

Nurses' Perspectives on Problems of Hospitalized PCP Patients: Implications for the Development of a Nursing Taxonomy

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Abstract

The phenomena of interest in nursing informatics research are the data, information and knowledge related to nursing. This study presents nurses' perspectives on the problems of patients hospitalized for Pneumocystis carinii pneumonia from four data sources: nurse interview, intershift report, care plan, and nurses' notes. Even within this narrowly specified sample, patient problems showed variation across sources of data. The results of this study demonstrate the difficulties inherent in developing a nursing taxonomy when there is not consensus about the relevant data for nursing within a specific patient sample. Although existing information technology is capable of processing large volumes of nursing data, the lack of a common taxonomy limits the usefulness of the technology for documentation of care and decision support applications.

Introduction

The phenomena of interest in nursing informatics research are the data, information, and knowledge related to nursing [1]. Forces both within and outside of nursing are providing the impetus for generating a taxonomy of relevant nursing data as the building blocks for developing nursing information and knowledge. These include the Medical-Effectiveness Initiative, the Joint Commission on Accreditation of Health Care Organizations, the North American Nursing Diagnosis Association (NANDA), the National Commission on Nursing Implementation Project, and the development and testing of the Nursing

Minimum Data Set [2-5]. This paper will first review the issues related to the development of a taxonomy of nursing data. Secondly, a study describing the problems of patients living with AIDS (PLWAs) from their nurses' perspectives will be reported. Lastly, the implications of the study findings for the development of taxonomies that address not only the documentation of nursing care, but also provide the basis for support of clinical and administrative decision making will be examined.

Ozbolt and associates stated that the lack of generally accepted taxonomies of nursing diagnoses, objectives, and interventions hinders the development of nursing information systems that support the documentation of nursing care and clinical and administrative decision making [6]. Graves and Corcoran described the barriers to the development of the universe of relevant nursing data including: (a) the whole person perspective of nursing, (b) multiple conceptual frameworks guiding nursing practice, (c) identification of the data elements in a nursing minimum data set, and (d) defining the data elements required to capture different nursing diagnostic or classification systems, interventions, and outcomes [1]. The issues related to a common taxonomy for nursing have been not been isolated to the United States, they have also been raised by Hoy in a report on computer-assisted nursing care planning systems in the United Kingdom [7]. McCormick recently urged the development of an international uniform vocabulary for nursing that includes patient problems, nursing interventions, and expected patient outcomes [8].

Classification schemes or taxonomies have been of interest to nursing since Nightingale's six nursing canons in the nineteenth century. These were followed by the development of Henderson's 14 categories of nursing care and Abdellah's 21 problems associated with health patterns of patients,

and currently the 89 approved diagnoses of the North American Nursing Diagnosis Association [9]. The inductively generated NANDA taxonomy has become the predominant classification system identified in the nursing literature despite criticisms related to the internal consistency and theoretical underpinnings of the diagnoses [6]. NANDA's taxonomy has recently been revised for possible inclusion in the World Health Organization's International Classification of Diseases (ICD-10) [10].

Other taxonomies including Ozbolt's deductively derived conceptualization based on Orem's self-care deficit theory have been less widely implemented [6]. Additionally, Carpenito has differentiated between nursing diagnoses and other problems of interest to nursing [11]. She proposed a bifocal clinical nursing model which includes collaborative problems (overlap with medicine, social services, etc.) as well as nursing diagnoses.

Simpson and Waite stated that while today's information systems have the capability to sort, track, and report on national data, the lack of a uniform coding format for nursing diagnoses renders the capabilities useless [2]. Brennan and Romano reviewed the potential for the use of computers and nursing diagnoses and stated "despite the problems and concerns related to applying computer technology and taxonomy science to nursing diagnosis, great possibilities are available" (p.940) [12].

The major effort for the design and implementation of a nursing minimum data set has been led by Werley [3]. The unique items related to nursing in the 16 item data set include nursing diagnosis, nursing intervention, nursing outcome, intensity of nursing care, and unique number of principal registered nurse provider. Nursing diagnosis in this instance refers to "a clinical judgment made by a nurse about a human response to an actual or potential health problem, the intervention for which nurses are responsible" not specifically to a NANDA approved nursing diagnosis (p.31) [3].

Three ongoing nursing research projects are investigating nursing taxonomies. The focus of the Georgetown Home Health Care System is to classify patients in order to predict resource use and measure patient outcomes. [13] Both diagnosis and intervention schemes are being developed. Grobe recently reported the development of a lexicon of

nursing interventions for chronically ill adult patients [14-15]. Eventually a taxonomy of nursing interventions will be generated. McCloskey and associates are refining their classification of nursing interventions [16-17]. This classification is conceptualized as a complement to the NANDA taxonomy of nursing diagnoses and to outcome classifications.

It is clear from this brief review of the professional literature that although the promise is great, many barriers exist which hinder the adoption of a universal nursing taxonomy of nursing data and it is within this context that the results of the following study are discussed.

The purpose of the study was twofold: (a) to describe the relevant nursing data (patient problems) for a specific patient population, persons living with AIDS hospitalized for *Pneumocystis carinii* pneumonia (PCP) and (b) to describe differences in the nature of the data related to the data source or format. This study was conducted as part of a larger study examining the quality of nursing care of patients with AIDS by describing the relationships between patient problems, nursing interventions, and patient outcomes.

Methods

Sample

This was a descriptive study of the problems of 69 patients hospitalized for *Pneumocystis Carinii* pneumonia (PCP) at one site in San Francisco. Table 1 shows the demographic characteristics of the male sample. The majority of the patients were hospitalized for their first episode of PCP. The sample was predominantly Caucasian with a mean age of 38 and sexual practice reported as the source of infection.

These 69 patients were cared for by a sample of 40 nurses at the time of enrollment into the study. One-third of the nurse sample was male. Seventy-seven percent of the sample were RN's and the remainder were LVN's or student nurses. Education level was BSN, 28%, Diploma, 26%, and ADN, 23%. The years of experience ranged from 0 to 20 years, however, all had taken care of at least ten patients with AIDS.

Procedure

Patient problems were obtained from interviews with nurses (RNO) caring for patients at

Table 1. Characteristics of Male Patient Sample (n=69)

	<u>Frequency</u>	<u>%</u>
PCP admission		
First	44	65
Second	18	26
Third/Fourth	6	9
Source of Infection		
Sexual practice	65	94
Needle	2	3
Sexual & needle	1	1
Not stated	1	1
Race		
Caucasian	63	91
Hispanic	3	4
Black American	1	1
Asian	1	1
Other	1	1

Table 2. Rankings of Problems for PCP Patients (n=69) as Reported by Nurses

RNQ* (n=68)			NCP (n=39)			RNC (n=69)			ISR (n=64)		
Rank	Problem	%	Rank	Problem	%	Rank	Problem	%	Rank	Problem	%
1	Respiratory	54	1	Nutrition	72	1	Respiratory	41	1	Respiratory	69
2	Nutrition	28	2	Elimination	54	2	Nutrition	39	2	Fever	30
3	Fever	25	3	Fever	41	3	Activity	36	3	Nausea	25
4	Anxiety	21	4	Self-image	36	4	Fever	33	4.5	Anxiety	16
5	Elimination	18	5	Activity	33	5.5	Pain	13	4.5	Weakness	16
6	Depression	13	6.5	Safety	28	5.5	Elimination	13	6	Elimination	14
7	Nausea	12	6.5	Respiratory	28	7	Nausea	12	7.5	Nutrition	9
8	Coping	10	8.5	Comfort	15	8.5	Anxiety	7	7.5	Depression	9
9	Weakness	7	8.5	Skin integ	15	8.5	Skin integ	7	9	Coping	8
			10	Sleep	13						

Table 3. RN Terms Used for Two Frequently Occurring PCP-Related Problems

	RNQ*	NCP	RNC	ISR
	%	%	%	%
<u>Respiratory</u>				
Impaired Gas Exchange	0	100	0	0
Shortness of Breath/Dyspnea	45	0	32	45
Respiratory Status	24	0	27	0
PCP	18	0	0	11
Decreased Oxygen Saturation	0	0	0	24
Other	13	0	36	21
<u>Fever</u>				
Potential for Hyperthermia	0	100	0	0
Fever	80	0	29	48
Temperature	6	0	48	43
Diaphoresis/Night Sweats	13	0	24	10

*RNQ-Nurse Interview; NCP-Care Plan; RNC-Nurses' Notes/Activity Record; ISR-Intershift Report

the beginning of their hospitalization for PCP, an audit of the nurses' care plan (NCP), an audit of nurses' notes (RNC), and a recording of problems reported during the intershift report (ISR). During the RNQ, the nurse was asked to identify the patient's three or four major problems at the time. The NCPs audited were generated using a Technicon care planning system which is based on functional health patterns and nursing diagnoses. Both activity records/flow sheets and narrative nursing notes were examined by an RN research assistant for documented patient problems. The problems identified in the ISR were manually recorded verbatim. Problems collected from the four data sources were entered into Ethnograph for coding and analysis.

Results

Table 2 shows the patient problems with frequencies of five or more as reported by their nurses with frequencies of 5 or more. The percentages of patients with each identified problem are also listed for each data source. The top three problems focus upon physiological manifestations of PCP such as respiratory status and fever or human responses to treatment for PCP including nausea, vomiting, and alteration in nutritional status [18]. Psychosocial problems appeared more frequently when the nurses were providing verbal (RNQ or ISR), rather than written information (NCP or RNC). For example, anxiety ranked 4th in the RNQ and 4.5 in the ISR, but did not rank in the NCP and ranked 8.5 in the RNC. The category of respiratory problems which included shortness of breath, oxygen desaturation, and others occurred most frequently for all sources of data except the NCP. It is of interest that only 28% of the NCPs had an activated problem related to respiratory status when the patients were hospitalized for pneumonia. The low ranking on the NCP may be due in part to the exclusive focus of the care plan on nursing diagnoses and management, rather than medical management of the patient. It may also be reflective of the fact that only 57% of the sample had a NCP and the possibility that those without NCPs were experiencing more respiratory problems.

As shown in Table 3, the terms used by the nurses to refer to two frequently occurring PCP-related problems varied according to data source. Respiratory impairment is a common presenting

symptom of PCP [18]. The nursing diagnosis, Impaired gas exchange, was reported exclusively in the nursing care plans. Shortness of breath/dyspnea was the most frequently occurring term used in the other three sources of data. The high frequency of the term, respiratory status, in the nurses' notes is reflective of a "review of systems" approach to patient assessment implemented for the narrative notes by some nurses. For fever, the nursing diagnosis, potential for hyperthermia, was used only on the nursing care plan. Fever was the most frequently occurring term for an elevation in temperature in the verbal data sources (RNQ and ISR) while temperature was the most common term in the RNC.

Discussion and Implications

Even within the narrowly specified sample of PLWAs hospitalized for Pneumocystis carinii pneumonia, the patient problems varied according to source of data. For example, psychosocial problems occurred more frequently in the RNQ and ISR. Holzemer and Henry recently reported on the lack of consensus related to identified patient problems for care planning for the AIDS patient across settings [19]. The data reported here support those findings. While the NANDA taxonomy of nursing diagnoses was implemented in the computer-supported care planning system, nursing diagnoses were not used in other sources of communication. Problems were more commonly reported as symptoms (ie. shortness of breath/dyspnea, fever) than as nursing diagnoses in the RNQ, RNC, and ISR.

The results of this study demonstrate the difficulties of developing a nursing taxonomy when there is not consensus about the relevant data for nursing within a specific patient sample. Although existing information technology is capable of processing large volumes of nursing data, the lack of a common taxonomy limits the usefulness of the technology for both documentation of care and decision support applications. Continued research in taxonomy development for patient problems, nursing interventions, and patient outcomes is essential for the advancement of nursing knowledge and to fully utilize current and future information technologies. As Schultz recently stated in an address to the Fourth International Conference on Nursing Use of Computers and Nursing Science in

Melbourne, Australia, "...the paradigm shift is here and it consists of nursing as a profession taking control of the data and the data systems it manages (p. 20)" [20].

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