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# Uncovering the Antecedents for Measuring the Nursing's Contribution to Quality of Care Provided to Patients: Role of Health Information Technology on the Care Coordination

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## ABSTRACT

This project intends to identify and develop context-specific measurements that would capture nursing's contribution to the quality of care provided to the patient during their visit to the hospital. In this time period nurses play a critical role in many facets of establishing of care quality. There are significant numbers of outcome measures capturing the quality of care provided for the patient. However, there is a deficiency in the area for assessing the factors that would have an important effect on the nurses who are the primary contact with the patient. Literature provides us with evidence that there is a relationship between certain factors in the practice environment and employee behavior, but fails to put those relationships in the context that would be clinically and empirically robust measures that would reasonably assess the relationship with nursing quality and its relationship with organizational factors, health information technology, and quality outcomes.

## Keywords

Health care information technology, care coordination, quality of care.

## INTRODUCTION

The work presented here is a 'research in progress' presentation of an ongoing investigative project that is currently being conducted at a community hospital located in Southeastern US, for the reasons of confidentiality we will refer to this facility as Community Hospital (CH). CH is an 850-bed publicly owned community hospital. The hospital is the only publicly owned hospital providing charity care in a five-county region. CH employs almost 4000 employees, of which almost 1200 are nurses. The average age of a nurse at CH is 48 years.

CH is an American Nurses Credentialing Center (ANCC) Magnet-designated organization, receiving designation in March 2003. As a Magnet facility, CH participates in the American Nurses Association's National Database of Nursing Quality Indicators (NDNQI). Despite the fact that CH ranks in the upper quartile of hospitals in the indicators of skill mix with a high registered nurse (RN) ratio, and also in percentage of nursing hours delivered by RNs, some patient care units in the hospital struggle to attain benchmark in the nurse-sensitive outcome areas of pressure ulcer prevention and falls.

Early in 2004, a series of focus groups were conducted as part of a study of quality and safety after a sentinel event occurred at the hospital. A predominant theme that emerged from the focus groups was the perceived change in workflow caused by the integration of more and more technology. It was very evident that the practice environment of nurses had been negatively affected by technology.

CH has an almost 100% electronic medical record, including computerized physician order entry (CPOE). While all designed to improve efficiency and the quality of care, nurses readily vocalize the fact that software glitches, connectivity issues and issues stemming from hardware availability and software functionality often shift the focus of nursing care from a patient-centered approach to a series of frustrating, thankless process-driven tasks. The frequent software upgrades (most recently in October of 2005) appears to be impacting nursing engagement and organizational commitment. In fact, the steadily rising turnover rate within the first 90 days of employment has been anecdotally attributed to the nurse's frustration with various issues related to the electronic documentation system in use at the hospital.

## PURPOSE OF THIS STUDY

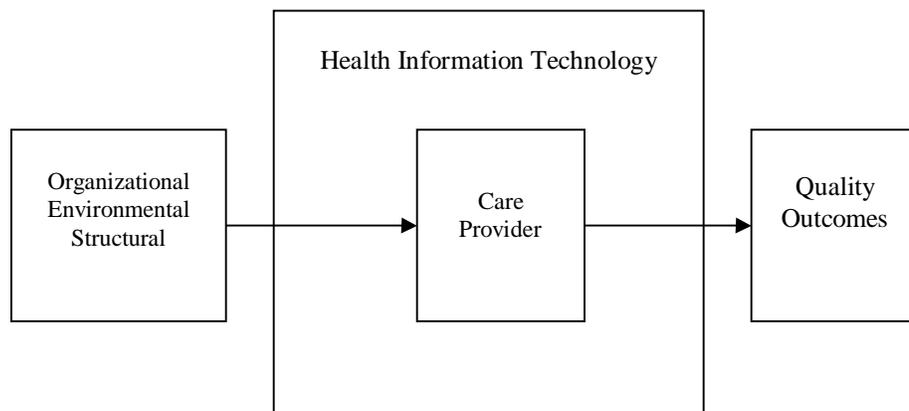
True to the scope of the NDNQI the researchers undertook the current study specifically focused on understanding the structural, organizational and environmental factors that may have a casual effect on the quality of nursing care in acute care setting. The researchers are especially interested in identifying health information technology related factors that may have an impact on care coordination in conjunction with the aforementioned factors. The study findings should yield clinically and empirically robust measures that would link the aforementioned factors to quality outcomes. Through interdisciplinary collaboration an encompassing approach has been adopted to identify, develop, test and use measures that capture nursing's contributions to improving the quality of the care that patients receive. We would like to stress that ability for nursing to contribute to the quality of care received by the patient needs to be studied in a macro level where the quality outcomes may be affected by multiple factors (this argument is further explained in the methodology section). We believe that the opportunity presented to the researchers by CH in conducting the proposed research project in a natural setting offers a tremendous opportunity to contribute to field of knowledge.

## LITERATURE REVIEW

Information technology (IT) has been touted as a significant contributor to process improvements and for creating efficiencies in many organizations (Mukhopadhyay, Rajiv and Srinivasan, 1997; Rai, Patnayakuni, and Patnayakuni, 1997; Thatcher and Oliver, 2001; Kudyba and Vitaliano, 2003; Chen and Zhu, 2004; Mitra, 2005). Based on the importance given to the IT as an organizational change agent and considering the attention IT has been receiving from various stakeholders in the health care arena (Kock and McQueen, 1995; Miller and Sim, 2004; Gans, Kralewski, Hammons and Dowd, 2005; Lee, Cain, Young, Chockley and Burstin, 2005) one would expect to encounter ample study investigating the role of IT in health care organizations, specifically in hospitals. However, despite of these efforts there is a dearth of literature that comprehensively examines the impact of hospital's HIT adoption on the quality of health care, especially in a high velocity nursing setting. Even though there are numerous studies that focuses on the relationship of HIT adoption and quality outcomes in health care, little attention has been paid how HIT impacts the quality of care provided by the nurses. Literature on nurse's workplace performance (Lum, Kervin, Clark, Reid and Sirola, 1998; Aiken, Clarke and Sloane, 2001; Cummings and Estabrooks 2003; McCusker, Dendukuri, Cardinal, Laplante and Bambonye, 2004) offers us some understanding on the role of certain factors impacting their job performance but fall short in capturing the role of increasing HIT use in the hospital.

## THEORETHICAL FOUNDATION

The theoretical foundation for our study stems from various disciplines such as Theory of Reasoned Action, Social Cognitive Theory, and Contingency Theory (AIS 2006). Studies that have identified factors such as organizational climate, culture, structure, management, infrastructure, and technical support could play a role in the staff performance and outcomes (Kimberly and Evanisko, 1981; Meyer, 1988; Brynjolfsson, 1994; Evans and Hoole, 2005; Horwitz, 2005). Also studies done in the field of support and burnout, job satisfaction, and employee productivity (Rai et al. 1997; Thatcher et al. 2001; Brewer and Shapard, 2004; Marks, 2004; Patterson, 2004; Tsigilis, Koustelios and Togia 2004) provides us with underlying factors to integrate in the proposed research. Figure 1 depicts the conceptual research framework as the basis for our study.



The research framework represents a holistic approach to identifying the critical factors where HIT's impact on the quality outcomes is manifested through the hospital's effective assimilation of such technologies as well as being mediated through the nurse's overall care provisioning to the patient.

## METHODOLOGY

CH is the natural setting of the proposed study. Currently there are 1190 nurses employed at the hospital. Nurses from multiple departments at CH will be our subjects in the study. Conducting this research in the hospital setting where care coordination is influenced by many factors is imperative for our study since we are seeking to identify context-specific measurements that would capture nursing's contribution to the quality of care provided to the patient. Sharing information and using available technology plays a significant role in nurse's daily activity. However, they are not isolated from the events that take place within the organization, thus their primary duty can be hindered by numerous factors resulting in a potential decline in the level of service quality.

Ex post facto design approach is employed to identify the relevant factors, which then will be followed up with measurement process and scale development. The research agenda was identified and structured to proceed in the following order:

- Fact finding visit to various departments at the hospital to conduct structured and unstructured interviews. (completed)
- Conduct focus groups using an Appreciative Inquiry (AI) approach. (completed)
- Investigate the underlying characteristics of the events identified in our research framework
- Identify and develop the measures
- Perform Content, Construct, and Criterion-related validity evaluations

The intended outcome is to identify appropriate context specific scales that would be used to develop a questionnaire which would subsequently be used in a survey. The data collected will be analyzed using various multivariate statistics.

## FINDINGS

Researchers to date completed three investigative studies at the CH. One study involved taped face to face interviews with eleven nurses. Interview questions probed the subject about the role they had as a nurse and how they felt about their job. Their comments about the implementation and use of EMR at the hospital and how it impacted their work was solicited. A preliminary study of these interviews indicates that even though nurses understand and appreciate the positive impact of such HIT tools they find administration's adoption policies as well as strategies disruptive and unduly tasking on them.

A second study conducted by researchers held twelve nursing staff focus groups that involved nurses from three shifts from inpatient and outpatient procedural areas. The locus of the focus group interviews was "Perceived barriers to safe and effective delivery of nursing care". The common theme emerging from the focus group interview analysis is the frustration with the excessive paperwork that now needs to be done by use of technology which may or may not function as it was supposed to. Along with technology grievances nurses were also displeased with the level of organizational commitment to employee relations, work coordination and streamlining processes not to discount issues stemming from staffing shortages.

Third study conducted focused on assessing the training needs of nurses where the hospital keeps adding HIT features and expect the nurses to adapt to these additions while providing continuous care. Again, preliminary analysis of these interviews indicates that there is a misalignment between the needs and wants of the nursing staff and the provisions of the hospital administration. We should note that the nursing staff indicated no resentment towards the CH administration, but rather were voicing their desire to be better heard on the issues that directly involved their job and quality of care provided in their units.

## DISCUSSION

The findings presented above are preliminary and are currently being further analyzed. The early indications lead us to believe that under the pressure of high velocity work environment the changing needs of the nursing staff has been neglected. A better understanding of the dynamic environment of hospitals and the factors impact the nurses' health care delivery is emerging as an area that is lacking in the literature. The traditional nursing has been suddenly burdened with an added or perhaps enhanced role as knowledge workers. This added role had never been a part of nursing's job definition, to date still a nurse is considered as a bedside care giver. All findings point towards the need of a comprehensive assessment of the proposed research framework.

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