A Comparison of Activities Undertaken by Enrolled and Registered Nurses on Medical Wards in Australia: An Observational Study

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Abstract

Background: The past decade has seen increasing patient acuity and shortening lengths of stays in acute care hospitals, which has implications for how nursing staff organise and provide care to patients.

Objective: The aim of this study was to describe the activities undertaken by Enrolled Nurses (ENs) and Registered Nurses (RNs) on acute medical wards in two Australian hospitals.

Design: This study used structured observation, employing a work sampling technique, to identify the activities undertaken by nursing staff in four wards in two hospitals. Nursing staff were observed for two weeks. The data collection instrument identified 25 activities grouped into four categories, direct patient care, indirect care, unit related activities and personal activities.

Setting: Two hospitals in Queensland, Australia.

Results: A total of 114 nursing staff were observed undertaking 14,528 activities during 482 hours of data collection. In total, 6,870 (47.3%) indirect, 4,826 (33.2%) direct, 1,960 (13.5%) personal and 872 (6.0%) unit related activities were recorded. Within the direct patient care activities, the five most frequently observed activities (out of a total of 10 activities) for all classifications of nursing staff were quite similar (admission and assessment, hygiene and patient/family interaction, medication and IV administration and procedures), however the absolute proportion of Level 2 RN activities were much lower than the other two groups. In terms of indirect care, three of the four most commonly occurring activities (out of a total of eight activities) were similar among groups (patient rounds and team meetings, verbal report/handover and care planning and clinical pathways). The six unit related activities occurred rarely for all groups of nurses.

Conclusion: This study suggests that similarities exist in the activities undertaken by ENs and Level 1 RNs, supporting the contention that role boundaries are no longer clearly delineated.

What is already known about this topic

- Increased patient acuity and decreased length of hospital stay have intensified nurses' work in the acute care setting.

- Large shortages of RNs are predicted for the future.

- The work sampling technique has been used to document the activities undertaken by nurses in hospitals.

What this paper adds

- The actual activities undertaken by ENs and Level 1 RNs are not particularly different, suggesting a blurring of roles.

- Almost half of the nurses worked part time, which may have important implications for continuity of care.

- Almost 50% of the activities undertaken by nursing staff were indirect patient care activities, undertaken away from the patient's bedside.

- Nursing staff are spending about 25% of their time in various forms of team communication.

Introduction

The past decade has seen increased patient acuity and shortened lengths of stays in acute care hospitals (Australian Institute of Health and Welfare (AIHW) 2006a; Graf et al., 2003), resulting in an intensification of the work undertaken by nursing staff in hospitals. This intensification has been compounded by the proliferation of health care roles, and a blurring of skill boundaries (Crossan and Ferguson, 2005; Jones and Cheek, 2003; Spilsbury and Meyer, 2001). Skill mix is a broad term that refers to the mix of staff in the workforce and can also refer to the combination of skills available at any one time (Buchan and Dal Poz, 2002). In recent years, administrative databases and chart audits have been used to demonstrate an association between workload, skill mix and patient outcomes (Aiken et al., 2002; Blegen et al., 1998; Needleman et al., 2002) however less is known about the activities of various levels of workers at both the individual and ward level. This study examined the care delivered by registered nurses (RNs), enrolled nurses (ENs) in acute medical wards in two Australian hospitals. The findings provide insight into the similarities and differences in the work undertaken by various levels of nursing staff. Such information may be useful to those responsible for planning nursing rosters with an appropriate skill mix and to individuals who are considering the areas of work in which they are most suited to work.

Background

A number of studies have examined the work performed by the nursing workforce in acute care hospitals. For example, Urden and Roode (1997) examined the activities undertaken by RNs and Licensed Practical Nurses (LPNs) in one hospital in the United States. Activities were separated into five categories of activities; direct care (patient care activities in close proximity to the

patient), indirect care (activities related to patient care but undertaken away from patients), unit related care (clerical work, education, meetings etc), personal (i.e. breaks) and documentation. Urden and Rood (1997) identified RNs and LPNs were spending 37% and 36% of their time on direct and 22% and 24% of time on indirect patient care activities. More recently, Lundgren and Segesten (2001) examined RNs' activities on one medical-surgical ward in Sweden and found similar patterns for direct care but slightly more indirect care and unit related activities than Urden and Roode (1997).

Duffield and colleagues have undertaken several studies of the activities of Australian hospital nurses (Duffield and Wise, 2003; Duffield et al 2005; Pelletier et al., 2005). In one study conducted in a private hospital, Duffield and Wise (2003) found 40% of all nursing staff's activities (including RNs, ENs and AINs) were spent on indirect care and 29% on direct care activities. Another study demonstrated about 7% of all observations by nursing staff in five wards of two Australian hospitals involved documenting care (Pelletier et al., 2005). No studies that considered differences or similarities in the activities undertaken by various levels of nursing staff specifically in the medical ward area were found, however a recent Australian study did survey RN, EN and AIN union members about their work (Hegney et al., 2006). Respondents reported their workload was heavy, the skill mix was often inadequate and the majority were unable to complete their work in the time available. A second recent Australian study showed ENs perceived there to be a lack of differentiation between the RN and EN role (Gibson and Heartfield, 2005).

The work context is generally believed to influence the delivery of nursing care and interventions. A recent study showed that the decisions nurses make are influenced by their working environment (Bakalis and Watson, 2005) and these decisions in turn influence the activities nurses undertake. Organisational processes and individual patient characteristics influence nurses' work in medical wards (Latimer, 1998). For example, both assessment and pain management are common practices among medical nursing staff (Dix et al., 2004). Trends such as increasing patient acuity coupled with increasing age and multiple co-morbidities and shortened lengths of hospital stay (AIHW, 2006) may also influence the activities nursing staff undertake in medical wards. The average age of patients admitted to one medical ward in one Australian study was 65 years (Sinclair et al., 2004), thus it is likely nursing staff have had to adapt their work practices to the increasing age levels of their patients. Importantly, empirical evidence for the claim that these patient profile trends influence nurses' work is lacking. Thus, while there is a growing understanding of the impact of skill mix on patient outcomes (Aiken et al., 2002; Blegen et al., 1998; Needleman et al., 2002), how the work of various groups of nursing staff has evolved in the contemporary medical ward settings remains poorly understood.

THE STUDY

Aim

The aim of the study was to describe and compare the activities undertaken by different categories of nursing staff in four medical wards in two acute care public hospitals in Australia.

Method

This descriptive study used the work sampling technique to undertake structured observation of nursing staff in two public hospitals.

Setting and Participants

Hospital A had 580 beds with eight medical wards, each with 28 beds. It employed approximately 1,400 nursing staff at the time of the study. Hospital B had 700 beds with 18 medical wards, each with 30 beds and employed just over 1,750 nursing staff at the time of the study. Two medical wards in each hospital volunteered to participate in the study. Hospital A's two medical wards had a combined average length of patient stay of 8.0 days while Hospital B had an average patient stay in the medical wards of 8.7 days. Nursing staff, including RNs and ENs who provided direct patient care in all four wards were eligible to participate if they worked part or full-time or were in the casual pool that regularly serviced the wards.

In Australia, completion of a three year baccalaureate program, in a university, is required to register as a nurse. In Queensland, there are, typically, three levels of RNs in the ward setting from 7am to 4pm and two levels of RNs after business hours. Level 1 RNs provide and are accountable for direct patient care. Level 1 RNs work in cooperation with the Level 2 RN who oversees and coordinates care and often works as the team leader. Level 3/4 RNs are clinical nursing managers who were excluded from this study because they provide little direct patient care and there is only one per ward, making their data identifiable.

ENs are a second level of nurse, similar to the Licensed Practical Nurse in North America, who work under the direction and supervision of a RN (Australian Nursing and Midwifery Council (ANMC, 2002). They undertake an 18 month program conducted in the vocational training sector [Colleges of Vocational Education and Training (VET) and Colleges of Technical and Further Education (TAFE)], somewhat similar to the community colleges of North America.

Ethical considerations

Nursing staff who agreed to participate signed a consent form. Verbal consent was also obtained prior to each data collection period. The study was approved by both the university and hospitals' human research ethics committees.

Data Collection

The work sampling technique (Finkler et al., 1993; Pelletier et al., 2005) was used in this study. Work sampling gathers data about the work activities performed during a predetermined work unit, such as an hour, or a shift, through observation or the self-report of multiple workers. These measurements are summed and proportions of time spent in various activities calculated (Duffield and Wise, 2003; Hoffman et al., 2003). The underlying premise of work sampling is that multiple, random, intermittent, observations of the work activities of multiple workers provide estimates of the amount and proportions of time spent in various work activities (Finkler et al., 1993). This method is advantageous for measuring nursing work, because it is particularly suited to capturing accurate data about highly variable work, and the activities of multiple workers (Finkler et al., 1993), as is the case for nursing services in hospitals.

While an observation method may itself influence nurses' work patterns, previous studies have shown nurses quickly became used to the presence of an observer and claim the impact is minimal (Ampt et al., 2007; Pelletier and Duffield 2003; Urden and Roode, 1997). An Australian study compared self-reported and observational work sampling techniques in nurses and concluded that the self-report work sampling technique is not as reliable a measure as the observational technique (Ampt et al., 2007). Work sampling, with random intermittent observation, is considered less vulnerable to errors arising from changes in workers' behaviour due to their being observed than are other techniques that use continuous observation such as time and motion studies (Finkler et al., 1993). The randomisation process may relate to the time between observations (Ampt et al., 2007) or to the hours of the day/days of the week during which observations occur (Pelletier & Duffield, 2003).

Data were collected on each ward for the equivalent of 12 hours per day for a 10-day period during winter and spring time of year. The 120 hours of observation occurred over several weeks in each ward due to the randomization process. Data collection occured between 0700 and 1900 hours Monday to Friday and was collected in equal timeframes on all wards. This timeframe was chosen to encompass the busy times for nursing activities. Several research assistants (RAs) were trained in work sampling observation and undertook observation in each ward. Within randomized two-hour periods, work activities were sampled at intervals of 10 minutes. RAs were limited to 2-hour periods of observation to ensure that fatigue did not affect accuracy of observation. These two hour periods commenced on the hour and the RA recorded participants' activities every 10 minutes. Nursing activities were numbered from 1 to 25 and recorded on a chart. Clarification was sought from the nursing staff when the RA was unsure of the exact

nature of the activity, that is the primary activity that the nurse was undertaking at that moment. As all RAs were nurses, this need for clarification was minimal.

Measures

The work sampling data collection instrument and its accompanying definitions, were originally developed in the United States (Urden and Roode, 1997) and have been adapted and validated to more accurately reflect the Australian nursing context (Duffield et al., 2001). Specifically, report writing, discharge notes and charts were included in the indirect care activity rather than a separate documentation category (Duffield et al., 2001). The revised instrument includes four categories; direct care (10 items), indirect care (8 items), unit-related activities (6 items) and personal time (1 item) as well as a data dictionary for each item. The instrument was used with permission. Demographic and clinical experience data were collected using a researcher devised short questionnaire.

Reliability and Validity

Reliability and validity were established for the original work sampling instument (Urden and Roode, 1997) and the Australian version (Duffield et al., 2001). The time interval of 10 minutes between observations was chosen because, although work sampling does not measure duration of individual tasks, sampling that occurs at short intervals increases the precision of work sampling (Finkler et al., 1993). RAs underwent 16 hours training by a person experienced in using the instrument to ensure data collected was both reliable and valid. Training continued until the RAs achieved 90% agreement with the expert. The inter-rater reliability was further confirmed with

spot checks of RA coding, (simultaneous recording of observation by the RA and an expert)
thoroughout data collection.

Data Analysis

Data were entered into a purpose built ACCESS database that included a number of built-in
quality checks. It was then electronically transferred into SPSS version 13. Demographic
characteristics of the medical and surgical nurses are reported as either frequency and percent or
median and interquartile range (IQR) because of the skewed nature of the data. Characteristics
of the medical nurses were compared using either the Chi-square or Kruskall Wallis test.
Activities were analysed descriptively to provide the proportions of time representing each
activity category. Consultation with an expert medical statistician determined that classic
inferential statistics could not be used to compare the activities undertaken by various types of
nursing staff because of a lack of independence in observations (i.e. nurses could be observed
multiple times during the data collection period).

Results

A total of 114 nursing staff, 52 (46%) from Hospital A and 62 (54%) from Hospital B,
participated in the study. Table 1 contains a description of the sample. Level I RNs were
represented in the 20-29 age group proportionally more and ENs were represented in the 50
years and older age group proportionately more than the other two classifications of nurses.
There were no gender differences amongst the types of nurses, with 86% of the total sample
being female. The vast majority of ENs worked part-time whereas more than 75% of Level 2
RNs worked full time. Level 1 RNs were almost equally split between full and part-time work.

Just over half of the total sample had two years of experience or more, and there were no group differences. Table 2 shows the experience level of the participants in the study. There were no differences between different levels of nurses in terms of the years experience in providing patient care, years of tenure in their current ward or years in their current classification.

A total of 484 hours of data was collected on the medical wards, which resulted in 14,528 documented activities. In total, 6,870 (47.3%) indirect, 4,826 (33.2%) direct, 1,960 (13.5%) personal and 872 (6.0%) unit related activities were recorded. Figure 1 identifies the proportion of observed activity categories for the classifications of nursing staff (EN, RN Level 1 and RN Level 2). The bar graph shows proportionately ENs were performing more than double the direct care activities compared to Level 2 RNs and almost 10% more than Level 1 RNs. Level 2 RNs were performing more indirect care activities than the other two groups, and in fact, these activities represented almost 60% of their work. Examining the proportion of activities rather than the absolute frequency of activities provides more insight into the data because both the numbers of staff on the wards and the number of participants in the study varied between units and over time within the same unit. Thus, the proportion of time spent in various groups of activities provides a more meaningful understanding of the activities undertaken.

Tables 3, 4 and 5 display the frequency of observations for the 25 activities for the three groups of nursing staff. Within the category of direct patient care activities, the five most frequently observed activities (out of a total of 10) for all classifications of nursing staff was quite similar (admission and assessment, hygiene and patient/family interaction, medication and IV administration and procedures). However the absolute proportion of Level 2 RN activities was

much lower than the other two groups. It was interesting to note that ENs actually performed admission and assessment more frequently (10.6%) than did either Level 1 RNs (6.6%) or Level 2 RNs (2.5%). Another surprising finding was that the proportion of activities related to hygiene, nutrition and elimination and patient mobility was very similar among ENs and Level 1 RNs.

In terms of the indirect care category, three of the four most commonly occurring activities (out of a total of eight) were similar among groups (patient rounds and team meetings, verbal report/handover and care planning and clinical pathways). A fourth activity, medications and IV preparation were similar for Level 1 and 2 RNs. The fourth activity for ENs, room or equipment set up and cleaning, was actually the most frequently performed activity in this category of activities. It is interesting to note that almost 20% of Level 2 RNs and 10% of Level 1 RNs activities were related to rounds and team meetings. Furthermore, five activities all related to team communication (rounds and team meetings, verbal reports, care planning, progress notes and other communication) comprised a total of 33.1% (n = 4,814) of all observed activities.

The six activities in the unit related category were observed being undertaken most frequently by Level 2 RNs but occurred rarely for all groups of nurses (see Table 5). In this category only meetings and administration accounted for more than 3% of any nurse's activity. Finally, the proportion of personal time reflects the coffee and meal breaks that nurses are entitled to take and was very similar between the three groups.

Discussion

A total of 114 nurses from four wards in two hospitals participated in this study. While participants were similar on a number of demographic characteristics, ENs were represented more in the two oldest age groups and Level 1 RNs were represented more in the youngest age group. Further, Level 2 RNs were more likely than the other two groups to work full time. In fact, as is the norm in Australia (AIHW, 2006b) less than half of the total sample worked full time. The effect on continuity of care that may result from this number of nursing staff working part-time is unknown, although the impact may be expressed in the frequency with which all levels of nurses engaged in verbal reports and handovers (see Table 4).

There was surprising consistency amongst levels of nursing staff in the most frequent activities undertaken in the four categories of activities; however, proportional differences between groups were noted. In particular there were great similarities in the activities undertaken by ENs and Level 1 RNs. Other researchers have shown that EN and RN work may be similar. For example, an Australian study of six ENs in the acute hospital sector, using a grounded theory approach identified the theme 'advancing practice' which referred to ENs undertaking the work of the RN (Milson-Hawke and Higgins, 2004). Results revealed when ENs planned to undertake any work-related activities, they would first determine whether the anticipated work was routine or non-routine. If the work was non-routine, they would then question whether they would be 'overstepping the mark' in terms of their ENs' scope of practice if they undertook the activity. If it was overstepping, they would refer the work to the RN. Interestingly, the researchers found the context did influence the ENs' scope of practice. In another Australian study of 48 ENs using the critical incident technique, ENs perceived there to be many similarities between the EN and

RN role (Gibson and Heartfield, 2005). However, given differences in the education of the two groups, it is likely the knowledge that underpins these activities is not the same. This level of sophistication in analysis cannot be determined when using a work sampling methodology. Regulatory authorities, however, recognize clinical practice is dynamic and that context will influence practice (International Council of Nurses, 2004; Queensland Nursing Council (QNC), 2002). Thus, it is common in Australia to consider scope of practice from a decision making framework, open to some interpretation, rather than as a set of absolute rules (Nurses Board of Western Australia, 2002; QNC, 1998).

Overall, about one third of all activities were recorded in the direct care category.   This proportion is similar to Duffield and Wise's (2003) previous Australian work, but somewhat less than what was found in the United States (Urden and Roode, 1997) and Sweden (Lundgren and Segesten, 2001). Admission and assessment, which included physical observations and vital signs, were the most frequently occurring activity for ENs and Level 1 RNs. The finding that more ENs' than RNs' work was associated with admission and assessment was surprising given that the Queensland Nursing Council's Scope of Practice Framework for Nurses and Midwives specifically states that comprehensive assessment of individuals and groups and interpretation of assessment data cannot be delegated to people who are not RNs (QNC, 2005). However this finding that ENs are undertaking activities related to admission and assessment may reflect increased patient acuity and/or complexity of medical patients who are older and have more chronic conditions (Parker, 2004). What is not known is whether the ENs reported their findings to the RNs who were then responsible for interpretation.   Medical nurses, irrespective of their classification, may now be required to spend more time on assessing patients in an ongoing way.

ENs and Level 1 RNs were very similar in terms of the proportions of activity spent on assisting patients with activities of daily living (ADLs) such as hygiene, nutrition and elimination, and mobility. This finding is congruent with Gibson and Heartfield's (2005) finding that ENs perceived there to be a lack of role differentiation between them and RNs. The fact that this study was undertaken in medical wards, where patient groups tend to be older, and require more assistance with ADLs, (Sinclair et al., 2004) may have influenced our results. This finding together with the previous finding, related to admission and assessment activities, raises questions about the levels of delegation and supervision and suggests further qualitative data may provide greater insight into models of care and teamwork being employed in medical wards.

Just under half of all observations related to indirect care, with a fair amount of consistency in the most frequently observed activities. These findings are similar to Duffield and Wise's (2003) work but represent a greater proportion of activity compared to results in the United States (Urden and Roode, 1997). In this study a third of activities revolved around communication amongst the team (excluding patient/family interactions but including doctor/nurse, nurse/nurse or nurse/other hospital worker). These activities may reflect increased acuity and throughput of patients or less continuity of staffing, as previously identified. A recent Australian study of team nursing practices demonstrated building good working relationships, exchanging knowledge with each other and good communications amongst team members were crucial for optimal team functioning (O'Connell et al., 2006) suggesting that time spent in this indirect care activity is both legitimate and important.

It may be that some of the indirect care reflects the changing patient profile. Over the last ten years the in-patient population in medical wards has aged and hospital length of stay has reduced (AIHW, 2006a) and as a result more time is required for discharge planning. Also high levels of indirect care may reflect the fact patient needs are more complex and this coupled with bed shortages, means only those who are very sick are admitted and they are discharged as soon as possible. This requires ward nurses to spend considerable amounts of time on organizing community-based services and coordinating post-discharge care.

Proportionately, within the indirect care category, three differences were noted, and all were expected given the various roles each type of nurse undertakes. First, Level 2 RNs spent about double the time on patient rounds and team meetings as did the other two groups of nursing. Given the fact that these nurses are the team leaders/shift coordinators, this finding is not surprising. Second, ENs spent more time on room and equipment set-up and cleaning, also not surprising and may be the trade off negotiated with RNs for the administration of some medications and monitoring of intravenous fluids/medications which is a role restricted to RNs. Level 1 RNs did spend more time in medication and intravenous preparation than ENs. During data collection we did note that patients in the medical wards were often moved to other rooms to cater for upcoming admissions. With shortages of trained nursing staff, it may be that other ancillary workers may be better used to undertake this activity.

The finding that the three groups were similar in terms of progress/discharge notes and in terms of care planning and clinical pathways was unexpected. Whether these activities have been influenced by shorter lengths of stay or not is unknown. However, the QNC Scope of Practice

mandates that formulation and documentation of a plan of care including establishing the priorities of care must be undertaken by RNs and not delegated to ENs. In this study a lack of differentiation between RNs and ENs in these areas may also reflect the complexity of medical patients, many of whom are elderly, who arrive in hospital with a myriad of co-morbidities (Parker, 2004). It may also reflect the way ENs and RNs work in teams to provide care.

In this study less than 10% of the activities were unit related. Some activities, such as teaching and in-service and meetings and administration, which were the two most frequently occurring activities in this category, seem to be fundamentally important to ensure both quality of care and smooth operations of the service. While the use of nursing staff to perform duties such as stocking supplies, running errands off the unit and environmental cleaning should be questioned in a climate of shortages of staff, fortunately, these two activities were relatively rare. In Urden and Roode's (1997) American study, 4% of RNs activities were unit related in the medical/surgical wards while this category comprised 7% for other nursing staff in the medical surgical wards and up to 17% of time in unit related activity in the emergency ward and birthing units. Given their study occurred almost a decade ago, the differences noted may be a reflection of the changing nature of hospital work, or it may simply reflect a difference in the range of non-ward based support staff provided in the two systems.

The category "personal' related to breaks, and as such, are an accepted part of the time nursing staff are working. Coffee breaks are considered to be an important part of the nurses' work day as this allows them time to ventilate feelings, gain support from colleagues and renew their energy (Lee, 2001). Given that nursing staff are generally allowed 50 minutes of break time

(including coffee and meal break) on any particular eight hour shift, it was expected that about 15% of observations would involve personal activities.

This study had a number of limitations. First, work sampling provides an overview of activities to be documented but it does not reflect every activity undertaken, nor does it identify the proportion of time spent undertaking more than one activity at a time. The reason for this is that it is the primary activity which took the nurse to the bed which is recorded, not the many other activities in which s/he might then undertake while at the patient's bedside. Occasionally, when a participant was undertaking two or more tasks at once it was difficult to distinguish the primary activity, and clarification was required. Second, this technique uses direct observation; however, it is always possible those being observed changed their behaviour because of the study. Third, not all nursing staff on the wards participated in the study. Thus, while the findings provide an overview of the activities undertaken in the specific wards, there is no way of knowing how the 'profile' might have been affected by the inclusion of all staff. However, more than 80% of all eligible staff did participate, so it is unlikely the inclusion of these 'non-participants' would have made a large difference. Finally, because the same nurses were observed multiple times per observation period and were also observed multiple times during data collection, classic inferential statistics could not be used to rule out chance as a reason for the observed differences. While it is possible that random variation may account for the differences, the large number of activities observed across four wards of each type lends weight to the proposition that these were true differences.

Implications and Recommendations

While this study has highlighted some similarities in the activities undertaken by various classifications of nursing staff, the education of ENs and RNs is actually quite different. ENs undertake an 18 month program, half the length of RNs. They are trained in the vocational training sector whereas all RNs are educated at universities. While ENs are taught about things like health assessment and nursing interventions, and it is within their scope of practice to recognise the normal from the abnormal, they are expected to work under the direction and supervision of the RN, only contributing to and not leading patient care. The role of registered nurses is to provide surveillance of patients, to identify when complications or impending complications are likely and to intervene appropriately. To do this effectively requires a highly skilled and educated nursing workforce. It is not and should not be the role expected by ENs as it can potentially lead to 'failure to rescue' (Aitken et al., 2003).

Admission and assessment was the most frequently observed direct care activity. Parker (2004) suggests patients in contemporary medical wards are admitted with complex health problems associated with specializations such as oncology or to control acute exacerbations of their chronic disease, both of which may require more regular assessments of vital signs. In addition, confused elderly patients are often admitted to hospitals and cared for on the medical wards in Queensland. Due to their mental state, these patients can require one-on-one care and regular assessment. Importantly, without the critical decision making skills that underpin assessment activities, it is possible that findings gleaned from assessment activities will not be appropriately acted upon. When considering staffing, it is important to acknowledge the frequency with which this activity occurs and, depending on the skill-mix of the staff, there may be a need to ensure

adequate RNs are available to both analyse and act on assessment data collected by ENs and unlicensed practitioners.

It is possible that actual details of the activities differed. For example, in the direct activity 'procedures', the actual types of procedures was expected to be different, with RNs likely to be performing more wound dressings and ENs performing other types of procedures. Alternatively, it may be that both groups are actually undertaking similar dressings, however the focus for RNs may be on more complex incisional wounds and central lines whereas the focus for ENs may be on more routine care such as uncomplicated pressure ulcers. These differences need to be considered when assigning float or pool staff to work in the areas. Further, staff development activities should be tailored to the context in which the participants' work.

Patient rounds and team meetings was the most frequently observed indirect care activity. In order for nursing staff to participate in an optimal manner, they require a strong knowledge base and good communication skills. When planning staffing and rosters, the extent to which these characteristics are present in the staff as a whole must be considered, rather than simply focusing on the charge nurse's abilities in these areas.

The work sampling instrument used in this study was able to capture a number of different activities, but it may require refinement based on the specific foci of the research. Grouping the work of nursing staff into 25 activities may not provide enough detail about the actual work. For example, admission and assessment activities and oral and intravenous medications are two activities that could be broken down to smaller components. Likewise, a more detailed

breakdown of activities, such as type of procedures, may provide a clearer picture of the work undertaken by the nursing staff. Depending on the aim of future research other adaptations to the instrument may be required.

Conclusion

In conclusion, almost 15,000 activities, undertaken by 114 nursing staff, from four wards, in two hospitals were documented in this study. Almost half of the nurses worked part time, which may have important implications for continuity of care. Of importance was the finding that the actual activities undertaken by ENs and Level 1 RNs are not particularly different, suggesting a blurring of roles.

About 80% of the activities observed related to direct or indirect patient care. However, almost 50% of the activities undertaken by nursing staff were indirect patient care activities, undertaken away from the patient's bedside often out of sight of the patients and their visitors. As approximately 25% of nurses' time was spent in various forms of team communication the relevance, accuracy and timeliness of this communication warrant further investigation. Several important differences in the frequency with which specific activities occurred were demonstrated. These differences may be useful to consider when assigning staff to areas, planning rosters and ultimately when individual nursing staff are deciding on their preferred place to work.

References

Aiken, L. H., Clarke, S. P., Cheung, R. B., Sloane, D. M., Silber, J. H., 2003. Educational Levels of Hospital Nurses and Surgical Patient Mortality. JAMA, 290 (12), 1617-1623.

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J. A., Busse, R., Clarke, H., Giovannetti, P., Hunt, J., Rafferty, A., Shamian, J., 2002. Nurses' reports on hospital care in five countries. Health Affairs 20 (3), 43-53.

Ampt, A., Westbrook, J., Creswick, N., & Mallock, N., 2007. A comparison of self-reported and observational work sampling techniques for measuring time in nursing tasks. Journal of Health Services Research & Policy 12 (1), 18-24.

Australian Institute of Health and Welfare, 2006a. Australian Hospital Statistics 2004-2005, Health Services Series No. 26, AIHW Cat. No. HSE-41, Canberra.

Australian Institute of Health and Welfare, 2006b. Nursing and Midwifery Workforce 2004, National Health Labour Force Series No. 37, AIHW Cat. No. HWL -38, Canberra.

Australian Nursing & Midwifery Council, 2002. National competency standards for the enrolled nurse. Author: Canberra.

Bakalis, N. A., Watson, R., 2005. Nurses' decision-making in clinical practice. Nursing Standard 19 (23), 33-40.

Blegen, M. A., Goode, C. J., Reed, L., 1998. Nurse staffing and patient outcomes. Nursing Research 47 (1), 43-50.

Buchan, J., Dal Poz, M., 2002. Skill mix in the healthcare workforce: reviewing the evidence. Bulletin of the World Health Organization 80 (70), 575-580.

Crossan, F., Ferguson, D., 2005. Exploring nursing skill mix: a review. Journal of Nursing Management 13 (4), 356-362.

Dix, P., Sandhar, B., Murdoch, J., MacIntyre, P., 2004. Pain on medical wards in a district general hospital. British Journal of Anaesthesia 92 (2), 235-237.

Duffield, C., Forbes, J., Fallon, A., Roche, M., Wise, W., & Merrick, E. T., 2005. Nursing skillmix and nursing time: The roles of registered nurses and clinical nurse specialists. Australian Journal of Advanced Nursing 23 (2), 14-21.

Duffield, C., Wise, W., 2003. Tell me what we do? Using work sampling to find the answer. Australian Journal of Advanced Nursing 20 (3), 24-26.

Duffield, C., Wood, L. M., Franks, H., Brisley, P., 2001. The role of nursing unit managers in educating nurses. Contemporary Nurse 10 (3-4), 244-250.

Finkler, S., Knickman, J., Hendrickson, G., Lipkin, M., Thompson,W., 1993. A comparison of work-sampling and time-and-motion techniques for studies in health services research. Health Service Research 28, 577-597.

Graf, C. M., Millar, S., Feiteau, C., Coakley, P. J., Erickson, J. I., 2003. Patients' needs for nursing care: beyond staffing ratios. Journal of Nursing Administration 33 (2), 76-81.

Gibson, T., Heartfield, M., 2005. Australian enrolled nurses have their say – Part 2: Scope of practice. Contemporary Nurse 19 (1-2), 126-136.

Hegney, D., Eley, R., Plank, A., Buikstra, E., Parker, V., 2006. Workforce issues in nursing in Queensland: 2001 and 2004. Journal of Clinical Nursing 15 (12), 1521-1530.

International Council of Nurses, 2004. Position statement scope of nursing practice. Available from http://www.icn.ch/psscope.htm. Accessed 18 May, 2007.

Jones, J., Cheek, J., 2003. The scope of nursing in Australia: a snapshot of the challenges and skills needed. Journal of Nursing Management 11 (2), 121-129.

Latimer, J.,1998. Organizing context: nurses' assessments of older people in an acute medical unit. Nursing Inquiry 5, 43-57.

Lee, D. S., 2001. The morning tea break ritual: a case study. International Journal of Nursing Practice 7, 69-73.

Lundgren, S., Segesten, K., 2001. Nurses' use of time in a medical-surgical ward with all-RN staffing. Journal of Nursing Management 9, 13-20.

Milson-Hawke, S., Higgins, I., 2004. The scope of enrolled nurse practice: A grounded theory study. Contemporary Nurse 17 (1), 44-62.

Needleman, J., Buerhaus,P., Mattke, S., Stewart, M., Zelevinsky, K., 2002. Nurse-staffing levels and the quality of care in hospitals. The New England Journal of Medicine 346 (22), 1715-1723.

Nurses Board of Western Australia, 2002. Advanced skills EN project: Report of the scope of nursing practice project. Author: Perth.

O'Connell, B., Duke, M., Bennett, P., Crawford, S., Korfiatis, V., 2006. The trials and tribulations of team-nursing. Collegian 13 (3), 11-17.

Parker, J. M., 2004. Nursing on the medical ward. Nursing Inquiry 11 (4), 210-217.

Pelletier, D., Duffield, C., 2003. Work sampling: valuable methodology to define nursing practice patterns. Nursing and Health Sciences 5 (1), 31-38.

Pelletier, D., Duffield, C., Donoghue, J., 2005. Documentation and transfer of clinical information in two aged care settings. Australian Journal of Advanced Nursing 22 (4), 40-45.

Queensland Nursing Council,1998. Scope of nursing practice decision making framework. Author: Brisbane.

Queensland Nursing Council, 2005. Scope of practice framework for nurses and midwives. Author: Brisbane.

Sinclair, C., Boyd, K., Sinnott, H., 2004. Advanced practice nurses in Melbourne's hospitals: clinical coordinators in a rapid assessment medical unit. Australian Journal of Advanced Nursing 21 (2), 42-46.

Spilsbury, K., Meyer, J., 2001. Defining the nursing contribution to patient outcome: lessons from a review of the literature examining nursing outcomes, skill mix and changing roles. Journal of Clinical Nursing 10 (1), 3-14.

Urden, L., Roode, J., 1997. Work sampling: a decision-making tool for determining resources and work redesign. The Journal of Nursing Administration 27 (9), 34-41.
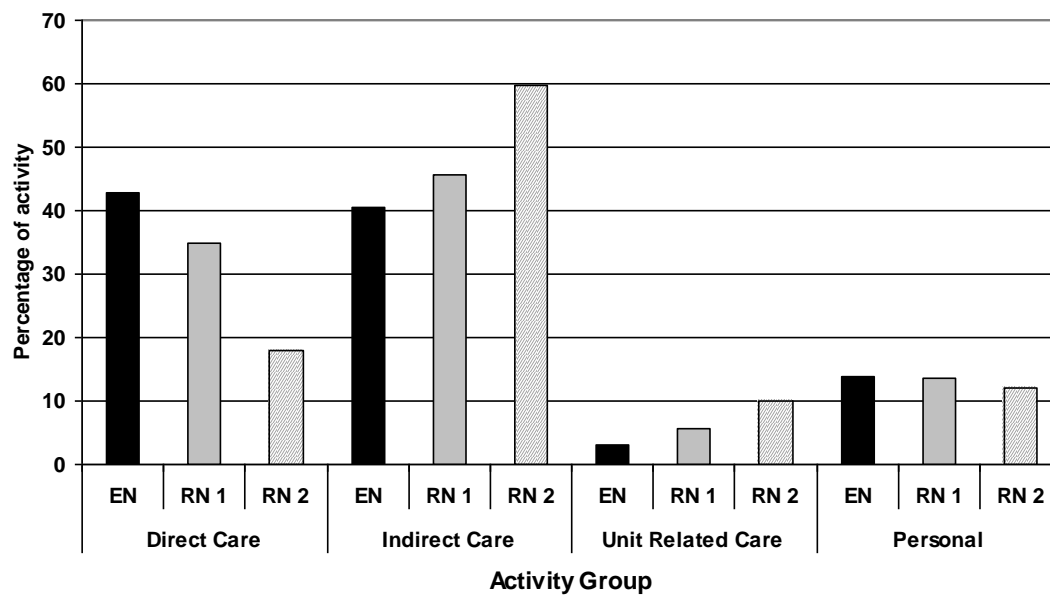
Figure 1: Proportion of Activities Undertaken in Nursing Staff

Table 1: Characteristics of the Sample

Characteristic	Total n (%)	EN n (%)	RN 1 n (%)	RN 2 n (%)	[a]p - value
Age Group					
20-29 years	42 (37.2)	4 (16.0)	35 (46.7)	3 (21.4)	
30-39	35 (31.0)	5 (20.0)	23 (30.7)	7 (50.0)	*0.005
40-49	22 (19.5)	8 (32.0)	12 (16.0)	2 (14.3)	
50 and older	14 (12.4)	7 (28.0)	5 (6.7)	2 (14.3)	
Gender					
Female	98 (86.0)	19 (76.0)	67 (89.3)	12 (85.7)	0.251
Male	16 (14.0)	6 (24.0)	8 (10.7)	2 (14.3)	
Hours of Work					
Full time	53 (46.5)	5 (20.0)	37 (49.3)	11 (78.6)	*0.001
Part time	61 (53.5)	20 (80.0)	38 (50.7)	3 (21.4)	
Experience					
2 years or less	48 (42.1)	8 (32.0)	34 (45.3)	6 (42.9)	0.504
Over 2 years	66 (57.9)	17 (68.0)	41 (54.7)	8 (57.1)	
Total	114 (100.0)	25 (21.9)	75 (65.8)	14 (12.3)	

[a]Chi square test

Table 2: Experience of the Sample

Type of Experience	Total Median (IQR) n = 114	EN Median (IQR) n = 25	RN 1 Median (IQR) n = 75	RN 2 Median (IQR) n = 14	[a]p-value
Years Providing Patient Care	3.0 (8)	5.0 (13)	4.8 (11)	3.5 (7)	0.595
Years In Current Ward	2.0 (5)	2.0 (7)	2.0 (5)	3.0 (5)	0.423
Years At Current Classification	4.8 (11)	5.0 (10)	3.0 (8)	3.0 (6)	0.363

[a]Kruskal-Wallis test

Table 3: Direct Care Activities by Nursing Classification

Activity	Frequency (%)		
	EN	**RN 1**	**RN 2**
1. Admission & Assessment	172 (10.6%)	707 (6.6%)	54 (2.5%)
2. Hygiene	134 (8.3%)	567 (5.3%)	41 (1.9%)
3. Patient/Family Interaction	109 (6.7%)	570 (5.3%)	87 (4.0%)
4. Medications & IV Administration	63 (3.9%)	587 (5.4%)	68 (3.1%)
5. Procedures	62 (3.8%)	569 (5.3%)	55 (2.5%)
6. Nutrition & Elimination	53 (3.3%)	343 (3.2%)	29 (1.3%)
7. Patient Mobility	56 (3.5%)	253 (2.3%)	35 (1.6%)
8. Assisting with Procedures	6 (0.4%)	61 (0.6%)	11 (0.5%)
9. Transporting Patient	22 (1.4%)	44 (0.4%)	14 (0.6%)
10.Specimen Collection & Testing	5 (0.3%)	47 (0.4%)	2 (0.1%)
Total Direct Care	**682 (42.2%)**	**3,748 (34.8%)**	**396 (18.0%)**

Table 4: Indirect Care Activities by Nursing Classification

Activity	Frequency (%)		
	EN	RN 1	RN 2
11. Patient Rounds & Team Meetings	103 (6.4%)	1,013 (9.4%)	427 (19.4%)
12. Verbal Report/Handover	118 (7.3%)	843 (7.8%)	257 (11.7%)
13. Care Planning and Clinical Pathways	120 (7.4%)	736 (6.8%)	158 (7.2%)
14. Room or Equipment Setup & Cleaning	143 (8.8%)	666 (6.2%)	96 (4.4%)
15. Medication & IV Preparation	44 (2.7%)	776 (7.2%)	111 (5.0%)
16. Progress/Discharge Notes	72 (4.5%)	478 (4.4%)	87 (4.0%)
17. Communication & Information	35 (2.2%)	249 (2.3%)	118 (5.4%)
18. Computer – Data entry & Retrieval	14 (0.9%)	147 (4.4%)	59 (2.7%)
Total Indirect Care	**649 (40.2%)**	**4,908 (45.5%)**	**1,313 (59.7%)**

Table 5: Unit Related Care and Personal Activities by Nursing Classification

Activity	Frequency (%)		
	EN	RN 1	RN 2
19. Teaching & In-service	12 (0.7%)	238 (2.2%)	37 (1.7%)
20. Meetings & Administration	6 (0.4%)	101 (0.9%)	75 (3.4%)
21. Clerical	15 (0.9%)	98 (0.9%)	54 (2.5%)
22. Supplies, Check & Restock	5 (0.3%)	79 (0.7%)	41 (1.9%)
23. Errands, Off Unit	4 (0.2%)	63 (0.6%)	8 (0.4%)
24. Environmental Cleaning	6 (0.4%)	22 (0.2%)	8 (0.4%)
Total Unit Related Activities	**48 (3.0%)**	**601 (5.6%)**	**223 (10.1%)**
25. Personal	220 (13.6%)	1,474 (13.7%)	266 (12.1%)
Total Personal	**220 (13.6%)**	**1,474 (13.7%)**	**266 (12.1%)**