Participant action research with bedside nurses to identify NANDA-International, Nursing Interventions Classification, and Nursing Outcomes Classification categories for hospitalized persons with diabetes

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Received 30 November 2009; revised 5 August 2010; accepted 16 August 2010

Abstract

Experienced bedside nurses identified 14 nursing diagnoses, 78 interventions, and 76 health outcomes for hospitalized persons with diabetes. Using these terms, the nursing department revised the standards of care and the electronic health record. Nurses’ engagement in generating knowledge translated to increased interest in research. This methodology is recommended for other agencies.

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International and national mandates for improved quality of care have led to the adoption of electronic health records (EHRs; Institute of Medicine, 2003; McConnell, 2004). With the use of EHRs, data can be aggregated and interpreted to determine health outcomes as they relate to diagnoses and interventions. The resulting data interpretations can be used to compare, contrast, and improve health care quality across systems. For decades, nurses have foreseen this change from paper to electronic records and have prepared for it by developing standardized nursing vocabularies (SNVs), such as NANDA International (NANDA-I), the Nursing Interventions Classification (NIC), and the Nursing Outcomes Classification (NOC; Bulechek, Butcher, & Dochtermann, 2008; Moorhead, Johnson, Maas, & Swanson, 2008; NANDA-I, 2009). The American Nurses Association (ANA, 2007) Committee for Nursing Practice Information Infrastructure approved 13 data element sets and terminologies for use in the EHR.

The vocabularies of NANDA-I, NIC, and NOC are the most comprehensive of all available data sets for nursing practice, and they have a strong research base (ANA, 2007; Bulechek et al., 2008; Moorhead et al., 2008; NANDA-I, 2009). These vocabularies consist of standardized labels, definitions, descriptions, and computer codes for use in EHRs. The availability and use of standardized vocabularies make it possible to aggregate data for description of common nursing diagnoses, nursing interventions, and health outcomes as a basis for quality improvement and to determine achievement of national and other standards. In a study that compared nursing diagnoses with diagnosis-related groups as predictors of patient outcomes, nurses’ diagnoses had higher predictive value of outcomes such as length of stay and disposition (Welton & Halloran, 2006).

The use of these languages can be a problem, however, because the three languages currently include more than 1,000 terms with definitions and descriptions. These are too many terms to be useful to nurses in health care agencies that serve specific populations. Identification of the terms that are relevant for use with populations such as hospitalized persons with diabetes is needed to improve the efficiency and effectiveness of EHRs. The purpose of this study was to identify the bedside nurses’ perspectives of the relevance of the terms in NANDA-I, NIC, and NOC for use with adults with diabetes mellitus (DM) who are served by a community hospital.

1. Background

The terms within these three SNVs represent three essential elements of the nursing process to be documented...

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0897-1897/$ – see front matter © 2012 Elsevier Inc. All rights reserved. doi:10.1016/j.apnr.2010.08.001
in health care systems: nursing diagnoses, nursing interventions, and patient outcomes. Using these three languages enables standards of care within EHRs to focus on a nursing model for practice, instead of a medical model; that is, the standard of care is driven by the nurses’ diagnoses, not the medical diagnoses. In a description of hospitals as complex adaptive systems, it was shown that use of SNVs also reduced the complexity of documentation and increased efficiency (Clancy, Delaney, Morrison, & Gunn, 2006).

Standards of care for adults with DM are a high priority because the incidence and prevalence of this complex disease are rapidly growing (Centers for Disease Control, 2008). If the trend continues, one in three Americans will develop Type 2 DM, and their life expectancies will be shortened by 10–15 years. Many persons with diabetes are hospitalized at some course of their disease for concomitant illness or complications. The need to provide quality nursing care is imperative.

To achieve quality nursing care, nurses are ethically obligated to help adults with DM to integrate prescribed therapeutic regimens with daily living (Redman, 2005). The nurses’ role in hospitals and community settings is to facilitate patients’ self-management activities to obtain and maintain glycemic control.

Current guidelines aim for the treatment goal of optimum glycemic control to prevent end-organ damage and complications (American Diabetes Association, 2009). To achieve optimum efficiency and effectiveness, treatment plans that include patients and their families should be instituted with interdisciplinary team members. Such plans need to be individualized because patients respond differently to education, self-management strategies, and the therapeutic regimens to control their disease.

An essential component of managing DM is that individualized treatment plans be evaluated for health outcomes (American Diabetes Association, 2009). Use of the SNVs of NANDA-I, NIC, and NOC facilitates this process by contributing to an interdisciplinary plan of care that reflects nurses’ and patients’ collaborative interpretations of patients’ responses to the disease, that is, nursing diagnoses; the expected health outcomes; the nursing interventions necessary to alleviate or eradicate problems and risk states and enhance health promotion; and the achieved health outcomes. Standardization of these elements of nursing care for an acute care agency requires identification of the specific terms needed to produce individualized treatment plans.

This study identified bedside nurses’ perspectives in caring for a community hospital’s population of adults with DM. The research questions were as follows:

1. What are the NANDA-I terms of human responses or experiences with DM that are relevant for adults with DM in this acute care setting?
2. What are the NIC terms to help adults with DM and provide treatments for the identified diagnoses of human responses or experiences?
3. What are the patient and family NOC terms that are sensitive to changes in the quality of nursing care and may indicate that nursing interventions are helping adults with DM to reach glycemic control?

2. Method

The study was approved by the institutional review board of the College of Staten Island. The investigators used the participant action research (PAR) methodology and a total consensus validation method to identify the NANDA-I, NIC, and NOC categories that are relevant for adults with DM who are admitted to this community hospital and require nursing care (Carlson, 2006; Stringer, 2007).

The PAR is a qualitative methodology that involves asking community-based stakeholders who have specific interest in use of the research product to answer the research questions (Stringer, 2007). The PAR methodology builds positive working relationships and encourages open communication. In this study, the central focus was that each staff nurse’s opinions were valued and encouraged. The total consensus validation method used for this study provided strategies to apply the PAR methodology with staff nurses to obtain 100% consensus on the NANDA-I, NIC, and NOC categories for use with adults with DM (Carlson, 2006). The standardized terms represent diagnoses to guide nursing care, nursing interventions to address the diagnoses and achieve positive health outcomes, and the health outcomes of patients and their families.

2.1. Sample

In the standardized methodology of the consensus validation method (Carlson, 2006), the recommended sample size is three experienced nurses who volunteer for the study. This sample size is recommended because the effort of gaining consensus takes many hours of discussion, which includes the resolution of conflicting positions. To achieve this goal, registered professional nurses who worked at the hospital for at least 5 years with bedside clinical medical–surgical nursing experience were recruited at meetings. For this study, four nurses volunteered and remained until the study was completed. To prevent too small a sample size that would occur with attrition, having an extra nurse in the study was helpful. The nurses were paid their hourly wage by the institution for the 1.5–2.0-hour consensus validation meetings. They were not compensated for preparation time for reading and individual selection of the NANDA-I, NIC, and NOC categories. The NANDA-I, NIC, and NOC books were provided by the organization. Each nurse signed an informed consent that specified that they could remain anonymous and they could withdraw from the study at any time without retribution.

2.2. Data collection procedures

The study was led by two nurse leaders with master’s degrees in nursing. These leaders were trained in the study
procedures by the principal investigator. The four expert bedside nurses all had more than 15 years of experience in medical–surgical nursing. Collectively, two were graduates of diploma programs, one had an associate’s degree, and one had a bachelor’s degree in nursing. All of the nurses were currently certified in medical–surgical nursing. During training, the study procedures were presented, and the roles of the researcher, leader, and bedside expert nurse were defined. The competencies of the nurse leaders in PAR methodology included facilitating group process so that all participants’ inputs were encouraged, focusing the group on the task, and advising on clinical and NANDA-I, NIC, and NOC issues, but not imposing their personal views. At each meeting, one of the leaders was responsible for recording the lists of NANDA-I, NIC, and NOC categories discussed at each meeting and updating the master list with changes.

At the beginning of each phase of the study, that is, the diagnostic phase, intervention phase, and outcome phase, the four participating nurses reviewed the NANDA-I, NIC, and NOC categories at home. This included their decisions of inclusion or exclusion of each category. The leaders scheduled subsequent consensus discussion meetings at times when at least one leader and the four participating nurses could attend. The consensus meetings consisted of a nurse leader reading the list to participants and each nurse would state if the label was applicable or not. Most discussions centered on the application to typical patients in the population, not just a particular patient. These discussions reinforced the need for nurses to share their individual views of nursing care and led to many conversations to gain consensus. Whenever consensus did not occur, the leader read the category definition and criteria aloud to the group for reconsideration and discussion of the reasons for inclusion or exclusion. The sessions did not continue until consensus occurred on each category.

Each meeting lasted 1.5–2.0 hours, for a total of 30 hours in a 1-year period. The study’s cost was relatively low, considering the benefits, at $6,894 for staff time and the purchase of NANDA-I, NIC, and NOC books for participants and leaders.

3. Results

The findings were that 14 NANDA-I diagnoses, each with 7–19 NIC interventions (n = 78), and 4–14 NOC outcomes (n = 76) were identified by the nurses as relevant for this population of adults with DM (example in Table 1). Of the selected diagnoses, two were physical problem responses, that is, Delayed Surgical Recovery and Impaired Skin Integrity (NANDA-I, 2009). Seven were risk states, that is, Risk for Activity Intolerance, Risk for Caregiver Role Strain, Risk for Falls, Risk for Infection, Risk for Peripheral Neurovascular Dysfunction, Risk for Powerlessness, and Risk for Impaired Skin Integrity. Two diagnoses were selected to guide health promotion, that is, Readiness for Enhanced Nutrition and Readiness for Enhanced Self-Health Management. The three remaining diagnoses reflected the nursing approach of helping people with diabetes to achieve self-management, that is, Deficient Knowledge, Ineffective Self-Health Management, and Ineffective Family Management of Therapeutic Regimen. These 14 diagnoses are not applicable to each patient but serve as a decision template of likely possibilities for nurses to choose in developing individualized plans of care.

Interventions that were selected specifically addressed the diagnoses that had been initially selected. The interventions covered a wide range of nursing care services such as Self-Care Assistance, Mutual Goal Setting, Support System Enhancement, Family Involvement Promotion, Exercise Promotion, and Pain Management (Bulechek et al., 2008). Indirect nursing interventions, such as Referral, Shift Report, and Documentation, were also included for a complete practice guideline. Occasionally, an intervention that was not immediately linked to a diagnosis was selected. An example of this was the intervention of anxiety reduction. The nurses had already

<table>
<thead>
<tr>
<th>NANDA-I diagnoses</th>
<th>NIC nursing interventions</th>
<th>NOC outcomes</th>
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<tbody>
<tr>
<td>Risk for Powerlessness</td>
<td>Active Listening</td>
<td>Acceptance: Health Status</td>
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<tr>
<td>Anxiety Reduction</td>
<td>Anxiety Self-Control</td>
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<tr>
<td>Coping Enhancement</td>
<td>Client Satisfaction: Caring</td>
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<tr>
<td>Counseling</td>
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<td>Decision-Making</td>
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<td>Support</td>
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<td>Emotional Support</td>
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<td>Hope Instillation</td>
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<td>Self-Esteem</td>
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<td>Enhancement</td>
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<table>
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<tr>
<th>Readiness for Enhanced Self-Health Management</th>
<th>Behavior Management</th>
<th>Acceptance: Health Status</th>
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<tbody>
<tr>
<td>Capillary Blood Sample</td>
<td>Blood Glucose Level</td>
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<tr>
<td>Discharge Planning</td>
<td>Client Satisfaction: Access to Care Resources</td>
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<td>Documentation</td>
<td>Client Satisfaction: Continuity of Care</td>
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<td>Family Involvement</td>
<td>Client Satisfaction: Teaching</td>
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<td>Promotion</td>
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<td>Family Support</td>
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<td>Health Care</td>
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<td>Information Exchange</td>
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<td>Hyperglycemia</td>
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<td>Management</td>
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<td>Hypoglycemia</td>
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<td>Management</td>
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<td>Multidisciplinary Care</td>
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<td>Conference</td>
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<td>Discharge Readiness: Independent Living</td>
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<td>Shift Report</td>
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<td>Supported Living</td>
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<td>Support System</td>
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<td>Enhancement</td>
<td>Knowledge: Disease Process</td>
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<tr>
<td>Teaching: Individual</td>
<td>Knowledge: Treatment Regimen</td>
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Note: Readers who want the completed results can write to the first author.
decided that the diagnosis of anxiety would not be included, but, through discussion, they realized that their interest in this intervention related to Risk for Powerlessness. The nursing interventions for Risk for Powerlessness are listed in Table 1. The nurses decided that these interventions would be applicable to a majority of patients who self-manage this chronic disease.

The outcomes selected were categories that could be measured for patient satisfaction, changes in patients’ conditions such as progress toward glycemic control, and prevention of complications (Moorhead et al., 2008). A sample of the selected outcomes was Blood Glucose Level, Participation in Health Care Decisions, Knowledge: Disease Process, Diabetes Self-Management, Discharge Readiness, and Family Coping. The nurses decided that these outcomes would be applicable to those newly diagnosed with DM or those who were hospitalized with complications or superimposed illness. A major purpose was to help patients achieve glycemic control and prevent further hospitalizations.

In the processes of conducting this study, the nurses became more aware of the complexity of professional nursing practice and the critical-thinking processes that they routinely use in clinical practice. The time for reflection on practice that occurred in this study translated to these nurses being agency champions for evidence-based nursing initiatives.

4. Discussion

The identification of nursing diagnoses, nursing interventions, and health outcomes for use in standards of care and an EHR meets one of the latest recommendations of the American Association of Diabetic Educators (AADE) to establish practice guidelines (Martin et al., 2008). The research product of this study is a practice guideline for a local population.

The diagnoses, interventions, and outcomes selected reflect research-based literature sources on health and nursing care of adults with DM such as recommendations of the American Diabetes Association (2009) and others (Franz, 2001). The interventions to resolve or mitigate the problems of Deficient Knowledge and Ineffective Self-Health Management, for example, are intended to help patients improve their glycemic control. In a review of Cochrane Systematic Reviews to identify the benefits of nursing education of patients with chronic illnesses including diabetes, it was concluded that the evidence is promising for people with diabetes, but the “active ingredients” of successful interventions are not clear (Coster & Norman, 2009). In a randomly controlled clinical trial of 50 adults with diabetes who, prior to the study, had no significant differences in metabolic control, the intervention group that received three educational sessions to improve knowledge of DM and self-management significantly improved metabolic control compared with the control group who did not receive the educational sessions (Mollaoglu, & Beyazit, 2009).

Identification of seven risk states and two health promotion diagnoses to include in nursing care is important to help adults with DM with their struggles to achieve higher quality of life despite the disease and to identify themselves as persons with diabetes rather than diabetic persons (Gurková, Cáo, & Ziaková, 2009; Olshansky et al., 2008). The focus on reduction of risks may prevent diabetic complications, a factor that interferes with quality of life (Gurková et al., 2009). The focus on health promotion may help adults with DM to proactively manage their diabetes so that self-management feels like healthy living rather than a treatment regimen.

Risk for Powerlessness, which was added by the nurses after the final list had been compiled, was important because the experience of powerlessness interferes with self-management (Aujoulat, Luminet, & Deccache, 2007). Nursing interventions to prevent powerlessness may reduce or eliminate this barrier to self-management. A sense of power enables adults with DM to make important and complex decisions regarding their daily care for glycemic control because they are the ones with the disease.

Measurement of the health outcomes identified by these nurses will enable validation of the quality of nursing care of adults with DM who are hospitalized (Clancy et al., 2006). The outcomes selected in this study for the hospital phase of diabetes care meet some of the standards identified by the AADE Diabetes Education Outcomes Project (Peeples, Tomky, Mulcahy, Peyrot, & Siminerio, 2007). The Diabetes Education Outcomes Project recommended that health providers measure the seven self-care behaviors of healthy eating, being active, monitoring, taking medications, problem solving, healthy coping, and reducing risks. Using the outcomes identified in this study, the hospital nurses will be able to measure these seven self-care behaviors.

The time invested by the nurses in this study enabled them to reflect on and appreciate their nursing practice. In a previous study, time constraints were shown to be a barrier to nurses’ utilization of research and evidence-based nursing practice (Bonner & Sando, 2008).

5. Limitations

PAR is a qualitative design with a small sample size, and thus, the study results cannot be generalized. Even in the agency where these nurses work, the study results may not apply to all adults with diabetes who are hospitalized. This is because people are unique and they respond differently to life experiences such as diabetes and its complications.

Another limitation is that the results have not been validated by adults with diabetes or their families. The nurses in this agency will use the results to mentally consider these diagnoses, outcomes, and interventions and, whenever possible, will validate the standardized labels that they are considering with patients or their families.

6. Implications

Using a PAR method for this consensus validation study benefits the agency, the nursing department, the participating
nurses, and the patients. The agency and nursing department benefit because the study provides research-based terms for standards of care and the EHR for adults with DM. Completion of the study contributes to the agency’s application for Magnet status (American Nurses Credentialing Center, 2009). Magnet recognition, an honor that recognizes excellence in nursing practice, requires that the nursing department conduct research studies to generate new knowledge and support nursing excellence.

The nurses benefit because they become more aware of their professional status and ability to think critically, appreciate the opportunity to generate new knowledge, and are able to use the standardized categories for individual plans of care. These categories are used for the front-end screen of an EHR. The nurses can more easily develop individualized plans of care by selecting from this smaller list of targeted categories. In this agency, the nurses plan to repeat this research process as it pertains to people with other chronic diseases, such as heart failure. To shorten the timeline for completion in future studies such as this, a timeline and schedule will be agreed upon prior to initiation.

Patients will benefit from this study because the nurse participants recognize the importance of all the interventions related to chronic disease management. The previous tasks that they performed, although important, did not fully encompass interventions to help people with self-management, for example, Self-Esteem Enhancement. Such interventions prepare patients to successfully cope with the disease and are necessary to meet the outcome standards.

It is recommended that other health care agencies use this standardized research methodology to achieve these same benefits. The PAR method for consensus validation is recommended as a way to involve experienced nurses in research, to travel the journey to nursing excellence, and to seek Magnet recognition. An advantage of PAR methods is that nurses are the researchers and the end products are used by the nurses. As done for this study, agencies that do not employ nurse researchers can collaborate with college-based nurse researchers.

The next step for this agency is that the nurses, through shared governance, are in the process of selecting a nurse theorist for integration with the current philosophy and standards of care. This is expected to strengthen the hospital’s nursing model for practice.

Acknowledgment

The principal investigator and coinvestigator thank an additional coinvestigator of this study, Loraine Skeahan, RN, MA, MSN, PNP, and a nurse leader, Alda Savite, BSN. They also thank the following staff nurses who were the research participants: Kathy Cartwright, RN,C, BSN, Joan Pavlovsky, RN,C, Nancy Peer, RN,C, and Susan Rinaldi, RN,C. They also thank Linda Ries, RN, DNP, CNAA, chief nurse executive, Hackettstown Regional Medical Center, for her support of the study.

References

Callouts

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