Patient Satisfaction in Resident and Attending Ambulatory Care Clinics

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OBJECTIVE: To measure and compare patient satisfaction with care in resident and attending physician internal medicine ambulatory care clinics.

DESIGN: A cross-sectional survey using a questionnaire derived from the Visit-Specific Satisfaction Questionnaire (VSEQ) and Patient Satisfaction Index (PSI) distributed from March 1998 to May 1998.

SETTING: Four clinics based at a university teaching hospital and the associated Veterans' Affairs (VA) hospital.

PARTICIPANTS: Two hundred eighty-eight patients of 76 resident and 25 attending physicians.

RESULTS: Patients of resident physicians at the university site were more likely to be African American, male, have lower socioeconomic status and have lower physical and mental health scores on the Short Form-12 than patients of university attendings. Patients of resident and attending physicians at the VA site were similar. In multivariate analyses, patients of university attending physicians were more likely to be highly satisfied than patients of university residents on the VSEQ-Physician (odds ratio [OR], 3.5; 95% confidence interval [CI], 1.6 to 7.8) and the PSI-Physician (OR, 10.1; 95% CI, 3.7 to 27.4) summary scores. Differences were not seen on the summary scores at the VA site. Two individual items displayed significant differences between residents and attendings at both sites: "personal manner (courtesy, respect, sensitivity, friendliness) of the doctor" ($P \leq .03$ at both sites) and "my doctor always treats me with the highest respect" ($P < .001$ at both sites).

CONCLUSIONS: After controlling for patient characteristics, patients of resident physicians were less satisfied than those of attending physicians, especially in regard to the doctor's personal manner and respect toward the patient. Medical education should continue to emphasize the importance of these aspects of the physician-patient encounter.

KEY WORDS: patient satisfaction; ambulatory care clinics; residents; physician-patient relationship.
J GEN INTERN MED 2001;16:755-762.

Medical resident education is shifting from the inpatient to the outpatient setting to follow trends in

patient care. New methods to educate resident physicians are needed to help them improve delivery of care to their outpatients. Examination of patient satisfaction may be a useful method for evaluating resident physicians and identifying areas in which they need to improve. Moreover, identification of specific domains of satisfaction in which patients of resident and attending physicians differ may help to determine if dissatisfaction results from the residents' behaviors or from the clinic environments in which they practice. There have been few studies examining patient satisfaction in resident ambulatory clinics and none specifically comparing patient satisfaction in resident and attending physicians' ambulatory clinics.¹⁻⁵ The importance of patient satisfaction has been demonstrated in studies in which physician training level was not explicitly examined; patient satisfaction correlated with improved compliance with treatment,⁶ maintenance of primary care physician,⁷ and possibly improved health status.⁸

Our objectives were to measure overall patient satisfaction with care in resident and attending physician ambulatory clinics. We wanted to measure satisfaction within specific domains of care including convenience and accessibility of care, office staff technical and personal manner at a specific visit, and physician technical and personal manner at a specific visit and over time. By comparing the responses of resident physicians' patients with those of attending physicians, we hoped to identify domains of care in which resident training can be improved.

METHODS

Study Setting and Patient Sample

This study was performed during an 8-week period from March to May, 1998 at 2 general internal medicine ambulatory care clinics based at the University of Pittsburgh Medical Center and 2 at the nearby Oakland Division of the VA Pittsburgh Healthcare System. The clinics are the primary outpatient training sites for the university resident physicians. They are also the primary clinical sites for the university and VA attending physicians, respectively.

At each site, resident and attending physicians utilized the same physical space and clinic support staff. Each resident physician was assigned to 1 examining room while each attending physician was assigned to 2 rooms. At both the university and VA sites, 4 to 8 resident physicians saw patients during half-day sessions with at least 2 dedicated preceptors. Three to 5 attending physicians at the university clinic and 1 to 3 attending physicians at the VA clinic were scheduled at a time for half-day sessions. At the university,

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resident physicians saw patients without simultaneous attending physician sessions with 1 exception. At the VA, attending physicians were scheduled to see patients concurrently with all resident physician sessions. Attending physicians worked either at the university site or the VA site. Most resident physicians saw patients at both sites.

Patients who were seen during the time period by resident (PGY2 or PGY3) or attending physicians were eligible. We excluded patients who saw a physician for the first time, had filled out the questionnaire at a previous visit, or were unable to respond to the questionnaire without assistance. Research assistants (RAs) provided the questionnaire to each patient for self-administration immediately after the physician encounter. Questionnaires were numbered serially to account for those not returned to the RA, which were counted as refusals. The RA noted the date, clinic location, and a physician code on each returned questionnaire. One RA rotated every 2 weeks between the 2 clinics at the university, and another RA did the same at the VA.

Survey Contents

The questionnaire was derived from the Visit-Specific Satisfaction Questionnaire (VSQ, 11 questions)⁹ and the Patient Satisfaction Index (PSI, 9 questions).¹⁰ The VSQ-derived questions were scored on a 5-point rating scale from "Poor" to "Excellent" and asked specifically about satisfaction with this particular clinic visit. The VSQ has established psychometric properties that demonstrate reliability and validity; internal consistency reliability estimates ranged from 0.87 to 0.93 based on Cronbach's α .^{9,11} The predictive validity of this instrument was demonstrated in 1 study that found that patients of physicians who received low patient satisfaction ratings were more likely to seek another provider within 6 months.¹² The PSI-derived questions were scored on a 6-point scale from "Strongly Disagree" to "Strongly Agree" and asked about satisfaction with this clinic visit and previous care from this particular physician. In the PSI's original format, reliability estimates were approximately 0.90 based on Cronbach's α .¹⁰ In addition, the questionnaire contained 2 questions addressing the availability of the physician after regular working hours or during working hours when a visit had not been scheduled, 1 question addressing duration of wait prior to being seen by the physician and 1 addressing duration of care with the physician. Seven demographic, income, and insurance questions, along with the Short Form-12 (SF-12)¹³ were added to evaluate possible differences in patient populations. The complete survey instrument consisted of 36 items.

Statistical Analysis

Several summary measures of the responses to the items were possible. We used principal component analyses of the VSQ items and the PSI items to identify items that could be grouped. Two components emerged from the VSQ. These components differentiated items that dealt with

clinic site or office staff from those that dealt with the physicians' competence and interpersonal manners. The third component emerged from the PSI and contained all items that were not reverse scored (the reverse-scored questions did not correlate with the other items, indicating that these questions were poorly understood by the patients). The summary measures used in the analysis were as follows: VSQ-Clinic Site and Office Staff Items (coefficient $\alpha = 0.90$); VSQ-Physician Items (coefficient $\alpha = 0.93$); and PSI-Physician Items (coefficient $\alpha = 0.93$).

There is no established optimal method to summarize patient satisfaction responses. Some authors have chosen to group excellent, very good, and good responses,^{2,3} while others have used excellent responses only^{14,15} to categorize satisfied patients. Our results were analyzed using both methods. We favored analysis on the basis of whether all items were rated as the most positive on the scale (i.e., "Excellent" for the VSQ, "Strongly Agree" for the PSI) because this strategy appeared to discriminate less satisfied patients more effectively.

Each summary measure served as the dependent variable in a multivariable logistic regression containing the following independent variables: physician type (resident or attending) and gender; and patient age, gender, race, socioeconomic status (education level and income level), SF-12 physical and mental health composite scores, and insurance type (university site only). Because education level and income level correlated highly, we used a composite measure of socioeconomic status (SES). We categorized SES into 3 groups: <high school (HS) education and <\$10,000 annual income; at least a HS education and \$10,000 to \$39,000 annual income; and advanced degree or >\$40,000 annual income. In order to maximize our use of the data, we included patients who omitted less than 3 items within a summary measure. Clustering of patients under each physician was controlled statistically by using Huber/White sandwich estimator for the variance.¹⁶⁻¹⁸

In an attempt to more specifically delineate areas in which resident physicians could improve, we examined each individual item from the VSQ and PSI. Each item was dichotomized into the most superlative response versus all other responses and then analyzed in separate multivariate logistic regressions with physician type, patient race, and patient SES as predictor variables. In addition, all but the 2 general items were used as independent variables in regression models in order to evaluate which of these items best predicted overall satisfaction. The 2 general items, "Overall, how would you evaluate the health care at this clinic?" from the VSQ and "I am perfectly satisfied with the health care I receive." from the PSI were the independent variables in these models. Demographic variables and items from the other questionnaire (PSI or VSQ) were added sequentially to the original model to determine which variables were consistently predictive of overall satisfaction. Data from the university and VA sites were analyzed separately.

STATA statistical software was used (Stata Corp., College Station, Tex).

RESULTS

Four hundred thirty-one questionnaires were collected. One hundred fifty-one were from the university clinics, 28 of which were ineligible for the reasons cited in the methods. One refusal was noted, although tracking of refusals was not performed adequately at the university site. Two hundred eighty questionnaires were collected from the VA clinics; 81 were ineligible and 33 patients refused to participate. After exclusions, 288 eligible patients were used in the analysis (Table 1). While most resident physicians saw patients at both sites, only 16 residents actually had questionnaires returned at both sites.

At the university, there were 122 patients (63 from 13 attendings, 59 from 29 residents). University clinic patients of resident and attending physicians differed on most of the demographic variables; residents' patients were more likely to be African American, male, have lower SES, and have lower SF-12 physical and mental health composite scores (see Table 1). University clinic patients of attending physicians felt they spent less time in the waiting room than did university clinic patients of residents. University clinic patients of resident physicians were more likely than university clinic patients of attending physicians to have known their physicians less than 1 year. University clinic

patients of residents were less likely than attendings' patients to have tried to contact their physicians outside of clinic hours.

At the VA, there were 166 patients (68 from 12 attendings, 98 from 47 residents). VA clinic patients of resident and attending physicians had similar demographic profiles, SF-12 health composite scores, waiting times, and durations of knowing their physicians. VA clinic patients of residents were less likely than attendings' patients to have tried to contact their physicians outside of clinic hours. Patients of both resident and attending physicians at the VA had SF-12 physical health composite scores that were similar to patients of resident physicians at the university clinics. Furthermore, residents' patients at both sites combined had lower SF-12 physical health composite scores compared with attendings' patients at both sites combined ($P = .04$).

When responses to individual items were scanned, only a small minority of patients rated their clinics or physicians less than "Good" on any of the VSQ items or "Somewhat Agree" on any of the PSI items. Furthermore, when grouping the VSQ responses of "Excellent," "Very Good," and "Good" versus "Fair" and "Poor" (or "Strongly Agree," "Agree," and "Somewhat Agree" vs "Somewhat Disagree," "Disagree," and "Strongly Disagree" for the PSI), there were no significant differences between the patients of resident and attending physicians on any items from the surveys. However, when the data were analyzed using the response "Excellent" (for

Table 1. Patient Demographic and Health Status Characteristics

	University Site			VA Site		
	Resident Patients	Attending Patients	P Value*	Resident Patients	Attending Patients	P Value*
Patients, <i>n</i>	59	63		98	68	
Physicians, <i>n</i>	29	13		47	12	
Demographic variables						
Categorical measures, %						
Male	37	22	.008	98	88	.096
African American	69	12	<.001	20	21	1.00
Socioeconomic status (SES) [†] , %						
<High school education and annual income <\$10,000	17	5	<.001	30	23	.7
High school education and annual income \$10,000–\$39,000	73	40		63	66	
Advanced degree or annual income >\$40,000	9	55		8	11	
Continuous measures (mean)						
Age	53.3	49.7	.3	62.7	61.3	.9
SF-12 Summary scores						
Physical health	40.8	47.3	.004	40.1	39.9	.6
Mental health	47.4	51.4	.05	48.0	46.8	.5
Appointment variables, %						
Seeing this physician <1 year	51	24	.003	36	30	.5
With <10 min wait for today's appointment	36	71	<.001	22	29	.37
Who have ever tried to reach their physician outside of clinic hours	36	59	.02	52	67	.07

* P values for χ^2 tests for categorical variables and F tests for continuous variables for comparisons at each site.

[†] We constructed a composite measure of SES using patient education and income levels.

VSQ items) or "Strongly Agree" (for PSI items) versus all other responses, satisfaction with attending physicians was found to be higher than with residents on most items at the university site and several items at the VA site (Table 2).

As shown in Table 2, at the university site, differences between the percentage of "Excellent" responses from residents' and attendings' patients were seen on both the VSQ-Physician and PSI-Physician summary measures, with attending physicians' patients being more satisfied. Furthermore, although a significant difference in satisfaction was not present on the VSQ-Clinic summary measure at the university site, significant differences were present on most of the individual items of that measure. At the VA site, there were no significant differences in satisfaction on any of the 3 summary measures. However, differences in patient satisfaction did exist at the VA site on several of the individual items. Patients of VA attending physicians were more likely to be satisfied than residents' patients in regard to "overall evaluation of health care" (VSQ-Clinic); "personal manner of the doctor" (VSQ-Physician); and "doctor explains reasons for procedures," "doctor listens carefully," and "doctor treats me with respect" (PSI-Physician).

We analyzed the importance of the congruence between patient and physician gender on the 3 satisfaction summary measures using separate logistic regressions for each measure. At the university site, 6 of the 29 resident

physicians were female and 6 of the 13 attending physicians were female. At the VA site, 9 of the 47 resident physicians were female and 4 of the 12 attending physicians were female. There were no significant patient gender, physician gender, or gender match/mismatch effects in any of the 3 regressions ($P > .30$ in each of the 3 regressions for all of the gender variables, data not shown). There were no African-American attending or resident physicians, so patient-physician race match/mismatch effects were not analyzed.

Table 3 shows the significant multivariable predictors of patient satisfaction. These are expressed in odds ratios of having all "Excellent" (or "Strongly Agree") ratings on each of the 3 summary measures. Physician type (resident vs attending) was a significant predictor of patient satisfaction in 2 of the 3 summary measures at the university site (VSQ-Physician and PSI-Physician) but none of the summary measures at the VA site. White race predicted higher patient satisfaction on the PSI-Physician items at the university site and the VA site. High SES predicted higher patient satisfaction on all 3 summary measures at the university site and on the PSI-Physician measure at the VA site. Other variables that were entered into the model but did not predict satisfaction included physician gender, patient age, patient gender, insurance type (university patients only), and patient SF-12 physical and mental health composite scores. There were no

Table 2. Patient Satisfaction with the Clinic Visit: Percentage of Patients Who Rated Items as Excellent or Strongly Agree

	University Site			VA Site		
	Resident, % (n = 59)	Attending, % (n = 63)	P Value*	Resident, % (n = 98)	Attending, % (n = 68)	P Value*
All VSQ-Clinic Items rated as "Excellent"	9	19	.10	9	18	.2
VSQ-Clinic Site and Office Staff Items						
Overall evaluation of the health care at this clinic	29	57	.01	45	60	.05
Convenience of the location of the office	23	48	.01	35	46	.2
Getting though to the office by phone	23	34	.3	25	31	.5
How long you waited to get an appointment	21	52	.001	33	40	.2
Length of time waiting at the office	19	45	.01	25	31	.2
The technical skills (carefulness, competence) of the staff	24	45	.05	44	50	.2
The personal manner (courtesy, respect, sensitivity, friendliness) of the staff	28	60	.001	49	62	.2
All VSQ-Physician Items rated as "Excellent"	44	73	.001	53	63	.2
VSQ-Physician Items						
The technical skills (carefulness, competence) of the doctor	50	82	.001	65	75	.1
The personal manner (courtesy, respect, sensitivity, friendliness) of the doctor	51	86	.01	67	84	.05
Explanation of what was done for you	51	83	.001	64	77	.1
Time spent with the doctor you saw	48	75	.01	58	68	.2
All PSI-Physician Items rated as "Strongly Agree"	9	48	.001	46	48	.9
PSI-Physician Items						
I am perfectly satisfied with the health care I receive	16	55	.001	55	54	.2
My doctor spends enough time with me	21	68	.01	54	65	.2
My doctor explains the reasons for procedures or tests	36	71	.01	53	69	.05
My doctor listens very carefully to what I have to say	36	74	.01	59	80	.01
My doctor always treats me with the highest respect	40	82	.01	63	89	.01

* P values for χ^2 tests for between resident and attending physicians comparisons of proportions of superlative responses.

VSQ, Visit-Specific Satisfaction Questionnaire; PSI, Patient Satisfaction Index.

Table 3. Multivariate Odds Ratios for Excellent/Strongly Agree Summary Satisfaction Ratings

Independent Variable*	Odds Ratio (95% Confidence Intervals)		
	VSQ-Clinic Items	VSQ-Physician Items	PSI-Physician Items
University site			
Attending physician	2.5 (0.8 to 8.1)	3.5 (1.6 to 7.8)	10.1 (3.7 to 27.4)
Patient of white race	1.5 (0.5 to 5.1)	2.4 (0.9 to 6.2)	4.3 (1.4 to 13.0)
Patient of high SES (advanced degree or annual income >\$40,000)	3.8 (1.2 to 11.9)	6.1 (2.0 to 18.8)	5.0 (1.9 to 13.7)
VA site			
Attending physician	2.1 (0.8 to 5.9)	1.4 (0.7 to 3.3)	1.1 (0.5 to 2.5)
Patient of white race	†	1.5 (0.7 to 3.4)	3.8 (1.5 to 9.9)
Patient of high SES (advanced degree or annual income >\$40,000)	NS	NS	NS

* In addition to the variables presented in the table above, the following variables were considered in the multivariate models: patient age, patient gender, patient SF-12 Mental and Physical Composite scores, patient's insurance type (university site only), and physician gender. None of these variables were significantly associated with any of the composite scores.

† No African-American patients rated the clinic with all "Excellent" responses. The odds ratio cannot be calculated. The Fisher Exact two-tailed P value of this comparison is .008.

SES, socioeconomic status.

significant interactions between physician type (resident or attending) and patient age, gender, race, or SES. However, physician type did interact with clinic site, since patients of resident physicians at the university site were less likely to be satisfied on the PSI summary measure compared with patients of residents at the VA site.

Table 4 shows the odds ratios for superlative patient satisfaction on each questionnaire item depending on physician type (resident or attending) after controlling for patient race and patient SES. At the university site, physician type was a significant predictor of patient satisfaction on 2 of the VSQ-Clinic items and most of the VSQ-Physician and PSI-Physician items. At the VA site, physician type was a predictor on 2 items ("personal manner of the doctor" from the VSQ and "doctor treats me with respect" from the PSI).

Table 5 displays the questionnaire items that significantly predicted overall satisfaction. Superlative ratings on "Overall, how would you evaluate the health care at this clinic" from the VSQ were consistently predicted by the following 2 items at both sites: "convenience of the office location" ($P < .05$ on 8 of 8 models) and "length of time waiting at the office" ($P < .05$ on 7 of 8 models). In addition, "time spent with the doctor" was significantly predictive of overall satisfaction in all 4 models at the university site. Only 1 item consistently predicted "I am perfectly satisfied with the health care I receive." on the PSI; "my doctor always treats me with the highest respect" was significantly predictive in 6 of the 8 models.

DISCUSSION

In our study, patients were generally satisfied with their care—very few gave responses that indicated dissatisfaction. However, significant differences in superlative patient satisfaction existed between resident and attending physicians, more evident at the university site

than at the VA site. Bivariate analyses of the university site data identified 10 specific domains of care in which resident physicians or their clinics could improve. Data from the VA site indicate that residents could improve in the 4 following domains: "personal manner of the doctor," "my doctor explains reasons for procedures," "my doctor listens very carefully," and "my doctor always treats me with the highest respect."

In the multivariate analyses, only 2 of the differences between university site resident and attending physicians on the VSQ-Clinic Site/Office Staff items remained significant ("how long you waited to get an appointment" and "length of time waiting at the office") after controlling for patient race and patient SES. In contrast, several differences between resident and attending physicians remained on the VSQ-Physician and PSI-Physician items. At the university site, multiple differences were seen, including the following: "personal manner of the doctor," "explanation of what was done for you," "time spent with the doctor," "my doctor explains reasons for procedures," and "my doctor always treats me with the highest respect." At the VA site, only 2 Physician items remained significant in the multivariable model, "personal manner of the doctor" and "my doctor always treats me with the highest respect." Importantly, 3 of the above questionnaire items were also found to consistently predict overall satisfaction (Table 5). This indicates that in order to improve patient satisfaction, resident education should concentrate most on improving length of time waiting at the office, time spent with the doctor, and respectful treatment of patients.

Our results differ from those of Probst et al., who identified factors that contributed to patient and physician satisfaction and found that "academic position" (resident vs attending physician) did not affect patient satisfaction. Their study included only 6 attending physicians who had significantly lower physician (not patient) satisfaction with patient encounters than their resident counterparts.³ Our

Table 4. Multivariate Odds Ratios for Attending Physicians Receiving Excellent/Strongly Agree Individual Item Satisfaction Ratings

	University Site Attending		VA Site Attending	
	Odds Ratio*	95% CI	Odds Ratio*	95% CI
VSQ-Clinic Site and Office Staff Items				
Overall, how would you evaluate the health care at this clinic	2.18	0.85 to 5.63	1.89	0.93 to 3.84
Convenience of the location of the office	2.44	0.86 to 6.91	1.60	0.72 to 3.56
Getting through to the office by phone	1.25	0.54 to 2.94	1.27	0.56 to 2.88
How long you waited to get an appointment	3.21	1.24 to 8.28	1.38	0.56 to 3.36
Length of time waiting at the office	3.11	1.36 to 7.11	1.33	0.58 to 3.09
The technical skills (carefulness, competence) of the staff	1.78	0.74 to 4.29	1.11	0.57 to 2.17
The personal manner (courtesy, respect, sensitivity, friendliness) of the staff	2.39	0.92 to 6.22	1.65	0.82 to 3.30
VSQ-Physician Items				
The technical skills (carefulness, competence) of the doctor	2.31	0.98 to 5.46	1.51	0.77 to 2.99
The personal manner (courtesy, respect, sensitivity, friendliness) of the doctor	3.23	1.23 to 8.48	2.44	1.11 to 5.33
Explanation of what was done for you	2.64	1.05 to 6.62	1.80	0.78 to 4.15
Time spent with the doctor you saw	2.42	1.01 to 5.78	1.25	0.61 to 2.57
PSI-Physician Items				
I am perfectly satisfied with the health care I receive	3.93	1.24 to 12.48	0.95	0.44 to 2.06
My doctor spends enough time with me	8.80	3.14 to 24.73	1.47	0.65 to 3.34
My doctor explains the reasons for procedures or tests	3.21	1.31 to 7.83	1.93	0.70 to 5.35
My doctor listens very carefully to what I have to say	4.10	1.61 to 10.43	2.59	0.97 to 6.91
My doctor always treats me with the highest respect	7.49	2.48 to 22.57	5.11	2.60 to 10.02
There are things about the health care I receive that could be better [†]	2.58	0.79 to 8.46	0.46	0.11 to 1.82
My doctor could have been kinder and more considerate of my feelings [†]	1.85	0.88 to 3.89	1.55	0.85 to 2.84
I have some doubts about the ability of my doctor [†]	2.55	1.06 to 6.08	1.81	0.96 to 3.39
I feel that there are some issues that my doctor has not given enough attention [†]	2.37	0.99 to 5.68	1.72	0.92 to 3.24

* Odds ratios >1 indicate that attending physicians received more "Excellent" and/or "Strongly Agree" ratings than resident physicians did.

[†] These reverse-scored items were not included in the composite index.

CI, confidence interval; VSQ, Visit-Specific Satisfaction Questionnaire; PSI, Patient Satisfaction Index.

study is also different from that of O'Malley et al., who found higher patient satisfaction when patients were seen jointly by a staff preceptor and a trainee as opposed to a staff physician alone.² In our study, preceptors discussed cases with residents but saw the residents' patients only if pertinent (e.g., for a difficult case or to demonstrate a physical examination skill). The resident physician was considered to be the primary caregiver.

We postulate 3 reasons for the differences in patient satisfaction between resident and attending physicians. First, and most obvious, is that actual differences in clinical experience, medical knowledge, interpersonal skills, and demeanor result in differences in patient satisfaction. While differences in clinical experience and medical knowledge seem intuitive when comparing physicians-in-training to trained physicians, it is interesting to note that patient satisfaction did not differ in regard to "the technical skills of the doctor." However, at both sites, differences were consistently seen in regard to the doctor's personal manner (courtesy, respect, sensitivity, friendliness) and the respect shown by the doctor to the patient. Resident physicians who are not as experienced at dealing with outpatient clinic flow, referral procedures, and common

clinical scenarios may become preoccupied with protocol and diagnostic/treatment decisions while losing sight of the physician-patient personal interaction. This could also explain why residents' patients were less satisfied with the waiting time, time spent with the doctor and amount of explanation given to them. Of course, another explanation for differences on these particular patient satisfaction items might be related to higher stress levels and sleep deficiencies in the resident physicians. Finally, since physician type was more predictive at the university site than at the VA site, one must consider that resident physicians had different attitudes toward university site patients versus VA site patients.

The second possible reason for differences in patient satisfaction between resident and attending physicians involves the differences in the patient populations. Resident physicians' patients at the university clinics were demographically different from attending physicians' patients, while VA patients of the 2 physician types were quite similar. Tables 3 and 4 show that patient SES was a significant predictor of lower patient satisfaction on summary ratings and several individual items at the university site. The influence of this predictor variable

Table 5. Significant Predictors of Overall Satisfaction Ratings of Health Care*

	University Site	VA Site
Predict VSQ "Overall, how would you evaluate the health care at this clinic"		
Only VSQ items	Convenience of office location Length of time waiting at the office Time spent with the doctor	Convenience of office location Length of time waiting at the office Technical skills of the staff Personal manner of the staff
Only VSQ items + demographics	Convenience of office location Length of time waiting at the office Time spent with the doctor	Convenience of office location Length of time waiting at the office Personal manner of the staff Socioeconomic status
VSQ + PSI items	Convenience of office location Time spent with the doctor Length of time waiting at the office	Convenience of office location Technical skills of the staff My doctor could have been kinder My doctor treats me with highest respect
VSQ + PSI items + demographics	Convenience of office location Time spent with the doctor Length of time waiting at the office	Convenience of office location Length of time waiting at the office Personal manner of the staff My doctor could have been kinder Socioeconomic status
Predict PSI "I am perfectly satisfied with the health care I receive"		
Only PSI items	My doctor spends enough time with me My doctor treats me with highest respect	I have doubts about ability of my doctor My doctor treats me with highest respect There are issues my doctor has not given enough attention
Only PSI items + demographics	My doctor listens carefully My doctor treats me with highest respect Socioeconomic status	My doctor explains reasons for tests I have doubts about ability of my doctor My doctor treats me with highest respect There are issues my doctor has not given enough attention My doctor explains reasons for tests
VSQ + PSI items	Technical skills of the staff Getting through to office by phone My doctor could have been kinder	Doctor type (resident vs attending) Technical skills of the staff My doctor spends enough time with me Time spent with the doctor
VSQ + PSI items + demographics	Technical skills of the staff Getting through to office by phone My doctor could have been kinder There are issues my doctor has not given enough attention Doctor type (resident vs attending)	My doctor treats me with highest respect Technical skills of the staff My doctor treats me with highest respect My doctor explains reasons for tests There are issues my doctor has not given enough attention I have doubts about ability of my doctor Doctor type (resident vs attending)

* All predictors listed in the table are statistically significant at the $P < .05$ level.
 VSQ, Visit-Specific Satisfaction Questionnaire; PSI, Patient Satisfaction Index.

might be increased by the addition of unmeasured demographic characteristics such as employment status. The lessened effect of SES on patient satisfaction at the VA site may reflect the uniformity of patient SES at this site.

Third, the differences in patient satisfaction may arise from dissimilar aspects of resident and attending clinics. Residents saw patients in only 1 exam room compared to 2 for attendings. There were usually more residents than attendings during their respective clinic sessions. This meant that the office staff was required to assist more physicians and patients in the resident clinics. This might result in inefficiency and a less friendly environment in the residents' clinics. In addition, most attendings have more

than 1 clinic session per week and have worked at their clinics for more than 3 years. Therefore, the office staff may be more aware of the attending physicians' and their patients' needs. All of these factors may impact favorably on the attending patient's experience in the clinic.

It is important to note that there were fewer differences in patient satisfaction between resident and attending physicians at the VA site, where patient characteristics were very similar and clinic structure was more similar, than at the university site. As compared with the university site, the items in the VA site data that displayed significant satisfaction differences (i.e., physician's personal manner, explanation of tests, listening skills, respect toward the patient

[Table 2]) may be more likely to reflect true deficiencies of the resident physicians. The differences in patient demographics and clinic structure at the university site may have been too great to control for statistically. Therefore, clinics such as those at the VA site may be more ideal for making comparisons between resident and attending physicians.

Limitations of the investigation are as follows. First, the study was limited by a relatively small sample size. Second, the use of only 2 clinic sites limits generalizability. However, we feel these results would likely be similar at other university-based residency programs where resident clinics predominantly serve populations of lower socioeconomic status. Third, we were unable to account for all of the questionnaires at the university resident clinics. We felt that the unaccounted patients would most likely strengthen the significance of the differences between resident and attending physicians, since these patients usually refused in frustration due to lengthy waits. Fourth, since the percentage of nonwhite physicians was small, we were unable to examine the effect of physician race on patient satisfaction. Last, it is possible that a highly negative experience in 1 domain of satisfaction could influence the responses in other domains.

In conclusion, the most prominent areas in which resident physicians' patients were less satisfied than attendings' patients include the following: their physicians' personal manner, length of time waiting at the office, time spent with the doctor, and the respect they received from their physicians. Furthermore, the latter 3 areas were found to be most consistently predictive of overall patient satisfaction. Residency programs should emphasize to trainees the impact that physician-patient interaction and time management can have on patient satisfaction. In addition to this training, altering residents' clinic structure so that it is more similar to attendings' may improve efficiency and thus improve patient satisfaction. Finally, future investigations into patient satisfaction differences between resident and attending physicians will be more effective if clinic structure and patient characteristics are similar for both types of physicians.

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Special thanks to research assistants David Sarkness and Jodi Kaetzel, who distributed and collected questionnaires and to Deborah Selzer, who assisted with formatting of the questionnaire.