findings of this study are consistent with extant nursing literature related to expertise acquisition and exercise, particularly with respect to the role of domain-specific knowledge, experience and feedback-governed practice (Benner & Tanner 1987, Reischman & Yarandi 2002), experience (Ericsson, Krampe & Tesch-Romer 1993, Radwin 1998, Fairweather & Gardner 2000) and feedback-governed practice (Charness, Krampe & Mayr, 1996, Sloboda, 1996, Thomas & Thomas 1999). Importantly, however, it also adds to this literature, particularly in relation to the importance of expertise recognition in the exercise of expertise (Bonner 2003); the experts' blurring of boundaries (Bonner & Walker 2004) to streamline and facilitate care; and, focus of care.

In relation to nursing's understanding of expertise acquisition, this study identified that expertise is acquired in a three-stage process; namely non-expert, experienced non-expert and expert stages. Each stage consisted of four interrelated characteristics which simultaneously influenced the level at which the nurse practiced and demonstrated the process of expertise acquisition. These characteristics were knowledge, experience, skill and focus. In addition with the assistance of each characteristic, a thorough explanation of their practice at each stage was described. Finally, the data revealed

personal attributes which, in combination with increased knowledge, experience, skill and focus, would explain the transition from one stage to the next.

Data analysis in this present study supported only three stages rather than five (Bonner 2001). This is consistent with other literature on the nature of expertise acquisition (Fitts & Posner 1967, Bereiter & Scardamalia 1993, Anderson 1995). According to Bereiter and Scardamalia (1993), the Fitts and Posner phases of skill acquisition characterise all forms of learning. They suggest that pattern learning and proceduralization constitutes a process through which the novice and experienced non-expert as well as the expert will progress. Whereas Benner's (1984) seminal research on nursing expertise which applied and adapted the Dreyfus brothers' (Dreyfus & Dreyfus 1986, 1996) model of expertise acquisition suggests that a person usually passes through five levels of relative skillfulness (novice, advanced beginner, competent, proficient and expert).

The non-expert stage clearly had similarities to Benner's novice and advanced beginner levels. This was apparent in their degree of knowledge and experience in nephrology nursing. Benner (1984), for instance, describes novice nurses as using context-free rules to guide action, the action being extremely limited and inflexible. During the present study, it was apparent that non-expert nephrology nurses consistently followed the rules previously learned in general nursing (i.e., *played within the boundaries*) because they had been taught that it was safer to do so and because they lacked sufficient domain-specific knowledge to deviate from them. The experienced non-

expert stage shared similarities with both the competent and proficient stages. Experienced non-expert nephrology nurses had learned, integrated and practiced nursing actions, and were capable of seeing beyond the immediate task to its broader situational context. Finally, the expert nephrology nursing stage was consistent with Benner's expert stage. In particular, expert nurses tended not to come across completely new situations, issues or events; most clinical situations or aspects of situations have been experienced previously (i.e., *not a lot* [was] *new*).

This difference in the number of stages apparently required for expertise acquisition is probably associated with the previous nurse training of 'beginner' nephrology nurses. These nurses brought and applied a wealth of general nursing knowledge to their early experiences of nephrology nursing and this could well have expedited their acquisition of domain-specific nephrology nursing knowledge. In an important sense, therefore, our respondents had an advantage over Benner's novices who had no previous nursing knowledge to draw on.

Secondly, the three stage process of expertise acquisition in nephrology nursing explicitly suggests that expertise is acquired systematically due to the nurse gaining additional knowledge, experience and skill, and a changing their focus of attention from tasks to the patient. The transition from one stage to the next has not been previously described in the nursing literature. In particular, the study suggests several personal attributes are required to transit from one stage to the next. An aptitude for nephrology nursing was needed to move from the non-expert to the experienced non-expert stage.

Recognition of expertise, having an obligation and commitment to, and having a motivation for and enjoyment of nephrology nursing were additionally needed to move from the experienced non-expert to the expert stages.

Benner (1984) in her model of expertise acquisition, however, only suggests that the process of transition from one level to the next is based on experience which is gained over time. Time, according to Benner, will assist in progressing the nurse from being a novice to a competent nurse, and this time is 'typified by the nurse who has been on the job in the same or similar situations [for] two to three years' (p. 25). Similarly, she suggests that progress to proficient performance takes three to five years, and that an expert level performance takes, greater than five years. Having spent more time in nursing is not the only means of moving from one stage to the next. As someone gains more experience, their memory is filled with cases or examples upon which to draw to solve problems. The amount of time an individual may take to develop expertise is related to its complexity, the amount of exposure to the activity and repeated practice of it (Fitts & Posner 1967).

In terms of adding to the current nursing literature on expertise, this study has identified two important findings. Firstly, the centrality of the recognition of expertise was a necessary feature for the exercise of expert practice. That is, expert nephrology nurses could only exercise their advanced nursing skills when others recognised them as having expertise (Bonner 2003). Secondly, only expert nephrology nurses blurred the boundaries of professional nursing practice. They did this by shifting into medical

domains in the areas of prescribing, dispensing and ordering of pathology tests when required to ensure patient safety and well-being. Non-expert nurses did not cross these professional boundaries. This finding concerning the blurring of boundaries is consistent with those of Benner (1984), Conway (1998) and Tye and Ross (2000).

In addition, this study has increased understanding of what a nurse, at various stages of expertise acquisition, focuses on when giving nursing care. Specifically, it provided evidence of a nurse's focus of attention and how this changed as the nurse acquired expertise in nephrology nursing. Non-expert nurses were task-focused because they had proceduralised sufficient domain-specific knowledge to enable them to concentrate on similar or new tasks (Little 2000). Experienced non-expert nurses had proceduralised much of the routine practice required of a nephrology nurse and this had freed up some of their attention for deployment to other, less familiar task situations. This provided them with additional time to think about and plan their actions; typically, their planning focused on making things easier for themselves. To our knowledge, this study was the first to identify this practice focus of experienced non-experts. Expert nurses, by comparison, were entirely focused on the provision of optimal nursing care to people with renal disorders. Their focus of attention, while seamlessly integrating technology into everyday practice (Walters 1995), was the patient but this did not exclude attention to other nurses. Expert nurses simultaneously devoted attention to the ways other nurses practiced in order to guide and support them to ensure that all nurses in the renal unit provided optimal nursing care.

Finally, the present study has extended the discipline's understanding of skillfulness by revealing that skills are a more generalized ability or expertness which came from or was learned from practice and experience. This definition diverges from existing literature in which skills tend to be narrowly defined as the performance of tasks. To date, the nursing literature is replete with studies of novice-expert differences in the performance of particular nursing skills such as pressure sore treatment (Lamond & Farnell 1998), pain assessment and administration of analgesia (Hamers et al 1997) and why an infant is crying (Holden & Klinger 1988). Nephrology nursing, however, takes place in situations of uncertainty and is more complex than the ability to perform individual tasks. Expert nurses, in particular, exercised advanced levels of flexible skillfulness which allowed them to deal with a range of clinical/management situations simultaneously.

Study Limitations

This study was designed to be descriptive and theory-generating. The findings, however, cannot be generalized as the sample was confined to one renal unit and consisted of a small number of participants. This implies that the findings may not be fully applicable to other nephrology nurses, other renal units or more widely in other fields of nursing. Nevertheless the findings can be verified as they provide an important reference point for nurses seeking to examine the practice of expert nurses.

CONCLUSION

Using grounded theory methods, this study explicated a three stage process of the way in which expertise is acquired and exercised by nephrology nurses in New South Wales.

Of significance to nursing, it identified expertise as a function of four interconnected characteristics, namely, knowledge, experience, skill and focus, each of which alters during the acquisition process. Secondly, two unique features of expert nursing practice were revealed during this study; these were recognition of expertise and blurring the boundaries. These features, in particular, warrant further research to establish if recognition of expertise exists in other areas of nursing, and to what extent it influences expert practice.

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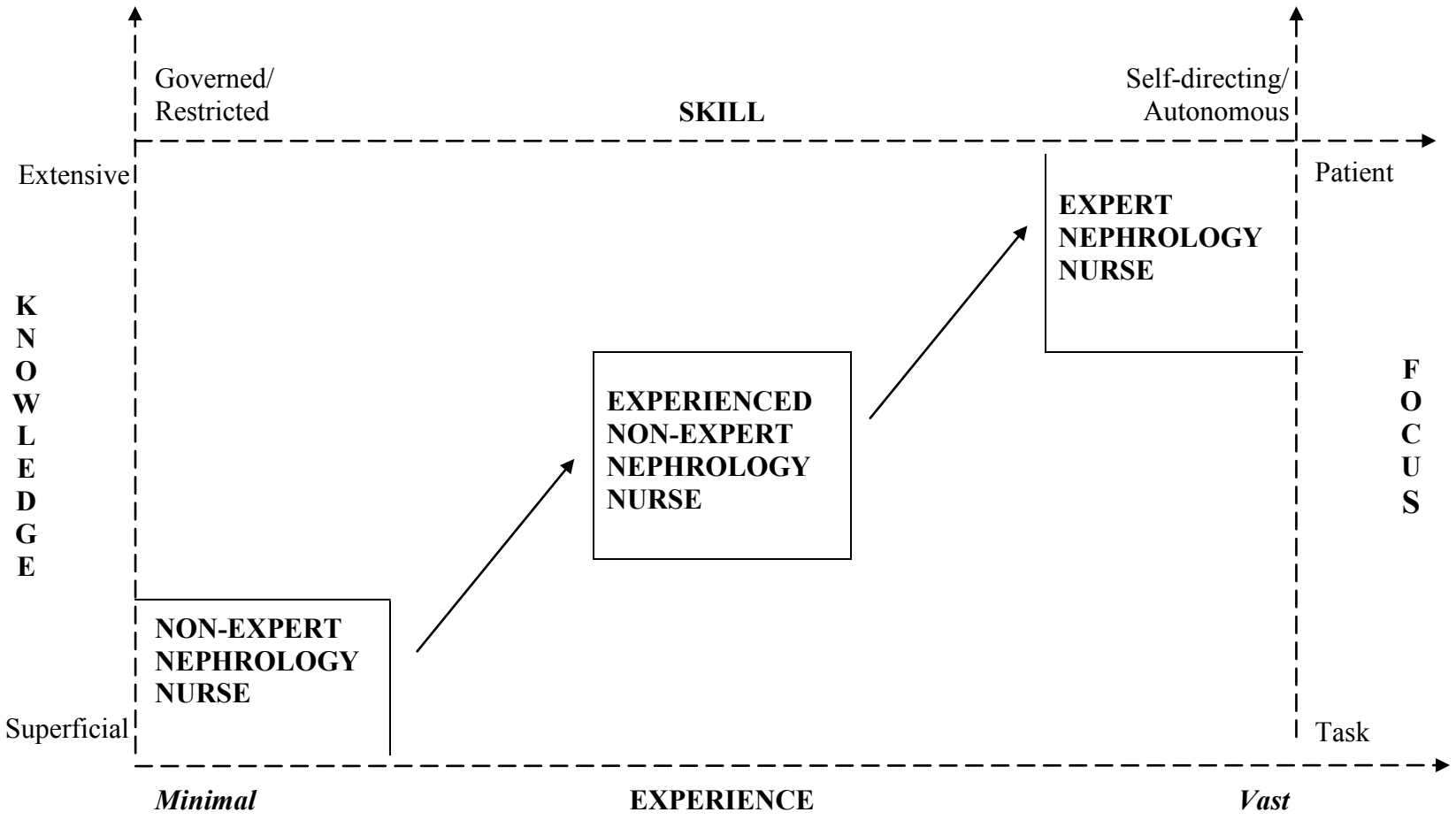
Table 1: Participant Selection Criteria

ATTRIBUTE	EXPERT NEPHROLOGY NURSES	NON-EXPERT NEPHROLOGY NURSES
Registered Nurse	• Yes	• Yes
Postgraduate Nephrology Nursing Qualification	• Yes	• No
Length of Nephrology Nursing Experience	• > 5 years in a nephrology area and working permanently in the nephrology unit for at least two days per week.	• < 3 years in a nephrology area and working permanently in the nephrology unit for at least two days per week.
Level of Practice	• Rapidly and effectively copes with multiple complex patient care demands. • Works independently accepting accountability and responsibility for practice.	• Needs assistance with complex patient care. • Follows rules and needs guidance from other nurses to perform.
Personal Characteristics	• Respected by peers and others. • Role model. • Supports less experienced staff. • Aware of the needs of the whole unit. • Professionally active. • Effective communication skills. • High level of assessment skills. • Accurately and efficiently performs nursing activities.	• Unable to meet **all** of the expert personal characteristics.
Peer Rating	• Considered an ***expert*** nephrology nurse	• **NOT** considered an expert in nephrology nurse

Diagram 1: Acquisition and Exercise of Nephrology Nursing Expertise



LEGEND:

Indicates continuing domain

Factors influencing movement into next stage