

# Patient-Reported Missed Nursing Care Correlated With Adverse Events

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## Abstract

The aim of this study was to determine the extent and type of missed nursing care as reported by patients and the association with patient-reported adverse outcomes. A total of 729 inpatients on 20 units in 2 acute care hospitals were surveyed. The MISSCARE Survey–Patient was used to collect patient reports of missed care. Patients reported more missed nursing care in the domain of basic care ( $2.29 \pm 1.06$ ) than in communication ( $1.69 \pm 0.71$ ) and in time to respond ( $1.52 \pm 0.64$ ). The 5 most frequently reported elements of missed nursing care were the following: (a) mouth care (50.3%), (b) ambulation (41.3%), (c) getting out of bed into a chair (38.8%), (d) providing information about tests/procedures (27%), and (e) bathing (26.4%). Patients who reported skin breakdown/pressure ulcers, medication errors, new infections, IVs running dry, IVs infiltrating, and other problems during the current hospitalization reported significantly more overall missed nursing care.

## Keywords

quality, missed care, errors of omission, nursing, acute care

A critical component of patient safety and health care quality improvement is the promotion of patient engagement. Just as patient experiences with health care services are increasingly becoming the focus of health services research, numerous provisions of the US Patient Protection and Affordable Care Act that promote patient engagement have reinforced this pivotal component of high-quality care.<sup>1</sup> Patient engagement is not only a requirement for patients to optimally benefit from their health care, but their input is also critical to the assessment of the quality of health care services. Although the responsibility for the safety of patients remains with the health care provider, patients also can play an important role in the reduction of patient safety incidents (errors of omission or commission) by functioning as a safety “buffer” because they are often the last line of defense for avoiding errors.<sup>2</sup>

A series of studies were conducted to attempt to understand what elements of standard nursing care are being delivered to inpatients and what is being omitted or significantly delayed (missed nursing care) from the viewpoint of the nursing staff. An initial qualitative study uncovered the fact that important elements of nursing care are being missed on a regular basis, including ambulation, turning, delayed or missed feedings, patient teaching, discharge planning, emotional support, hygiene, intake and output documentation, among others.<sup>3</sup> Based on the results of this study, the MISSCARE Survey was

designed and tested to quantify the types and amounts of missed nursing care occurring in acute care hospital patient care units.<sup>4</sup> The first study was conducted in 3 hospitals on 32 units ( $n = 459$  nursing staff)<sup>5</sup> and the second in 10 hospitals on 110 units ( $n = 4086$  nursing staff).<sup>6</sup> Both studies revealed a substantial amount of missed nursing care and demonstrated consistency across hospitals regarding the amounts and types of missed care. The most frequently reported elements of missed nursing care were ambulation, attending interdisciplinary conferences, mouth care, medications administered on time, and turning the patient every 2 hours. The least missed elements of nursing care were patient assessments performed each shift, glucose monitoring, focused reassessment, vital signs, and discharge planning and teaching.<sup>6</sup>

Because eliciting patient perceptions is one way to engage patients and bring about more patient-centered interventions that meet the needs of patients, the research team conducted a qualitative study during which 38 hospitalized adults on medical-surgical units were interviewed to determine the elements of nursing care they are able to

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report on.<sup>7</sup> The patients' ability to accurately assess elements of nursing care was categorized into fully reportable, partially reportable, and not reportable. Fully reportable areas of nursing care included mouth care, listening, being kept informed, response to call lights, response to alarms, meal assistance, pain medication and follow-up, and bathing. Partially reportable items included ambulation, discharge planning, patient education, medication administration, repositioning, vital signs, and hand washing. Finally, items they could not report on included patient assessment, surveillance, and intravenous site care.

In terms of the specific elements of care missed (ambulation, mouth care, repositioning, meals, and patient teaching), patient reports in the qualitative study were similar to staff reports in the quantitative studies.<sup>3</sup> These findings suggest that patients have the ability to report on aspects of nursing care but not on everything.<sup>3</sup> The results of this study were used to develop the MISSCARE Survey–Patient, which was used in the current study.

The purpose of this study was to determine what specific nursing care was not provided to patients in inpatient settings as reported by patients or their family members. The research questions for this study were the following:

1. What is the extent and type of missed nursing care identified by hospitalized patients?
2. Do the amounts and types of patient reported missed nursing care vary by hospital?
3. Are patient-reported outcomes (ie, fall, skin breakdown/pressure ulcer, medication error, hospital-acquired infection) associated with missed nursing care?
4. What patient demographic and health status variables influence patient perceptions of missed nursing care?

## Methods

### Design, Sample, and Setting

This is a cross-sectional descriptive study. A total of 729 patients in 2 hospitals in the Midwest region of the United States participated in the study. Inclusion criteria were length of hospitalization  $\geq 3$  days; age  $\geq 18$  years; hospitalized on a medical, surgical, or rehabilitation unit; and English language proficiency. A family member who had spent at least 5 hours a day with the patient in the hospital could complete the survey if the patient was unable to do so.

### Measures

Patient perceptions of missed nursing care were collected using the MISSCARE Survey–Patient. Patients were asked to identify whether or not nursing care was provided during

their current hospitalization. The MISSCARE Survey–Patient contains 3 sections: (a) demographic characteristics and health status (including patient age, sex, race, education, marital status, hospitalized days, health status, diagnosis, and disease history), (b) elements of nursing care, and (c) adverse events. The section of elements of nursing care contains 13 items and uses 5-point Likert-type scales for measurement of communication and basic care (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *usually*, and 5 = *always*) and for measurement of timeliness (1 =  $<5$  minutes, 2 = 5-10 minutes, 3 = 11-20 minutes, 4 = 21-30 minutes, 5 =  $>30$  minutes). The mean of all 13 items was used as a total score for the scale, and the potential range of scores was 1 to 5. All the items were reverse coded so that higher scores indicated more missed nursing care. In the adverse events section, participants were asked the question, "Did you experience any of the following problems during this hospitalization?" Problems included falls, skin breakdown/pressure ulcers, medication errors, infections, and intravenous running dry or leaking into the skin of the patient. A general category called "other problems" also was included, in which patients could write in additional items.

Reliability and validity studies of MISSCARE Survey–Patient were conducted (B. J. Kalisch, M. Rochman, K. H. Lee, unpublished data, 2013). Nurses who worked on medical-surgical units and patients hospitalized on these types of units participated in focus groups to identify and clarify elements of care. As indicated, the research team conducted a qualitative study of patients' ability to report on items of nursing care that were completed or not and the results of that study informed the selection of items for the survey tool. Once a draft of the survey was completed, the focus groups reviewed the MISSCARE Survey–Patient for clarity and the relevance. The content validity index (CVI) for nursing staff was .89, and the CVI for patients was .88. These indicate a high level of clarity and relevance. Convergent validity was examined by comparing the results of the MISSCARE Survey–Patient with a satisfaction with nursing care question imbedded in the Survey. It was found that higher ratings of global satisfaction were correlated with less missed nursing care ( $r = .25$ ,  $P < .001$ ). Exploratory factor analysis was performed to evaluate construct validity. A 3-factor solution emerged: (a) communication (5 items), (b) time to response (4 items), and (c) basic care (4 items). The factor loadings ranged from .605 to .869. These 3 factors explained 59.2% of the variance in patient perceptions of missed nursing care. The confirmatory factor analysis resulted in a good model fit (comparative fit index = .969 and root mean square error of approximation = .058).

Test–retest reliability was examined by administering MISSCARE Survey–Patient to a randomly selected group of 30 patients who had completed the survey while hospitalized and 2 weeks after discharge. The overall test–retest

coefficient was .818. Internal consistency measured by Cronbach  $\alpha$  coefficient was .838, and the subscale  $\alpha$  ranged from .708 to .834. In this study, the Cronbach  $\alpha$  is .86, and  $\alpha$  for communication, time to response, and basic care was .784, .803, and .771, respectively.

### Data Analysis

After data cleaning, analyses were conducted using the SPSS version 19.0 (IBM SPSS, Chicago, IL). Descriptive analyses were performed first. Normality tests were conducted to examine the distribution of data. Frequencies were used to explore whether patients perceived each element of nursing care as missed or not, and the MISSCARE Survey–Patient items were treated dichotomously. Elements of nursing care that were selected as “never,” “rarely,” or “sometimes” occurring were coded as “missed nursing care” and those selected as “usually” or “always” occurring were coded as “not missed nursing care.” Independent  $t$  test and  $\chi^2$  were conducted to examine the differences in patient perceptions of missed care and adverse events across hospitals. Independent  $t$  tests were performed to examine the differences between hospitals in patient reports of missed care by adverse events. For adverse events, participants who answered “unsure” were excluded from the analysis. A series of bivariate regression analyses were performed to find the significant variables of general information associated with patient perceptions of missed care. A multiple linear regression model was completed to determine the predictors of patient perceptions of missed nursing care.

### Procedure

After acquiring institutional review board approval at the study institutions, patients who met the inclusion criteria were recruited to participate in the study. On any given shift, research assistants (RAs) went to the patient care units and asked the charge nurse to assist them in determining which patients met the eligibility criteria for the study. The RAs then approached eligible patients (and/or family members), asking them if they would be willing to participate in the study; if they were, the RAs obtained written consent and then administered the survey. The patients filled out the survey themselves unless they had difficulty reading or writing. In this case, the RA read the questions to them and marked the answers the patients selected.

## Results

### Sample Characteristics

A total of 729 patients in 2 hospitals in the Midwest participated in this survey. Almost 90% of patients had been hospitalized before. The average current hospital days

were  $7.86 \pm 8.83$ . The average patient age was  $59.76 \pm 16.42$  years. The majority of patients completed the survey themselves ( $n = 639$ , 88.9%); the remainder had a family member complete the survey. Other sample demographic characteristics (eg, sex, race, education, marital status) and health status are contained in Table 1.

### Extent and Type of Missed Nursing Care

As is demonstrated in Figure 1, the overall patient perception of missed nursing care was  $1.82 \pm 0.62$ . Patients reported more missed nursing care in the domain of basic care ( $2.29 \pm 1.06$ ) than in communication ( $1.69 \pm 0.71$ ) or in time to respond ( $1.52 \pm 0.64$ ). Figure 2 contains the percentages of missed elements of nursing care. The 5 most frequently reported specific elements of missed care were the following: (a) mouth care, (b) ambulation, (c) getting out of bed into a chair, (d) not giving information about tests/procedures, and (e) bathing. The 5 least missed elements of nursing care were the following: (a) not listening to patients' questions and concerns, (b) not answering call lights, (c) not responding to beeping monitor, (d) requests not fulfilled, and (e) not being helped to the bathroom.

### Demographic Characteristics and Health Status

A series of bivariate regression analyses were conducted to find significant variations in overall patient perceptions of missed care by patient demographic characteristics and health status. Three variables were found to be significantly associated with missed nursing care: education, general health status, and history of a psychiatric diagnosis. Compared with patients whose education was high school or less, patients with some college or earned degrees reported more missed care ( $\beta = .10$ ,  $P = .032$ ). Patients who had a poorer health status reported more missed care ( $\beta = -.08$ ,  $P < .0001$ ). Patients who had ever been diagnosed or treated for a psychiatric problem also reported more missed care ( $\beta = -.19$ ,  $P = .002$ ). Other demographic characteristics and health status variables were not significantly associated with patient perceptions of missed care (eg, race, marital status, sex).

### Comparison by Hospital

There was no significant difference in overall patient perceived missed care or missed communication between the 2 study hospitals. However, there was a significant difference in perceived time to response between Hospital 1 and Hospital 2. Patients in Hospital 2 identified more delays in response time than patients in

**Table 1.** Sample Characteristics (N = 729).

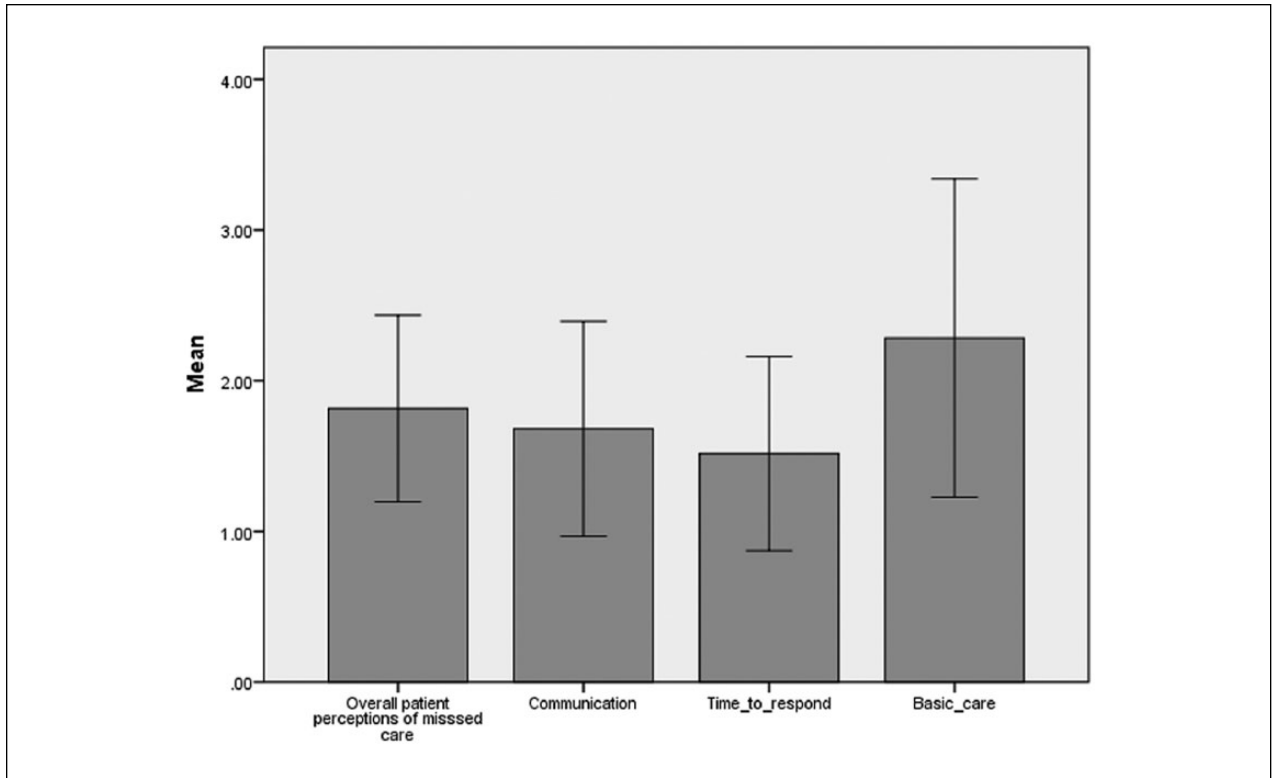
Variable	Label	n	%
Previous Hospitalization	Yes	646	89.8
	No	73	10.2
Sex	Male	370	51.1
	Female	354	48.9
Race	White	581	81.4
	African American	101	14.1
	Hispanic or Latino	8	1.1
	Asian	6	0.8
	Other	18	2.5
Education	Less than high school	46	6.4
	High school diploma/GED	217	30.2
	Some college	254	35.3
	4-Year college degree	95	13.2
	More than 4-year college degree	107	14.9
Marital status	Married	370	52.6
	Separated	11	1.6
	Widowed	108	15.4
	Divorced	101	14.4
	Never married	113	16.1
General Health	Poor	125	17.5
	Fair	235	33.0
	Good	234	32.1
	Very good	99	13.9
	Excellent	20	2.8
Patient type	Medical	420	57.6
	Surgical	255	35.0
	Rehabilitation	54	7.4
History of Diseases	Hypertension	410	57.5
	Heart disease	239	33.8
	Cancer	233	32.7
	Diabetes	207	29.3
	Lung disease	142	20.1
	Psychiatric problems	111	15.7
	Rheumatoid arthritis	93	13.3
	Stroke	65	9.2
Substance abuse	27	3.8	

Abbreviation: GED, general equivalency diploma.

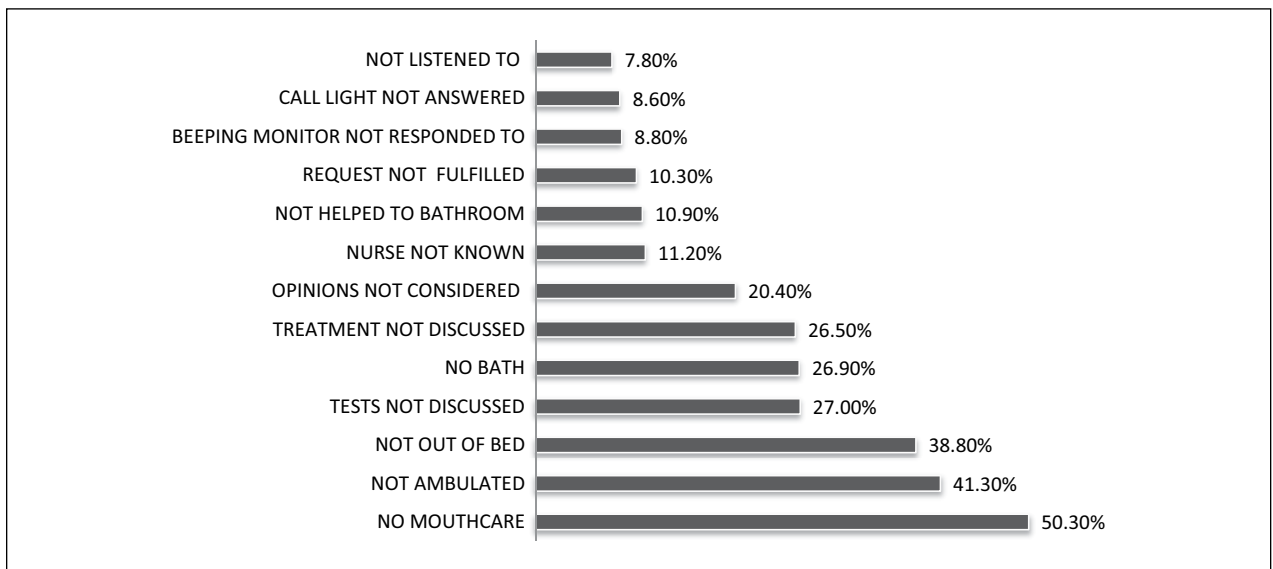
Hospital 1 ( $P = .0006$ ; Table 2). Patients in Hospital 2 reported significantly more missed timely assistance to the bathroom ( $\chi^2 = 5.93$ ,  $P = .015$ ). In addition, Hospital 1 reported more missed basic care, which approached but did not quite reach significance ( $P = .054$ ). Significant differences were found between Hospital 1 and Hospital 2 in reports of missed ambulation, getting patients out of bed into a chair, and bathing. Patients in Hospital 2 reported more missed bathing ( $\chi^2 = 7.09$ ,  $P = .008$ ), and patients in Hospital 1 reported much more missed mobilization (getting out of bed,  $\chi^2 = 41.88$ ,  $P < .0001$ ) and walking ( $\chi^2 = 26.62$ ,  $P < .0001$ ).

### Adverse Events

The most frequently reported adverse event occurrences were the IV running dry (12%) and leaking into the skin (15%). Hospital 1 had more IV-related problems than Hospital 2 ( $P < .001$ ). Other reported adverse events were skin breakdown (6.3%), new infection, (6.1%), falls (2.3%), and medication errors (2.2%). Table 3 illustrates the occurrence of adverse events identified by patient reports of missed nursing care. The results indicate that patients who experienced skin breakdown/pressure ulcer, medication errors, new infections, IV running dry, IV leaking, and other problems reported significantly more overall



**Figure 1.** Mean scores: patient reports of missed nursing care (N = 729). The solid bars represent the means of patient reports of missed care, and the range lines represent the standard deviations.



**Figure 2.** Missed elements of nursing care (N = 729).

missed nursing care as well as more missed communication and timeliness. Patients reported more missed basic care if they experienced the adverse events of medication errors, new infection, IV running dry, IV leaking, and other

problems. The “other problems” category included lack of pain management, problems with their food, fluid overload, and complaints of noise. The n was too small to conduct tests of significance on these “other” responses.

**Table 2.** Patient Reports of Missed Care: A Comparison by Hospital (N = 729).

	Hospital 1 (n = 449)	Hospital 2 (n = 280)	t	P
Overall patient perception of missed care	1.83 ± 0.63	1.80 ± 0.61	0.69	.49
Communication	1.70 ± 0.72	1.66 ± 0.69	0.87	.38
Time to response	1.46 ± 0.62	1.60 ± 0.68	-2.77	.006*
Basic care	2.35 ± 1.09	2.20 ± 1.01	1.93	.054

\*P &lt; .05.

**Table 3.** Relationship Between Patient Reported Adverse Events and Patient Reports of Missed Nursing Care (N = 729).

		Overall Missed Care	Communication	Timeliness	Basic Care
Fall	Yes	1.90 ± 0.63	1.92 ± 0.97	1.61 ± 0.59	2.23 ± 1.11
	No	1.80 ± 0.61	1.66 ± 0.69	1.50 ± 0.63	2.29 ± 1.06
Skin breakdown/pressure ulcer	Yes	2.05 ± 0.76*	1.96 ± 0.92*	1.80 ± 0.79*	2.46 ± 1.06
	No	1.79 ± 0.59	1.64 ± 0.66	1.48 ± 0.62	2.27 ± 1.05
Medication error	Yes	2.19 ± 0.82*	1.84 ± 0.90	1.99 ± 1.07	2.84 ± 1.22*
	No	1.79 ± 0.60	1.65 ± 0.68	1.48 ± 0.61	2.27 ± 1.04
New infection	Yes	2.29 ± 0.91*	2.20 ± 0.095*	1.93 ± 0.91*	2.81 ± 1.19*
	No	1.77 ± 0.58	1.62 ± 0.65	1.48 ± 0.60	2.25 ± 1.04
IV running dry	Yes	2.13 ± 0.75*	1.95 ± 0.83*	1.69 ± 0.79*	2.83 ± 1.11*
	No	1.73 ± 0.56	1.60 ± 0.65	1.47 ± 0.59	2.16 ± 1.02
IV leaking	Yes	2.05 ± 0.64*	1.91 ± 0.75*	1.68 ± 0.71*	2.67 ± 1.13*
	No	1.75 ± 0.58	1.61 ± 0.66	1.46 ± 0.60	2.19 ± 1.01

\*P &lt; .05.

## Discussion

A sample of 729 patients hospitalized on medical, surgical, or rehabilitation units in 2 acute care hospitals completed the MISSCARE Survey–Patient. The study sample demonstrated characteristics typical of the populations generally served by the participating hospitals in terms of age, sex, and race. The mean age of 59.8 with a standard deviation of 16.42 was within the 2 hospital norms as well as overall hospitalized patients in the United States. The percentage of males and females were fairly equal. The sample had a slightly higher percentage of white participants, 81%, compared to 79% in the overall hospitals' population. Most of the sample had some college education (62%) and were married (52%). The majority rated their health as either fair or good. The top diseases reported by patients were hypertension, heart disease, cancer, and diabetes. According to the Centers for Disease Control and Prevention, these chronic diseases are among those most frequently found in the population in the study region.<sup>8</sup>

The results of the study showed that standard required nursing care is being missed. The greatest area of missed nursing care that patients could identify was in the basic care category. Mouth care was missed 50.3% of the time,

followed by missed ambulation (41.3%), not getting patients up to a chair (38.8% missed), and missed bathing (26.9%).

The second most frequently missed area of nursing care was communication. Providing information to patients about tests and other procedures was missed 27% of the time, followed by discussing the treatment plan with patients (26.5% missed), considering the opinions of patients (20.4% missed), the patient knowing who their assigned nurse was (11.2% missed), and listening to the patient (7.8% missed). The importance of communication was highlighted in a recent editorial in *Health and Hospital Networks*, which stated that patients are looking for human connection during their time of crisis, pointing to surveys that suggest that patients often depend more on health care providers for emotional support than their families.<sup>9</sup>

The third area of missed nursing care was timeliness to respond. Timely help to the bathroom was missed 10.9% of the time, followed by the fulfilling call light requests (10.3% missed), the answering of beeping monitors (8.8% missed), and answering call lights (8.6% missed).

Previous studies of missed nursing care from the vantage point of the nursing staff revealed that the ambulation of patients was the most frequently reported missed

element of nursing care, missed frequently or always 32.7% of the time, followed by attendance at care conferences 31.8%, mouth care 25.5%, timely medication administration 17.6%, and turning patients 15.1%.<sup>6</sup> Both nursing staff and patients reported missed ambulation and mouth care to be within the top 3 elements of missed nursing care.<sup>6</sup>

A comparison between hospitals showed that there was no significant difference in overall missed nursing care between facilities. There also was no difference in missed communication between hospitals. However, Hospital 1 missed more basic nursing care, and the nursing staff in Hospital 2 were less timely in their responses, especially related to assisting patients to the bathroom.

Adverse events were measured by patient reports of their occurrence, which have been found to be largely accurate. For example, a study of the agreement of patients' reports of adverse events with physicians' reports of adverse events found agreement in 72.2% of the cases. Patients demonstrated the ability to recognize and report on many inpatient adverse events, yielding their reports valuable and complementary to other incident detection methods.<sup>10</sup>

There were no significant differences between the 2 hospitals in the number of falls, skin breakdown/pressure ulcers, medication errors, and new infections. IV problems were the most common patient-reported adverse events, followed by skin breakdown/pressure ulcer, new infection, falls, and medication errors.

### Limitations

This study was conducted in 2 hospitals in the Midwest region of the United States using a convenience sample of inpatients willing to participate in the survey, thus limiting the generalizability of results. Demographic information of patients who decided not to participate in the study is not available but the characteristics of the patients in the sample were similar to the patients hospitalized in these facilities. The amount of missed nursing care was based on patient reports. The influence of social desirability on patient self-reports of nursing care is a consideration. However, patient reports were similar to nursing staff reports, thus lessening this concern.

### Implications

A substantial body of evidence demonstrates that patients who are more actively involved in their health care experience have better health outcomes at lower costs.<sup>11</sup> This study uncovered substantial areas of missed nursing care. These omissions have potential for serious negative patient outcomes. Mouth care, the most frequent element of missed nursing care identified by patients in this study

(50.3%) and also by nursing staff (25.5%) in other studies,<sup>6</sup> is essential to preventing complications (eg, tooth loss, gingivitis, periodontitis). Poor mouth care could contribute to serious problems, including chest infection, pneumonia, poor nutrition intake, decreased self-esteem, and increased hospital days, especially when patients have physical or cognitive problems and must rely on others for their personal care.<sup>12-14</sup> Mouth care is supposed to be a part of the daily nursing routine in most hospitals.<sup>15</sup> Although the majority of nurses feel responsible to ensure that patients receive mouth care, Pettit and colleagues and other investigators have noted that they do not usually consider mouth care as a priority in the acute setting and are somewhat ill prepared to provide adequate mouth care.<sup>13,16,17</sup>

Missed ambulation is another important issue reported by both nursing staff and patients. This finding, along with the results of other studies that have asked nursing staff to report on the extent to which care is provided, indicates that most patients are confined to bed or a chair and experience a lack of mobility during their hospitalization. Previous studies reveal that inpatient mobilization has a vital positive impact on patients' physical function as well as emotional and social well-being.<sup>18</sup> Moreover, patient ambulation potentially could yield important organizational benefits, including cost reduction, decreased length of stay, and lower mortality rates.<sup>18</sup> Effective interventions and policies that increase mobilization must be developed and integrated into nursing practice in the acute care setting. To decrease the amount of missed care, system improvements (eg, adequate staffing, reminders, checklists, mid-shift debriefings) are needed.

This study also uncovers inadequate communication between patients and nursing staff. Patients reported that tests and treatments were not discussed with them (missed 27% and 26.5% of time, respectively), and their opinions were not considered (missed 20.4%). Effective communication between patients and health care providers is critical to ensure the delivery of quality patient care, patient satisfaction, and patient safety.<sup>19,20</sup> Failure to communicate effectively with patients and their family members can contribute to problems such as errors, inadequate pain relief, extended hospital stays, increased costs, and patient anguish and disorientation.<sup>20</sup> Essential training and other interventions as well as organizational improvements should be provided to facilitate patient-centered communication.

This study demonstrates that patients are not receiving all of the standard required nursing care expected and needed. It also shows that patients are capable of reporting on whether or not selected aspects of their nursing care were completed. With more patient education about the care they should be receiving, they could be even

more engaged in monitoring and contributing to the quality and safety of their own care. Moreover, the greater involvement of patients and their family members could better prepare them for care after discharge and potentially lead to a decrease in readmissions and complications. Although this could require more time on the part of staff members while the patient is hospitalized, the result could be a higher quality of care and perhaps even a reduction in the overall costs of health care. Studies are needed to demonstrate the effect of engaging patients and families more extensively in their nursing care.

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