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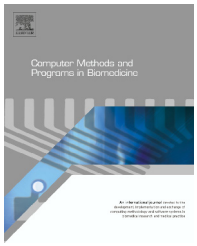

A preliminary study on the use of clinical care classification in nursing documentation data sets

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ABSTRACT

This study analyzed and organized the content coverage of the clinical care classification (CCC) system to represent nursing record data in a medical center in Taiwan. The nursing care plan was analyzed using the process of knowledge discovery in the data set. The nursing documentation was mapped based on the full list of nursing diagnoses and interventions available using the CCC system. The result showed that 75.45% of the documented diagnosis terms can be mapped using the CCC system. A total of 21 established nursing diagnoses were recommended for inclusion in the CCC system. The results also showed that 30.72% of assessment/monitor tasks and 31.16% of care/perform tasks were provided by nursing professionals, whereas manage/refer actions accounted for 15.36% of the tasks involved in nursing care. The results showed that the CCC system is a suitable clinical information system for the majority of nursing care documentation, and is useful for determining the patterns in nursing practices.

1. Introduction

Practicing nurses have been described as knowledge workers with the capacity to use data and aggregate information. Electronic patient records (EPRs) are the information and communication tools currently used by health care professionals to document their work and help them care for patients [1]. An EPR is a record of the patient structured in an organized format; nurses play a vital role in the documentation of EPRs.

Nurses require unique terminology to describe their tasks, to ensure that they are compensated for the care they provide. Evidence of the skills and knowledge of a nurse, as well as the use of assessment instruments, pre-coordinated designs by the provider, care plans, alerts, reminders, automated notifications, and required actions must be recorded using standard clinical terminology in electronic format. Data must be collected in a sensitive and discrete manner, and must clearly display any shift in the condition of the patient. This allows other nurses to use the data for clinical reasoning and decision-making processes. This aggregation of nursing data enables researchers to develop further knowledge related to the quality and cost of care to compare quality and cost across localities and time [2]. Throughout the history of medical profession, nurses have documented the care they provide using individual and unit-specific methods, including narrative descriptions, flowcharts, and critical paths. Consequently, a wide range of methods are used to describe the same care.

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This practice has resulted in misunderstanding and misinterpretation of the care provided, resulting in difficulty in ensuring continuity and evaluating the care provided in various settings.

It is impossible for medical, nursing, or other health care-related professions to implement electronic documentation without a standardized terminology or vocabulary to describe the crucial components of the care process. The benefits of standardizing nursing terminology include improved communication among nurses and between nurses and other health care providers [1]. In addition, standardized nursing terminology can increase the visibility of nursing interventions, improve patient care, and enhance data collection to evaluate nursing care outcomes, resulting in greater adherence to the standards of care, and facilitating the assessment of nursing competency.

Most experts on nursing agree that standardizing nursing terminology will improve patient care and play a vital role in building a body of evidence-based outcomes for the nursing profession. Evidence of nursing care provided must be included in each application, regardless of whether it is an expert rule to support clinical decisions or data collected in electronic form [4,5]. This will also help nurses ensure that patient data are captured in the system using standardized terminology.

Nursing terminology organized into classification systems can enhance the quality of nursing documentation and enable the design of quality assurance and decision support systems, as well as the aggregation of research data from EPRs [1]. In addition, the enumerated classifications are useful in data retrieval and analysis to manage resources more effectively, identify the nursing input in the care process, formalize knowledge on nursing practice, and for use in statistical evaluation [6].

Because current medical terminology did not accurately represent nursing practices, by 1999, these descriptions were competing with one another for incorporation into health care information systems; to date, none have been accepted as a standard [7].

2. Background

The use of standardized nursing language in the documentation of nursing care is vital to the nursing profession. Because of the extensive development of a standardized nursing vocabulary, several nursing experts have attempted to develop a universal set of relevant nursing data using multiple conceptual frameworks to guide nursing practice, including the whole-person perspective of nursing. In addition, they have attempted to define the data elements required to capture various nursing diagnostic and/or classification systems, interventions, and outcomes. Attempts to develop a standardized language for nursing began over 25 years ago when the North American Nursing Diagnosis Association (NANDA) standardized the language of diagnoses. Otherwise, the Nursing Interventions Classification (NIC) and the Nursing Outcomes Classification (NOC) were developed by research teams at the University of Iowa College Of Nursing [8,9]. In addition to these nursing terminology systems, the America Nursing Association (ANA) has recognized 13 standard nursing terminology systems related to clinical nursing practices. The other 10 terminologies include the Omaha system, Home Health Care Classification (HHCC), Patient Care Data Set (PCDS), Perioperative Nursing Data Set (PNDS), Nursing Minimum Data Set, Nursing Management Minimum Data Set (NMMDS), International Classification of Nursing Practice(ICNP), Complete Complementary Alternative Medicine Billing and Coding Reference (ABC Code), Logical Observations, Identifiers Names, and Codes (LOINC), and Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) [3,10].

Over the past decade, several researchers and nursing informatics theorists have studied the issue of nursing terminology. These studies have focused primarily on describing the characteristics of the classifications, comparing the examined system to various classification systems, and using the system to code the nursing care of patients under special conditions. In most health institutes worldwide, electronic health records use one of several standardized nursing languages, such as NANDA international, NOC, or NIC.

In health institutes in Taiwan, nursing documentation is voluminous, and is traditionally presented in a free-text format rather than a structured format using discipline-specific terms. Since the 1980s, most clinical nurses are taught to use the Chinese version of NANDA when describing patient health problems regarding signs, symptoms, and nursing diagnoses. In the 1990s, a few hospitals developed their own electronic nursing care plan system using the NANDA diagnostic concept structure [11]. However, because no clear coding operations exist for current computerized nursing care plan (CNCP) systems, the data within the systems cannot be searched, analyzed, and introduced. Moreover, new nursing knowledge cannot be generated.

3. Design consideration

This study analyzed the use of the Clinical Care Classification (CCC) system (V2.0) to present nursing record data in a critical care center in Taiwan. The researchers analyzed current nursing plans, nursing records, patients' health problems, nursing interventions, and nursing results retrieved from the CNCP and matched to the standard terminology of the CCC 2.0 system.

The CCC system, previously known as the HHCC, was developed by Dr. Virginia K. Saba and her colleagues during the Home Care Project (1988–1991). The HHCC was created to document nursing care provided in home health and ambulatory care settings. The CCC system can be defined as a data set, code set, classification, taxonomy, terminology, and/or nomenclature [5,11,12]. The CCC terminology system can be defined as classifications because it has a hierarchical structure, and can also be defined as a terminology because it represents a system of concepts [11,12].

The CCC system is specifically designed as a clinical information system to facilitate nursing documentation at the point of care. The CCC system consists of two interrelated terminologies: CCC of Nursing Diagnoses and Outcomes and CCC of Nursing Interventions [11]. Its framework consists of four health patterns and 21 care component classes, and consists