TELL ME WHAT WE DO. USING WORK SAMPLING TO FIND THE ANSWER

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ABSTRACT

As Australian hospitals have restructured and work patterns have changed 'multi-skilling' has become a necessary component for health care professionals, especially nurses. To date, there has been little empirical evidence to assess these changes and their effects on nurses and nursing work. This paper will discuss work sampling as a research method to assess what nurses do and how they spend their working day. The results examine nursing activities carried out in a private, not for profit hospital in metropolitan Sydney, Australia, and will be used to highlight the uses of this type of data. Work sampling can, in conjunction with other management tools, prove invaluable for managers.

INTRODUCTION

The Australian health care sector has experienced a decade of constant change to organisational structures and patient care delivery systems within hospitals. In an increasingly competitive market place, health care facilities are no longer being measured as quality service providers based solely on reputation and resource allocation and consumption. Overseas, particularly in North America, great attention has been paid to the workplace and working conditions for nurses in an acknowledgement that the quality of worklife is a significant factor in determining whether nurses stay or leave their positions (Duffield and O'Brien-Pallas 2002). A very important component of a nurse's worklife is what that work actually comprises.

What nurses do in the course of their working day has changed dramatically since Florence Nightingale's time. While the underlying 'essence' of nursing remains, the landscape has changed markedly as a result of new technologies, new roles, new diseases and different patient expectations (Duffield and O'Brien-Pallas 2002). These changes have also seen patient acuity increase and the length of patient stay in hospital decrease. In real terms, this has seen nursing workloads increase and a growing need to re-assess the skill mix of nursing staff required to meet these changing demands. Exacerbating this situation are staff shortages (Aiken et al 2001). Against this developmental background of change it is timely to evaluate what nurses do, using a technique such as work sampling to measure these activities (O'Brien-Pallas et al 2001).

Little recent work has been undertaken in Australia to examine the activities nurses perform during the course of their working day and the time involved in pursuing these activities. Work sampling is an ideal management tool as it is participatory in the sense that it relies on the active involvement of all members of the organisation and provides all managers and staff with useful information on which to base staffing decisions, to argue for the holistic nature of nursing or more importantly, to provide a platform for further research.

This paper will describe the type of information which can be provided from a work sampling study and its uses. Some results will be presented from a study conducted in a large metropolitan hospital in Sydney, but merely to indicate how use of this technique and its results may be effective in the organisational decision-making process.

WORK SAMPLING

The antecedents of work sampling originated within the field of industrial engineering and management. A statistician realised that given the routine nature of the work being undertaken, outcomes similar to those obtained from time and motion studies could be obtained by taking randomly spaced observations of workers' activities during their shift (Abdellah and Levine 1954). However, work sampling differs from time and motion studies in that it provides randomised and regular observations of work, without the account of these activities being skewed or underestimated by more mundane or repetitive activities (Urden and Roode 1997). The technique involves observations of multiple workers at random intervals by independent observers and then recording their observed work activities into predetermined categories during a sample of hours, shifts or days (Prescott et al 1991).

Work sampling is premised on the laws of probability using the assumption that 'a smaller number of occurrences will follow the same distribution as over a longer time period' (Hagerty, Chang and Spengler 1985, p.10). A sample of observations of staff activities can be generalised into a larger snapshot of how staff spend their working days over much longer spans of time (weekly or monthly). However, as Urden and Roode (1997, p.37) note, unlike time and motion studies, 'the exact activity is recorded; actual time spent in activities is not'. Work sampling as a research method is considered by many overseas scholars to be a reliable management tool because it provides the clearest snapshot of staff/skill mix, quality patient outcomes and cost-effectiveness (Bernreuter and Cardona 1997; McNiven et al 1992; McNiven et al 1993; Guarisco et al 1994).

The requirements for undertaking work sampling

The most important requirement for undertaking work sampling is a suitable data collection tool. The tool used in this study was adapted with permission from Urden and Roode (1997) with some modifications for the Australian audience. To undertake a study of this magnitude a project director, well-trained data collectors, and, statistical support are also critical. Almost as critical is support from the organisation (financially and in spirit), a willingness to 'know' the findings and staff consent to participate.

The success of this study was directly related to commitment on the part of the hospital's management to a process of developmental evaluation, a willingness to work towards resolving the issues raised as the study began and a continued desire to involve all staff in the process. The university provided a project director and the hospital provided 19 data collectors for the four weeks of the study (two weeks of data collection randomised over eight weeks). University staff provided training and determined inter-rater reliability.

The study

The tool has been described elsewhere. However, in summary there are four major categories in which 25 activities are measured. The 'direct care' category has 10 activities: admission/assessment; administration of medications/IV therapy; hygiene; specialised procedures; specimen collecting/testing; transporting patients; patient /family interaction; patient nutrition/elimination; patient mobility; and, assisting with procedures. The 'indirect care' category has eight activities: verbal report and handover; room/equipment set-up; medication/IV preparation; progress/discharge notes; rounds and team meetings; communication of information; data entry and retrieval; and, interaction with other internal and external departments or agencies. The 'unit-related' category has six activities: teaching and inservice; checking and restocking of supplies; errands off unit; meetings and administration; clerical duties; and, environmental cleaning. The final category is 'personal time', meal breaks and unclassified time off unit. A schedule outlining all the specific tasks included under each of these 25 activities was provided to data collectors.

All wards and units were used including intensive care and operating theatres. Most staff consented to participate, including agency and casual staff, working between 7am and 7pm from Monday to Friday. These days and times were selected as they were the busiest and would provide the most useful data. The costs of undertaking this study 24 hours over seven days were prohibitive and were unlikely to be justified in terms of providing information sought by this particular healthcare organisation. The categories of staff observed consisted of clinical nurse specialists (CNSs), registered nurses (RNs) and ward assistants (WAs). During the time that this work sampling study was conducted, there were no enrolled nurses employed within the hospital. Data were collected at 10-minute intervals and data collectors usually undertook this collection in two to four hour blocks. There were 53,240 observations across the entire hospital which provided a robust sample for data analysis.

As indicated earlier, the purpose of this paper is to provide some results from a work sampling study merely as a vehicle to highlight the potential uses of such information in decision-making. A great deal of data can be obtained from a study such as this which is particularly useful for managing at the hospital and unit levels. The discussion in the paper is shaped around four major domains, aggregated information provided about the whole hospital, information by staff classification, information at the ward level and information at the activity level. The latter (by activity level) actually

provides information at the ward level by staff classification as well, and is thus most useful.

Hospital-wide information

Data provided at the institutional level consisted of an overview of the amount of time spent by all staff in each of the four major categories of activities [direct, indirect, unit related and personal] (see Figure 1) and in each of the 25 individual activities for all staff in the 'direct care' category (see Figure 2). It is important when assessing the findings from work sampling studies relating to nursing work, that health care managers take into consideration the observations recorded are only those which took the nurse to the patient bedside, not activities undertaken at the same time.

Figure 1: Pie chart of all staff activity in four categories.

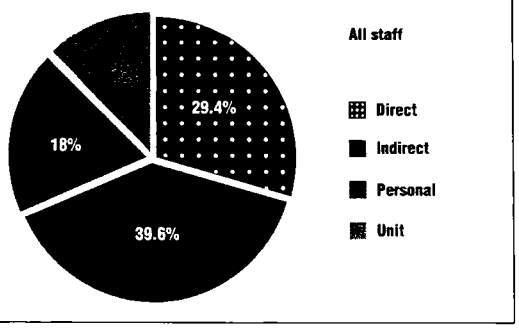
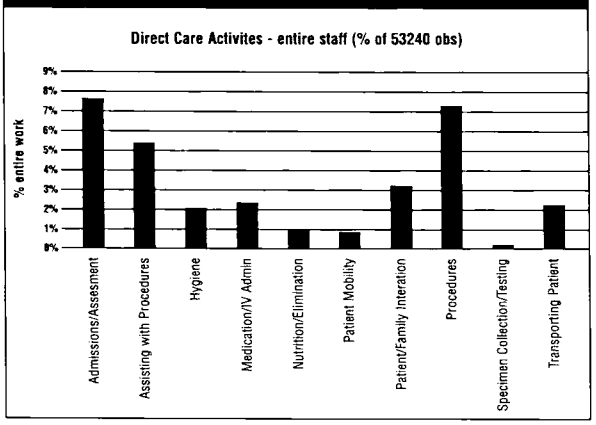


Figure 2: All staff by individual activity in direct care category.

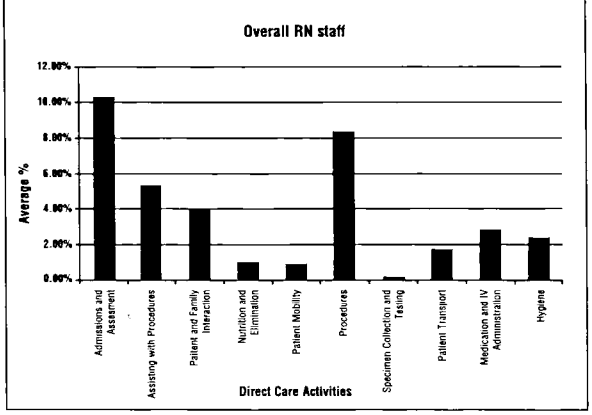


Data of this nature are useful for directors of nursing or other nurse and non-nurse executives. It provides a snapshot of the total type and amount of nursing activity undertaken in the institution. This information may facilitate benchmarking with other institutions (comparing the amount of time spent with families in a private institution versus the amount of time spent by nurses in the public sector in the same activity). It provides information which may be useful for marketing purposes (for example the amount of time spent in teaching and inservice activities for staff); information which may facilitate changes to support staff provision (the amount of clerical work being undertaken by nursing staff). Importantly, it also provides information on the 'totality' of the range of activities undertaken by nurses in their workday.

Results presented by skill level

The second cluster of hospital-wide data which can be provided is by staff classification, in this case the time spent by RNs, CNSs and WAs in each of the four major categories of activities and in each of the 25 individual activities (see Figure 3 as an example of results for RNs).

Figure 3: All RNs by individual activity in direct care category.



Again this is information which is very useful at the institutional level as it provides data on which to make a determination of the appropriateness of staff deployment across the hospital. The results may validate perceptions of what is known but may also provide insight into what is not. For example, if CNSs were found to be spending large amounts of time transporting patients or attending meetings and very little time in coordinating care, questions might be raised about their cost-effectiveness. If a WA was observed setting up sterile procedure trolleys or attempting medication administration, professional and legal issues may be raised.

Unit level information

Results can also be analysed at the individual ward or unit level. First of all, information can be provided about the totality of work observed for each unit (the amount of time all staff in the ward spend on each of the four categories of activity) or for a single classification of staff such as RN (see Figure 4). As the time each activity is undertaken is recorded this information can also be provided across the observed time - although aggregated to an 'average' day (see Figure 5).

Figure 4: Ward X percentage of RN staff activity by major category.

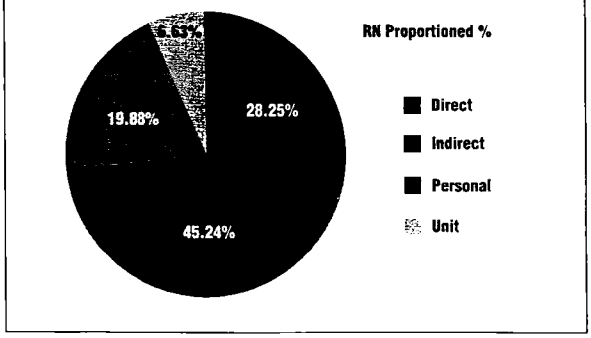
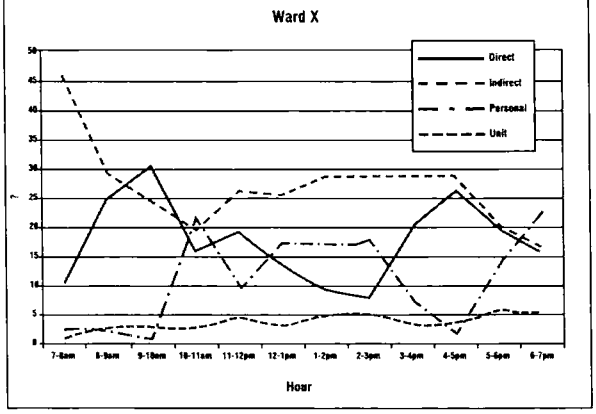
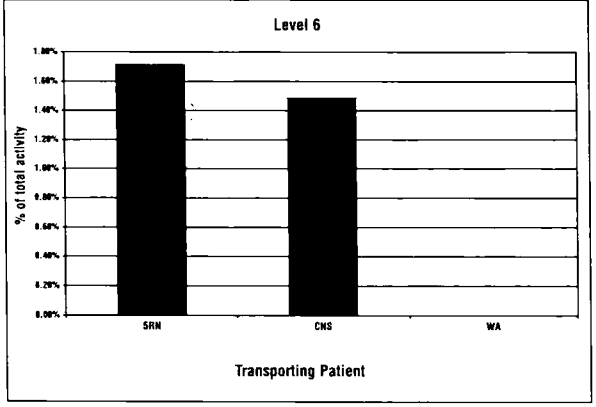


Figure 5: Hourly activity by major category for RNs by ward.



This information is useful for both the director of nursing and nursing unit manager and allows comparisons to be made between staff activities throughout the day. The data on hourly peaks and troughs may for example, validate perceptions which are well 'known' but not supported with data - for example, that CNSs are much busier in 'indirect care' activities from 6-7pm than RNs who are more involved in 'direct care' activities in those hours. Alternatively, this sort of information may provide new insight. For example, WAs may have extended 'troughs' with large amounts of 'personal time' at the beginning and end of the day. This information may facilitate rostering, staff employment and deployment decisions.

Figure 6: RNs by individual activity by ward.

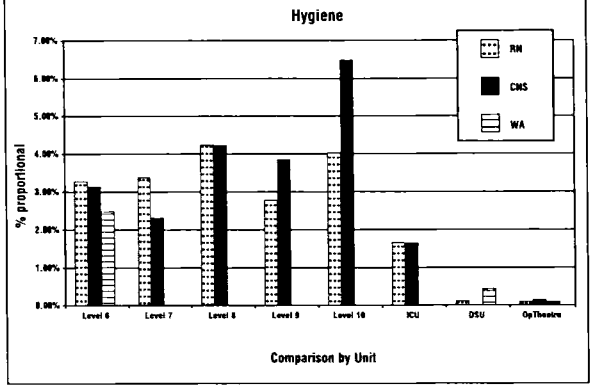


Comparative information for each staff classification for each of the 25 individual activities (see Figure 6) again is useful information for the NUM and indeed all staff on the unit. It allows staff to ask questions about how they spend their day. Is this what they should be doing? Is this the best use of staff expertise? The NUM will have data on which to assess role responsibilities and skillmix and to realign or reallocate duties on the basis of the data provided.

Results by activity

The last cluster of data which are useful is to compare all staff classifications for each of the 25 activities for each ward or unit (Figure 7).

Figure 7: Comparison of individual activity for all staff on numbered wards.



This information is most useful for nursing unit managers and directors of nursing. Units can be benchmarked against each other and staffing decisions can then be made on the basis of type and amount of activity rather than historical methods. There may be an indication that inter-hospital movement of staff is warranted if, for example, RNs are spending a great deal of time in errands off the unit on one ward when compared to the rest of the hospital. Further exploration may reveal that they are spending large amounts of time collecting medications from the pharmacy and more cost-effective solutions could be sought. Alternatively, a nursing unit manager may, when comparing their unit's profile of activities with another, discover that on other wards WAs perform the majority of 'unit-related' activities thus freeing up the time for CNSs and RNs to provide more direct patient care.

The uses of work sampling for managers and staff

The data provided by work sampling assists managers to make decisions. It determines what staff are doing, but not how the work is done, and this must be remembered when using the technique. Information on working patterns and the proportion of time spent on individual activities by different categories of staff at different times of the day would be invaluable in predicting work activity and staff resource utilisation and deployment. Importantly it provides baseline data for change, facilitates an assessment and determination of an appropriate skillmix given patient needs (and this includes the need for more clerical or support staff). It is also possible to determine cost analyses of interventions using this technique.

Some of the advantages of work sampling techniques are that they are cheaper to use than time and motion (Finkler et al 1993), they accommodate nursing's less repetitive work schedule, observations can be undertaken

over an extended period of time capturing the full range of work, it provides comparative data for skillmix use and provides managers with data from which to argue their position.

Despite the advantages, there are some disadvantages which must be remembered. This technique is not useful for large spaces as too much time is spent locating individuals to determine their activities; percentages of time spent in activities are estimates and not precise measures; it does not measure the quality of work; training observers is time consuming. Of particular note is the caution that this technique does not provide any assessment of the quality of the work undertaken. Also, it does not provide data on activities which are not undertaken, only those which are. Thus, if a manager wanted to know whether aspects of care were being omitted, work sampling will not provide this information.

It is also important that everyone using the information understands the data and method. In particular, interpretation of the data is best undertaken by knowledgeable practitioners, those who know and understand the work of the unit, otherwise data could easily be misinterpreted or misrepresented. For example, RNs on a particular unit might have been observed spending a great deal of their workday on hygiene activities which a non-nurse might argue is best done by a less skilled employee. However, knowing that this was a palliative care unit where the primary activity recorded was hygiene (because that is what took the nurse to the patient's bedside), but that much of the counselling of patient and family occurred during hygiene activities, changes the perspective as to who should be providing the hygiene.

CONCLUSION

Work sampling facilitates an analysis of what work activity is being undertaken, when, and, in what proportions. It provides a vehicle for staff to discuss and verify their views on how to manage staff and patient care at an organisational level. It is most useful for those who know and understand the contexts in which activities are performed.

It is now paramount for health care organisations to have accurate information systems which allow managers within an organisation to quantify the key performance indicators which govern employee activities. This information must provide a clear picture of work throughputs, areas of deficiency and insight into how to improve the overall organisational productivity. Work sampling as an information and management tool provides the types of data which will place health care managers within complex organisational settings at the cutting edge of resource management. However, it is but one tool providing only a 'snapshot' of the activity undertaken. Understanding the practice patterns and 'drilling down' more deeply into what it is nurses do and why, requires the use of different methodologies than that undertaken for this study. Nevertheless, provision of baseline data such as is found in this study provides a benchmark against which to measure future changes.

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