

## The Influence of Physician Practice Behaviors on Patient Satisfaction

John A. Robbins, MD, MHS; Klea D. Bertakis, MD, MPH; L. Jay Helms, PhD; Rahman Azari, PhD; Edward J. Callahan, PhD; Deborah A. Creten, BA

**Background:** Previous research on the relationship between physician behavior and patient satisfaction has not always used standardized terminology and instruments to measure physician behavior. The Davis Observation Code (DOC) provides a reliable and valid means of analyzing clinically relevant units of physician behavior. The units of behavior can then be related to patient satisfaction.

**Methods:** One hundred new patients randomly assigned to receive care from primary care residents at a university medical center outpatient facility were evaluated. Before seeing their physicians, patients completed a previsit questionnaire to determine their general level of satisfaction with health care. During the visit, the encounter was videotaped and physician behavior characterized using DOC. After the appointment, patients completed a visit-specific satisfaction questionnaire. Multiple regression analysis was used to model the visit-specific satisfaction variables in terms of DOC measurements. **Results:** Total visit-specific satisfaction was positively related to previsit satisfaction ( $P \leq .05$ ) and to time spent on health education ( $P \leq .001$ ), physical examination ( $P \leq .05$ ), and discussion of treatment effects ( $P \leq .01$ ). There was a negative relationship with time spent on history taking ( $P \leq .01$ ). Slightly more than 25% of the variability in satisfaction was explained by these five variables ( $R^2 = .26$ ). The general, humaneness, and quality/competence subscales of visit-specific satisfaction were also positively related to health education, physical examination, and treatment effects and negatively related to history taking. **Conclusions:** Patients are most satisfied with medical visits in which they talk about their specific therapeutic interventions, are examined, and receive health education. Extended general discussion of medical history is negatively related to satisfaction.

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Physician practice style relates directly to patient satisfaction with medical care.<sup>1-14</sup> Satisfaction is most closely associated with the amount of information given to patients by providers and is also positively related to the provider's technical competence, partnership-building ability, immediacy in nonverbal behavior, positive talk, and overall communication.<sup>15</sup>

A recent collaborative study of medical interviewing examined 550 physician-patient encounters at 11 sites across the United States using the Roter Interaction Analysis System.<sup>16</sup> The study found that open and close-ended questions about biomedical topics were negatively related to patient satisfaction, as was patient talk about biomedical topics. On the other

hand, physician-patient discussions of psychosocial topics were positively related to patient satisfaction. Nevertheless, further research using standardized terminology and instruments is needed to examine relationships between physician behavior, both biomedical and psychosocial, and patient outcomes.<sup>17</sup>

Our study investigates relationships between physician behavior and patient satisfaction using instruments that have been demonstrated to be both reliable and valid in previous research.<sup>11-13,18-20</sup> Two major hypotheses were examined. First, we expected that since patient satisfaction has been found to be significantly related to the amount of information given by the provider,<sup>15</sup> patients would be more satisfied with increased amounts of health education in medical encounters. Second, given that questions about biomedical topics have been associated with patient dissatisfaction, we hypothesized that extensive history taking would lead to decreased levels of patient satisfaction.<sup>16</sup>

From the Department of Family Practice (Drs. Bertakis, Callahan, and Ms. Creten), the Department of Internal Medicine (Dr. Robbins), the Department of Economics (Dr. Helms), and the Division of Statistics (Dr. Azari), University of California, Davis.

Table 1

## Visit-specific Satisfaction Questionnaire Subscales and Questions\*

*General*

- I'm very satisfied with the medical care I received from this doctor.
- This doctor could give better care.
- The care I received from this doctor was just about perfect.
- There are things about the medical care I received from this doctor that could be better.

*Humaneness*

- This doctor did his or her best to keep me from worrying.
- This doctor treated me with respect.
- Sometimes this doctor made me feel foolish.
- This doctor caused me to worry a lot because he or she didn't explain medical problems to me.
- This doctor respected my feelings.
- This doctor did not explain medical problems to me.

*Quality/Competence*

- This doctor was not as thorough as he or she should be.
- This doctor encouraged me to get a yearly examination.
- This doctor was very careful to check everything when examining me.
- This doctor didn't explain ways to avoid illness or injury.
- This doctor ignored medical problems I've had in the past.
- This doctor asked what foods I eat and explained why certain foods are best.

*Access to Care*

- It was hard to get an appointment with this doctor right away.
- My doctor told me how to reach him or her if I have a medical problem.

\* Five-point Likert response scales ranging from "strongly agree" to "strongly disagree" were used.

**Methods**

The medical encounters of a population of new primary care patients were videotaped and analyzed to determine which aspects of the physician-patient interaction were related to patient satisfaction. Previsit and visit-specific patient satisfaction were measured, and physician behavior during the visit was analyzed with the Davis Observation Code (DOC).

We focused on individual episodes of physician-patient interaction. Patients were randomly assigned to physicians in the medical practice under evaluation. Randomizing new patients offered an advantage over previous studies in that patients did not choose a specialty physician to fit their particular expectations of practice style, thus leading to potential selection bias. In addition, our study used new patients rather than established patients, who are more likely to maintain satisfying physician-patient relationships. Use of new patients, therefore, helped control for the effects of previsit satisfaction.<sup>21,22</sup>

One hundred patients were recruited from new patients requesting outpatient appointments at the University of California, Davis, Medical Center. Nonpregnant adults having no preference for a specific physician or specialty were randomly assigned

Table 2

## Patient Demographic Information (N=100)

<i>Sex</i>	
Male	44%
Female	56%
<i>Race</i>	
White	67%
Black	14%
Asian	5%
Other	14%
<i>Age</i>	
Median	41.1 years
S.D.	15.7 years
Range	19 to 76 years
<i>Education</i>	
Less than 12 years	14%
12 years	29%
13 to 14 years	27%
15 to 16 years	11%
More than 16 years	19%
<i>Income</i>	
Less than \$10,000	20%
\$10,000 to \$19,999	23%
\$20,000 to \$29,999	18%
\$30,000 to \$39,999	12%
\$40,000 to \$49,999	10%
At least \$50,000	15%
Unreported	2%

to primary care physicians. Of the first 183 patients meeting selection criteria, 149 (81.4%) agreed during their initial telephone contact to participate in this study. Forty-nine (26.8%) of these potential patients canceled or missed their appointments or were excluded for other reasons. (Of the 34 subjects who declined to be included in the study, 31 kept their first clinic appointment.) In the end, 100 patients participated in the study.

A total of 54 second- and third-year resident physicians were involved in the study. They included 14 family practice residents and 40 internal medicine residents. Each physician had an average of 1.8 ( $\pm 1.3$ ) study patient visits.

*Measures*

Each new patient visit was videotaped. Research assistants reviewed the videotapes and coded them using the DOC, which uses an interval coding system, analyzing the occurrence of 20 behaviors during successive 15-second intervals. A detailed description of the DOC, including measures of its reliability and validity, has been previously published.<sup>19</sup> DOC has also been shown to be useful for evaluating the difference between new and established patient encounters.<sup>20</sup>

Intercoder reliability was measured by percent agreement between pairs of coders using this formula: agreements on occurrence/agreements + disagree-

Table 3  
Standardized Beta for Independent Variables

Dependent Variables	Independent Variables					R <sup>2</sup>
	Health Education	Physical Examination	Treatment Effect	History Taking	Previsit Satisfaction	
Visit-specific satisfaction	.37 <sup>††</sup>	.21 <sup>*</sup>	.25 <sup>†</sup>	-.29 <sup>†</sup>	.23 <sup>*</sup>	.26
Total satisfaction	.29 <sup>†</sup>	.23 <sup>*</sup>	.19	-.41 <sup>††</sup>	.11	.19
General satisfaction	.33 <sup>†</sup>	.19	.23 <sup>*</sup>	-.26 <sup>*</sup>	.09	.17
Humaneness satisfaction	.25 <sup>*</sup>	.07	.17	-.001	.37 <sup>††</sup>	.20
Access to care satisfaction	.33 <sup>†</sup>	.14	.19	-.27 <sup>*</sup>	.22	.19

\*  $P \leq .05$

†  $P \leq .01$

††  $P \leq .001$

ments. This is the most rigorous formula for determining observer agreement in multi-code systems because kappa is inappropriate for such instruments.<sup>23</sup> For 42 patient visits chosen at random, individual coders had an inter-observer reliability of 72.3%.

Before the visit, each patient completed a demographic questionnaire and a satisfaction questionnaire measuring his or her feelings about physician care in general. After the physician-patient encounter, patients completed a visit-specific questionnaire.<sup>11</sup> This visit-specific questionnaire consisted of 18 satisfaction questions adapted from a longer instrument developed by Ware et al (Table 1).<sup>18</sup> The questions examined four components of patient satisfaction: general satisfaction, physician humaneness, quality/competence, and access to care. The visit-specific questionnaire was worded so that questions referred to care received from a particular physician during a particular visit. Assistance in the completion of both questionnaires was provided for patients who had physical limitations or lacked reading skills. As a result, all 100 patients who were videotaped completed both questionnaires.

## Results

Demographic information for the 100 patients is presented in Table 2. Demographic information on patients enrolled in the study was compared with those who refused to participate. The chi-square test showed no statistically significant differences between the two groups for sex ( $P = .09$ ) or race ( $P = .51$ ). A *t* test comparing the average ages between the two groups was also not significant ( $P = .34$ ). Demographic information on patients enrolled in the study was also compared with the overall clinic population; there were no statistically significant differences in sex, race, or age.

Stepwise multiple regression analysis was undertaken to determine which DOC elements were most

highly associated with patient satisfaction. Total visit-specific satisfaction on the questionnaire served as the dependent variable. All of the DOC interval codes were used as independent variables. Total previsit satisfaction questionnaire results were considered in the analysis to control for the possibility that patients who were generally more satisfied with the health care system would be more inclined to view any particular visit in a positive light.

The results showed that total visit-specific satisfaction was significantly related to total previsit satisfaction and to four of the DOC variables: health education, physical examination, the discussion of treatment effects, and history taking. The standardized regression coefficients reported in the first row of Table 3 show that total visit-specific satisfaction was positively related to time spent on health education ( $P \leq .001$ ), physical examination ( $P \leq .05$ ), discussion of treatment effects ( $P \leq .01$ ), and previsit satisfaction ( $P \leq .05$ ) but negatively related to history taking ( $P \leq .01$ ). About 25% of the variability in satisfaction scores was explained by these five variables ( $R^2 = .26$ ). When analyzed according to the different components of patient satisfaction, history taking had a negative association with satisfaction, as shown in Table 3.

## Discussion

Patient satisfaction has been previously shown to be associated with the amount of information given to patients by their health providers.<sup>15</sup> Our study supported this finding. Effective health education is thus a critical aspect of the medical encounter.

Patients were also more satisfied when their encounters included more time devoted to both physical examination and discussion of treatment effects. Patients refer to such task-oriented behaviors more than any other aspects of physician behavior when thinking about total satisfaction.<sup>16</sup> Thus, it is not surprising that task-oriented DOC behaviors such as perfor-

mance of a physical examination and inquiry about treatment effects were related to the patients' overall satisfaction.

Earlier studies of medical interviews<sup>3,20,24,25</sup> found that medical history taking comprised the largest portion of the medical interview. Yet extensive history taking was associated with decreased levels of patient satisfaction. This finding is, perhaps, not surprising since questions about biomedical topics, the usual method of obtaining a medical history, have been associated with patient dissatisfaction.<sup>16</sup> Further research is needed to determine which types of medical history taking are associated with patient dissatisfaction. DOC is not an evaluation instrument, and it is not possible to discriminate between "appropriate" and "inappropriate" history-taking techniques.

A significant association between previsit satisfaction and visit-specific satisfaction was confirmed in our study. Patient dissatisfaction with previous medical care in patients who were seeing their new physicians for the first time was associated with dissatisfaction with that medical encounter. It may be appropriate to identify potentially dissatisfied patients by adding questions that assess patient satisfaction for new patients. In this way, such patients might be targeted for strategies known to enhance patient satisfaction, such as health education and task-directed activities. It might also be valuable to develop a more focused medical history with these patients, postponing extensive data gathering for future visits.

Our findings have implications for health care delivery and areas of future research. We attempted to address deficiencies in earlier studies by using standardized methodologies to study the relationship between physician behavior and patient outcomes.<sup>17</sup> The DOC system used<sup>18</sup> in this research is valid and reliable and evaluated clinically meaningful units of physician and patient behaviors. Nonetheless, other analysis systems might provide additional information about physician-patient interactions.

To date, studies have identified two major components of quality care: physicians' interpersonal style and physicians' technical performance.<sup>26</sup> Interpersonal style has been associated with patient satisfaction, as our study indicates. Technical aspects of physician practice style, including medical competence and cost-effective use of medical services, are areas that patients may not be able to evaluate and that were not studied here. Researchers who evaluate quality of care recognize that patient satisfaction as an outcome measure complements, but does not supersede, health outcomes.<sup>5</sup> Further research is needed to examine the relationship between physician practice style and patient health outcomes.

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*Corresponding Author:* Address correspondence to Dr. Bertakis, Department of Family Practice, University of California, Davis, School of Medicine, 2221 Stockton Boulevard, Sacramento, CA 95817.

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