

# Nurse Practice Environments and Outcomes: Implications for Oncology Nursing

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**Purpose/Objectives:** To examine practice environments and outcomes of nurses working in oncology units or Magnet hospitals and to understand the association between the two.

**Design:** Secondary analysis of survey data collected in 1998.

**Setting:** Medical and surgical units of 22 hospitals, of which 7 were recognized by the American Nurses Credentialing Center Magnet program.

**Sample:** 1,956 RNs, of whom 305 worked in oncology units.

**Methods:** Chi-square tests compared nurse-reported outcomes by work setting, analysis of variance tested practice environment differences by setting, and logistic regression estimated the effects of practice environment, specialty, and Magnet status on outcomes.

**Main Research Variables:** Practice environments, emotional exhaustion, job satisfaction, and quality of care.

**Findings:** Oncology nurses had superior outcomes compared with nononcology nurses. Emotional exhaustion was significantly lower among oncology nurses working in Magnet hospitals. Scores on the Collegial Nurse-Physician Relations subscale were highest among oncology nurses. Outcomes were associated with Practice Environment Scale of the Nursing Work Index scores and Magnet status. Oncology nurses with favorable collegial nurse-physician relations were twice as likely to report high-quality care.

**Conclusions:** Oncology nurses benefit from working in American Nurses Credentialing Center Magnet hospitals. Adequate staffing and resources are necessary to achieve optimal outcomes. Collegial nurse-physician relations appear to be vital to optimal oncology practice settings.

**Implications for Nursing:** In addition to pursuing American Nurses Credentialing Center Magnet recognition, nurse managers should assess practice environments and target related interventions to improve job satisfaction and retention. High-priority areas for interventions include ensuring adequate staff and resources, promoting nurse-physician collaboration, and strengthening unit-based leadership.

Since the mid-1980s, research studies have documented the relationship between the characteristics of nurses' work settings and patient outcomes; however, the nursing profession still struggles to determine how to organize practice environments best to retain nurses and keep patients safe. This article uses previously collected data to draw conclusions about the practice environments of RNs and differences related to nurse specialty and hospital recognition for nursing. The results presented here can be used to understand the organizational features associated with favorable nurse-reported outcomes. The findings point to promising strategies for improving nurse and patient outcomes in oncology.

## Background and Significance

The Institute of Medicine's (IOM's) (Page, 2004) fourth volume in the *Crossing the Quality Chasm* series, titled

## Key Points . . .

- ▶ Nurses' reports regarding their practice environments were associated strongly with job dissatisfaction, burnout, and perceived quality of care.
- ▶ Oncology nurses perceived their environments and outcomes differently from other inpatient nurses, which suggests that future studies should sample to detect differences by specialty.
- ▶ To improve outcomes, practice environments should be assessed routinely and systematically to optimize the success of interventions.

*Keeping Patients Safe: Transforming the Work Environment of Nurses*, addressed nursing work environments and their impact on patient safety. The IOM's Committee on the Work Environment for Nurses and Patient Safety identified areas of healthcare organizations that needed improvement, including evidence-based staffing standards, work-hour regulations, the creation of interdisciplinary teams, and the establishment of visible and responsive nursing leadership. The intended result of these recommendations was to create healthcare settings that reduce the likelihood of errors and subsequent poor patient outcomes (Page). Key stakeholder groups also have identified practice environment transformations as imperative to attracting and retaining nurses (American Hospital Association, 2002; American Nurses Association, 2002; Joint Commission on Accreditation of Healthcare Organizations, 2002; Kimball & O'Neil, 2002; U.S. General Accounting Office, 2001).

The concerns expressed by IOM and others build on two decades of research that has found that poor work environments result in undesirable nurse and patient outcomes. In a

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sample of nurses caring for patients with AIDS, those working in specialty AIDS units or hospitals with reputations for professional nursing practice exhibited lower emotional exhaustion scores than those working in nonspecialty units or conventionally organized hospitals (Aiken & Sloane, 1997a). Nurses were more likely to resign their positions when nurse staffing was poorer and clinical autonomy was perceived to be low (Lake, 1998). Patients with AIDS were more likely to be satisfied when care was received in dedicated AIDS units or in hospitals with favorable nurse practice environments (Aiken, Sloane, & Lake, 1997; Aiken, Sloane, Lake, Sochalski, & Weber, 1999). The incidence of needlestick injuries was lower at hospitals in which nurses reported more positive practice environments (Clarke, Sloane, & Aiken, 2002). When direct measures of the practice environment are introduced into prediction models, nurses in favorable settings are less likely to report emotional exhaustion, depersonalization, or the intent to resign their positions (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). Patients with AIDS in nursing units where practice environments were positive were more than twice as likely to be highly satisfied with their nursing care when compared with patients receiving care in units lacking such favorable work settings.

Staffing levels fluctuate when dissatisfied nurses resign their positions, leaving patients in suboptimal conditions to receive care. Among routine surgical patients, higher patient-nurse ratios have been associated with an increased likelihood of death (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Hospitalized patients undergoing surgery who received more hours of care from RNs experienced reduced lengths of stay and fewer adverse events (Cho, Ketefian, Barkauskas, & Smith, 2003; Kovner, Jones, Zhan, Gergen, & Basu, 2002; Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002).

An evidence base exists to encourage reforms in nursing practice environments. In 1983, 41 hospitals across the United States were identified as favorable places for nurses to work because of their relative resilience to a formidable nursing shortage (McClure, Poulin, Sovie, & Wandelt, 1983). A common feature among the hospitals was a nonhierarchical organizational structure, which enabled nurses to exert optimal decision making in the care of their patients. In a retrospective analysis of Medicare data that were adjusted for differences in hospital characteristics and patient severity of illness, fewer patients died in Magnet hospitals than in control hospitals (Aiken, Smith, & Lake, 1994). Since 1995, the American Nurses Credentialing Center (ANCC), an arm of the American Nurses Association, has employed a standardized process to recognize Magnet hospitals that incorporates extensive documentation and site visits to address adherence to ANCC's published guidelines for nursing administration (Urden & Monarch, 2002). Subsequent research findings suggested that ANCC-recognized hospitals also have favorable practice environments for nurses (Aiken, Havens, & Sloane, 2000). Of nearly 5,000 community hospitals in the United States, fewer than 2% have been recognized as Magnet hospitals (ANCC, 2004). In addition, two freestanding cancer centers have obtained ANCC Magnet recognition. Whether working on specialty units in Magnet hospitals confers additional benefits is unknown because the Magnet hospitals in previous studies did not have specialty units.

Oncology nursing dates back to the mid-1960s, when chemotherapy and radiation therapy clinical trials programs increased in size and scope (Henke-Yarbro, 1996). Over time, many hospitals established specialized oncology units with a cadre of nurses who had expertise managing chemotherapy administration and the unique cluster of patient needs associated with anticancer therapies. Theoretical arguments have suggested that favorable outcomes for patients and healthcare workers can be found in specialized units (Aiken & Sloane, 1997b; Hughes, 1971; Hughes, Hughes, & Deutscher, 1958). Shortell et al. (1994) argued that favorable patient outcomes may be found on specialty units because the scope of diagnoses and their treatment-related tasks are less diverse than on nonspecialty units. Therefore, clinicians are able to direct their assessments and interventions more efficiently to a smaller array of conditions. This hypothesis was supported by the finding that patients cared for in intensive care units with reduced diagnostic diversity had lower mortality rates (Shortell et al.). On specialized units, nurses interact with fewer physicians than on general medical-surgical units and have a greater depth of knowledge because they practice within a single specialty, which provides an opportunity for more positive professional interactions. When faced with the crisis of HIV infection in the 1980s, nursing leaders replicated the model of dedicated oncology units to deliver inpatient care (Fox, Aiken, & Messikomer, 1990; Morrison, 1987).

Nurse practice environments were placed at risk during a cycle of restructuring initiatives during the 1990s that were motivated by escalating healthcare costs. Hospitals known for positive nurse practice environments were surveyed in 1986 and 1998 and showed considerable declines in nearly all measures of the practice environment (Aiken, Clarke, & Sloane, 2000). The surveyed hospitals had been recognized previously by McClure et al. (1983) as Magnet hospitals, yet the features that had defined their inclusion in the elite list were no longer highly prevalent. A study that reviewed the literature and conducted targeted interviews concluded that hospital-restructuring efforts of the 1990s resulted in less time for nurses to engage in direct patient care, a less central role for nurse executives, and less autonomous nursing practice (Norrish & Rundall, 2001). These concerns also were identified in a survey of oncology nurses (Lamkin, Rosiak, Buerhaus, Mallory, & Williams, 2001, 2002). In 2000, nurses working in inpatient and ambulatory oncology settings reported an increase in the amount of paperwork they were required to complete and difficulty retaining experienced nurses. Seventy-nine percent of the inpatient nurses surveyed reported that float nurses and nurses outside the oncology unit supplemented their staff. Sixty-eight percent of those surveyed reported that oncology nurses had worked in other hospital settings to meet staffing needs. This erosion of a specialized team of nursing professionals to deliver and manage highly sophisticated therapies may result in poorer quality of care for patients with cancer (Lamkin et al., 2002).

An earlier study examined burnout in AIDS, cancer, and intensive care units in seven hospitals in California, but measures of the practice environments were not included (van Servellen & Leake, 1993). Additionally, the researchers did not study medical-surgical units for comparison purposes. Although oncology nursing units have been characterized as

a more satisfying work environment than general medical units, little empirical information is available that shows how oncology nursing practice environments fared during restructuring and whether the advantages survived. Also, whether Magnet hospitals offer advantages to oncology nurses is not known. This article provides encouraging evidence for a systematic process, namely ANCC Magnet recognition, and modifiable features of practice environments that are associated with nurse reports of emotional exhaustion, job satisfaction, and quality of care.

## Methods

This article reports the results of secondary analysis of data collected in 1998 for a previous study (Aiken, Havens, et al., 2000). The parent study received university institutional review board approval, and the principal investigator provided permission to conduct these analyses. The parent study was a continuation of a research program that surveyed nurses from a convenience sample of 22 hospitals and was designed to understand the organizational climate of RNs working therein. Seven of the hospitals were recognized formally by ANCC as Magnet hospitals. Nurses also were surveyed from hospitals identified, in the original study, by the American Academy of Nursing as Magnet hospitals ( $n = 13$ ) or prominent teaching hospitals ( $n = 2$ ). However, as noted previously, the 13 hospitals with prior recognition by the American Academy of Nursing had substantial declines in their practice environments from 1986–1998 and differed significantly from the seven ANCC Magnet hospitals (Aiken, Clarke, et al., 2000).

RNs working in medical or surgical units at least 16 hours per week were eligible to participate in an anonymous survey that evaluated work setting, perceptions of the practice environment, burnout, and quality of care. Of 4,085 eligible nurses, 2,287 (56%) had usable responses and worked on 146 units in 22 hospitals. Survey data from 1,956 nurses, 305 of whom were oncology nurses, were used in the current analysis (Aiken, Havens, et al., 2000).

### Practice Environment

The **Practice Environment Scale of the Nursing Work Index (PES-NWI)** measures the practice environment (Lake, 2002). The PES-NWI is derived from the Nursing Work Index (NWI), a 48-item questionnaire that measures the presence of particular organizational attributes in a nurse's work setting (Aiken & Patrician, 2000; Kramer & Hafner, 1989). A four-point scale is used to score agreement with each item from 1 (strongly disagree) to 4 (strongly agree). Lake (2002) performed exploratory factor analysis and detailed psychometric evaluation of the NWI and derived five subscales that use 31 NWI items to describe the practice environment of hospital nurses: Nurse Participation in Hospital Affairs (e.g., "staff nurses have the opportunity to participate on hospital and nursing committees"); Nursing Foundations for Quality of Care (e.g., "active inservice/continuing education programs for nurses"); Nurse Manager Ability, Leadership, and Support of Nurses (e.g., "a supervisory staff that is supportive of the nurses"); Staffing and Resource Adequacy (e.g., "enough registered nurses to provide quality patient care"); and Collegial Nurse-Physician Relations (e.g., "physicians and nurses have good working relation-

ships"). Reliability at both individual and hospital levels was high, and nurses in Magnet hospitals scored higher on all subscales than those in non-Magnet hospitals (Lake, 2002). In the current sample, Cronbach's alpha scores ranged from 0.79–0.84 for the five subscales. Subscale scores are calculated for each nurse using the same four-point scale (i.e., 1 = strongly disagree to 4 = strongly agree).

### Outcomes

Items on the nurse survey assessed emotional exhaustion, job dissatisfaction, and nurse-assessed quality of care. Emotional exhaustion is a component of burnout that determines whether a nurse is overextended emotionally and exhausted because of work (Maslach, Jackson, & Leiter, 1996) and was measured using the emotional exhaustion scale of the Maslach Burnout Inventory, a highly valid and reliable instrument that is used to evaluate job-related feelings reported by healthcare workers. The nine-item scale gauges the frequency of these feelings (i.e., 0 = never to 6 = every day); scores higher than 16 reflect the presence of emotional exhaustion, and scores higher than 27 indicate high levels of emotional exhaustion. In addition, nurses were asked how satisfied they were with their present job (i.e., 1 = very satisfied to 4 = very dissatisfied) and how they would describe the quality of nursing care given to patients on their units (1 = very poor to 5 = excellent).

### Data Analysis

After descriptive statistics for the nurse sample were calculated, frequencies of the three outcomes by work setting were evaluated by chi-square test statistics. The nurses surveyed worked in four settings: nononcology units in non-ANCC hospitals, oncology units in non-ANCC hospitals, nononcology units in ANCC hospitals, and oncology units in ANCC hospitals. The three outcomes were transformed to dichotomous variables (i.e., emotional exhaustion score higher than 27, a little or very dissatisfied with present job, report of good or excellent nursing-care quality on the unit). Analysis of variance (ANOVA) was used to test differences in PES-NWI scores among the four work settings. ANOVA results were adjusted for the unequal distribution of responses by specialty and hospital. To further aid interpretation, scores on the five practice environment scales for each nurse were dichotomized (i.e., 1 = rating above the midpoint or 0 = rating below the midpoint). The three outcomes were regressed with logistic models against the dichotomized PES-NWI subscales, specialty status (i.e., oncology versus nononcology), hospital type (i.e., ANCC versus non-ANCC), and nursing demographics (e.g., age, gender, marital status, dependent children, education). After significant variables were identified, a final series of logistic regression models was estimated that retained previously noted predictor variables. A separate model was estimated for oncology nurses only to identify differences in predictors of quality of care by nursing specialty.

All analyses were performed using the individual nurse as the unit of analysis. To account for the clustering of nurses in hospitals, generalized estimating equations were used to correct the standard errors obtained from logistic regression models (Huber, 1967; White, 1982). Parameter estimates were transformed to odds ratios to aid in interpretation. Odds ratios may be interpreted as the likelihood that the predicted

outcome will occur. For example, an odds ratio of 1.0 indicates no increased or decreased likelihood of the outcome's occurrence, an odds ratio of 2.0 indicates twice the likelihood of the outcome's occurrence, and an odds ratio of 0.75 indicates a 25% reduction in the likelihood of the outcome's occurrence.

## Results

Table 1 describes the characteristics of the sample. T tests and chi-square statistics showed no significant differences between nurses working on oncology or nononcology units. On average, nurses working in ANCC Magnet hospitals had 1.5 years less nursing experience and one year less experience on their units than their counterparts in non-ANCC hospitals. Compared with national statistics, the study sample was slightly younger and more nurses had baccalaureate or higher degrees in their educational preparation (Spratley, Johnson, Sochalski, Fritz, & Spencer, 2002).

Table 2 compares the frequency of emotional exhaustion, job dissatisfaction, and nurse reports of good or excellent nursing care by work setting. Oncology nurses had lower rates of emotional exhaustion than nononcology nurses; however, the difference was not significant. Oncology nurses in ANCC hospitals had almost half the exhaustion levels of their counterparts in non-ANCC hospitals (Fisher's exact test,  $p < 0.05$ ).

Nurses working in ANCC hospitals had significantly less emotional exhaustion and job dissatisfaction when compared with nurses working in non-ANCC hospitals, regardless of specialty ( $p < 0.0001$ ). As hypothesized, outcomes were worst for nononcology nurses in non-ANCC hospitals and best for oncology nurses in ANCC hospitals.

The differences in practice environments for nurses in the four work settings are displayed in Table 3. Oncology nurses had superior ratings on the Collegial Nurse-Physician Relations subscale of the PES-NWI; these scores were significantly higher than those of nononcology nurses ( $p < 0.01$ ). Oncology nurses in non-ANCC hospitals had the lowest mean on the Staffing and Resource Adequacy subscale. On three of the five subscales, nurses in ANCC hospitals had significantly higher scores than their counterparts in non-ANCC hospitals, regardless of specialty settings ( $p < 0.01$ ). Nurses in non-ANCC settings responded that staffing and resources were not adequate to deliver patient care, which was reflected by a mean below the theoretical midpoint on this subscale.

The results of the logistic regression model that used all nurse responses are reported in Table 4. Nurses who responded favorably on the Nurse Manager Ability, Leadership and Support of Nurses; Staffing and Resource Adequacy; and Collegial Nurse-Physician Relations subscales were far less

**Table 1. Sample Demographics**

Characteristic	Non-ANCC Hospitals				ANCC Hospitals			
	Nononcology (n = 896)		Oncology (n = 150)		Nononcology (n = 755)		Oncology (n = 155)	
	$\bar{X}$ (SD)		$\bar{X}$ (SD)		$\bar{X}$ (SD)		$\bar{X}$ (SD)	
Age (years)	38.0 (10.3)		37.9 (10.2)		36.0 (9.5)		37.8 (10.0)	
Years in nursing	11.0 (9.6)		10.8 (8.4)		10.4 (9.0)		10.5 (8.9)	
Years at hospital	8.1 (7.2)		8.1 (7.0)		7.7 (7.1)		6.7 (5.6)	
Years on unit	5.8 (5.6)		5.9 (5.6)		5.5 (6.0)		5.2 (4.4)	
Characteristic	n	%	n	%	n	%	n	%
<b>Gender</b>								
Female	837	93	145	97	703	94	142	92
Male	55	6	5	3	48	6	12	8
Missing data	4	—	—	—	4	1	1	1
<b>Marital status</b>								
Single	254	28	50	33	236	31	38	25
Married	531	59	84	56	455	61	95	61
Divorced	91	10	9	6	48	6	18	12
Other	14	2	5	3	13	2	1	1
Missing data	6	1	2	1	3	—	3	2
<b>Dependent children</b>								
Yes	419	47	64	43	352	47	79	51
No	464	52	86	57	394	52	75	48
Missing data	13	1	—	—	9	1	1	1
<b>Highest degree obtained</b>								
Diploma	110	12	20	13	72	10	14	9
Associate	212	24	30	20	206	27	39	25
Bachelor's	517	58	88	59	449	59	95	61
Master's or higher	52	6	12	8	25	3	7	5
Missing data	5	1	—	—	3	—	—	—

N = 1,956

ANCC—American Nurses Credentialing Center

Note. Because of rounding, not all percentages total 100.



**Table 2. Nurse-Reported Outcomes by Unit Type and Magnet Status**

Outcome	Non-ANCC Hospitals				ANCC Hospitals			
	Nononcology (n = 896)		Oncology (n = 150)		Nononcology (n = 755)		Oncology (n = 155)	
	n	%	n	%	n	%	n	%
High emotional exhaustion	362	40	58	39 <sup>a</sup>	197	26 <sup>b</sup>	30	20 <sup>b</sup>
A little or very dissatisfied with present job	268	30	50	33	122	16 <sup>b</sup>	23	15 <sup>b</sup>
Good or excellent nursing care on the unit	654	73	115	77	666	88 <sup>b</sup>	142	92 <sup>b</sup>

<sup>a</sup> More frequent than oncology nurses working in ANCC hospitals ( $p < 0.05$ )

<sup>b</sup> Less frequent than either group of nurses working in non-ANCC hospitals ( $p < 0.0001$ )

ANCC—American Nurses Credentialing Center

Note. Chi-square analysis indicates that the frequencies of all outcomes differ significantly by unit type (3 df,  $p < 0.0001$ ).

likely to have high emotional exhaustion or job dissatisfaction ( $p < 0.01$ ). The same three subscales were significant predictors of nurse reports of high-quality care ( $p < 0.01$ ); nurses who reported the presence of these features were 1.4, 3.4, and 1.6 times as likely to report good or excellent nursing care on their unit, respectively. Although oncology nurses, regardless of whether they worked in an ANCC hospital, were less likely to report emotional exhaustion and more likely to report high-quality nursing care, these estimates were not significant. Nurses in ANCC hospitals were less likely to report job dissatisfaction and more likely to report high-quality care than nurses in non-ANCC hospitals ( $p < 0.05$ ). Scores on the PES-NWI revealed that working in an ANCC hospital had significant and distinct effects on quality of care and nurses' perceptions of their jobs.

Considering the differing perceptions in practice environments, significant predictors of the quality of nursing care were examined separately for oncology nurses. The results of a logistic regression model estimated solely for the 305 oncology nurses are reported in Table 5. Higher scores on the Staffing and Resource Adequacy subscale were a strong and significant predictor for all three outcomes. Oncology nurses with adequate

staffing and resources were 80% less likely to report emotional exhaustion, 84% less likely to have job dissatisfaction, and seven times more likely to report high-quality care ( $p < 0.01$ ). Nurse manager ability was only a significant predictor for job dissatisfaction ( $p < 0.01$ ). For oncology nurses, the presence of collegial nurse-physician relations was associated with a 2.4-fold increase in the odds of reporting good or excellent nursing care ( $p < 0.01$ ).

## Discussion

This article reports the findings of a systematic examination of nursing practice environments, outcomes, and workplace settings. Oncology nurses, compared with their counterparts, have some advantages in the quality of their practice environment, particularly with regard to their relationships with physicians. These advantages are enhanced when oncology nurses work in ANCC Magnet hospitals. Significant effects on three outcomes—emotional exhaustion, job dissatisfaction, and nursing care quality—were found based on the presence or absence of favorable nursing practice environments, whether nurses worked on oncology

**Table 3. Practice Environment Scale of the Nursing Work Index Scores by Nursing Unit and Magnet Status**

Subscale	Non-ANCC Hospitals		ANCC Hospitals	
	Nononcology (n = 896)	Oncology (n = 150)	Nononcology (n = 755)	Oncology (n = 155)
	$\bar{X}$ (SD)	$\bar{X}$ (SD)	$\bar{X}$ (SD)	$\bar{X}$ (SD)
Nurse Participation in Hospital Affairs	2.72 (0.56)	2.60 (0.62) <sup>a</sup>	2.98 (0.53) <sup>b</sup>	2.90 (0.56) <sup>b</sup>
Nursing Foundations for Quality of Care	3.09 (0.44)	3.03 (0.45) <sup>a</sup>	3.35 (0.43) <sup>b</sup>	3.26 (0.47) <sup>b</sup>
Nurse Manager Ability, Leadership, and Support of Nurses	2.74 (0.78)	2.63 (0.82) <sup>c</sup>	2.93 (0.70) <sup>d</sup>	2.86 (0.82) <sup>d</sup>
Staffing and Resource Adequacy	2.35 (0.69)	2.31 (0.78) <sup>a</sup>	2.77 (0.68) <sup>b</sup>	2.88 (0.70) <sup>b</sup>
Collegial Nurse-Physician Relations	2.90 (0.60)	3.07 (0.59) <sup>a, e</sup>	2.99 (0.59)	3.09 (0.62) <sup>e</sup>

<sup>a</sup> Lower than oncology nurses in ANCC hospitals ( $p < 0.0001$ )

<sup>b</sup> Higher than working in non-ANCC hospitals regardless of specialty ( $p < 0.01$ )

<sup>c</sup> Lower than oncology nurses in ANCC hospitals ( $p < 0.05$ )

<sup>d</sup> Higher than oncology nurses in non-ANCC hospitals ( $p < 0.01$ )

<sup>e</sup> Higher than nononcology nurses ( $p < 0.01$ )

ANCC—American Nurses Credentialing Center

**Table 4. Predictors of Emotional Exhaustion, Job Satisfaction, and Quality of Nursing Care**

Variable	Emotional Exhaustion				Job Dissatisfaction				Quality of Care			
	β	95% CI	SE	OR	β	95% CI	SE	OR	β	95% CI	SE	OR
<b>Practice environment</b>												
Manager ability	-0.24**	-0.38, -0.11	0.07	0.79	-0.81**	-1.01, -0.61	0.10	0.44	0.31**	0.12, 0.51	0.10	1.36
Staffing and resource adequacy	-1.17**	-1.37, -0.98	0.10	0.31	-1.55**	-1.74, -1.36	0.10	0.21	1.22**	0.96, 1.49	0.14	3.39
Collegial nurse-physician relations	-0.21**	-0.37, -0.06	0.08	0.81	-0.25**	-0.42, -0.07	0.09	0.78	0.45**	0.24, 0.66	0.11	1.57
<b>Works in ANCC Magnet hospital</b>	-0.24	-0.55, 0.07	0.16	0.79	-0.26*	-0.48, -0.04	0.11	0.77	0.69*	0.15, 1.22	0.27	1.99
<b>Works on oncology unit</b>	-0.27	-0.62, 0.09	0.18	0.76	0.00	-0.32, 0.31	0.16	1.00	0.26	-0.23, 0.75	0.25	1.30

N = 1,956

\* p < 0.05

\*\* p < 0.01

ANCC—American Nurses Credentialing Center; CI—confidence interval; OR—odds ratio; SE—standard error

units, and whether they practiced in hospitals recognized for professional practice standards. The findings from these analyses confirm the suggested reforms proposed by the IOM Committee on the Work Environment for Nurses and Patient Safety (Page, 2004).

As managers begin to consider how to apply IOM’s recommendations (Page, 2004) into clinical settings, the evidence presented here may inform their interventions. Nurses’ perceptions of practice environments clearly vary based on clinical setting. To improve work environments and patient outcomes, a two-step approach is proposed. A comprehensive assessment of the practice environment should be conducted to determine the needs of a clinical setting, followed by an action plan designed to address specific deficiencies. Managers may wonder whether nurses’ perceptions of the practice environment matter. In this sample of nurses, the presence of several favorable features was significantly associated with emotional exhaustion, job dissatisfaction, and quality of nursing care. In particular, nurses who reported adequate staffing and resources for completing patient care were far more likely to have low levels of emotional exhaustion and job dissatisfaction and report higher-quality nursing care. As consideration is given to processes required to keep patients safe, key attributes of the nursing practice environment must not go unnoticed.

The ability to capture nursing specialty in the data permitted the examination of the intersection between nurses’ specialties and their practice environments. This is an important contribution to the literature because specialty organizations

consider the needs of their members when planning continuing education, policy, or information campaigns to the public. The findings of a similar study conducted in dialysis settings were recognized as an important step in developing effective care models in the future for dialysis patients (Thomas-Hawkins, Denno, Currier, & Wick, 2003). When oncology nurses were considered as a group, a distinct pattern emerged when they were compared to their colleagues. Oncology nurses were more likely to report high quality of care when collegial nurse-physician relations and adequate staffing and resources were present in the workplace. Given the practice arrangements required to administer anticancer therapies safely and assess and manage their related side effects, collaborative nurse-physician relationships clearly are an essential component of favorable work settings that deliver high-quality care. The absence of this characteristic suggests poorer quality of care and should alert administrators, nurses, and oncologists. However, some principles are universal to nursing. Without regard to specialty, nurses were far more likely to report favorable patient and nurse outcomes when staffing and resources were adequate to deliver patient care.

Oncology nurses and managers working in settings in which ANCC Magnet recognition is not currently a consideration should be encouraged by the findings that distinct, modifiable features of work environments are associated with favorable nurse and patient outcomes. In this sample, three modifiable features of the workplace—strong nurse-physician relationships, well-regarded nursing management,

**Table 5. Predictors of Emotional Exhaustion, Job Satisfaction, and Quality of Nursing Care for Oncology Nurses**

Variable	Emotional Exhaustion				Job Dissatisfaction				Quality of Care			
	β	95% CI	SE	OR	β	95% CI	SE	OR	β	95% CI	SE	OR
Manager ability	0.02	-0.43, 0.47	0.23	1.02	-0.81**	-1.34, -0.28	0.27	0.44	-0.03	-0.51, 0.44	0.24	0.97
Staffing and resource adequacy	-1.45**	-1.86, -1.04	0.20	0.23	-1.81**	-2.32, -1.30	0.26	0.16	1.96**	0.32, 1.43	0.29	7.10
Collegial nurse-physician relations	-0.12	-0.68, 0.43	0.28	0.89	-0.39	-0.83, 0.05	0.22	0.68	0.88**	1.42, 2.50	0.27	2.41

N = 305

\* p < 0.05

\*\* p < 0.01

CI—confidence interval; OR—odds ratio; SE—standard error

and adequate staffing—were associated with favorable outcomes. The key for any institution is to assess nurses' perceptions of the workplace and use the data to develop strategies for improvement.

### Study Limitations

The original study was not designed to examine differences in practice environment by oncology specialty. Outpatient areas, a crucial setting for oncology nurses, were not included. Additionally, the participating hospitals were not representative of all hospitals; all but two have received recognition of some type for innovative nursing practice. The demographics of the sample differed from nurses throughout the United States. This secondary analysis cannot be generalized to all oncology nurses but does provide important information about the relationships between practice environment and outcomes of interest. When surveying nurses, future researchers should devise sampling frames that are adequately powered to detect differences in practice environments by clinical specialty.

Nurses reported on practice environments and outcomes, which may cause some to question this study's validity. An accepted approach to this problem, randomly splitting the sample (i.e., half of the sample is used to measure the practice environment and half is used to measure the outcome), was not feasible because of the small number of oncology nurses in the total sample. Future examination of these relationships using externally measured outcomes may add more validity to the approach. However, nurses historically have been reliable informants of their work settings and patient outcomes (Aiken, Lake, Sochalski, & Sloane, 1997; Justice, Aiken, Smith, & Turner, 1996; Pearlin, 1962).

## Conclusions

Because the hospitals studied here might be considered more progressive than other institutions, the variation in practice environments and estimated effects on outcomes reported may be more conservative than a more generalized sample of hospitals and nurses. The reported variations in practice environments and outcomes are noteworthy for several reasons. The variations are associated with nursing specialty, which suggests that improvement strategies must consider the physical location of staff and the type of care they provide. Also, favorable environments are found in hospitals with formal recognition for professional practice models. These differences in nursing practice environments are significantly associated with patient and nurse outcomes. The favorable practice environment features and outcomes present for oncology nurses are enhanced in ANCC hospitals. Leaders in oncology nursing should consider collegial nurse-physician relations carefully as a requisite for high-quality oncology nursing care. As the movement to keep patients safe progresses, future research activities should include practice environment measurements as well as other nursing characteristics (e.g., staffing, educational preparation) when examining a broader array of nurse and patient outcomes. Impressive advances in cancer therapy have been made since the 1990s that confer survival benefits to patients. These successes should coincide with improvements in nursing practice environments to ensure that therapies are delivered safely, symptoms are well managed, and patient outcomes are optimized.

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