Original Article

Patient Satisfaction Associated With Correct Identification of Physicians' Photographs

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- ***Objective*: To determine whether placement of photographs of physicians in hospital rooms improves patients' satisfaction with their medical care.**
- ***Patients and Methods*: This is a prospective, controlled study of 224 patients admitted to general internal medicine services in a teaching hospital. The intervention consisted of photographs (8 × 10 in) of attending and resident physicians displayed in the patients' rooms. Before dismissal, patients completed a survey that required them to match names with photographs of physician caregivers and included patient satisfaction questions. The primary outcome was whether patients who had photographs in their hospital room would correctly identify more physicians than those with no photographs in their room.**
- ***Results*: The presence of photographs on the hospital wall was associated with a significant improvement in the number of physicians identified correctly (odds ratio [OR], 1.83; 95% confidence interval [CI], 1.47-2.27; *P*<.001). The percentage of physicians that patients identified by correctly matching their physicians' names to their photographs was significantly associated with satisfaction with physician responsiveness (OR, 1.19; 95% CI, 1.01-1.40; *P*=.03) and with the way in which physicians addressed questions regarding medical care (OR, 1.23; 95% CI, 1.05-1.44; *P*=.05).**
- ***Conclusions*: Patients who had photographs of their physicians on the wall of their hospital room were able to identify correctly a larger number of physicians on their team compared with patients who had no photographs. Patient satisfaction was related to the number of physicians' photographs that patients could identify correctly.**

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CI = confidence interval; OR = odds ratio

Data on patient satisfaction receive a considerable amount of attention in today's practice environment. Studies have documented the importance of personal identification and formal greeting on patients' perceptions of professionalism and satisfaction with their medical care.[1,2] In addition, studies have suggested that women have better communication skills than men.[3-6] This may suggest that female physicians more often incorporate formal greetings and personal identification in their approach to patient care. This in turn could affect patient satisfaction.

Currently, there is substantial potential for ambiguity in interpreting the general patient satisfaction data obtained in the inpatient teaching setting. Given the complex admitting procedure to some academic general medical services, patients could find it difficult to identify their physicians. The patient may be seen by a medical student, a first-year resident, a senior resident, or an attending physician. Often, the entire team sees the patient together; thus, the patient may see more than 4 doctors during hospitalization. Furthermore, a subspecialty team could be consulted. Because of the number of physicians that the patient sees, the variability in approaches, and the variable sex distribution of inpatient teams, we undertook this study to determine whether patient satisfaction could be improved if patients could identify the physicians responsible for their care.

PATIENTS AND METHODS

Patients hospitalized for more than 24 hours on general internal medicine services located on 2 hospital floors were eligible for this study. Patients were included if they were discharged during the study period, and in the event of change of service during a patient's hospitalization, the discharging team was considered to be the patient's team for the purpose of the study. Patients younger than 18 years, those with visual impairment, and patients not oriented to person, place, and time were excluded. The survey was administered with the help of a translator as needed.

Patients in this prospective, controlled study were assigned to hospital floors according to standard admission protocols. The intervention occurred on 2 hospital floors in a crossover fashion. Patients were asked to complete a survey form immediately before their discharge from the hospital, and data were collected over a 6-week period from February 16, 2000, to March 30, 2000. Patients ad-

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mitted to general internal medicine services were assigned to 2 groups based on room assignment to 2 hospital floors. The first floor, floor A, has 31 beds and 21 rooms and serves patients from the local area admitted to internal medicine services. The other floor, floor B, has 37 beds and 36 rooms and serves patients from outside the local area admitted to internal medicine services. For the first 3-week period (study period 1), all rooms on floor A had photographs (8 × 10 in) of the attending physician (consultant) and the resident on the wall. For the second 3-week period (study period 2), all rooms on floor B had the photographs on the wall. The photographs of the attending physicians on the primary service were labeled with *Dr X. Lastname* and the term *Consultant*. The photographs of the residents were labeled with *Dr X. Lastname* and those of medical students were labeled *X. Lastname*. At the end of hospitalization, patients filled out a survey. The photographs were removed from the wall before the survey was administered. Informed consent was obtained verbally and documented in the patient's chart. This study was approved by the Mayo Foundation Institutional Review Board. There was a cover sheet for the interviewer to fill in the patient's age, sex, ethnicity, reason for admission, dismissal disposition, patient's affiliation with the hospital (present employee, past employee, or neither), number of previous hospitalizations, and medical comorbidities such as diabetes, cancer, hypertension, stroke, and depression.

The survey consisted of patient satisfaction questions (Table 1) and photographs (1.5 × 1.7 in) of the attending physician, senior resident, admitting resident, and medical students. Patients were asked to match the names of the care team members with the correct photograph. Physician sex was recorded in the database.

Patient characteristics included age, sex, ethnicity, medical comorbidities, reason for admission, discharge status, length of hospital stay, and number of hospitalizations in the past 5 years. Study design characteristics included photographs on the wall and room assignment. Six patient satisfaction questions were measured on a 5-point Likert scale in which 1 is poor and 5 is excellent. Scores of 4 or 5 were considered indicators of high patient satisfaction. Patient and study design characteristics, the percentage of physicians identified correctly, the percentage of women on the care team, the sex of the primary caregiver, and patient satisfaction were summarized with means and SDs or frequencies and percentages.

The relationship between the number of physicians identified correctly and the sex of the primary caregiver was assessed by using generalized regression models appropriate for count data. These models attempt to predict the natural logarithm of the number of physicians identified correctly as a linear function of the sex of the primary caregiver, with use of the Poisson distribution to model the error structure. The relationship of high patient satisfaction to the percentage of physicians identified correctly and the sex of the primary caregivers was evaluated with use of logistic regression models. The presence of photographs on the wall of the room, room assignment, and study period were included as variables in all models to account for possible study design effects. Patient age and sex were included in the models to assess the relationships of interest after adjusting for these patient characteristics. In all comparisons, a probability of $P<.05$ was considered statistically significant.

Table 1. **Patient Satisfaction Survey Questions***

1.	How would you rate the overall care that was provided by the physicians during your stay?
2.	How would you rate the responsiveness of the physicians to your needs?
3.	How would you rate the willingness of the physicians to listen to you and your family?
4.	How would you rate the way in which the physicians addressed your questions regarding your medical treatment?
5.	Considering all the staff (physicians, nurses, and other staff) who were involved, how would you rate the way in which your team worked together to coordinate your care?
6.	How would you rate the overall care you received?
7.	How willing are you to recommend this institution to your family and friends?

*Answer choices for questions 1 through 6 based on Likert scale in which 5 = excellent and 1 = poor; answer choices for question 7 based on Likert scale in which 5 = definitely would and 1 = definitely would not.

RESULTS

Patient and Study Design Characteristics

We enrolled 224 patients in the study. Patient and study design characteristics are summarized in Table 2. At admission, the mean (SD) age of the 100 men (44.6%) and 124 women (55.4%) was 65.9 (17.5) years; the range was 18 to 96 years. Of the 211 primary caregivers, 148 (70.1%) were men, and 63 (29.9%) were women. Of the study patients, 117 (52.2%) had no photographs on the wall of their hospital room, and 107 patients (47.8%) had photographs; 121 patients (54.0%) were on floor A, and 103 (46.0%) were on floor B; and 102 patients (45.5%) were in study period 1, and 122 (54.5%) were in study period 2.

Correct Identification of Physicians

The mean (SD) percentage of physician names identified correctly was 35.3% (28.5%), and range was 0% to

Table 2. **Patient Characteristics Stratified by Presence of Photographs of Physicians on Wall of Hospital Room**

Characteristic	Photographs on wall	
	No (n=117)	Yes (n=107)
Mean (SD) age (y)	67.0 (17.7)	64.6 (17.4)
Range	18-96	20-94
Mean (SD) length of stay (d)	3.2 (2.9)	3.5 (3.9)
Range	1-20	1-31
Mean (SD) No. of previous hospitalizations	4.0 (3.1)	4.5 (5.6)
Range	0-20	1-40
Sex, No. (%)		
Male	47 (40.2)	53 (49.5)
Female	70 (59.8)	54 (50.5)
Ethnicity, No. (%)		
White	114 (97.4)	103 (96.3)
African American	2 (1.7)	1 (0.9)
Asian	1 (0.9)	2 (1.9)
Other	0 (0.0)	1 (0.9)
Medical history, No. (%)*		
Diabetes	21 (17.9)	16 (14.9)
Cancer	32 (27.4)	31 (29.0)
Hypertension	55 (47.0)	43 (40.2)
Stroke	11 (9.4)	10 (9.3)
Depression	16 (13.7)	19 (17.8)
Mayo employee, No. (%)		
Current	5 (4.3)	8 (7.5)
Former	15 (12.8)	17 (15.9)
Never	97 (82.9)	82 (76.6)
Reason for admission, No. (%)†		
Neurologic	13 (11.1)	17 (15.9)
Respiratory	18 (15.4)	11 (10.3)
Cardiovascular	15 (12.8)	14 (13.1)
Gastrointestinal	24 (20.5)	31 (29.0)
Genitourinary	22 (18.8)	5 (4.7)
Musculoskeletal	8 (6.8)	11 (10.3)
Hematologic	13 (11.1)	15 (14.0)
Endocrine	3 (2.6)	3 (2.8)
Psychiatric	1 (0.9)	0 (0.0)

*Patients may have had more than 1 diagnosis.
†Percentages of patients responding yes do not total 100% because of rounding.

100%. The median percent correct was 40%. The generalized regression model summarizing the relationship between the number of physicians identified correctly and patient and study design characteristics is shown in Table 3. Patients in rooms with photographs identified a larger number of physicians correctly compared with patients with no photographs (odds ratio [OR], 1.83; 95% confidence interval [CI], 1.47-2.27). Interestingly, patients on the 2 floors differed in their ability to identify physicians correctly (OR, 1.51; 95% CI, 1.22-1.87). Female patients were more likely to identify their physician caregivers correctly (OR, 1.28; 95% CI, 1.03-1.60). As the age of the patient increased, the number of physicians identified correctly decreased (OR, 0.94; 95% CI, 0.89-1.00). Specifically, in 2 patients differing by 10 years of age, the older patient identified physicians correctly at about 0.94 times the rate of the younger patient. Finally, patients with female primary caregivers identified more physicians correctly than patients with male primary caregivers (OR, 1.33; 95% CI, 1.06-1.65).

Patient Satisfaction

Patient responses to the first 6 satisfaction questions are shown in Table 4. Of the 224 patients, 191 (85.3%) rated the overall care from their physicians as very good or excellent, 188 (83.9%) thought that the responsiveness of the physicians to their needs was very good or excellent, 191 (85.3%) were highly satisfied with the willingness of the physicians to listen to them and their families, and 183 (81.7%) were highly satisfied with how physicians addressed questions regarding medical treatment. Team coordination was rated as very good or excellent by 181 patients (80.8%), and 192 patients (85.7%) were highly satisfied with their overall care.

The study design did not control for factors such as patient characteristics, floor assignment, and study period. Because these factors could affect the results, a logistic regression model was used to adjust for them. After adjusting for patient and study characteristics, the percentage of physicians whose photographs were identified correctly by their patient was significantly associated with high patient satisfaction concerning physician responsiveness (OR, 1.19; 95% CI, 1.01-1.40; P=.03). For each 10% increase in the percentage of physicians' photographs identified correctly, the odds of high satisfaction with physician responsiveness increased almost 20%.

After adjusting for patient and study characteristics, the score for how physicians addressed questions regarding medical care was significantly associated with the percentage of physicians that patients identified by correctly matching their physicians' names to their photographs (OR, 1.23; 95% CI, 1.05-1.44; P=.05). Patients who identified more physicians on their team correctly were more likely to be highly satisfied with how questions regarding their medical treatment were addressed. Specifically, for each 10% increase in the percentage of physicians identified correctly, the odds of high satisfaction with how questions were addressed increased 23%.

We did not identify any statistically significant associations between the other 4 questions (ie, overall care from physicians, willingness to listen, coordinated team care, and overall care) and any patient or study design characteristics, the percentage of physicians identified correctly, or the sex of the primary caregiver.

Table 3. **Poisson Regression Model for Number of Physicians Identified Correctly***

Characteristic	Odds ratio (95% CI)	*P* value
Photographs on wall of hospital room	1.83 (1.47-2.27)	<.001
Floor B room assignment	1.51 (1.22-1.87)	.002
Female patient	1.28 (1.03-1.60)	.02
Age of patient (differing by 10 y)	0.94 (0.89-1.00)	.05
Female primary caregiver	1.33 (1.06-1.65)	.01

*CI = confidence interval.

DISCUSSION

The patient-physician relationship has been scrutinized substantially. Studies show that patients view the relationship as one that transcends a routine interpersonal interaction. The patient-physician relationship involves trust and personal involvement that cannot be categorized as a client–service provider relationship. Physicians and patients now recognize that patients' expectations and preferences directly influence their level of satisfaction with the care they receive.[7,8] Physicians must recognize that patients expect more than medical expertise.

This survey study shows an association between patient satisfaction and patients' abilities to identify their physicians' photographs correctly. Evaluating which aspect is cause and which is effect is difficult. Although it is tempting to conclude that patients are more satisfied with their medical care when they know their physicians, it is equally possible that patients who are more satisfied with their care are more likely to know their physicians. Our study indicates that patients with physicians' photographs on the wall of their hospital rooms were able to identify correctly a larger number of physician caregivers on their team than were patients who had no photographs. After adjusting for patient and study design characteristics, patients who identified a higher percentage of physicians correctly were more likely to be highly satisfied with how physicians responded to their needs and addressed questions regarding medical treatment.

Another factor that makes current inpatient satisfaction data difficult to interpret is the paucity of sex-related information published. Although numerous studies have analyzed the relationship between physician sex and patient satisfaction in an outpatient setting, no consensus exists. Results of some studies show that all outpatients prefer female physicians,[3-6] whereas results of another study show that all patients prefer male physicians.[9] Still other studies show that female patients prefer female physicians[10-12] and male patients prefer male physicians.[13-15] Although we did not control for the sex make-up of the hospital teams, we recorded the sex of the physician whom the patient identified as the primary caregiver. Our survey revealed that, in the inpatient setting, patients were able to identify a larger number of physician caregivers when either the patient was female or the patient had a female primary caregiver.

Several confounding factors must be remembered when interpreting the data. The first is the Hawthorne effect, any attempt to study a behavior often modifies the behavior. During survey administration, patients mentioned that they appreciate that the institution cares enough to ask about their satisfaction. This suggests that they might give higher satisfaction scores than they would if they filled out the questionnaires at home. In contrast, when questionnaires are mailed, conceivably only patients who are highly dissatisfied or satisfied would take the time to answer the questions and return the survey, and this would yield only extreme values.[16-18] Presumably, the most accurate satisfaction scores are between the scores that patients give in the hospital and the scores that patients give when they fill out questionnaires at home.

Second, the organization of clinical practice differed between the 2 floors. Floor B had a nurse as a member of the care team, and floor A did not. This nurse was responsible for writing the names of each patient's physicians on a white board in the patient's room. This difference could

Table 4. **Patient Responses to 6 Survey Questions**

Summarized survey question	Patient response*				
	Poor	Fair	Good	Very good	Excellent
1. Overall care from physicians	0 (0.0)	4 (1.8)	29 (13)	66 (30)	125 (56)
2. Responsiveness	1 (0.4)	4 (1.8)	31 (14)	76 (34)	112 (50)
3. Willingness to listen	2 (0.9)	1 (0.4)	30 (13)	69 (31)	122 (55)
4. Addressed questions	2 (0.9)	2 (0.9)	37 (17)	70 (31)	113 (50)
5. Coordinated team care	2 (0.9)	5 (2.2)	36 (16)	72 (32)	109 (49)
6. Overall care	0 (0.0)	3 (1.3)	29 (13)	74 (33)	118 (53)

*Values represent number (percentage).

have contributed to the outcome that patients on floor B were more likely to identify their physicians' photographs correctly.

Third, when physician service changed during hospitalization, the photographs on the survey were those of the discharging team. This may have caused some confusion for those patients who had a lengthy hospitalization and had seen more than 1 team.

Extending this survey study beyond the general internal medicine services would be useful. A more lengthy study might clarify the influence of sex of the physician on patient satisfaction. The results from this study indicate that patients who identified a female primary caregiver were able to identify more of their physicians' photographs, but they did not provide evidence of a direct association between sex of the primary caregiver and patient satisfaction. Additionally, it would be interesting to see if the presence of medical students on the teams affects patient satisfaction. Our study did not control for the presence of medical students.

The effect of this study may have been stronger if family members had been surveyed. Many of the family members of the patients who had physician photographs on their walls emphasized that the photographs helped them know who was taking care of the patient. Furthermore, surveying the family members of patients with dementia would have shown how the photographs help these individuals make health care decisions for the patients. Finally, instead of photographs on the wall, it would be interesting to examine the effect of a physician's business card with a photograph of the physician on it. If physicians gave these business cards to their patients when they first met them, it would help patients know their physicians not only during hospitalization but also when they want to schedule follow-up appointments. In the words of one of the patients in this survey study, "I'm terrible with names, but I can always remember faces. If I could take the photo home, it would help a lot."

Patients view hospitalization as a total of the medical care and the service they receive. Both of these elements must be addressed to optimize patient satisfaction. Service can be improved when features are incorporated that help patients identify their physicians. Patients are receptive when physicians seek ways to provide better service.

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