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Abstract

Aims

- i) Formulate a model for patient-nurse interaction (PNI);
- ii) Compile a comprehensive list of nursing tasks on hospital wards; and
- iii) Construct Nursing Tasks Demand Matrix (NTDM).

Background

The physical demands associated with nursing profession are of growing interest among researchers. Yet, it is the complexity of nursing tasks that defines the demands of ward nurses' role. This study explores nursing tasks, based on PNI on hospital wards.

Methods

- Extant literature was reviewed to formulate a PNI model.
- Twenty ward nurses were interviewed to compile a list of nursing tasks.
- These nursing tasks were mapped against the PNI model.

Results

- A PNI model was created, consisting of: (i) patient care, (ii) patient surveillance and (iii) patient support.
- Twenty-three nursing tasks were identified.
- The NTDM was constructed.

Conclusions

Ward managers may use NTDM to determine the demands of nursing tasks on ward nurses.

Implications for Nursing Management

While many studies have explored either the physical or the psychosocial aspects of nursing tasks separately, this study suggests that the physicality of nursing tasks must be evaluated in tandem with their complexity. Ward managers may take a holistic approach to nursing tasks evaluation by using NTDM.

Keywords: job demands, NHS, nursing tasks, patient-nurse interaction, ward nurses

1 Introduction

The physical demands associated with the nursing job role are of growing concern among researchers (Belbeck et al., 2014, Vieira and Kumar, 2009, Skotte et al., 2002). The functional responsibility of ward nurses is to support their patients in the healing process by coordinating patient-care activities (Swanson and Wojnar, 2004). A study that investigated how nurses spend their time in a typical 10-h day-shift found that nurses walk as much as 5 miles in the course of their duty (Hendrich et al., 2008). While much of the literature on nursing tasks has focussed on the physicality of the job, it is the complexity of the tasks and the importance of averting risk situations that define the demand characteristics of the ward nurse role (Krichbaum et al., 2007). This is because even simple tasks may place high demands on nurses in case of competing priorities in a work environment where multi-tasking becomes a routine (Kalisch and Aebersold, 2010). Nursing tasks are more complex; so, the demands of the nursing job role must be viewed to transcend its physicality.

An evaluation of nursing tasks in a hospital ward must be underscored by the nature of the interaction between the patient and the nurse (Barker et al., 2016), and conceptualised as supporting the patient-healing process. Hence, the definition of the demand attributes of these patient-nurse interactions (PNIs) is a prerequisite to undertaking a thorough evaluation of nursing tasks on hospital wards. Furthermore, the evaluation of nursing tasks must be contextualised, as nursing tasks would vary depending on the setting. Therefore, the focus of this study is to explore nursing task activities on general medical wards and surgical wards within the National Health Service (NHS) in the UK.

The overarching aim of this study was to examine nursing tasks on hospital wards based on the interaction between patients and nurses. To achieve this aim, this study:

- i) Formulated a model for PNI;
- ii) Compiled a comprehensive list of nursing tasks on hospital wards; and
- iii) Constructed the Nursing Tasks Demand Matrix

2 Background

Ward nurses play a pivotal role in coordinating and facilitating the tasks and contributions of other healthcare workers in the interest of their patients (Jangland et al., 2011). The ward nursing job role demands that a ward nurse would be in direct or indirect contact with their patients to support them in the healing process. This support is achieved by performing certain

nursing tasks relevant to the individual patient situation, in accordance with the corresponding medical protocol. Ward nurses are actively involved in the integration of the whole healthcare-management process, and are central to the interactions among the various multidisciplinary teams, such as doctors, specialist nurses, occupational therapists, speech therapists, and dieticians, to ensure a continuity of patient care (Aragonès et al., 2008). Good-quality collaboration among doctors and nurses has been found to elicit positive outcomes for patients (Stein et al., 1990, Baggs and Schmitt, 1988). Additionally, an effective collaboration between nurses and doctors is said to 'enable the knowledge and skills of both professionals to synergistically influence the patient care being provided' (Vazirani et al., 2005, p. 71). Effective teamwork among healthcare workers has been positively linked to patient safety (Manser, 2009). A study that investigated the interplay between patient medication prescription, dispensing and administering and the collaboration between physicians, pharmacists and nurse practitioners, found that good teamwork across these disciplines evoked positive outcomes for patients (Makowsky et al., 2009). All these studies underscore the central position of the nursing staff in facilitating patient healing, both as members of the multidisciplinary medical team, and in their interactions with patients' relatives.

According to Fagermoen (1997), nursing practice is characterised by a patient-nurse relationship in which the patient is vulnerable and extremely dependent on the nurse for maintenance of basic needs. Indeed, Evans (2016) asserted that the interaction between patients and nurses is so fundamental to nursing practice that a critical evaluation of this concept is often overlooked in nursing research literature. Depending on the acuity of the patient situation, nurses may have to rely on information from other persons, such as family members, to provide the most suitable nursing service to the patient (Hertzberg and Ekman, 2000). The quality of care that a nurse can provide may thus be defined by the quality of the relationship between the nursing staff and the family members. Åstedt-Kurki et al. (2001) noted that family members are both informants and recipients of information regarding their relatives in a hospital. Duffy (1988) argue that family members play a crucial role in the health outcomes of the patient in the first instance, and, will most probably be the ones to foster and continue the post-discharge support of the patient healing process. The early and continuous involvement of family members in the patient healing process is therefore a key element of the nursing tasks.

In this study, the role of the ward nurse is conceptualised to be fundamentally based on the PNI. It is hypothesised that most nursing tasks would require some form of direct or indirect interaction with patients, to provide support for the therapeutic healing. Following this trail of thought, three categories of PNI can be identified, namely; (i) patient care, (ii) patient

surveillance and (iii) patient support. These three categories of nursing tasks constitute a model of PNI each posing some form of job demands for ward nurses (Figure 1). Most of the tasks that ward nurses perform would fall into one or more of these three categories.

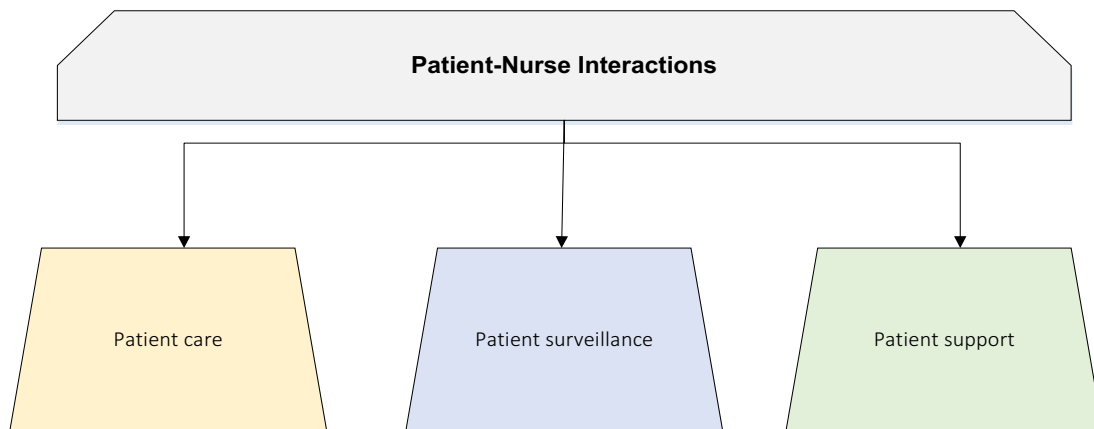


Figure 1: A model of patient-nurse interaction

First, patient care involves the nursing tasks performed directly on, and requires interaction with, patients, for example, medication, bathing, feeding, and moving and handling. These tasks would, mostly, have some degree of physicality to them and are carried out in direct cooperation with, or implied consent of, the patient (Hendrich et al., 2008, p. 27, footnote). Second, patient surveillance consists of those sets of tasks that do not require physical contact with the patients, and may not demand direct interaction with the patient. However, these tasks are necessary to safeguard the patient's health, safety, and well-being, such as watching, checking, listening, etc. While this type of task does not require 'active' physicality, they may evoke a 'latent' form of physicality as it may be necessary to perform them in conjunction with other tasks. As a result, it may not be readily evident that these tasks are being carried out (Dendaas, 2011). Third, nurses do perform a number of 'behind the scene' activities that are not necessarily visible to a novice observer. These are mainly coordinating activities undertaken on behalf of the patient without his/her presence. These tasks are termed patient support; they are performed away from the patients, and do not require the presence of patients, but are nevertheless necessary for the patient's health and well-being; for example consultation with social workers and caregivers, advising and supporting family members, etc. (Maxwell et al., 2007).

The evaluation of nursing tasks requires an understanding of the job demands attributable to any of these three PNI categories. Furthermore, establishing this understanding and creating

the model is a prerequisite to the commencement of gathering empirical evidence of the nature of nursing tasks in NHS hospital wards.

3 Methodology

This study requires an in-depth understanding of the nuances of nursing tasks, which might not be readily evident during a casual observation of nurse ward activities. In addition, an analysis of the job description of ward nurses would only have revealed what nurses are expected to do, and not what they actually do. Furthermore, undertaking a questionnaire survey would not have provided the possibility to explore the intricacies of the real situation on hospital wards, as this would only have captured the standard protocols, and therefore undermined the rigour of the study. A qualitative case study research design has been adopted for this study. Case study research is the study of a case within a real life, contemporary context (Yin, 2009). 'Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon in its real life context, using multiple sources of evidence...' (Walliman, 2011). Robson (2002) sees case study as a tool used '...to identify a specific form of enquiry...', in which a case is captured in its uniqueness, unstructured data are collected about the case, and these data are qualitatively analysed.

3.1 Data Collection

The nature of this study lends itself to purposive sampling of participants. Purposive sampling is a deliberate, and careful selection of participants for a study based on predetermined criteria. It is used when there are a limited number of participants available for a study and when informants are restricted geographically due to the nature of the case being studied (Barbour, 2001). Whereas purposive sampling is often criticised for being inherently biased, well-defined selection criteria, the quality of data retrieved, the aptitude of the researcher in the subject area, and the method of data analysis, may justify its application in qualitative research design. Figure 2 is an illustration of the research process.

Table 1: Schedule of Interview Questions

1	How long have you worked for the NHS and how long have you been in your current position?
2	Do you consider yourself fit and well? Do you feel fit in your work environment as a ward nurse?
3	What type of ward do you work on?
4	How many beds are on the ward?
5	Do you typically work day or night shifts? Percentage split?
6	On a typical shift, please describe the nature of the work of the healthcare team. Please tell us about your role in the team?
7	On a typical shift, please give examples of the tasks you perform and group them in the following categories*: i) patient care; ii) patient surveillance; and iii) patient support.
8	Do you consider your ward to be a fast-paced work environment? If yes, please name the key tasks of your job that you think require more attention (in time or approach)?
9	How does the ward layout affect your ability to move around and perform your duties?
10	Please describe the major risks associated with the ward nurse role.
11	Please name the key areas of the ward nurse role that you think require special attention in order to avert such risks.

*These three categories of nursing tasks were explained to each participant during the interview.

At the end of the interview, each nurse was handed a copy of the Nursing Tasks Data Collection Sheet (NTDCS) shown in Table 3. Participants were asked to complete the NTDCS and return it to their ward managers from whom the researcher would later collect them. This table was prepared ahead of the interview to ensure that a complete list of nursing tasks was obtained from the participants. Three ward nurses returned the completed NTDCS. While the ratio of three returned NTDCS may seem low in comparison to the 20 distributed, this was not to be the primary source of data for the compilation of nursing tasks, but to complement the data gleaned from the interview transcripts.

Table 2: Profile of Interview Participants

Participants	Job Title*	Age Group (years)	Gender	Name of Ward	Length of Service with NHS (years)
P1	SHCA	50-59	Female	Upper Gastrointestinal Surgical	14
P2	staff nurse	50-59	Female	Ophthalmology Surgical	35
P3	SHCA	Up to 39	Female	Upper Gastrointestinal Surgical	2
P4	staff nurse	50-59	Male	Upper Gastrointestinal Surgical	23
P5	SHCA	40-49	Female	Upper Gastrointestinal Surgical	6
P6	staff nurse	Up to 39	Female	Upper Gastrointestinal Surgical	9
P7	staff nurse	Up to 39	Female	Upper Gastrointestinal Surgical	6
P8	staff nurse	50-59	Female	General Surgery	35
P9	staff nurse	Up to 39	Female	Gastroenterology Medical	7
P10	staff nurse	Up to 39	Female	Gastroenterology Medical	5
P11	staff nurse	40-49	Female	Gastroenterology Medical	10
P12	staff nurse	Up to 39	Female	Gastroenterology Medical	2
P13	SHCA	Up to 39	Female	Gastroenterology Medical	1
P14	staff nurse	Up to 39	Male	Gastroenterology Medical	1
P15	staff nurse	Up to 39	Female	General Surgery	2
P16	staff nurse	Up to 39	Female	General Surgery	3
P17	sister	40-49	Female	General Surgery	19
P18	staff nurse	40-49	Female	General Surgery	18
P19	staff nurse	50-59	Female	Ophthalmology Surgical	12
P20	staff nurse	Up to 39	Female	Upper Gastrointestinal Surgical	2

*SHCA: Senior Healthcare Assistant

Table 3: Nursing tasks data collection sheet

Name of participant	
Name of Ward/Department (e.g. medical or surgical)	
Date completed	

Please tick the boxes to indicate which category a task belongs to. If a task belongs to more than one category, please indicate all that is applicable.

List of tasks		Patient-Nurse Interaction		
		(i) Care	(ii) Surveillance	(iii) Support
1				
2				
3				
4				
5				

Please give examples of the tasks that ward nurses perform and group them in the following categories:
i) patient care; ii) patient surveillance; and iii) patient support.

Please read the following description of each task category:

Patient care are tasks performed directly on, and requires interaction with patients, e.g. medication, bathing, feeding, moving and handling, etc. **Patient surveillance** are tasks that do not require physical contact with patients, but are necessary for patient health, safety and wellbeing, e.g. watching, checking, listening, safeguarding, etc. **Patient support** are the tasks that you perform away from patients and do not require the presence of patients, but are nevertheless necessary for patient health and wellbeing, e.g. consultation with a other social workers and other caregivers, advising and supporting family members, etc.

3.2 Data Analysis

The interview transcripts were analysed using NVIVO 10 for windows. The main purpose of the analysis was to compile from the transcripts a list of nursing tasks. It must be acknowledged that data saturation was attained after about 12 interviews transcripts were reviewed. Nevertheless, all the 20 interview transcripts were screened for relevant data for the study. The compilation of the nursing tasks list was conducted in four stages. In the first stage, the researcher combed through the interview transcripts to identify and list each nursing task. In the second stage, the three completed NTDCS in Table 3 were searched for further nursing tasks and to corroborate existing list compiled from NVIVO. In the third stage, the researcher further examined the complete nursing tasks list and it was observed that some of the tasks would result in similar outcomes for patients. These clusters of tasks are termed multilateral tasks. The tasks that constitute a single act, which are not divisible into further subtasks are termed unilateral tasks. In total 23 nursing tasks were identified, consisting of 12 multilateral tasks and 11 unilateral tasks. Table 4 shows a list of working definition of each of the nursing tasks identified in this study. The subtasks under the multilateral tasks do not require further definition, as the subtask item is defined by the name of the encompassing cluster task activity. Each task is coded as either multilateral or unilateral. Multilateral tasks are coded with a prefix 'TM', while unilateral tasks are annotated with the prefix 'TU'. The tasks are then listed and coded TM01...TM12, for the multilateral tasks, and TU13...TU23, for the unilateral tasks. Lastly, the compiled nursing tasks list was sent by email to an independent nurse at another NHS Trust, to verify the completeness of the list, so as to avoid or reduce the risk of omission. In addition, the use of an independent nurse was to bring some element of 'objectivity' into the acquired data. The independent nurse confirmed the task list as complete. The independent nurse has more than 30 years of nursing experience, and worked at an orthopaedic ward within her NHS Trust.

Table 4: Brief Definition Nursing Tasks

Task Code	Task Name	Task Description
TM01	Handover	Sharing patient information among nursing staff about patient healing progress. Usually conducted at the beginning of each shift
TM02	Medication	Preparing and administering patient medication, including dosage measuring and cannula drip calibration
TM03	Observation	Measuring vital signs, such as respiratory rate, heart beat rate, blood pressure, and oxygen saturation in the blood
TM04	Feeding	Feeding and attending to the nutritional needs of patients, including monitoring fluid intake and output and administering alternative feeding procedures, such as nasogastric feeding
TM05	Personal care	Washing and ensuring patients are clean, dressed, and well, including toileting and catheterisation
TM06	Moving and handling	Transferring patient from one functional position to another position, e.g. bed to chair, repositioning in bed and restraining patient from falling. This task includes non-patient related moving of equipment and other physical activities like lifting, pushing, pulling, reaching and stretching
TM07	Liaison	Contacting and collaborating with multidisciplinary team members and advising family members and relatives. May include soliciting support from GPs, pharmacists, district nurses and social workers
TM08	Admission	Placement of patient on ward, including bed allocation and check listing of patient for surgical procedure
TM09	Discharge	Ensuring patient is fit for home recovery, including community discharge and alternative rehabilitation
TM10	Pre-operation	Preparing patients for surgical operation, e.g. preparing anaesthetic procedures, preparing blood for transfusion and assessing medication requirement pre and post-operation
TM11	Post-operation	Ensuring patient is recovering post operation, according to appropriate medical protocol, e.g. monitoring and recording vital signs
TM12	Specific risk assessment	Determining the vulnerability of patients to certain hazards, e.g. risk of falls
TU13	General risk assessment	General assessment of patient care and needs
TU14	Watching	Safeguarding of patients from physical and psychosocial environmental hazards
TU15	Documentation	Keeping records of all nursing activities according to the medical/surgical protocol
TU16	Ward round	Visiting at patient bed with doctors/consultants and sharing information to aid patient healing process
TU17	Coordination	Coordinating own activities with those of other nursing colleagues and multidisciplinary teams
TU18	Psychological support	Reassuring and comforting patient.
TU19	Walking	Movement within the ward related to attending patient needs
TU20	A&E clinic	Ophthalmological emergency & medical/surgical intervention on patient with eye problems
TU21	Answer patient buzzer	Attending to patient call raised by call system
TU22	Telephone	Answering ward telephone calls and making telephone contacts to solicit provision for patient support
TU23	Engage and teach student nurses	Supervising and teaching student nurses

4 Interview Results

Figure 3 and Figure 4 show graphical representations of the NVIVO coding of multilateral and unilateral nursing tasks, respectively. The vertical axis depicts the 'number of references' a task had, i.e. the number of times it was mentioned by all the participants in the transcripts, according to the coding regime employed by the researcher. This may also be termed as the frequency of occurrence of data. The number of references is plotted against the 'nursing task' identified on the horizontal axis.

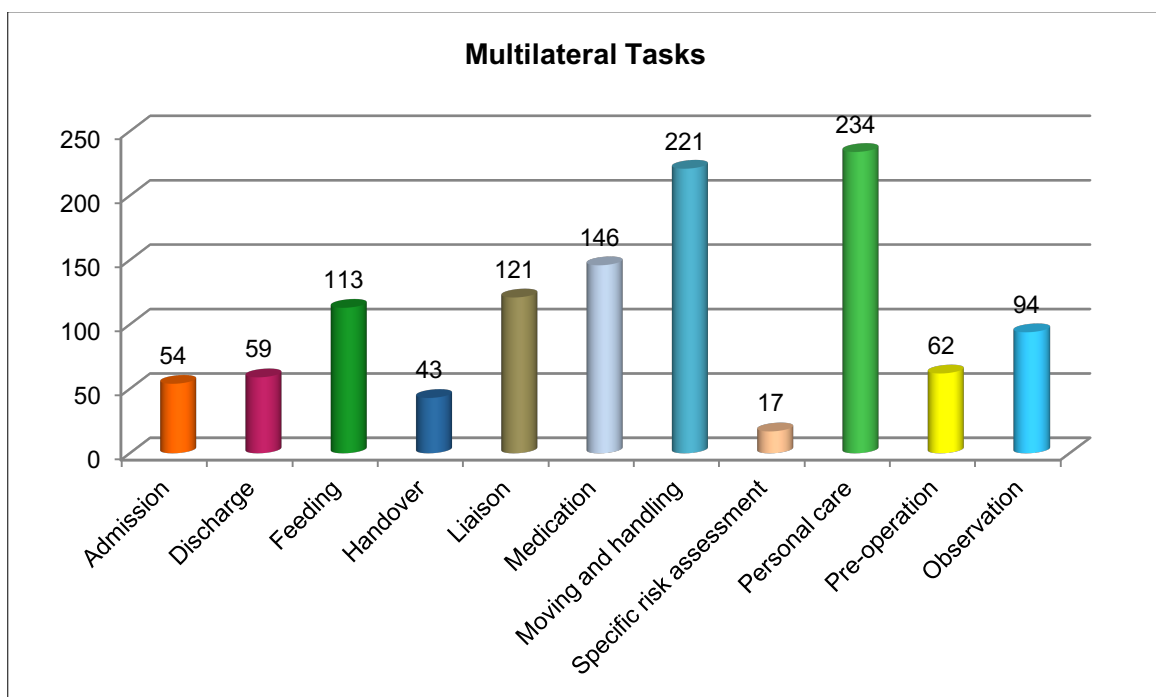


Figure 3: Coded Frequency of Multilateral Nursing Tasks

A multilateral task is an umbrella term for a group of subtasks, each intended to result in certain patient outcomes. For example, the multilateral task 'observation' consists of a set of subtasks including 'check respiration' and 'measure temperature'. While each subtask differs in its constituent activity, the ultimate outcome for both of them is to look for vital signs and garner important information about certain physiological bodily functions of the patient. Therefore, each multilateral task depicted in Figure 3 constitutes further subtasks, with similar characteristics. Furthermore, it can be seen that within the multilateral tasks, the two main tasks with the highest number of references are personal care and moving and handling, with 234 and 221 references, respectively. This may suggest the significance or the demands

attributes of these tasks. For example, in case of moving and handling tasks, one of the participants noted:

"...well all the beds now are not like years ago when we had to climb the bed. They are all electronic now. But even though they are electronic we still do have to do some moving and handling, to get them (patients) in a comfortable position really" (P17)

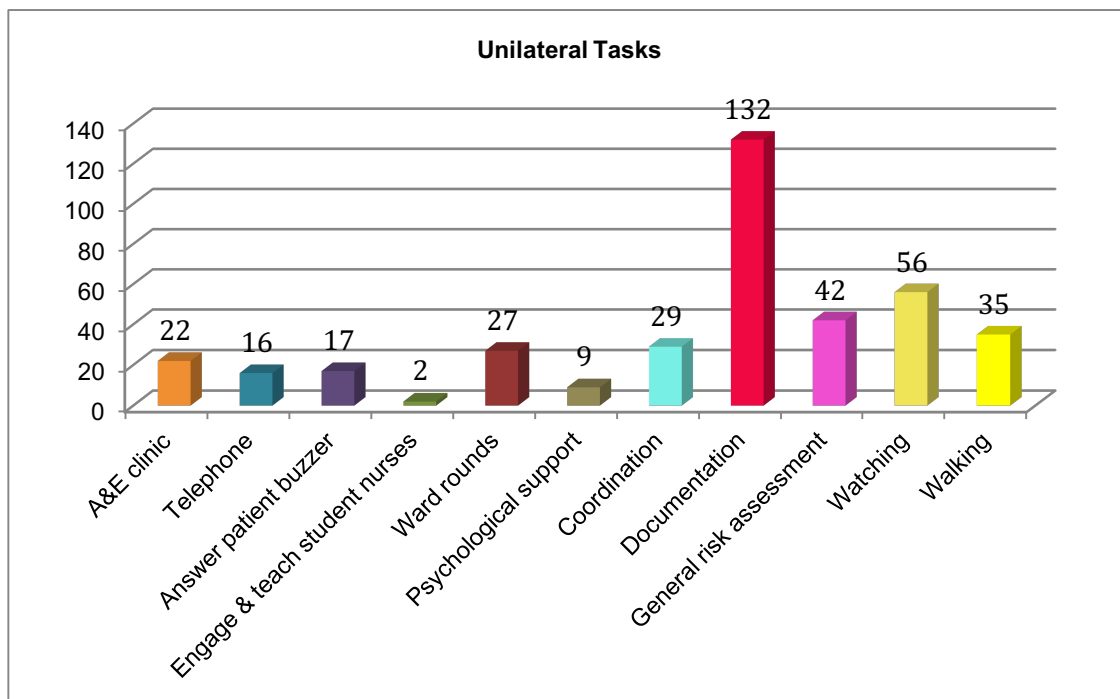


Figure 4: Coded Frequency of Unilateral Nursing Tasks

A unilateral task is a nursing task that constitutes a single body of activity that ward nurses perform for their patients. Such tasks are normally not divisible into subtasks. A unilateral task may constitute a singular complex activity, undertaken over an extended period of time, such as psychological support. It is noteworthy that of the 23 nursing tasks, documentation has 132 references (Figure 4), which shows the highest frequency of occurrence in the dataset. The prominence of 'documentation' as a nursing task may suggest the importance of keeping adequate record of a number of activities related to the patient healing process, or the significance of taking notes to aid cognitive acuity, as stated by a participant:

"Sometimes it is very stressful and mentally draining having to like think of all the information and remember everything. If you think of

something and you don't write it down, then in ten minutes, you've forgotten, because there is so much in your mind.” (P13)

4.1 Nursing Tasks Demand Matrix

The Nursing Tasks Demand Matrix (NTDM) can be used for the qualitative evaluation of nursing tasks in a ward setting. It was constructed by plotting the nursing tasks against the corresponding PNI category. As suggested earlier, nursing tasks are conceptualised as involving some degree of direct or indirect interaction with the patients. This is represented by the PNI model, consisting of patient care, patient surveillance and patient support (Figure 1). Therefore, each nursing task will exhibit one or more of these demand attributes of the PNI model. Each unilateral task and each subtask of the multilateral tasks was identified from the interview transcripts with the aid of NVIVO. During the coding of the transcript texts, each task identified was also coded as being a patient care, a patient surveillance or a patient support, as the case may be. During the analysis, a matrix query was conducted in NVIVO to ascertain the intersection between each of the unilateral tasks and the subsets of the multilateral tasks, which are then mapped against the respective PNI category. Essentially, this approach ensured that the demand attributes of each task were derived from the data based on the coding regime employed, and, based on the completed Nursing Tasks Data Collection Sheet (Table 3).

The appropriate cell of Table 5 was ticked (✓) if the nursing task was deemed to exhibit the characteristic of the PNI category, and crossed (✗), if not. Most of the tasks that nurses perform will have one or more of the three aforementioned demand attributes of the PNI model. Therefore, when evaluating nursing tasks, it is important to know which and how many of these attributes a task exhibits, because such an understanding might illuminate the complexity of a ward nursing tasks and therefore offer an insight into the potential demands these nursing tasks may be posing for ward nurses (Table 5).

Table 5: Nursing tasks demand matrix

Nursing Tasks Demand Matrix						
	Task Code	Task Name	Subtasks list	Patient-Nurse Interaction		
				Care	Surveillance	Support
MULTILATERAL TASKS	TM01	Handover	walk from patient to patient	✓	✓	✗
			discuss each patient case	✓	✓	✓
			info transfer between night and day staff	✓	✓	✓
			inquire about patient wellbeing	✓	✓	✓
			compare patient charts with physical observations	✓	✓	✗
	TM02	Medication	affix cannulation	✓	✓	✗
			affix drips	✓	✓	✗
			calculate drip rate	✓	✓	✗
			calculate drug dosage	✓	✓	✓
			confirm drug allergy	✓	✓	✓
			perform medication rounds	✓	✓	✓
			check control drugs	✓	✓	✓
	TM03	Observation	check blood pressure	✓	✓	✗
			check heart rate	✓	✓	✗
			check respiration	✓	✓	✗
			measure temperature	✓	✓	✗
			check oxygen saturation	✓	✓	✗
			check blood sugar	✓	✓	✗
			take specimens from patient	✓	✓	✗
			check bowel discharge	✓	✓	✗

			check urine amount	✓	✓	✘
			check patient for nausea	✓	✓	✘
			check patient alertness	✓	✓	✘
			patient discharge odour	✓	✓	✘
			check patient pain score	✓	✓	✘
			check pressure damage	✓	✓	✘
			weigh patients	✓	✓	✘
	TM04	Feeding	perform drink rounds	✓	✓	✓
			hand out food to patients	✓	✓	✓
			feed patients	✓	✓	✓
			administer PEG feeding	✓	✓	✓
			check dietary needs	✓	✓	✓
			administer NG feeding	✓	✓	✓
			administer NJ feeding	✓	✓	✓
			check and monitor feeding for nil by mouth patients	✓	✓	✓
	TM05	Personal Care	bed bath patients	✓	✓	✘
			bed dress patients	✓	✓	✘
			wash patients	✓	✓	✘
			administer drains	✓	✓	✘
			dress patients	✓	✓	✘
			apply anti-embolism stocking	✓	✓	✓
			perform personal hygiene on patients	✓	✓	✘
			assist patients toileting	✓	✓	✘
			perform full body wash for patients	✓	✓	✘
			administer catheter	✓	✓	✘
	TM06	Moving & Handling	patient pressure relief	✓	✓	✘
			move patient up the bed	✓	✓	✘

			transfer patient from bed to wheelchair/chair	✓	✓	✗
			sit patient up in chair	✓	✓	✗
			stand patient up from chair	✓	✓	✗
			slide patient from bed to another bed	✓	✓	✗
			walk patient	✓	✓	✗
			make patient bed	✓	✓	✗
			hoist patients from chair to bed and vice versa	✓	✓	✗
			lift mattresses	✓	✓	✗
			assist patient off the floor	✓	✓	✗
			wheel patient to procedures	✓	✓	✓
			weigh patient	✓	✓	✓
			move beds around the ward	✓	✓	✓
			handle and put away ward stocks	✗	✗	✓
			help patient out of bed	✓	✓	✗
			restrain patient from falling	✓	✓	✗
			roll patient in bed	✓	✓	✗
			move items around bed spaces	✓	✓	✗
			wheel medications trolley	✓	✓	✗
			move patient on trolley	✓	✓	✗
			transfer patient from wheelchair to toilet & vice versa	✓	✓	✗
			wheel patients to bathroom	✓	✓	✗
			carry and empty washbowls of water	✓	✓	✗
			calm down agitated/aggressive patients	✓	✓	✗
			TM07	Liaison	advise & speak with relatives	✓
	consult with doctors	✓	✓		✓	
	consult with theatre staff	✓	✓		✓	

			consult with carers	✓	✓	✓
			consult with social workers	✓	✓	✓
			consult with district nurse	✓	✓	✓
			consult with specialist nurses	✓	✓	✓
			consult with multidisciplinary teams	✓	✓	✓
			consult with GP	✓	✓	✓
			seek Security intervention	✓	✓	✓
	TM08	Admission	check for sepsis	✓	✓	✗
			check medical history	✓	✓	✓
	TM09	Discharge	agree discharges with doctors	✓	✓	✓
			advise patient on post operation after care	✓	✓	✓
	TM10	Pre-operation	perform pre-op surgical assessment	✓	✓	✓
			complete surgery checklist	✓	✓	✓
			collect blood from blood bank	✗	✓	✓
	TM11	Post-operation	perform wound dressing	✓	✓	✓
			check patient pain score	✓	✓	✓
			administer pain relief	✓	✓	✓
TM12	Specific Risk Assessments	perform falls RA	✓	✓	✓	
		perform nutritional RA	✓	✓	✓	
		perform pressure ulcer RA	✓	✓	✓	
UNILATERAL TASKS						
	TU13	General Risk Assessment		✓	✓	✓
	TU14	Watching		✗	✓	✓
	TU15	Documentation		✗	✓	✓
	TU16	Ward Rounds		✓	✓	✓
	TU17	Coordination		✓	✓	✓

	TU18	Psychological Support		✓	✓	✓
	TU19	Walking		✓	✓	✗
	TU20	A&E Clinic		✓	✓	✓
	TU21	Answer Patient Buzzer		✓	✓	✗
	TU22	Telephone		✗	✓	✓
	TU23	Engage & Teach Student Nurses		✓	✓	✓

Exploring the interview data and recording the numerical prevalence of participant responses to these attributes helped in achieving this. Furthermore, establishing a model to underpin the demand attributes of nursing tasks in a ward setting was necessary prior to the collection of empirical evidence on the nature of nursing tasks on hospital wards. While some tasks would require more physical effort to perform, such as moving and handling of patients, others may be both physically and cognitively demanding such as performing vital sign observation on a patient. On the other hand, tasks or subtasks such as watching a patient and being vigilant that they are safe, without the nurse having to make physical intervention, may be demanding on the auditory or visual senses at the same time. This is evident in the account of P2:

“Because you're listening, aren't you, even if you are not looking. I mean I can be stood in the office in a handover and I am still listening to what's going on on the ward. And you have to be like that. Because you can't be everywhere, can you.” (P2)

This suggests that ward nurses are frequently multitasking, which means their attention is constantly divided. Evidently this poses the risk of committing clinical error, if compounded with other aggravating factors, such as fatigue, as a result of long shifts or sleep deprivation, which are usually intrinsic parts of the nursing profession (Han et al., 2014).

4.2 Validating the Nursing Tasks Demand Matrix

Barbour (2001) suggested that in the construction of research results, respondent validation is a useful means of corroborating and refining the research findings in qualitative research design. This requires that the researcher presents the findings of the study to those participants from whom the data had been generated and inviting them to verify if the respondents' views are reflected in the research findings. By doing so, consistency of information is guaranteed and the risk of misinterpretation is eliminated or reduced. The main purpose of validating the findings of this study was for the stakeholders to verify that the mapping of nursing tasks with the PNI categories was a true reflection of the nursing practice within the NHS case study hospital wards, as ward nurses are the key beneficiaries of the NTDM.

The validation focus group consisted of three practising nurses, including a midwife, a senior healthcare assistant, and a neuroscience and dementia research nurse. To ensure that there is continuity of participation across each stage of the data collection, one of the three

participants (P1) invited to the validation focus group had previously been interviewed in the first stage of the data-collection process. Please see Table 6 for the profile of the validating focus group participants.

Table 6: Profile of validating focus group participants

Participants	Job Title	Department	Gender	Length of service in NHS (years)	Previous participation in study (Yes/No)
P1	Senior HCA	Upper Gastrointestinal Ward	Female	14	Yes
P21	Midwife	Maternity	Female	33	No
P22	Research nurse	Neuroscience and Dementia Research	Female	28	No

The three nurses were invited to record their understanding of the relationship between each of the nursing tasks and the PNI category, in the appropriate cell of the sheet, based on the definitions (given on the NTDCS) of the PNI categories. The participants were asked to perform this activity first individually, and then agree on a group consensus, which should then be recorded in a separate sheet, labelled 'Group'. The researcher then updated the Nursing Tasks Demand Matrix based on the 'Group' results of the focus group. The final outcome of the validation is the Nursing Tasks Demand Matrix, which is presented in Table 5.

The validation process was an opportunity to reflect further on the distinction made between multilateral tasks and unilateral tasks. While these classifications were not fundamentally contested, questions were raised about the grouping of some of the tasks. For instance, the task psychological support is classified as a unilateral task, without subtasks. It was noted during the validation process that psychological support is a complex task requiring a great deal of empathy, and may also entail a number of 'latent' subtasks, including 'listening'; 'just being there'; 'comforting', and 'holding a patient's hands'. While it is appreciated that this unilateral task could entail a number of 'subtasks', there was also consensus across the focus group that these could not be agreed on in advance, as it is highly subjective, situation-dependent, and may be influenced by other factors such as age, gender, or socio-cultural background correlations or differences between the nurse and the patient. Furthermore, the complexity of psychological support may be exacerbated by the length of time that might be needed to 'accomplish' it. On the other hand, the task, 'moving and handling' is a multilateral task and with 25 subtasks, it consists of the highest number of subtasks. One of the most important outcomes of this focus group was that while the physicality of nursing job role is always evident (Nelson et al., 2003), overt concentration on the visible and the quantifiable aspects of nursing practice alone might mean psychosocially demanding activities, which may

be posing greater demands on nurses (when compared with the physical ones), may be omitted and be left unaddressed, with negative outcomes for nurses and their patients (Malinauskienė et al., 2009).

5 Discussions

The hypothetical point of departure of this study was that most nursing tasks involves the direct or indirect interaction with patients, in order to facilitate the patient healing process. Yet, the most prominent approach to nursing task evaluation is through patient satisfaction survey (Kaldenberg et al., 1997). Proponents of such an approach claim that patient satisfaction surveys attempt to gauge patient contentment with the quality of service received during hospital admission. Critics, however, argue that the evaluation of patient's perspective of events in this way fail to elicit patient's feelings, beliefs and values (Coyle, 1999). In addition, some patient groups may not be in a position to give accounts of their experience, e.g. in case of patients with cognitive impairments or paediatric patients. Another approach to evaluating the efficacy of nursing tasks is through the workload-per-nurse and the time-per-task systems. Invariably, such measurements are intended to determine the costs of care provision and mainly support resource allocation and management (O'Brien-Pallas et al., 1997). Again, this approach is fraught with the oversight of the complexity of patient situations.

Evidently, the need to evaluate nursing tasks through patient-nurse interaction in the therapeutic healing process is not newfound. One of the earliest studies of this relationship was conducted by Altschul (1971), who observed that patients often attributed both the positive and negative experiences of hospital stay to the quality of the relationship they had with the duty nurses. More recently, a comprehensive review of literary accounts of patient-nurse interactions found that the central tenet of this relationship is communication (Shattell, 2004). In the current study, while communication was not 'listed' in the NTDM as a task in its own right, participants underlined its coalescing function as follows:

"If the communication is not great you are kind of putting yourself at risk. You are putting yourself at risk every time you do the medication round, because you need to give the correct drug. If you are giving the drug and you've not checked whether they are allergic to it and they are. And they have a big collapse, you'll be in trouble." (P12)

The account of P12 above is in reference to the nursing task medication, in which the importance of communication between the nursing staff and the patient was being

emphasised. This is consistent with existing literature, as suggested by Barker et al. (2016), who postulated that nursing tasks should be conceptualised as the quality of the interactions between nursing staff and patients, and measured in the length and frequency of patient-nurse interactions. Central to this length and frequency of patient-nurse interaction is communication. A multilateral nursing task in which communication plays a vital role is liaison, a task that requires interaction not just with patients, but with other people interested in the patient therapeutic healing process, such as family members and the multidisciplinary team members.

6. Conclusions

This study was designed to achieve three objectives. The first objective was to create a model for assessing nursing tasks, based on the PNIs. It was argued that since the main duty of a ward nurse is to foster the healing process of the patients, this responsibility would require temporal and direct or indirect interactions between the patient and the nurse. This model of PNI was conceptualised to be made of three categories: patient care, patient surveillance and patient support. The second objective of this study was to compile a comprehensive list of nursing tasks working on general medical and surgical wards in the NHS. This objective was achieved by interviewing 20 ward nurses at a selected NHS Trust hospital. A thorough analysis of the interviews, corroborated with the data collected from some of the nurses on the NTDCS, helped in accomplishing this objective. However, to embed quality into the data collection process, the compiled nursing tasks list was independently verified by a ward nurse from another NHS Trust. Twenty-three nursing tasks were identified from the interview data, consisting of 12 multilateral tasks and 11 unilateral tasks. The third objective of this study was to construct the Nursing Tasks Demand Matrix. The NTDM was constructed by mapping each subtask of the multilateral tasks, and each unilateral task against one or more of the three categories of the model of the PNI. The NTDM offers nursing practitioners a nuanced approach to evaluating nursing tasks, and thereby examine potential demands associated with these tasks. This broader understanding of nursing tasks may support ward management's decision-making regarding nursing job design, workload allocation, or in tasks specification. The evaluation of nursing tasks is of profound importance to the management of nursing practice. However, establishing the objectives and methods of the nursing task evaluation process could be a daunting exercise.

7. Limitations

There are at least two limitations of this study. The first one is due to the relatively small number of participants. A total of 23 participants took part in the study: 20 ward nurses were

interviewed; one independent ward nurse verified the nursing tasks list; and 3 nurses validated the NTDM in a focus group session (one of whom participated in the interview stage as well, to ensure consistency). While questions could be raised about the sufficiency of this limited number of participants, it is noteworthy that this does not detract from the quality of the study. First, an independent nurse from another NHS Trust confirmed the nursing tasks list to be complete. Second, the validation of the NTDM must have reduced, if not eliminated, potential misrepresentations in the dataset. Therefore, a higher number of participants might not necessarily have provided a higher level of confidence in the findings.

The second limitation is geographic. Data collection was undertaken from multiple wards of an NHS Trust hospital in Northwest England; therefore, critics might claim that this region is not representative of the whole country. It must, however, be stated that as a qualitative case study research, the intention was not to attain generalisability, but to explore a localised and contemporary phenomenon. Given that nursing practice is guided by certain established protocols, nursing tasks in the studied settings (i.e., general medical wards and surgical wards) would not vary overtly within the NHS. In addition, since the NHS is the major provider of healthcare services in the UK, best practices may be adaptable across different Trusts.

8 Implications for Practice and Further Research

The primary function of the Nursing Tasks Demand Matrix is to provide a nuanced understanding of nursing tasks on hospital wards. The NTDM may be used to qualitatively determine the characteristics or demand attributes of nursing tasks in a hospital ward environment by ward managers and ward nurses, occupational health advisors, human resource managers, facility managers, and other stakeholders interested in the design and management of nursing tasks in hospital wards. For example, the NTDM may aid ward managers to determine task assignment among their staff. Occupational health advisors may use the NTDM in the readjustment of nursing tasks to suit individual needs of an employee; while human resource managers may use the Nursing Tasks Demand Matrix in drafting nursing job descriptions. Finally, the NTDM may be used to support the design and management of the physical ward environments by facility managers.

Researchers interested in the physical and psychosocial demands of the nursing profession may use the findings of this study to form the basis of further research. A potent basis for further research is the taxonomy of nursing tasks as multilateral and unilateral as presented in the NTDM, which may be explored from both physical and psychosocial perspectives.

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