

Does Certification Status of Oncology Nurses Make a Difference in Patient Outcomes?

Marilyn Frank-Stromborg, EdD, JD, FAAN, Sandra Ward, PhD, RN, FAAN, Linda Hughes, PhD, RN, Karen Brown, PhD, AOCN®, Ann Coleman, PhD, RNP, AOCN®, Cecelia Gatson Grindel, PhD, RN, and Cynthia Miller Murphy, RN, MSN, CAE

Purpose/Objectives: To test hypotheses that patients cared for by Oncology Certified Nurses (OCNs®) have superior outcomes compared to those cared for by noncertified nurses.

Design: Descriptive ex post facto.

Setting: A homecare agency in the midwestern United States.

Sample: 20 nurses (7 certified and 13 noncertified) and charts for 181 of their patients.

Methods: Retrospective chart review.

Main Research Variables: Symptom management (i.e., pain and fatigue), adverse events (e.g., infection and decubitus ulcers), and episodic care utilization (e.g., visits to care facilities, admissions to care facilities, unscheduled home visits).

Findings: Contrary to hypotheses, the two groups did not differ with respect to assessment of pain at admission, number of pain assessments subsequent to admission, assessment of fatigue at admission, number of unplanned visits to care facilities, admissions to care facilities, and number of unscheduled home visits. As hypothesized, the OCNs® documented a higher number of postadmission fatigue assessments ($p < 0.05$). Contrary to hypotheses, patients of OCNs® had a greater number of infections and fewer documented instances of patient teaching regarding infection.

Conclusions: Little support was found for the hypothesis that nursing care by OCNs® results in superior patient outcomes in comparison to care by noncertified nurses.

Implications for Nursing: Further research is needed to examine the dimensions of clinical practice that may demonstrate the benefits of care by OCNs®.

Key Points . . .

- This study examines differences in nursing care provided by Oncology Certified Nurses (OCNs®) and noncertified nurses in a homecare setting.
- A retrospective chart audit was used to obtain patient demographic information, symptom management, incidence of adverse effects, and episodic care utilization by patients.
- The study failed to support the hypotheses that nursing care provided by OCNs® differed from that provided by noncertified nurses.
- Nursing continues to be challenged to demonstrate that certification makes a difference in patient outcomes.

tory certification, little research exists to support it. Studies must be done to describe the role of specialty certification in the delivery of quality care and attainment of desired patient outcomes. This area of research is especially critical at the present time because of increasing attention to specialty certification as a presumed indicator of clinical competence and quality care.

Recognizing the need for research in this area, the Board of Directors of the Oncology Nursing Certification Corporation (ONCC) created a committee to implement studies related to specialty nursing certification. Since its inception, the committee has been guided by the following question: "Does certification in oncology nursing make a difference?" As a first step, the committee conducted a nationwide study of ONS

Recent reports by the Pew Health Professions Commission (1995, 1998) have been instrumental in making regulation of the healthcare workforce a critical public policy issue. Recommendations from these reports center around the need for greater public accountability in the areas of governance of health professions, scope of practice authority, and demonstration of continuing competence. Because specialty certification is the postentry level credential recognized by most healthcare professions, attention has focused on certification as a mechanism to ensure public access to competent providers. In many settings, certification has become a mandatory requirement for specialty practice and is used as a quality assurance indicator. In conjunction with this trend, the American Association of Colleges of Nursing (1996) has predicted that certification soon will be a mandatory requirement for advanced nursing practice. Despite trends toward manda-

Marilyn Frank-Stromborg, EdD, JD, FAAN, is chair and presidential research professor in the School of Nursing at Northern Illinois University in Dekalb; Sandra Ward, PhD, RN, FAAN, is a professor in the School of Nursing at the University of Wisconsin-Madison; Linda Hughes, PhD, RN, is an associate professor of nursing at the University of Texas Medical Branch at Galveston; Karen Brown, PhD, AOCN®, is an oncology consultant and educator in Tucson, AZ; Ann Coleman, PhD, RNP, AOCN®, is a professor in the Medical Sciences' College of Nursing at the University of Arkansas in Little Rock; Cecelia Gatson Grindel, PhD, RN, is an associate professor in the School of Nursing at Georgia State University in Atlanta; and Cynthia Miller Murphy, RN, MSN, CAE, is executive director of the Oncology Nursing Certification Corporation in Pittsburgh, PA. (Submitted March 2001. Accepted for publication July 12, 2001.)

Digital Object Identifier: 10.1188/02.ONF.665-672

members to elicit opinions about the Oncology Certified Nurse (OCN®) credential, reasons the credential is obtained and retained, and the extent to which it is valued by employers (Coleman et al., 1999). The committee then explored links among nurses' OCN® status, types of work setting and work group cohesion, organizational commitments, and job satisfaction (Hughes et al., 2001). Following this work, the committee elected to expand its investigation to study specialty certification in oncology and patient outcomes. The purpose of this study was to describe differences in nursing care provided by oncology certified and noncertified nurses to home-based patients with cancer.

Theoretical Framework

Donabedian's conceptualization of quality health care was used as the theoretical framework for this study. Three overarching constructs are identified in this model as key determinants of healthcare quality: structure, process, and outcomes (Donabedian, 1966, 1992). Structure is used to represent enduring attributes of the client, provider, and practice setting that influence both outcomes and the processes through which care is delivered. Structure can be measured using client characteristics such as age or prior health status; provider characteristics such as education, years of experience, or specialty certification; and setting characteristics such as hospital size and type, volume of procedures performed, or number of specialties represented. Process refers to all actions and interactions that take place during the clinical management of a client. This construct can be interpreted broadly to represent not only the clinical processes of care but also the organizational or work-related processes through which effective and efficient care is delivered. In nursing studies, clinical processes have been measured using variables such as hours of direct care or number and type of skilled procedures performed. Work-related processes have been measured using variables such as interdisciplinary collaboration and managerial support for decision-making autonomy. Outcomes typically are defined as the end points of care or client responses resulting from the interaction between structure and process variables.

Related Literature

Few studies have investigated specialty certification in the healthcare professions or described links between provider certification and the processes and outcomes of care. Additionally, little work has been done to synthesize the findings of studies that have addressed provider certification. Three avenues of inquiry have been typical of the research on specialty certification among healthcare providers. Studies have been done to

- Identify characteristics that differentiate certified and noncertified providers.
- Describe variations in practice that are associated with certification.
- Link provider certification to patient outcomes.

In studies to differentiate characteristics of certified and noncertified nurse providers, researchers have focused primarily on knowledge in a specialized content area or ability to make sound clinical decisions. Several studies suggest that nurses who are specialty certified achieve higher scores on tests of clinical knowledge than do noncertified nurses. In an

assessment of 216 critical-care nurses, Iberti et al. (1994) found that knowledge about use of a pulmonary artery catheter was significantly associated with critical-care certification. Similarly, Pettinger, Woods, and Herndon (1993) evaluated knowledge of pediatric dysrhythmias using data from 356 pediatric critical-care nurses who responded by mail to a self-administered test. These researchers found that critical-care certification or certification in advanced life support was associated with significantly higher test scores. Finally, Walhall et al. (1993) questioned 212 nurses about clinical situations in which withholding digitalis is appropriate. These researchers found that critical-care certification was a significant factor in correct identification of such situations. In each of these studies, however, certification was associated with years of experience in settings where advanced or critical-care technologies are used. Experience may have mediated the relationship between certification and knowledge.

Similarly, nurses' certification status has been linked to differences in decision-making style (Henry, 1991; White, Nativio, Kobert, & Engberg, 1992), quality (Catolico, Navas, Sommer, & Collins, 1996), and consistency (Hughes, 1988). However, because these studies used simulated case scenarios, the ability of certified nurses to apply sound decision-making skills in actual patient situations remains unclear. This is especially true for nurses who work in settings that fail to support a practice model in which decision-making autonomy is encouraged. In summary, findings from this research indicate that differences may exist between certified and noncertified nurses in abilities seen as essential for competent nursing practice. However, appropriate application of knowledge and decision-making skills by certified nurses in actual clinical practice remains in question.

Studies to link certification with variables that reflect variations in nursing practice have yielded equivocal results. In one study, differences were found in the teaching styles used by providers certified in the management of diabetic patients. In comparison with their noncertified counterparts, certified diabetes nurse educators discussed more topics during telephone contacts with their patients (Leggett-Frazier, Swanson, Vincent, Pokorny, & Engelke, 1997). This difference in teaching styles also was associated with the educational levels and experience of the providers. Therefore, the independent contribution of certification to practice variations remained unclear. Redd and Alexander (1997) used certification status to compare nurses' job performance ratings. Using RNs from two acute care hospitals, these researchers found that certified nurses reported higher self-esteem and received better performance ratings from their supervisors than did nurses who were not certified. These researchers concluded that certification enhances nurses' self-esteem, which leads to better job performance. The psychological benefits attributed to certification by Redd and Alexander have been described similarly in other studies of nurses who are specialty certified. In a national survey of 1,217 oncology nurses, certification was described as personally rewarding and a vehicle for informal recognition as a clinical expert (Coleman et al., 1999). Laffoon (1994) and Cary (2000) reported similar findings. However, the presumed link between certification and performance is less clear. In an international study of more than 19,000 certified nurses, Cary found that more than 50% of the nurses said that certification enabled them to feel more competent, accountable, confident, and satisfied as nurses. Yet fewer than 25% of the same nurses reported that

certification enabled them to actually experience greater autonomy in their practice, collaborate with other providers, or initiate early interventions for patients who developed complications. These findings suggest that certification may be a source of personal empowerment for nurses, but the extent to which this sense of empowerment translates to quality nursing practice or better job performance remains uncertain.

Ultimately, the value of specialty certification will be determined by the ability to document relationships between it and desired patient outcomes (Spencer-Cisek & Sveningsson, 1995). Although some researchers have found positive outcomes for patients who received care from certified providers (Anderson, Brook, & Williams, 1991; Haas, Orav, & Goldman, 1995; Rogers et al., 1993), consistent support for a direct relationship between provider credentials and patient outcomes is minimal (Verran & Mark, 1992). In studies where such a relationship has been documented, researchers focused on practitioners who function in roles that permit substantial control over the clinical management of patients, such as board-certified physicians or certified nurse midwives. For this reason, outcomes could be traced to the actions of a single provider. In a study conducted with staff nurses working in a neonatal intensive care unit, however, Perez-Woods and Dvorak (1990) found no relationship between nurses' certification status and patient outcomes. These researchers attributed their null findings to the absence of the autonomous practice conditions under which others have documented a link between certification and outcomes. The findings from this study suggest that the environmental context for the delivery of nursing care may be an important variable moderating the relationship between nurse certification and patient outcomes (Kremer, 1991; Perez-Woods & Dvorak).

Just as links between certification and outcomes may be visible only in the context of autonomous practice conditions, so, too, may links be apparent only with respect to outcomes over which nurses have some degree of control. Literature on nurse-sensitive outcomes points to symptom control (Holzemer & Henry, 1999). Of all possible symptoms, pain and fatigue are particularly important in patients with cancer, have been the focus of the oncology nursing community for a long period of time, and, therefore, should be good reflections of quality nursing care (Nail et al., 1998; Stetz, Haberman, Holcombe, & Jones, 1995). Similarly, quality nursing care is critical to the prevention or early detection of adverse events, such as infection and decubitus ulcer formation (Lang & Marek, 1992). Finally, quality nursing care includes the foresight to predict problems that require medical intervention or admission to an acute care facility. Therefore, quality nursing care should contribute to a reduction in unplanned utilization of episodic care (Lang & Marek).

Decisions for the present study were based on consideration of the conditions under which links between quality nursing care and outcomes may be seen. With respect to setting, the researchers elected to examine certification status as it relates to patient outcomes in a homecare setting where, in comparison to acute-care settings, nurses tend to have greater autonomy in the management of patients. With respect to outcomes, the researchers selected symptom management, adverse events, and utilization of health services. They hypothesized that nursing care provided by certified nurses, in comparison to care provided by noncertified nurses, would reflect more effective symptom management (i.e., pain and fatigue), fewer adverse events (i.e., preven-

tion or early detection of infection and decubitus ulcers), and less utilization of episodic care (i.e., unplanned visits and admissions to care facilities, unscheduled home visits).

Methods

Setting

To control for extraneous variables that would result from the use of multiple homecare agencies, this pilot study was conducted at a single agency. A feasibility study was done to identify the homecare agency that would best meet the objectives of the study. Each member of the ONCC Research Committee surveyed a minimum of two homecare agencies in his or her geographic area (i.e., Illinois, New York, Pennsylvania, Massachusetts, Wisconsin, Arkansas, Kansas, and Washington). The committee members asked agency representatives a series of questions centered on the agencies' resources and the feasibility of conducting a study in their settings. The committee determined that it would be feasible to conduct this study in a homecare agency. However, most of the agencies surveyed had a low ratio of OCNs® working in direct patient care, making them unsuitable for this study.

A national search was conducted to locate a homecare agency with a case mix that included a high percentage of patients with cancer and at least 20%–25% OCNs® among the RN staff. Such an agency was located in a midwestern metropolitan area: The Home Care Program is a private, not-for-profit corporation that has provided home care exclusively to patients with cancer since 1979. It is a Medicare-certified agency where a family-centered interdisciplinary team approach (incorporating nursing care, social work, home health aides, physical therapy, occupational therapy, and speech therapy) is used to care for patients with cancer in the community. During the year data were collected, the agency had 1,178 admissions—the majority of patients were 45–84 years of age (80%), female (57%), and Caucasian (38%). Primary reimbursement for almost half of these patients came from Medicare (45%). In the same year, all patients received direct nursing services; the average length of service was 47.97 days, and the average number of visits per patient was 21.8. The most common reasons for discharge during the same year were hospitalization (30%), goals optimally met by patients (28%), or goals met with caregivers' support (16%). Of the nurses employed by the agency, 30% were certified. Each home-health nurse covers a specific geographic area, caring for patients who reside in that area.

Instruments

Chart review form: Because this study used retrospective chart review, the committee developed a data collection form on which to record data abstracted from patients' charts. The chart review form was drafted and pilot-tested by two committee members on site. They reviewed 40 charts with the draft chart review form, discussed difficulties in locating data with agency personnel, and then revised the form. The agency chart forms used to abstract data for this study included the admission form, progress record, nursing assessment form, skin integrity assessment form, nursing care plan, medication instruction sheet, and agency report, which contained the homecare admission/discharge summaries.

An accredited records technician employed by the agency was hired to conduct the chart reviews. She is a medical

records manager and tumor registrar who does freelance abstracting work. The abstractor examined the chart review form; based on her feedback, minor changes were made to facilitate data collection. Data obtained from chart review included the following.

- Patient demographic information (i.e., gender, age, race, marital status, living arrangements, payor, cancer diagnosis, other medical diagnoses, International Classification of Disease-9th edition codes)
- Symptom management
 - Pain (i.e., pain ratings on admission, subsequent pain ratings, and documentation of pain as a functional limitation on the progress record forms)
 - Fatigue (i.e., fatigue ratings on admission, subsequent pain ratings, and dates documented)
- Incidence of adverse effects
 - Infection (i.e., documentation of infection on admission and subsequent infection documentation, using data available on the progress records form that is completed at every visit)
 - Decubitus ulcers (i.e., presence of a decubitus ulcer as recorded on the skin integrity assessment form that is completed on admission and at every visit)
- Episodic Care Utilization (documented on the agency report and progress record)
 - Planned and unplanned visits to acute- and long-term care facilities
 - Planned and unplanned hospital admissions
 - Unplanned home visits

Nurse demographic form: Each nurse completed a one-page questionnaire that covered the following areas: gender, age, race, highest degree in nursing, years of experience as an RN, years of oncology nursing experience, years of homecare experience, certification status, and average number of homecare visits made per day.

Procedure

Institutional Review Board approval was obtained from both the homecare agency and the university of the chair of the ONCC research committee. The director of nursing of the homecare agency selected all charts for each nurse employed by the agency from early 1997 through early 1998. The entire episode of home care from admission through discharge had to fall within that time period. Charts meeting this criterion formed the pool from which charts were selected randomly. The goal was to select 14 charts per nurse. Because some nurses had not been employed by the agency long enough to have cared for 14 patients who met the necessary criteria, all charts for these nurses were selected. The director then reviewed each chart to ensure that the primary nurse played a significant role in the care (e.g., the nurse facilitated the admission and initial care plan, saw the patient for a significant percentage of the total visits, and completed the discharge). If the randomly selected case did not fit the criteria, another chart was selected randomly.

Results

Descriptive Data: Nurses

Seven certified (six OCNs® and one Certified Wound, Ostomy and Continence Care Nurse) and 13 noncertified nurses provided care during the time period identified for this study. All certified nurses and 12 (92%) of the noncertified nurses

were female. All of the certified nurses were Caucasian; 11 (85%) of the noncertified nurses were Caucasian and 2 (15%) were African American. In the certified group, 29% had associate degrees or diplomas and 71% had bachelor's degrees or higher degrees; in the noncertified group, the pattern was reversed in that 69% had associate degrees or diplomas and 31% had bachelor's degrees or higher (P^2 [2, N = 20] = 3.04, $p = 0.08$). The groups did not differ significantly in age; the mean (SD) age was 45.7 (11.03) years for the certified nurses and 40.5 (9.14) years for noncertified nurses. The certified nurses had significantly more years of experience in nursing, years of experience in oncology nursing, and years of experience in home care (see Table 1). These variables were strongly correlated: years in nursing and years in oncology ($r = 0.45$, $p = 0.05$), years in nursing and years in home care ($r = 0.73$, $p = 0.00$), and years in oncology and years in home care ($r = 0.66$, $p = 0.00$).

Descriptive Data: Patients

As described previously, the original intent of the researchers was to review 14 charts per nurse, but insufficient numbers of patients met the study's criteria. Instead, 181 patients' charts were reviewed for the study, with 74 from patients cared for by certified nurses and 107 from patients cared for by noncertified nurses. The number of charts per certified nurse ranged from 7–14 with a mean (SD) of 10.6 (2.76). The number of charts per noncertified nurses ranged from 1–13 with a mean (SD) of 8.2 (3.59). The two groups of patients, those cared for by certified nurses versus noncertified nurses, did not differ with respect to age, gender, race, marital status, living arrangements, or source of payment for home care (see Table 2).

All patients had at least one cancer diagnosis; two patients had two primary cancers (one had colon and lung cancer; the other had rectal and lung cancer). The most common sites of cancer were lung ($n = 37$), breast ($n = 29$), gastrointestinal ($n = 26$), head and neck ($n = 22$), bone ($n = 19$), endocrine ($n = 14$), genitourinary ($n = 13$), and gynecologic ($n = 12$). Site of cancer did not differ by group. As many as three additional diagnoses were coded for each patient. All patients had at least one additional diagnosis, the most common of which occurred in the following categories: cardiovascular ($n = 79$), pulmonary ($n = 45$), metabolic ($n = 56$), musculoskeletal ($n = 22$), and neurologic ($n = 22$). These additional diagnoses did not occur differentially by group, with the exception that 55% of patients cared for by certified nurses compared to 36% of those cared for by noncertified nurses had cardiovascular disease (P^2 [1, N = 181] = 7.047, $p = 0.008$).

Table 1. Mean Years of Experience

Parameters	Certified Nurses (n = 7)		Noncertified Nurses (n = 13)		t
	\bar{x}	SD	\bar{x}	SD	
Years as an RN	23.43	11.60	9.81	7.26	3.25*
Years in oncology	9.71	7.95	4.00	3.09	2.33*
Years in home care	12.14	5.30	3.73	3.00	4.57*

* $p < 0.05$

Table 2. Demographic Characteristics of Patients

Variable	Cared for by Certified Nurses (n = 74)		Cared for by Noncertified Nurses (n = 107)		Total (N = 181)	
	n	%	n	%	n	%
Age						
Born before 1940	54	73	71	66	125	69
Born after 1940	20	27	36	34	56	31
Gender						
Male	45	62	66	62	111	61
Female	29	39	41	38	70	39
Race						
White	22	31	39	38	61	34
African American	21	30	22	21	43	24
Other/unknown	28	39	43	41	71	39
Missing	3	4	3	2	6	3
Marital status						
Married	31	47	50	52	81	45
Not married	43	58	57	53	100	55
Living arrangements						
With someone	56	76	90	86	146	81
Alone	18	24	17	16	35	19
Private pay						
Yes	52	72	67	64	119	66
No	22	30	40	37	62	34

Note. None of these variables differed significantly by group.

Hypothesis Testing

Symptom management: Contrary to the hypothesis, the two groups did not differ with respect to assessment of pain upon admission; for both groups, 76% of patients had such assessments. Subsequent to admission, 90% of patients cared for by certified nurses and 93% of those cared for by noncertified nurses had at least one pain assessment. The groups did not differ with respect to the number of pain assessments made subsequent to admission; the mean (SD) number of assessments for the certified group was 10.5 (12.6); for the noncertified group, the mean was 8.4 (9.1) ($t [179] = 1.30, p > 0.05$) (see Table 3).

The groups also did not differ with respect to whether fatigue was assessed upon admission: 97% of patients cared for by certified nurses and 93% of patients cared for by noncertified nurses had such assessments. On the other hand, as hypothesized, subsequent fatigue assessments differed for the groups. That is, 18 (26%) of the patients cared for by certified nurses compared to 8 (7%) of the patients cared for by noncertified nurses had at least one fatigue assessment after admission ($P^2 [1, N = 181] = 9.227, p < 0.05$). Similarly, the mean (SD) number of fatigue assessments made subsequent to admission was higher for patients cared for by certified nurses ($\bar{X} = 0.54, SD = 1.44$) than for patients cared for by noncertified nurses ($\bar{X} = 0.17, SD = 0.76$) ($t [179] = 2.27, p < 0.05$).

Incidence of adverse events: The researchers anticipated that quality nursing care would be reflected in fewer incidents of decubitus ulcers and infection. The occurrence was so low (1% in patients cared for by certified nurses and 6% in patients cared for by noncertified nurses) that statistical analysis for differences between the groups was not possible.

Infections presented a somewhat more complicated picture. A distinction needed to be drawn between a “mention” of infection in a chart as opposed to an actual occurrence of infection. Two members of the research team read all of the “mentions” and coded them as either indicating actual infection or preventive care and patient teaching; this coding was accomplished with 99% agreement between the two coders. Most of the mentions of infection reflected documentation of patient teaching activities and other prevention measures. Certified nurses’ charts contained 157 mentions of infection, 29 of which indicated that patients actually had infections. These 29 infections occurred in 16 patients, with a range of 1–9 per patient. Noncertified nurses’ charts contained 307 mentions, 19 of which were actual infections. These 19 infections occurred in nine patients with a range of 1–4 per patient. In other words, 16 of 74 patients (22%) cared for by certified nurses experienced one or more infections, whereas 9 of 107 patients (8%) cared for by noncertified nurses had one or more infections. That is, contrary to the hypothesis, patients cared for by certified nurses were more likely to experience infections ($P^2 [1, N = 181] = 5.531, p < 0.05$). In addition, the groups did not differ with respect to patient teaching: The certified nurses charted 128 mentions of such activities in 74 patients compared to the noncertified nurses, who had 288 mentions in 107 patients (permutation test, $p > 0.05$).

Episodic care utilization: The researchers operationally defined episodic care as the number of visits to care facilities, admissions to facilities, and unplanned home visits by nurses. Contrary to the hypothesis, the groups did not differ with respect to the ratio of planned to unplanned visits to care facilities. Patients of certified nurses had 423 visits to care facilities, 28 (6%) of which were unplanned. Twenty patients made 28 unplanned visits to care facilities with a range of 1–3 such visits per patient. Similarly, patients of noncertified nurses had 422 visits to care facilities, 22 (5%) of which were unplanned. Nineteen patients made 22 unplanned visits to care facilities with a range of 1–2 such visits per patient. For both groups, the majority of these visits were to physicians’ offices or clinics (see Table 4).

Similarly, and again contrary to the hypothesis, the number of planned versus unplanned admissions did not differ by

Table 3. Documentation of Symptom Management and Adverse Events

Variable	Cared for by Certified Nurses (n = 74)		Cared for by Noncertified Nurses (n = 107)	
	n	%	n	%
Symptom management				
Pain assessed				
• At admission	56	76	81	76
• After admission	66	90	100	93
Fatigue assessed				
• At admission	71	97	99	93
• After admission	18	26	8	7
Adverse events				
Decubitus ulcers	1	1	6	6
Infection	16	22	9	8

Table 4. Site of Planned and Unplanned Visits to Care Facilities

Visit type	Cared for by Certified Nurses (n = 43 visits)		Cared for by Noncertified Nurses (n = 422 visits)	
	n	%	n	%
Planned				
Hospital	49	13	44	11
Physician's office/clinic	306	77	314	79
Other	40	10	42	10
Total	395	100	400	100
Unplanned				
Hospital—general	7	25	4	18
Emergency room	16	57	13	59
Physician's office/clinic	5	18	5	23
Total	28	100	22	100

group. Charts of both certified and noncertified nurses revealed a large number of both planned and unplanned admissions, the reasons for which are listed in Tables 5 and 6. For patients of certified nurses, 40 of 86 admissions were unplanned (47%). For patients of noncertified nurses, 50 of 105 admissions were unplanned (48%). The vast majority of planned admissions were to hospitals, as was also true for unplanned admissions (see Table 7).

Finally, contrary to the hypothesis that certified nurses would make fewer unscheduled home visits, examination of the number of unscheduled home visits by the nurses revealed that such visits did not differ by group. Specifically, the certified nurses made 10 unscheduled home visits to nine patients, whereas the noncertified nurses made 8 visits to seven patients. Table 8 describes the reasons for these unplanned home visits.

Discussion

Limitations

This study has a number of limitations. First, its use of patient records is the primary source of data. Such a retrospective de-

sign does not allow for standardized measurement of variables (e.g., pain, fatigue, infection), nor does it allow for control of extraneous variables. Other methodologies, such as participant observer, could have revealed subtle differences between patients cared for by certified nurses versus noncertified nurses that were not apparent from documentation in patient records. A second limitation is the sample's heterogeneity of demographic and cancer-related variables; differences between the groups may have been detected if the sample was more homogenous in cancer diagnosis, stage of disease, and illness trajectory. Third, this study was conducted at one clinical setting and, therefore, may represent reality only within that setting. The agency used was in a populated urban location, which may have limited the ability to generalize these results to nurses in rural areas. Fourth, although the researchers were not aware of any bias in the assignment of patients to nurses because patient assignments were based on geographic locations of nurses, the two groups of patients may have been different in acuity and risk of infection. Lastly, the sample of certified nurses in the agency was small and may not have been representative of all certified nurses, thus limiting the ability to generalize the findings.

Hypotheses

In general, the results of this study failed to support the hypotheses that nursing care provided by certified nurses, in comparison to that provided by noncertified nurses, would reflect more effective symptom management related to pain and fatigue care, fewer adverse effects related to the prevention and incidence of infection and decubitus ulcers, and less episodic care utilization as demonstrated by fewer unplanned visits and admissions to care facilities and fewer unscheduled home visits by nurses. The two groups did not differ with respect to assessment of pain at admission, number of pain assessments subsequent to admission, assessment of fatigue at admission, number of unplanned visits to care facilities, admissions to care facilities, and unscheduled home visits. The groups differed with respect to fatigue assessments subsequent to admission, with the certified nurses documenting a higher number of such assessments. Finally, the two groups differed in two ways not hypothesized: The patients of certified nurses had a greater number of infections and fewer documented instances of patient teaching regarding infection compared to patients cared for by noncertified nurses.

Table 5. Reasons Documented for Planned Admissions

Reason	Cared for by Certified Nurses (n = 46 admissions)		Cared for by Noncertified Nurses (n = 55 admissions)	
	n	%	n	%
Chemotherapy/ radiation therapy	23	50	21	38
Status change	6	13	10	18
Surgery	5	11	8	14
Dehydration	1	2	—	—
Pain	1	2	4	7
Breathing problems	1	2	1	2
Infection	—	—	1	2
Blood issues	5	11	—	—
Other	4	9	10	18

Table 6. Reasons Documented for Unplanned Admissions

Reason	Cared for by Certified Nurses (n = 40 admissions)		Cared for by Noncertified Nurses (n = 50 admissions)	
	n	%	n	%
Status change	12	30	10	20
Surgery	—	—	1	2
Dehydration	5	12	6	12
Pain	3	7	2	4
Breathing problems	4	10	7	14
Infection	3	7	15	30
Blood issues	6	15	1	2
Other	7	18	8	16

Several explanations for the overall lack of differences between the groups are possible. Charting may be the “great equalizer” (Ellenbecker & Shea, 1994). Nursing documentation has many purposes: communication among providers about patients’ progress, legal evidence of care provided and patients’ responses to care, demonstration that clinical interventions affect patient outcomes, and substantiation of care that ensures financial reimbursement. Staff nurses in all settings have expressed frustration with documentation demands (Ellenbecker & Shea). Documentation in home care is more demanding because nurses must not only communicate nursing care and patients’ responses to treatments but also demonstrate compliance with Medicare reimbursement requirements, federal government-required forms, and agency-required notations. To conserve time, homecare nurses may only document care that is required and reimbursable. If this is the case, charting may not capture variations in practice accurately.

Charting that records information that is essential for legal and reimbursement requirements may not capture the degree of caring during interactions between nurses and patients. Certified nurses in this study were superior with respect to the number of fatigue assessments they documented. Fatigue is a factor that affects quality of life. Attention to fatigue demonstrates a personal interest in patients’ well-being beyond the expected management of clinical problems, such as pain and infection. It may be that certified nurses also focus on factors that contribute to patients’ personal quality of life. Nursing care actions focused on such issues may be captured inadequately in homecare charting.

The work environment of homecare nurses is unique in that they are very autonomous in their nursing practice. They essentially work alone in the field. Most often, they learn best practices in home care from colleagues.

In this study, the certified nurses had significantly more years of experience in nursing, oncology nursing, and home care. As noted in other studies (Iberti et al., 1994; Pettinger et al., 1993; Walthall et al., 1993), certified nurses scored higher on clinical knowledge than noncertified nurses. One might theorize that such clinical knowledge is exchanged readily among nurses in this homecare setting because they form a small, tightly knit group. Certified nurses may mentor and

Table 8. Reasons Documented for Unplanned Home Visits

Reason	Cared for by Certified Nurses (n = 10 visits)		Cared for by Noncertified Nurses (n = 8 visits)	
	n	%	n	%
Patient family request	2	20	1	12
No answer	2	20	2	25
when telephoned				
Equipment change	1	10	4	50
Symptom change	5	50	–	–
Other	–	–	1	12

consult with noncertified nurses on best practice interventions for clients, thus diluting the differences between the two groups in clinical practice.

Another explanation for the lack of differences between certified and noncertified nurses in this study may be related to the findings of Aiken, Sochalski, and Lake (1997) and Aiken and Sloane (1997), who presented a theoretical framework of the operant mechanisms linking organizational attributes and patient outcomes. Aiken et al. theorized that any organizational models that result in greater nurse autonomy, more control by nurses of resources, and better relations between nurses and physicians will yield better patient outcomes.

Homecare agencies expect staff nurses to be autonomous in their practice, access and control resources for their patients, and have strong communication links with physicians. In the context of such a practice environment, identifying the differences between certified and noncertified nurses on patient outcomes would be difficult.

Finally, no differences may exist between certified and noncertified nurses in clinical practice. Although the literature supports differences in clinical knowledge between these groups (Iberti et al., 1994; Pettinger et al., 1993; Walthall et al., 1993), decision-making style (Henry, 1991; White et al., 1992), quality (Catolico et al., 1996), and consistency (Hughes, 1988), these differences may not translate into differences in patient outcomes as measured by symptom management, adverse events, and episodic care utilization.

Trends toward mandatory certification suggest that the nursing profession values the added clinical knowledge demonstrated by nurses who are certified. Nursing is challenged to demonstrate how certification makes a difference. Certification makes a difference to nurses in that they believe it is beneficial to their practice, but without documentation that certification makes a difference to patients, mandatory certification may not be justified. Further research is needed to examine dimensions of clinical practice that may demonstrate benefits to patients. More creative approaches to the measurement of nurse-sensitive outcomes and nurse specialization are needed to investigate the links between certification status and patient outcomes.

Author Contact: Marilyn Frank-Stromborg, EdD, JD, FAAN, can be reached at cancer@niu.edu, with copy to editor at rose_mary@earthlink.net.

Table 7. Site of Admissions

Admission	Cared for by Certified Nurses (n = 86 admissions)		Cared for by Noncertified Nurses (n = 105 admissions)	
	n	%	n	%
Planned				
Hospital	39	85	34	62
Hospice	7	15	15	27
Other	–	–	6	12
Total	46	100	55	100
Unplanned				
Hospital	35	87	50	100
Hospice	5	13	–	–
Total	40	100	50	100

References

- Aiken, L.H., & Sloane, D.M. (1997). Effects of specialization and client differentiation on the status of nurses: The case of AIDS. *Journal of Health and Social Behavior*, 38, 203–222.
- Aiken, L.H., Sochalski, J., & Lake, E.T. (1997). Studying outcomes of organizational change in health services. *Medical Care*, 35(Suppl. 11), NS6–NS18.
- American Association of Colleges of Nursing. (1996). Certification and regulation of advanced practice nurses. *Journal of Professional Nursing*, 12, 184–186.
- Anderson, G.M., Brook, R., & Williams, A. (1991). Board certification and practice style: An analysis of office-based care. *Journal of Family Practice*, 33, 395–400.
- Cary, A. (2000). *International survey of certified nurses in the U.S. and Canada*. Sponsored by Nursing Credentialing Research Coalition and American Nurses Credentialing Center.
- Catolico, O., Navas, C.M., Sommer, C.K., & Collins, M.A. (1996). Quality of decision making by registered nurses. *Journal of Nursing Staff Development*, 12, 149–154.
- Coleman, E.A., Frank-Stromborg, M., Hughes, L.C., Grindel, C.G., Ward, S., Berry, D., et al. (1999). A national survey of certified, recertified, and noncertified oncology nurses: Comparisons and contrasts. *Oncology Nursing Forum*, 26, 839–849.
- Donabedian, A. (1966). Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly*, 44(Suppl. 3), 166–203.
- Donabedian, A. (1992). The role of outcomes in quality assessment and assurance. *Quality Review Bulletin*, 18, 356–360.
- Ellenbecker, C.H., & Shea, K. (1994). Documentation in home health care practice. *Nursing Clinics of North America*, 29, 495–506.
- Haas, J.S., Orav, E.J., & Goldman, L. (1995). The relationship between physicians' qualifications and experience and the adequacy of prenatal care and low birthweight. *American Journal of Public Health*, 85, 1087–1091.
- Henry, S.B. (1991). Effect of level of patient acuity on clinical decision-making of critical care nurses with varying levels of knowledge and experience. *Heart and Lung*, 20, 478–485.
- Holzemer, W., & Henry, S.B. (1999). Therapeutic outcomes sensitive to nursing. In A. Hinshaw, S. Feetham, & J. Shaver (Eds.), *Handbook of clinical nursing research* (pp. 185–198). Thousand Oaks, CA: Sage.
- Hughes, K.K. (1988). *Decision-making in clinical nursing practice: Consistency with decision analytic outcomes*. Unpublished doctoral dissertation, University of Illinois, Chicago.
- Hughes, L.C., Ward, S., Grindel, C.G., Coleman, E.A., Berry, D., Hinds, P., et al. (2001). Relationships between OCN® certification and job perceptions of oncology nurses. *Oncology Nursing Forum*, 28, 99–106.
- Iberty, T.J., Daily, E.K., Leibowitz, A.B., Schecter, C.B., Fischer, E.P., & Silverstein, J.H. (1994). Assessment of critical care nurses' knowledge of pulmonary artery catheter. *Critical Care Medicine*, 22, 1674–1678.
- Kremer, B.K. (1991). Physician recertification and outcomes assessment. *Evaluation and the Health Professions*, 14, 187–200.
- Laffoon, T.A. (1994). *Certification in perioperative nursing: A descriptive study of certified and non-certified nurses working in the operating room setting*. Unpublished master's thesis, University of Iowa, Iowa City.
- Lang, N., & Marek, K. (1992). Outcomes that reflect clinical practice. In *Patient outcomes research: Examining the effectiveness of nursing practice*. (NIH publication No. 93-3411, pp. 27–38). Rockville, MD: National Institutes of Health.
- Leggett-Frazier, N., Swanson, M.S., Vincent, P.A., Pokorny, M.E., & Engelke, M.K. (1997). Telephone communications between diabetes clients and nurse educators. *Diabetes Educator*, 23, 287–293.
- Nail, L., Barsevick, A., Meek, P., Beck, S., Jones, L., Walker, B., et al. (1998). Planning and conducting a multi-institutional project on fatigue. *Oncology Nursing Forum*, 25, 1398–1403.
- Perez-Woods, R., & Dvorak, E.M. (1990, April). *Measurement of practice outcomes: Use of an expert consensus panel to define a method to measure the impact of certification in neonatal nursing on the outcomes of neonatal intensive care nursing*. Paper presented at the annual meeting of the American Educational Research Association, Boston, MA.
- Pettinger, A.M., Woods, S.L., & Herndon, S.P. (1993). Pediatric critical care nurses' knowledge of cardiac dysrhythmias. *American Journal of Critical Care*, 2, 378–384.
- Pew Health Professions Commission. (1995). *Reforming health care workforce regulation: Policy considerations for the 21st century*. San Francisco: Author.
- Pew Health Professions Commission. (1998). *Strengthening consumer protection: Priorities for health care workforce regulation*. San Francisco: Author.
- Redd, M.L., & Alexander, J.W. (1997). Does certification mean better performance? *Nursing Management*, 28(2), 45–49.
- Rogers, F.B., Simons, R., Hoyt, D.B., Shackford, S.R., Holbrook, T., & Fortiage, D. (1993). In-house board-certified surgeons improve outcome for severely injured patients: A comparison of two university centers. *Journal of Trauma*, 34, 871–877.
- Spencer-Cisek, P., & Sveningson, L. (1995). Regulation of advanced nursing practice: Part two—certification. *Oncology Nursing Forum*, 22(Suppl. 8), 39–42.
- Stetz, K., Haberman, M., Holcombe, J., & Jones, L. (1995). 1994 Oncology Nursing Society Research Priorities Survey. *Oncology Nursing Forum*, 22, 53–79.
- Verran, J.A., & Mark, B. (1992). Contextual factors influencing patient outcomes individual/group/environment: Interactions and clinical practice interface. In *Patient outcomes research: Examining the effectiveness of nursing practice*. (NIH Publication No 93-3411, pp. 121–142). Rockville, MD: National Institutes of Health.
- Walthall, S.A., Odothan, C.B., McCoy, M.A., Fromm, B., Frankovich, D., & Lehmann, M.H. (1993). Routine withholding of digitalis for heart rate below 60 beats per minute: Widespread nursing misconceptions. *Heart & Lung*, 22, 472–476.
- White, J.E., Nativio, D.G., Kobert, S.N., & Engberg, S.J. (1992). Content and process in clinical decision-making by nurse practitioners. *Image: Journal of Nursing Scholarship*, 24, 153–158.

For more information . . .

- American Board of Nursing Specialties
www.nursingcertification.org/
- Oncology Nursing Certification Corporation
www.oncc.org/

These Web sites are provided for information only. The hosts are responsible for their own content and availability. Links can be found using ONS Online at www.ons.org.