The Doctor–Patient Relationship and HIV-infected Patients' Satisfaction with Primary Care Physicians

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OBJECTIVE: **To assess the extent to which perceptions of specific aspects of the doctor–patient relationship are related to overall satisfaction with primary care physicians among HIV-infected patients.**

DESIGN: **Longitudinal, observational study of HIV-infected persons new to primary HIV care. Data were collected at enrollment and approximately 6 months later by in-person interview.**

SETTING: **Two urban medical centers in the northeastern United States.**

PARTICIPANTS: **Patients seeking primary HIV care for the first time.**

MEASUREMENTS AND MAIN RESULTS: **The primary outcome measure was patient-reported satisfaction with a primary care physician measured 6 months after initiating primary HIV care. Patients who were more comfortable discussing personal issues with their physicians ($P = .021$), who perceived their primary care physicians as more empathetic ($P = .001$), and who perceived their primary care physicians as more knowledgeable with respect to HIV ($P = .002$) were significantly more satisfied with their primary care physicians, adjusted for characteristics of the patient and characteristics of primary care. Collectively, specific aspects of the doctor–patient relationship explained 56% of the variation in overall satisfaction with the primary care physician.**

CONCLUSIONS: **Patients' perceptions of their primary care physician's HIV knowledge and empathy were highly related to their satisfaction with this physician. Satisfaction among HIV-infected patients was not associated with patients' sociodemographic characteristics, HIV risk characteristics, alcohol and drug use, health status, quality of life, or concordant patient-physician gender and racial matching.**

KEY WORDS: **HIV; satisfaction; doctor–patient relationship.**
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The quality of medical care has been evaluated on the basis of process and structure of care, health outcomes, and satisfaction with care.[1–3] Reports of patient satisfaction are now routinely included in hospital quality reports or "report cards."[4] Satisfaction has been shown to be associated with adherence to medical care and treatment regimens, utilization of services, continuity of care and improved clinical outcomes.[1,5–8]

Satisfaction with care reflects the extent to which patients' expectations were met. Satisfaction is a multidimensional construct measured in a variety of ways.[1,9] Global or overall expectations, items that measure specific perceptions and/or values, and items that reflect what happened during a clinical encounter have been used to measure satisfaction.[2,10–15]

Medical care can be a large part of the lives of persons with HIV. Continuity of care and adherence to medication are critical for patients to achieve the maximum benefit of currently available, effective HIV treatment.[16,17] Satisfaction with medical care in general and with primary care physicians, in particular, may promote continuity of care and adherence to medication among these patients.

Previous studies of satisfaction among HIV patients focused on how characteristics of the patient and the site of care were related to satisfaction, operationalized in a variety of ways. Stein et al. measured 3 dimensions of satisfaction in symptomatic HIV patients: satisfaction with access to care, interpersonal relations with staff, and overall or global satisfaction.[12] Different correlates were found for each. For example, HIV-infected persons with public insurance, without insurance, or reporting more intense symptoms reported less satisfaction with access to care. Intravenous drug users were less satisfied with interpersonal relations with staff as were patients reporting more intense symptoms. Persons with any of 3 characteristics (i.e., no insurance coverage, more education, and more intense symptoms) reported less overall satisfaction.

Stone et al. measured satisfaction using ratings of physician care, nursing care, patient's involvement in medical decisions, and overall quality of care.[11] They examined AIDS patients and found that those who did not have a primary nurse, were black, used intravenous drugs, and reported lower health status were more likely to be less satisfied.

Many studies have assessed the extent to which characteristics of the patient and the site of care are associated with patient-reported satisfaction with care. Our focus is HIV-infected patients' perceptions of their relationship with their primary care physician and the extent to which specific aspects of this relationship, and patient

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and physician characteristics are related to overall satisfaction with primary care physicians.

METHODS

Design

The study is a longitudinal, observational study of HIV-infected persons new to primary HIV care. Data were collected at the time of enrollment and approximately 6 months later by in-person interview.

Sites and Participants

Patients were enrolled from the HIV Diagnostic Evaluation Unit, Boston Medical Center (BMC), Boston, Mass. from February 1994 to April 1996, and the HIV Clinic at Rhode Island Hospital (RIH), Providence, RI from December 1994 to March 1996. Both sites hold weekly clinics designed for the initial assessment and triage of all new patients with HIV infection entering their respective systems, except those who are pregnant.[18] Referrals to both sites come from a wide variety of sources, including inpatient hospital services, hospital outpatient clinics, self-referrals, the emergency department and urgent care clinic, community health centers, drug treatment programs, HIV testing sites, and local correctional institutions. The research study was approved by the institutional review boards of both institutions.

The subjects were patients who sought primary HIV care for the first time. We used specific criteria to identify patients who had not received primary medical care for HIV infection. Specifically, "new to HIV primary care" was defined as an initial positive HIV test result within 4 calendar months of the evaluation; or an initial positive HIV test result more than 4 months before presentation and absence of the following history, determined by medical record review or patient report: specific prior HIV primary care, past use of zidovudine or any other antiretroviral, or two or more prior CD4 lymphocyte counts. The criterion of two prior CD4 lymphocyte counts, rather than one, was used because some patients had one CD4 lymphocyte count obtained at the time of HIV testing. Only patients fluent in English, Spanish, or Haitian Creole were eligible. Each patient provided written informed consent before entering the study.

Patients were asked to participate in this study after their initial clinical care, including medical history taking, physical examination, and laboratory tests. At RIH this was at the initial encounter, and at BMC this was at a clinical appointment generally 1 week after the first. Those who met entry criteria and agreed to participate underwent a 60 to 90-minute standardized interview. One of 3 trained research associates carried out all interviews including behavioral, medical, and social history. Interviews were administered in Spanish or Haitian Creole when appropriate by interpreters working with the research associates. Spanish and Haitian Creole interview instruments were translated into these languages, back-translated into English to check for accuracy, and then corrected. Approximately 6 months after completing the initial interview, patients were re-interviewed according to a similar protocol.

Satisfaction with Primary Care Physician

The outcome of interest was patient-reported satisfaction with their primary care physician. We measured satisfaction using two global items in the 6-month follow-up interview. Patients were asked: "Does your primary care physician meet your expectations?" and "How satisfied are you with your primary care physician?" Each item was measured on a 4–point Likert–type response scale: completely, somewhat, a little, or not at all. Responses to the two items were summed and scaled from 0 to 100, with 100 reflecting complete satisfaction. Cronbach's α internal consistency reliability coefficient[19] for the 2-item measure was 0.83.

Patient Characteristics

Patient characteristics, assessed at baseline, were classified into 4 categories: (1) sociodemographic, (2) HIV risk, (3) alcohol and drug use, and (4) health status and quality of life. Sociodemographic characteristics included age, gender, education, income, race, and insurance coverage. HIV risk factors were categorized as intravenous drug use, male with a gay/bisexual orientation, or heterosexual, and CD4 cell count measured at the time of the baseline interview. Alcohol and drug use variables included the alcohol and drug composite scores from the Addiction Severity Index[20] and a history of intravenous drug use. Health status and quality of life were measured using the Basic Activities of Daily Living Scale, and the following AIDS-specific scales: Health Status, Symptoms, Quality of Life, and Emotional Health.[21] Depressive symptoms were measured by the Center for Epidemiologic Studies Depression Scale.[22]

Characteristics of Primary Care

Two characteristics were assessed in the 6-month follow-up interview related to primary HIV care. Patients at each site rated the convenience of the clinic hours using a 5–point Likert response scale and indicated whether or not they had a primary HIV nurse.

Characteristics of the Doctor–Patient Relationship

In the 6-month follow-up interview, patients were asked a series of questions regarding their primary care. They were asked if there was one doctor's office or clinic where they received most of their care and if they usually (90% of the time) saw one doctor, nurse, or physician's assistant. Specific aspects of the doctor–patient relationship were measured by 17 distinct items assessed in the 6-month follow-up interview. These items were chosen by the clinical investigators to re-

flect meaningful doctor–patient interactions and included patients' ratings and reports of how comfortable they felt discussing personal issues with their primary care physician, how well their physician explained side effects, how empathetic their physician was regarding their disease, how often they let their physician know what would and would not work in their treatment, and how often their physician asked questions about personal issues and relationships. Each item was measured on a 4–point Likert–type response scale. Principal components analysis of these items revealed 5 components: (1) comfort discussing personal issues (How comfortable would you feel discussing . . . family problems with your primary doctor? . . . relationship problems with your primary doctor? . . . feeling isolated with your primary doctor? . . . depression with your primary doctor?), (2) understanding the primary care physician's instructions (How often do you understand what your doctor tells you about . . . your HIV infection? . . . your medications? . . . your treatment plan? How well do you think your doctor . . . explains the usefulness of a specific medication? . . . explains the possible side effects of your medication? . . . gives you clear instructions on when and how to take any medications prescribed?), (3) the primary care physician's empathy (How sympathetic do you feel your primary care doctor is to what you are going through? How well do you think your doctor listens to you?), (4) the patient's participation in the medical encounter (How often . . . does your doctor ask for your input when making decisions about your medical care? . . . do you let your doctor know what will and will not work for you? How much do you trust your doctor to keep the results of your HIV test and your treatment confidential?), and (5) the primary care physician's interest in personal relationships (How often does your primary care doctor ask you questions about . . . your family relationships? . . . your relationships with friends?). Responses to the items comprising each component were summed and scaled from 0 to 100, with higher scores reflecting more favorable outcomes (e.g., more comfortable discussing personal issues, better understanding of primary care physician's instructions). Patients' perception of their primary care physician's HIV knowledge was measured in a single item, and responses to the 4–point Likert–type response scale were transformed to 0 to 100, with higher scores indicative of more positive perceptions of knowledge. Two variables were created reflecting doctor–patient gender match and doctor–patient racial match. Two variables were also considered reflecting patients' self-reported visit history over the past 6 months: (1) the number of appointments attended with the primary care physician, and (2) the number of appointments with the primary care physician missed over the same period.

Statistical Analysis

Our primary objective was to examine the extent to which specific aspects of doctor–patient relationship were related to overall satisfaction with primary care physicians among HIV-infected patients new to primary HIV care adjusting for relevant characteristics of the patient and their primary care. The analysis was carried out in 3 steps.

In the first step, descriptive statistics were generated for each study variable, including means and standard deviations for continuous variables and relative frequencies for discrete variables.

In the second step, bivariate relationships between each independent variable (characteristics of the doctor–patient relationship), each covariate (characteristics of the patient and characteristics of their primary care), and satisfaction with the primary care physician were assessed using correlation analysis and analysis of variance for continuous and discrete variables, respectively.

In the third step, we developed a multiple regression model relating satisfaction to the set of independent variables and covariates determined to be important based on the bivariate analyses. Specifically, variables that were statistically significant at the $P < .20$ level in bivariate analyses were considered in the multiple regression analysis. To explore in more detail those characteristics of the doctor–patient relationship associated with dissatisfaction with the primary care physician adjusting for relevant characteristics of the patient and their primary care, we created a dichotomous variable reflecting satisfaction with the primary care physician in the lowest quartile. We used multiple logistic regression analysis to investigate the relationships between an HIV infected person's dissatisfaction with their primary care physician (defined as satisfaction in the lowest quartile) and characteristics of the doctor–patient relationship adjusting for characteristics of the patient and their primary care.

RESULTS

The analytic sample for this study included patients who completed both the baseline and 6-month follow-up interviews ($n = 146$). Two hundred three (75%) of 276 eligible patients presenting for initial primary care for HIV infection at either site during the period of study were enrolled and completed a baseline interview. Seventy-three patients were not enrolled in this study (38 refused to participate, 25 agreed to participate but never returned for the initial interview, and 10 were never contacted). There were no significant differences between patients who enrolled in the study ($n = 203$) and those who did not enroll ($n = 73$) with respect to age, gender, or HIV risk. There was a significant difference with respect to race ($P < .05$), with disproportionately fewer Haitians and more whites enrolled in the study as compared to Hispanics and African Americans. One hundred forty-six (72%) of 203 patients who completed the baseline interview also completed the 6-month follow-up interview. There were no significant differences between patients who completed the 6-month follow-up interview ($n = 146$) and those who did not ($n = 57$) with respect to age, race, gender, or HIV

risk. There was a significant difference with respect to education ($P < .05$), with a significantly higher proportion of patients who completed the 6-month follow-up having graduated high school.

Characteristics of the study patients are displayed in Table 1. Patients in the analytic sample had a mean age of 37 years, almost three quarters were male, and the majority had graduated high school. Patients represented 3 major racial groups, and 36% had insurance. Almost half (45%) of the study patients were classified at risk for HIV based on a history of intravenous drug use. The mean CD4 cell count measured at the time of initiating primary HIV care was 305 cells/μL. Most (89%) of the patients reported that, for the most part, the clinic's hours of operation were convenient. Almost 70% of the patients reported having a primary nurse for HIV care.

The distribution of the outcome measure, satisfaction with the primary care physician, is negatively skewed similar to that observed in other studies, with the majority (56%) of patients reporting complete or near complete satisfaction with their primary care physicians.[23]

Ninety-seven percent of patients reported that they had one doctor's office or clinic where they received care, and 96% reported seeing the same doctor, nurse, or physician's assistant. Specific aspects of the doctor–patient relationship are displayed in Table 2. The majority of the doctors and patients were matched with respect to gender (64%), while there was less concordance with respect to race (24%). Patients reported being comfortable discussing personal issues (mean = 74.9 on a scale of 0–100, with higher scores indicative of more comfort), understanding the instructions that physician's gave regarding HIV infection, medications, and treatment plans well (mean = 80.4), and perceiving their physicians as empathetic (mean = 82.4). Patients rated their physician's interest in personal relationships lower by comparison (mean = 47.8) and, on average, perceived their physicians as knowledgeable with respect to HIV infection (mean = 59.7). Patients reported a mean of 5.7 appointments with their primary care physicians over 6 months (the median number of appointments was 4). Patients report missing a mean of 1.3 appointments with their primary care physicians over the same period.

Results of bivariate analyses evaluating the relationships between characteristics of the patients, their primary care, and each aspect of the doctor–patient relationship, and satisfaction with the primary care physician are displayed in Table 3. Only gender, income, HIV risk, history of intravenous drug use, the Addiction Severity Index composite score, and Basic Activities of Daily Living scale reached significance at the $P \leq .20$ level and were considered important covariates for the multiple regression analysis. Higher satisfaction with the primary care physician was found among women, patients with lower income, those classified as heterosexual HIV risk, those with no history of injection drug use, those with lower drug composite scores, and those reporting better health status as measured by the Basic Activities of Daily Living scale.

Table 1. Characteristics of HIV-Infected Patients and Primary Care

Characteristics of the Patient	Mean (SD)	n (%) (n = 146)
Sociodemographic characteristics		
Mean age, y (SD)	37 (7.9)	
Gender: male		109 (75)
Education: high school graduate		94 (64)
Income		
No income		45 (31)
≤$16,000		56 (39)
>$16,000		44 (30)
Race		
Black		70 (49)
Hispanic		30 (21)
White		44 (30)
Have insurance: yes		52 (36)
HIV characteristics		
HIV risk		
IV drug user		66 (46)
Gay/bisexual		28 (19)
Heterosexual		51 (35)
Mean CD4 cell count	305 (232)	
Characteristics of Primary Care		
Convenience of clinic hours		
Always		92 (68)
Most of the time		29 (21)
Some of the time		10 (7)
A little of the time		5 (4)
Have a primary nurse for HIV: yes		100 (70)

Table 2. Characteristics of the Doctor–Patient Relationship

Characteristics	%	Mean (SD)
Doctor–patient gender match: yes	64	
Doctor–patient racial match: yes	24	
Comfort discussing personal issues*		74.9 (29.4)
Understanding physician's instructions*		80.4 (25.8)
Empathy*		82.4 (23.1)
Patient participation in medical encounter*		76.7 (25.5)
Interest in personal relationships*		47.8 (36.4)
Perception of physician's HIV knowledge†		59.7 (19.0)
Number of appointments with PCP over 6 months		5.7 (6.2)‡
Number of appointments with PCP missed over 6 months		1.3 (1.7)§

**Scores range from 0 to 100, with higher scores indicative of more favorable perceptions. The items comprising each composite measure are listed in the Methods section.*

†Scores range from 0 to 100, with higher scores indicative of more knowledge.

‡The median number of appointments with PCP over 6 months was 4.

§The median number of appointments with PCP missed over 6 months was 1.

PCP indicates primary care physician.

With respect to characteristics of primary care, patients who rated the clinic hours as more convenient were more likely to report more satisfaction with primary care physicians (Table 3). Having a primary nurse was not associated significantly with satisfaction with the primary care physician.

Doctor–patient gender match was significant at $P < .20$, but doctor–patient racial match was not. Physician's gender and race were also considered as candidate-independent variables but neither was significantly associated with satisfaction (results not shown). Each aspect of the doctor–patient relationship and the patient's perception of their primary care physician's HIV knowledge were significantly associated with higher satisfaction with the primary care physician ($P < .0001$ for each, Table 3). The number of appointments patients had with their primary care physicians over 6 months was not significantly related to satisfaction. However, the number of appointments missed was inversely associated with satisfaction.

Variables which were significant at the $P \leq .20$ level in bivariate analyses were considered in the multiple regression analyses. HIV risk and the drug composite score were removed, as they were significantly related to the history of intravenous drug use. The results of the multiple linear regression analysis investigating the relationship between an HIV-infected person's satisfaction with their primary care physician and variables reflecting specific aspects of the doctor–patient relationship, adjusted for characteristics of the patient and of their primary care are displayed in Table 4. Patients who were more comfortable discussing personal issues with their physicians ($P = .022$), who perceived their physicians as more empathetic ($P = .001$), and who perceived their physicians as more knowledgeable with respect to HIV ($P = .002$) were significantly more satisfied with their primary care physicians, adjusting for relevant characteristics of the patient and their primary care. Collectively, the doctor–patient variables considered explained 56% of the variation in satisfaction with the primary care physician. Specifically, patients' perception of their physician's HIV knowledge explained 33% of the variation in satisfaction and patients' ratings of their primary care physician's empathy explained an additional 11%. In general, satisfaction among HIV-infected patients was not associated with patients' sociodemographic characteristics, HIV risk characteristics, alcohol and drug use, health status, quality of life, or concordant patient-physician gender and racial matching.

The results of the multiple logistic regression analysis investigating the relationship between an HIV-infected person's dissatisfaction with their primary care physician and specific aspects of the doctor–patient relationship, adjusted for characteristics of the patient and characteristics of their primary care were consistent with the results of the multiple linear regression analysis (results not shown). Patients who perceived their physicians as less empathetic ($P = .001$) and who perceived their physicians as less knowledgeable with respect to HIV ($P = .012$)

Table 3. The Doctor–Patient Relationship and Satisfaction with Primary Care Physician: Results of Bivariate Analyses

Patient Characteristics	Mean Satisfaction (0–100)	Correlation	*P Value*
Sociodemographic			
Age			
≤35 y	81.9		.51*
>35 y	84.8		
Gender			
Male	81.1		.07*
Female	89.6		
Education, y			
<High school	85.1		.60*
High school graduate	82.6		
Income			
No income	86.8		.07*
≤$16,000	86.9		
>$16,000	75.9		
Race			
Black	86.2		.21*
Hispanic	84.2		
White	77.3		
Have insurance			
No	81.9		.26*
Yes	86.8		
HIV			
HIV risk			
Gay/bisexual	79.8		.17*
Intravenous drug user	80.4		
Heterosexual	88.5		
CD4 cell count			
Lowest quartile	82.6	.03	.70†
Highest quartile	88.1		
Alcohol and Drug Use			
History of intravenous drug use			
No	85.3		.19*
Yes	79.3		
Alcohol composite score			
Lowest quartile	88.3	.08	.37†
Highest quartile	79.3		
Drug composite score			
Lowest quartile	91.7	.21	.02†
Highest quartile	75.3		
Health Status and Quality of Life			
Basic Activities of Daily Living Scale			
Lowest quartile	81.1	.14	.12†
Highest quartile	89.4		
Cleary Health Status			
Lowest quartile	81.8	.06	.48†
Highest quartile	86.8		
Cleary Symptom Scale			
Lowest quartile	81.5	.04	.68†
Highest quartile	84.4		
Cleary Quality of Life Scale			
Lowest quartile	84.8	.02	.86†
Highest quartile	77.0		
Cleary Emotional Health			
Lowest quartile	80.1	.03	.75†
Highest quartile	86.7		
Depressive Symptoms			
Lowest quartile	83.3	.08	.34†
Highest quartile	76.8		

(Continued)

Table 3. (Continued)

Patient Characteristics	Mean Satisfaction (0–100)	Correlation	*P Value*
Primary Care			
Convenience of clinic hours			
Always	88.3		<.01*
Most of the time	77.7		
Some of the time	75.0		
A little of the time	33.3		
Have a primary nurse for HIV?			
No	84.2		.82
Yes	83.1		
Doctor–Patient Relationship			
Doctor–patient gender match			
No	79.3		.18
Yes	85.7		
Doctor–patient racial match			
No	84.0		.56
Yes	80.6		
Comfort discussing personal issues			
Lowest quartile	73.2	.41	<.01†
Highest quartile	92.7		
Understanding physician's instructions			
Lowest quartile	60.4	.43	<.01†
Highest quartile	93.1		
Empathy			
Lowest quartile	63.1	.47	<.01†
Highest quartile	93.7		
Patient participation in medical encounter			
Lowest quartile	64.5	.40	<.01†
Highest quartile	93.4		
Interest in personal relationships			
Lowest quartile	66.1	.44	<.01†
Highest quartile	94.8		
Perception of physician's HIV knowledge			
Lowest quartile	51.9	.58	<.01†
Highest quartile	93.8		
Number of appointments with PCP over 6 months			
2 or less	78.2	.11	.22†
6 or more	88.5		
Number of appointments with PCP missed over 6 months			
None	85.7	−.18	.05*
One or more	81.4		

**Significance of difference in means based on analysis of variance.*
†*Significance of Pearson product moment correlation coefficient. For descriptive purposes, mean scores are shown for lowest (first) and highest (fourth) quartiles.*
PCP indicates primary care physician.

were significantly more likely to be dissatisfied with their primary care physicians, adjusting for other variables in the model.

DISCUSSION

Patient satisfaction is an area of research challenged by issues of measurement, reproducibility, and interpretation.[4] Assessment of patients' satisfaction with medical care reflects a variety of factors, many of which are not a function of the physician or the patient, such as specific attributes of nonphysician staff, attributes of the clinic, and related services such as pharmacy and general features of the institution.[24] There is some support for disaggregating global patient-reported satisfaction into more specific and interpretable aspects of care. However, the gain in interpretability is sometimes associated with a loss in psychometric properties.[4] Despite measurement limitations, patient-reported satisfaction with medical care is accepted as an important measure of the quality of medical care, in part because of its relationship to certain clinical and fiscal outcomes.[15,23–26]

We focused on satisfaction with the primary care physician, using global assessments rather than specific attributes. Our focus on the satisfaction with the primary care physician per se allows consideration of this aspect of satisfaction disaggregated from the multiple confounding variables that can impact one's satisfaction with "ambulatory care."[11] In addition, we studied a spectrum of HIV-infected patients, both symptomatic and asymptomatic, as well as patients with AIDS and those not meeting criteria for AIDS. To more carefully make the assessment, we examined a cohort of patients who were at similar stages in their experience with HIV-related primary medical care, 6 months after initiation of such care. This uniformity of stage of HIV care allows comparisons that are not confounded by the comfort level of physician and patient in discussing HIV-related matters based on duration of care. Perceptions of satisfaction with primary HIV care has not been adequately studied previously among this population.

There was an important difference between our results and other previous work examining satisfaction in this population. Other studies found that characteristics of the patient and characteristics of the site of care were associated significantly with both overall satisfaction and with specific aspects of satisfaction.[11,12] We found that after aspects of the doctor–patient relationship were taken into account, the characteristics of the patient and the characteristics of primary care did not explain the significant variation in satisfaction with the primary care physician. Thus, specific aspects of the doctor–patient relationship dominated the reported satisfaction of patients with their primary care physician.

Patients recently engaged in primary HIV care in the settings examined were highly satisfied with their primary care physicians. More than half (56%) of the sample reported complete satisfaction with primary care physicians. Specific aspects of the doctor–patient relationship were highly significantly associated with overall or global satisfaction. In particular, patients' perception of their physician's HIV knowledge was highly related to satisfaction as was patients' ratings of their physician's empathy. Cleary and McNeil reviewed the satisfaction literature and found that patients' perceptions of physicians' interper-

Table 4. Characteristics Associated with Satisfaction with Primary Care Physicians: Results of Multiple Linear Regression Analysis

Characteristic	Parameter Estimate	*P Value*	R^2
Doctor–Patient Relationship			
Doctor–patient gender match	5.1	.09	1.6
Comfort discussing personal issues	2.6*	.02	5.0
Understanding physician's instructions	1.9*	.13	3.6
Empathy	5.2*	<.01	11.0
Patient participation in medical encounter	1.2*	.44	.3
Interest in personal relationships	1.4*	.12	1.2
Perception of physician's HIV knowledge	6.1*	<.01	32.5
Number of appointments with PCP missed	−1.1	.21	1.1
Patient			
Gender	−3.4	.30	.4
Income ≤$16,000†	−1.2	.73	.0
Income >$16,000†	−9.7	.02	2.0
History of intravenous drug use	−5.2	.11	2.3
Basic Activities of Daily Living Scale	1.0	.32	.6
Primary Care			
Convenience of clinic hours	−3.1	.16	.7

Model R^2 = 62.3.

**Estimate relative to a 20-unit difference in scale scores (approximately one SD).*

†*The Reference group is patients with no income.*

sonal and communication skills explain more variation in satisfaction than do perceptions of technical skills.[15] They also reported that few studies have shown a relationship between satisfaction and independent assessments of physician's technical skills.

Understanding what accounts for this patient impression, particularly patients' perception of their primary care physician's HIV knowledge, is critical to implementing quality improvement efforts. It is possible that patients' perceptions of their primary care physician's knowledge are valid and reflect their physician's technical skills or experience. In such a case, we might expect that patients who perceive their physicians as more knowledgeable may achieve more favorable health outcomes.[27] Examining this issue among HIV-infected patients is particularly important and somewhat unique considering the seriousness of short- and long-term outcomes of this disease and the intensity of the medical interactions for patients with this disease.

This study has several limitations. First, the outcome measure was a global or aggregate measure based on two items which were newly developed for this study. We chose to use this approach, however, to avoid the criticism that patients' perceptions and values are blurred in more specific questionnaire items which have inadequate psychometric properties.[4] This study involved 2 sites of care, both based in urban areas in the Northeast. Future work needs to involve more sites of care, ideally sites which are geographically and structurally diverse. The analyses reported here were based on patients who were followed up at 6 months. Although our 72% follow-up rate was good, patients who we were unable to reach after 6 months or who refused to complete the 6-month follow-up interview may have been less satisfied with medical care. To further explore this possibility, we compared those in our cohort to those who received no follow-up and found few identifiable differences except education. In bivariate analyses conducted among those patients who were followed, we did not observe a significant association between education and satisfaction. Nonetheless, we can not fully exclude the possibility that these patients may have been less satisfied. Finally, our measures of specific aspects of the doctor–patient relationship were based on an array of items hypothesized to measure these domains, and a principal components analysis of these items assessed internal consistency reliability; however, more rigorous psychometric analysis is warranted in this area.

Patients' perception of their primary care physician's HIV knowledge and empathy were highly related to their satisfaction with that physician. More research needs to be done to fully understand the factors that influence a patient's perceptions of a physician's knowledge and empathy, and to determine specific strategies to improve these factors, with the ultimate goal of improving satisfaction with and the quality of HIV primary care.

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