Patient Satisfaction in Ambulatory Surgery

Patient satisfaction, viewed as an outcome of health care delivery, is an indicator of quality of care in patient care settings.[1] This concept applies to the ambulatory surgery setting, as well. This study sought to explore the relationships between selected variables and patient satisfaction in the ambulatory setting and the nursing interventions that can be taken to improve patient satisfaction.

LITERATURE REVIEW

Patients enter the health care setting with certain expectations of care, which, combined with their previous health care experience, play a vital role in their satisfaction.[2] Nurses are a key determinant of overall patient satisfaction with hospitalization.[3] They are responsible for direct patient care, as well as many activities related to the organization and structure of care (eg, documentation, staffing, preparation of patient care protocols, coordination of nursing services with other hospital departments). The current emphasis of health care administrators and nurses is on the measurement and tracking of quality (eg, total quality management, continuous quality improvement).[4]

The shift of nursing from caring for patients to providing a service to a customer is evident in the present day framework of health care. Employee behavior toward customers is an organization's most powerful marketing and customer satisfaction tool. Meeting and exceeding customer expectations is a top priority of health care institutions. Satisfaction in the business world is interpreted as a positive evaluation of specific service dimensions based on patient expectations and provider performance. Providers of patient care services must recognize that the patient has expectations of quality care.[5]

Patient Satisfaction Instrument. The development of a scale to measure patient satisfaction with nursing care was helpful in defining the construct of this study. The components of the Patient Satisfaction Instrument are technical-professional behavior of nurses, interpersonal and trusting relationships with nurses, and patient education.[6] Additional support for these components has been provided by one series of five clinical and administrative studies.[7]

Technical-professional behavior. Augmenting nurses'

A B S T R A C T

The purpose of this study was to explore the relationships between patient satisfaction and selected variables that were identified as important in ambulatory surgery. The study addressed whether the selected variables are associated with the satisfaction of patients admitted to the hospital for ambulatory surgery. A descriptive correlational study was conducted in two hospital settings with 130 ambulatory surgical patients. Nurses (n = 16) in the ambulatory surgery departments completed a nurse demographic data form. The patient sample differed between settings in age, diagnosis, and use of computers. The nurse sample differed in the number of nurses with computers in their homes and their satisfaction with nursing. Results showed that patients' higher ratings of postoperative pain correlated with higher patient satisfaction. Patients with high postoperative pain rated satisfaction with pain management lower. A point biserial correlation (r_{pb} = .22) indicated a significant correlation between patient satisfaction and nurses' use of computers to collect and record patient information (P = .01). The patient sample in the setting where computers were used showed a higher mean patient satisfaction. *AORN J* 74 (Oct 2001) 483-498.

ELAINE YELLEN, RN; GAIL C. DAVIS, RN

technical skills has been found to increase patient satisfaction levels in the emergency room.[8] Patients' ability to evaluate technical-professional nursing behavior may depend on the length of time in which they are involved with nurses' practices.[9] Two researchers questioned, however, whether patients have the technical knowledge to evaluate the quality of care they receive.[10] Patients may receive high technical quality of care without realizing it.[11]

Interpersonal and trusting relationship. An interpersonal and trusting relationship with nurses is an important factor in patient satisfaction. Its importance has been supported by studies associated with valuing the individual, good rapport, commitment, and responsiveness of the provider.[12] Provider responsiveness has been defined as promptness in meeting patients' needs, social courtesy, and being there when needed. Patients reportedly are more comfortable with nurses who are present and who respond in a timely fashion. Interpersonal care by nurses includes understanding the humanness and value of all patients and their family members and treating them with respect.[13] Feeling valued as an individual and feeling comfortable are important indicators of patient satisfaction.[14] Patients desire that nurses establish rapport with them, individualize care, and form a good interpersonal relationship.[15]

Education. Patients expect nurses to provide information about their progress, as well as advice, explanations, and guidance.[16] In the ambulatory surgery setting, nurses provide information and support that allow patients to gain an understanding of the upcoming experience.[17] Feeling adequately informed is an important indicator of customer satisfaction.[18]

THEORETICAL FRAMEWORK

The theoretical framework for this study was provided by general systems theory.[19] The essence of general systems theory is that any action, whether social or biological, causes a reaction within its own environment. The action also changes the relationship of that object to all other objects in its environment. The hospital environment is viewed as a system that incorporates patients within it; thus, the interaction between patients and the hospital environment represented the system studied here. Patient demographic variables were age, number of previous hospital admissions, and use of computers.

All systems have inputs, throughputs, outputs, and a feedback loop.[20] Patients' level of anxiety at preadmission is an input to the system. Nurses' use of computers in the direct patient care situation also is an input to the system because the unpredictability of nurses carrying or using computers may place stress on the nurse-patient relationship. This may be exemplified as increased anxiety in patients. Throughputs of the system include postadmission satisfaction, variables of postoperative pain associated with ambulatory surgery, or satisfaction with pain management. The system output is patient satisfaction. The feedback loop involves the energy expended by the patient to maintain a steady state. The patient must expend energy not only to attain optimum wellness but also to deal with the variables experienced in the hospital environment.

VARIABLES OF THE STUDY

A number of variables were investigated during this study. Patient anxiety, patient pain variables, patient data, and nursing data all were factors in patients' satisfaction.

Patient anxiety. Anxiety in anticipation of a surgical procedure is at least partially related to patient expectations concerning nursing care. Patients with higher expectations are less likely to be satisfied during hospitalization.[21] Anxiety can be detrimental to physical and emotional recovery, can prolong hospitalization, and can contribute to poor treatment outcomes.[22] Studying the association of patients' anxiety with their satisfaction may confirm its theorized connection with patient expectations.

Patient pain variables. Pain management in the hospital represents a nursing-sensitive outcome.[23] Research indicates a deficit in nursing awareness and treatment of pain.[24] Lack of nursing attention to and management of pain has been identified as an important predictor of patient satisfaction.[25] The inclusion of pain intensity and management in this study aided the understanding of nurses' association with patient satisfaction. By studying the associated variables of patients' satisfaction after ambulatory surgical procedures, researchers hope that this study will contribute to a continued effort to improve quality nursing care.

Patient data. Patient data on number of hospitalizations, age, and computer use were collected to explore their associated role with satisfaction. The number of previous hospitalizations was expected to influence patient expectations. Patients who had experience with hospital routines and nursing methods were expected to be less anxious and thus better

METHOD NOTE

Score distributions and the selection of statistics

When data from a research study are arranged graphically from lowest to highest score, they form a score distribution. The characteristics of a score distribution can be described in terms of *symmetry* and *skewness*.[1] These characteristics determine, in part, which type of statistical analysis can be used.

Normal and skewed distributions

A normal distribution of scores is a bell-shaped (ie, normal) curve that forms a symmetrical pattern around the mean or average score. The left half of the curve essentially is a mirror image of the right half, and the mean score is at the center or peak of the distribution. Many human attributes (eg, intelligence) appear to be distributed normally throughout the population. In a normal distribution, the largest number of scores occurs in the middle of the distribution, and very few scores occur at the extremes of the distribution (ie, very high or very low).

If the variable to be measured is not distributed normally or if the sample size is small, the shape of the resulting score distribution may be asymmetrical or skewed. The mean of a skewed distribution is not in the center. It is distributed with a cluster of scores occurring at one end and a "tail" with fewer scores extending toward the other end.

The direction the tail points indicates whether the distribution is skewed positively or negatively. The tail of a positively skewed distribution points to the right, in the direction of the highest scores, meaning that the largest number of scores occur at the low end. The tail of a negatively skewed distribution points to the left, the low end of the distribution, and most of the scores occur at the high end.[2] In this study, the distribution of patient satisfaction scores was skewed negatively, meaning that patients reported high levels of satisfaction with nursing care.

Parametric and nonparametric statistics

Researchers usually collect data from a sample to draw conclusions about a larger group of people or events (ie, a population). A parameter is a characteristic of a population. In most cases, population parameters are unknown and must be estimated from characteristics of the sample (ie, statistics).[3]

Parametric tests (eg, *t* tests) allow researchers to estimate at least one population parameter from the sample statistics. Such estimations are based on the assumption that the variable being measured in the sample is distributed normally in the population. If the score distribution is nonsymmetrical and skewed, however, it is more appropriate to use nonparametric statistical tests (eg, chi-square).[4]

Parametric tests are more powerful and flexible than nonparametric tests. They allow researchers to study the effects of many independent variables on the dependent variable. When a score distribution is skewed excessively, however, as the patient satisfaction scores were in this study, nonparametric statistics are preferable.[5]

Pamela J. Woods, *RN, MSN, MBA, CNA, is a doctoral student at Duquesne University School of Nursing, Pittsburgh.*

Kathleen B. Gaberson, *RN, PhD, is a professor at Duquesne University School of Nursing, Pittsburgh.*

NOTES
1. M H Oermann, K B Gaberson, *Evaluation and Testing in Nursing Education* (New York: Springer, 1998) 203-206.
2. *Ibid,* 207.
3. M E Duffy, B S Jacobsen, "Organizing and displaying data," in *Statistical Methods for Health Care Research,* fourth ed, B H Munro ed (Philadelphia: J B Lippincott Co, 2001) 3.
4. B H Munro, "Selected nonparametric techniques," in *Statistical Methods for Health Care Research,* fourth ed, B H Munro ed (Philadelphia: J B Lippincott Co, 2001) 97.
5. *Ibid,* 97-98.

Nurses' better understanding of patient factors related to satisfaction may lead to improved quality of care.

able to anticipate health care events. Age and computer use were factors that the researcher suspected might play a part in patients' comfort with nurses using computers at the bedside. Younger patients are more likely to have used computers themselves and know their function and value in the situation. Higher computer anxiety is associated with less computer experience.[26] One researcher's finding that patients who use computers show greater comfort with computer use suggests that familiarity with computers may influence patients' acceptance of computers in the patient care situation.[27]

Nursing data. One variable that increasingly is becoming a part of the hospital setting is the use of computers by nurses for collecting information directly from patients. The ambulatory surgery admission may be a situation in which nurses use computers to record patients' histories. Nurses again may use a computer in the postoperative phase when interacting with patients. Whether the introduction of the computer into the nurse-patient interaction interferes with communication and, thus, influences satisfaction is not clear. In one study, patients who were not exposed to point-of-care technology (ie, computers at the bedside) were found to be more satisfied than patients who were exposed to the technology.[28] Nursing care provided through a complicated network of machinery is believed to be more alien to human dignity than care provided through nonmechanical means.[29] Nursing philosophers describe the situation of nurses using computers at the bedside as one that alienates nurses from patients in the scientific paradigm.[30] Patient concerns with the physical setting of the hospital are documented;[31] however, additional effects of a computerized hospital environment on patient satisfaction are not known.

PURPOSE

The purpose of this study was to explore the relationship between patient satisfaction and selected variables identified as important in the ambulatory surgery setting. The study addressed whether the following variables are associated with the satisfaction of patients admitted to the hospital for ambulatory surgery: collection of patient information by nurses via computer, patients' preoperative reported anxiety, patient satisfaction after the preadmission process, postoperative pain, satisfaction with pain management, and demographic variables (eg, number of previous hospitalizations, age).

In the two settings studied, patients visit the ambulatory surgery department between one and 30 days before surgery for history taking and preoperative teaching.[32] On the day of surgery, patients are assessed preoperatively by an RN. The perioperative period lasts an average of eight to 12 hours. A brief postoperative phase followed by teaching occurs before the patient is discharged. Findings of this study are expected to confirm the knowledge that is necessary for continued discovery and improvement of patient satisfaction. Nurses' better understanding of individual patient factors related to satisfaction may lead to better addressing of patients' expectations and, thus, improved quality of care and higher satisfaction outcomes.

DEFINITION OF TERMS

Ambulatory surgery was defined in this study as a procedure that takes place in an outpatient surgical department and does not require an overnight hospital stay. *Patient satisfaction* is the degree of congruency between a patient's expectations of ideal nursing care and the perception of the real nursing care he or she receives.[33] *Nurse satisfaction* was defined as current satisfaction with nursing practice as rated on a scale of one to 10 by nurses working in the ambulatory surgical setting.

METHOD

A correlational descriptive design was used to explore the association of selected variables with the satisfaction of patients admitted to the hospital for ambulatory surgery. Following are descriptions of the study's setting, sample, measurement, and procedure.

Setting. This study was conducted in two 250-bed private hospitals in north Texas. Both hospitals are members of the same corporation, located in the same county, and approximately the same size. The

major known difference between them is that in hospital A nurses input preadmission assessment data directly into computers and collect data at the bedside via hand-held computers. At hospital B, nurses record data collected from patients using pen and paper.

Sample. The convenience sample was drawn from the population of all ambulatory surgery patients entering the two hospitals. Data were collected for three weeks in hospital A and for six weeks in hospital B. The difference in data collection times was due to the different volumes of ambulatory surgery procedures in the two hospitals. An initial sample of 149 participants was drawn from alert, oriented patients older than 18 years of age who were able and willing to complete the study instruments and orally respond to assessment questions. One hundred and thirty patients (ie, 62 from hospital A and 68 from hospital B) completed questionnaires after undergoing ambulatory surgery and were included in data analysis. The sample size, dependent on the number of variables in the study, was calculated by power analysis before data collection.

Before participating, all patients received an oral explanation of the study and signed a consent form. The mean age of patients was 44.35 years. Patients in the two hospitals varied significantly in age, with hospital B having an older patient group (chi-square test $[x^2] = 59.26, P = .00$). The gender composition of the sample was 44 males and 86 females. The gender of the two groups did not differ significantly between hospitals ($x^2 = .14, P = .72$). Hospital A included more patients undergoing orthopedic procedures, and hospital B included a greater number of patients undergoing gastrointestinal and heart catheterization procedures. The analysis of the diagnosis data indicated a significant difference ($x^2 = 39.96, P = .00$) between hospitals A and B. The younger population in hospital A indicated a significantly higher personal computer use ($x^2 = 12.92, P = .01$) (Table 1). The different sample size of the variables was due to missing data. The mean number of patients' previous hospitalizations in the sample was 3.97 times. The x^2 statistic showed that patients in the two hospitals did not differ significantly in number of previous hospitalizations.

A convenience sample of all nurses in the ambulatory surgery departments of both hospitals was surveyed to control for extraneous variables. The consenting nurse sample included 16 nurses (ie, nine from hospital A and seven from hospital B) all from the preadmission and ambulatory surgery departments (Table 2). Significantly more nurses in

hospital A had computers in their homes. Nurses in hospital B had a higher satisfaction with nursing score than those in hospital A.

Measurement. The Patient Satisfaction Instrument was used to measure patient satisfaction.[34] The researcher modified the instrument for clarification and application in the ambulatory surgical setting. The Cronbach α coefficient for the modified scale with the study sample was .92. Responses to 15 items were rated on a scale of one, meaning not at all, to four, meaning very much so. The item scores were added reversing negative item scores (ie, the higher the score, the higher the level of satisfaction). Convergent and discriminant validity of the Patient Satisfaction Instrument provided an estimate of moderate to strong construct validation.[35]

The reliability of the modified Patient Satisfaction Instrument was investigated in this study. A principal components analysis method accounted for three factors with an eigenvalue greater than one that were named by the researcher. The first factor, accounting for 47.7% of the variance, contained items that fit conceptually under the heading "effective communication." Factor two, accounting for 10% of the variance, was labeled "problem solving." Factor three accounted for 7% of the variance and was labeled "availability." More than 20 years and a number of rewordings and modifications for today's health care environment created the differences in factor analysis between this study and the original study in which the instrument was used. Three factors remain that conceptually fall under the interpersonal area of nursing. Finding factors in the interpersonal area of nursing, although not named exactly the same, resemble concepts named in the current literature.[36]

The 20-item state-anxiety portion of the State-Trait Anxiety Inventory (STAI) was used to measure state anxiety. Concurrent-convergent, divergent, and construct validity of the STAI has been established.[37] Each patient's reported preoperative anxiety level was a calculated sum of all the items on the preadmission STAI. The coefficient α with this sample was .92.

The researcher-developed patient data form was used to collect patient demographic variables (eg, age, number of previous hospitalizations, diagnosis) and data about patient satisfaction after preadmission. Convergent validity was established in this study for the one-item measurement of satisfaction, as satisfaction with preadmission and overall satisfaction were

found to have a high positive correlation with the Patient Satisfaction Instrument (r_S = .58, P = .00). The pain questionnaire included four items with visual analogue scaling of zero to 10 measuring perceived postoperative pain intensity and satisfaction with pain management.

The researcher-developed nurse demographic data form was used to collect data from ambulatory surgery nurses about years of experience with computers, computer use, computer comfort, and perceived work satisfaction. It was validated by four nurse researchers and pilot tested on a group of ambulatory surgery nurses to establish face validity.

Procedure. Approval for the study was obtained from the Human Research Review Committee at Texas Woman's University, Denton,

Tex, and the participating hospitals' executive committees. In hospital A, data were collected for three weeks during scheduled preadmission screenings. After undergoing laboratory and x-ray tests, patients entered the main lobby, identified themselves to hospital staff members at the information desk, and gave oral study consent. The researcher identified herself to the patients and obtained informed written consent. Patients began filling out the STAI and patient data form in the main lobby before being called by the preadmission nurse. During the preadmission interview and physical assessment, the nurse sat in front of a monitor and used a keyboard to enter patient data directly into a computer. After preadmission, the patient completed the patient data form and left the hospital.

Table 1

DEMOGRAPHIC CHARACTERISTICS OF THE PATIENT SAMPLE (N = 130)*				
Variable	**Hospital A** Mean (M) (Standard deviation [SD])	**Hospital B** M (SD)	**Total group** M (SD)	**Chi-square test**
Age (n = 130)	40.34 (17.66)	48.00 (18.98)	44.35 (18.69)	59.26†
Number of hospitalizations (n = 119)	3.76 (2.93)	4.18 (4.49)	3.97 (3.06)	18.40
Variable	**Hospital A** frequency (f)	**Hospital B** f	**Total group** f	**Chi-square test**
Gender (n = 130)				
Female	40	46	86	00.14
Male	22	22	44	
Diagnosis (n = 127)				
Orthopedic	24	14	38	39.96†
Otorhinolaryngology	6	4	10	
Abdominal	12	9	21	
Obstetrics/gynecological	18	8	26	
Eye	0	4	4	
Gastrointestinal	0	23	23	
Heart catheterization	0	5	5	
Computer use (n = 127)				
Never	9	29	38	12.92‡
Once per week	7	8	15	
Several times per week	14	9	23	
Daily	30	21	51	

* Percentages have been rounded; some sample sizes do not equal 130 because of missing data.
† P < .01.
‡ P < .05.

Table 2

DEMOGRAPHIC CHARACTERISTICS OF THE NURSE SAMPLE (N = 16)*

Variable	Hospital A Mean (M) (Standard Deviation [SD])	Hospital B M (SD)	Total group M (SD)
Years in nursing	22.22 (4.89)	17.86 (9.28)	20.31 (7.23)
Months employed at hospital	110.11 (83.89)	145.00 (126.83)	125.38 (102.54)
Months employed in ambulatory surgery	67.33 (37.65)	49.14 (46.18)	59.38 (41.18)
Nursing satisfaction	6.78 (1.39)	8.43 (1.13)	7.50 (1.50)
Months of computer use	50.00 (19.27)	46.29 (28.08)	48.38 (22.74)
Computer comfort	6.78 (1.20)	7.00 (2.52)	6.88 (1.89)

Variable	Hospital A frequency (f)	Hospital B f	Total group f
Degree (n = 16)			
Associate	3	3	6
Bachelor	5	3	8
Licensed vocational	1	1	2
Enjoy nursing (n = 16)			
Yes	9	6	15
No	0	1	1
Computer at home (n = 16)			
Yes	9	3	12
No	0	4	4
Formal computer education (n = 16)			
Yes	0	2	2
No	9	5	14

* Percentages have been rounded.

On the day of the scheduled surgery, approximately one to three days later, patients entered the hospital. The nurse escorted them into the ambulatory surgery department, where they were prepped and transferred to surgery. During all direct patient care, the nurse carried a handheld computer and entered patient data. When patients returned to the ambulatory surgery department, the researcher approached them in their rooms and asked them to complete the STAI, Patient Satisfaction Instrument, and pain questionnaire immediately before discharge. The researcher collected the completed forms, matched them to the preadmission forms, and removed all patients' names. All consenting nurses in the outpatient surgery department of hospital A (n = 9) completed the nurse demographic data form.

In hospital B, data were collected during a six-week period. The difference in data collection times between the two hospitals was due to differences in the volume of ambulatory surgery procedures. Preadmission screenings were performed in the ambulatory surgery department. The preadmission staff member requested oral study consent from patients after they had undergone laboratory and x-ray tests. The researcher then identified herself to the patients and obtained informed written consents. In the ambulatory surgery department lobby, patients completed the STAI and began filling out the patient data form. The preadmission nurse then called each patient to the preadmission office, where an interview and physical assessment were conducted. The nurse recorded patient information using pen and paper. After the preadmission process, patients completed the patient data form and left the hospital.

On the day of the scheduled surgery, one to 30 days later, patients entered the hospital and were

escorted by a nurse to the ambulatory surgery department. At this time, the nurse recorded patient information at the bedside using pen and paper. Patients then were prepped for surgery. After the procedure, the researcher approached the patients in their cubicles and asked them to complete the STAI, Patient Satisfaction Instrument, and pain questionnaire immediately before discharge. The researcher collected the completed forms, matched them to the preadmission forms, and removed all patients' names. All consenting nurses in the ambulatory surgery department of hospital B (n = 7) completed the nurse demographic data form.

RESULTS

Nonparametric statistics were used in data analysis to address the research question because the study's dependent variable, patient satisfaction, was not distributed normally. A point biserial correlation was used to determine the relationship between patient satisfaction and a dichotomized hospital variable. A significant positive correlation (r_{pb} = .22, P = .01) was found between patient satisfaction and the use of computers in hospital A, although it explained only 4% of the variance. The sample in the computerized setting showed a higher mean patient satisfaction of 52.32 (standard deviation [SD] = 8.16). Patients who reported higher postoperative pain also indicated higher patient satisfaction. Although significant, the strength of this relationship was weak. No other significant correlation was found between patient satisfaction and the variables in the research question.

To get a more complete picture of the relationships among the independent variables, the Spearman's Rho correlation coefficient was used to examine the extent of the association between the variables (Table 3). A significant inverse association was found between patients' reporting of postoperative pain and age (r_S = -.29, P < .01). As patients' age increases, their reporting of postoperative pain decreases.

A significant inverse association also was found between patients' postoperative pain and satisfaction with pain management (r_S = -.49, P < .01). As patients' postoperative pain increases, satisfaction with pain management decreases. Twenty-four percent of the variance (r_S^2 = .24) in satisfaction with pain management is explained by the reported level of postoperative pain. A significant positive association was found between patients' preadmis-

sion satisfaction and satisfaction with pain management. High preadmission satisfaction is associated with high satisfaction with pain management (r_S = .26, P < .01). A significant positive association was found between patients' ages and their number of hospitalizations; as the ages of patients increase, so does the number of hospitalizations (r_S = .52, P < .05). This association is to be expected.

To investigate the association of nurse satisfaction with patient satisfaction, a Spearman's Rho correlation coefficient test was used. The results of this analysis (r_S = -.14, P = .61) indicate that patient satisfaction has a nonsignificant, inverse association with nurse satisfaction in this study.

DISCUSSION

Patient satisfaction in this study correlated significantly in a positive direction with the use of computers to collect and record perioperative patient data. The hospital in which computers were used to collect and record patient data in this study (ie, hospital A) comprised a younger patient population with significantly higher patient satisfaction. These findings appear to question the philosophical stance that computerization of the hospital environment interferes with patient care.[38] Findings of this study may reflect the growing acceptance of computers in all aspects of life. It also suggests that the computerized patient environment in ambulatory surgery is not a deterrent to quality patient care.

It is naive to conclude that computerization is the only or even the most important difference in the two hospitals studied. It is one difference, however, that may contribute to the variance in patient satisfaction. The implications for nursing are that health care needs to be online as it moves into the twenty-first century. Patients expect hospitals, like other businesses, to have instant access to data. Nurses need to become computer literate and continuously improve their computer skills. Results of this study suggest that the growth of hospital information systems is accepted and expected by the patient population.

Postoperative pain and pain management. A significant positive correlation is suggested between patients' postoperative pain and patient satisfaction. Patients who reported higher postoperative pain also indicated higher patient satisfaction, although the strength of this relationship was weak. Research has shown that patients complained of moderate or severe pain and considered their pain relief to be adequate.[39] This study confirms the finding that patients may

report high patient satisfaction even when experiencing postoperative pain. This finding also might suggest that patients who experience more postoperative pain have increased attention from and interaction with nurses, leading to higher patient satisfaction. Reflecting on the Joint Commission on Accreditation of Healthcare Organizations standards, the best explanation for the result may be that in the hospitals studied, postoperative pain is assessed and managed in such a way that patients report higher levels of satisfaction.[40] As the possible contact with nurses (eg, one to two hours) is so short for ambulatory surgery patients, patients who experienced more pain during this time were likely to have more contact with nurses.

Issues related to possible inherent problems in the self-report and measurement of patient satisfaction and satisfaction with pain management also provide a possible explanation for this finding. This finding is not supported in the American Nurses Association's *Report Card for Acute Care,* a project to explore the nature and strength of links between nursing care and patient outcomes.[41] The report card provides a framework for nurses' contribution to inpatient hospital care. Acute pain has been shown to adversely affect patient outcomes. Researchers have found that hospitalized patients whose acute pain is well controlled are more satisfied with their care than patients whose pain is unmanaged.

A significant inverse association was found between postoperative pain and satisfaction with pain management. As postoperative pain increases, satisfaction with pain management decreases. This is an expected association. The pain questionnaire does not assess patients' perceived relief of postoperative pain. It instead asks patients to rate their satisfaction with pain management after surgery. This finding seems to confirm the interpretation that satisfaction with pain management is a mediating variable between perceived pain intensity and patient satisfaction.

Age. A significant association was found between postoperative pain and age. As patients' age increases, their reporting of postoperative pain decreases. Even though this finding seems to support previous research that older adult patients experience effective pain relief for longer periods than younger patients,[42] further studies are necessary to explain the relationship between pain and age.

Patient satisfaction. Patient satisfaction, as a gauge of the quality of nursing care, has a number of interesting attributes. Patients traditionally report

Table 3

SPEARMAN'S RHO CORRELATION OF INDEPENDENT AND DEPENDENT ORDINAL LEVEL VARIABLES						
Variable	Patient Satisfaction Instrument	Age	Preoperative State-Trait Anxiety Instrument (STAI)	Postoperative pain	Satisfaction with pain management	Preadmission satisfaction
Age	-.12					
Preoperative STAI	-.04	.08				
Postoperative pain	.22*	-.29†	.07			
Satisfaction with pain management	-.10	.10	.00	-.49†		
Preadmission satisfaction	-.09	.06	-.00	-.15	.26†	
Number of hospitalizations	.01	.52*	.06	-.02	.05	.10

* Correlation is significant at the .05 level (two-tailed *t* test).
† Correlation is significant at the .01 level (two-tailed *t* test).

high levels of satisfaction with nursing, potentially limiting the variation in responses necessary to identify quality problems. Patients may answer self-report questions to please the investigator and make a positive impression.[43] Although patient satisfaction provides valuable insight, it is not clear that it actually reflects quality of care.[44]

Patient satisfaction produces a skewed distribution of data. In addition, reporting of assumptions and their violations does not appear to be common practice in health care research.[45] The conclusion is that the reasons for using patient satisfaction as an outcome measure must be very clear. The objectives for using patient satisfaction should be presented in the study plan, and the results should be presented within that context, paying attention to data distribution.

Another issue related to the appropriate use of patient satisfaction as a measure of quality is construct validity. Three concepts of patient satisfaction—effective communication, problem solving, and availability—were identified in this study. Other research has identified varying numbers and concept names.[46] The principal components analysis of this study suggests that the negatively worded items on the Patient Satisfaction Inventory do not measure the same dimension as the positively worded items. Patients are confused and uncomfortable with negative statements concerning nurses, especially when the investigator is a nurse. Although measurement of patient satisfaction is necessary, valid and reliable tools specific to settings need to be developed to build on the present conceptual knowledge. Factors that contribute to patient satisfaction may vary among practice settings. Having a tool that truly is representative of the specific setting is necessary if patient satisfaction is to be a valid indicator of outcomes.

Nurse satisfaction. A significant difference in nurse satisfaction ratings between nurses in the two hospitals was noted. Nurse satisfaction in hospital B is significantly higher than in hospital A. Patient satisfaction is not associated significantly with nurse satisfaction. This result does not coincide with the commonly held belief that happier nurses will create happier patients. A review of the literature found that this belief does not have empirical backing. Many studies on nurse and patient satisfaction focus on new procedures or restructuring efforts.[47] Studies that focus on the correlation of nurse satisfaction and patient satisfaction document the difficulty of observing variability in negatively skewed patient data.[48]

LIMITATIONS

The study was limited to ambulatory surgery patients admitted to two 250-bed private hospitals. The sample in the study was a convenience sample. Ambulatory surgery patients entered the hospitals with a variety of diagnoses to undergo a variety of procedures. Admission diagnoses were collected for sample description and comparison, and they varied between the two hospitals. Generalization of findings was limited to the ambulatory surgery population in these settings.

Another limitation is that hospital B was in the process of moving to a new facility, which was to occur within four months of the time of the study. This meant that all nursing staff members in hospital B would be working in a new state-of-the-art hospital. This may have interfered with nurse satisfaction positively and with patient satisfaction negatively and could have been an intervening variable in the study affecting generalizability of the findings.

The time lapse between the preadmission assessment and hospital admission for the surgical procedure varied. Any effects of the preadmission procedure on patient satisfaction during hospitalization ratings, therefore, might have varied widely. The time patients spent in the hospital between the procedure and discharge varied. Data were collected during different time periods in each hospital. These factors could present a history threat to internal validity of the study.

Two different settings were used for this study. Although these hospitals are in the same county and owned by the same hospital system, the nurses, administrators, and other environmental factors are different. The nursing demographic data form, used to control for extraneous variables in the nursing staff members, lacked evidence of construct validity in the collection of nurse satisfaction data. The patient data form was used to collect data about patient satisfaction and to collect demographic variables after patients' preadmission. The absence of evidence to support the measurement validity of these instruments was a threat to the internal validity of the study.

CONCLUSION

It appears from the study that nurses can address several factors to improve patient satisfaction in the ambulatory surgery setting. Although a number of variables may have contributed to higher satisfaction for patients in hospital A, the finding does suggest

that nurses should give attention to increasing their computer skills. As the use of computers for the collection and organization of patient data is likely to increase, nurses who are comfortable with technology likely will be viewed as more competent by patients who, at the same time, are becoming more computer literate. Further, postoperative patients expect pain to be a major need that demands nurses' attention and expertise. To meet this need, increased skills and the use of appropriate pain measures is essential. Tools to measure patient satisfaction also need to be developed for use in the ambulatory surgery setting to appropriately validate this outcome. ▲

Elaine Yellen, RN, PhD, is an assistant professor, Texas A & M University, Corpus Christi, Tex.

Gail C. Davis, RN, EdD, is a professor of nursing at Texas Woman's University, Denton, Tex.

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