Managed Care, Physician Job Satisfaction, and the Quality of Primary Care

David Grembowski, PhD,[1,2] David Paschane, MS,[5] Paula Diehr, PhD,[1,2,3] Wayne Katon, MD,[4] Diane Martin, PhD,[1,2] Donald L. Patrick, PhD, MSPH[1,2]

[1]Center for Cost and Outcomes Research, and Departments of [2]Health Services, [3]Biostatistics, [4]Psychiatry and Behavioral Sciences, and [5]Geography, University of Washington, Seattle, WA, USA.

OBJECTIVE: To determine the associations between managed care, physician job satisfaction, and the quality of primary care, and to determine whether physician job satisfaction is associated with health outcomes among primary care patients with pain and depressive symptoms.

DESIGN: Prospective cohort study.

SETTING: Offices of 261 primary physicians in private practice in Seattle.

PATIENTS: We screened 17,187 patients in waiting rooms, yielding a sample of 1,514 patients with pain only, 575 patients with depressive symptoms only, and 761 patients with pain and depressive symptoms; 2,004 patients completed a 6-month follow-up survey.

MEASUREMENTS AND RESULTS: For each patient, managed care was measured by the intensity of managed care controls in the patient's primary care office, physician financial incentives, and whether the physician read or used back pain and depression guidelines. Physician job satisfaction at baseline was measured through a 6-item scale. Quality of primary care at follow-up was measured by patient rating of care provided by the primary physician, patient trust and confidence in primary physician, quality-of-care index, and continuity of primary physician. Outcomes were pain interference and bothersomeness, Symptom Checklist for Depression, and restricted activity days. Pain and depression patients of physicians with greater job satisfaction had greater trust and confidence in their primary physicians. Pain patients of more satisfied physicians also were less likely to change physicians in the follow-up period. Depression patients of more satisfied physicians had higher ratings of the care provided by their physicians. These associations remained after controlling statistically for managed care. Physician job satisfaction was not associated with health outcomes.

CONCLUSIONS: For primary care patients with pain or depressive symptoms, primary physician job satisfaction is associated with some measures of patient-rated quality of care but not health outcomes.

KEY WORDS: managed care programs; pain; depression; quality; physician job satisfaction
DOI: 10.1111/j.1525-1497.2005.32127.x
J GEN INTERN MED 2005; 20:271–277.

Many primary physicians believe that managed care and market competition have eroded their satisfaction with medical practice.[1–9] Little is known about whether physician job dissatisfaction—whether from managed care or other sources—undermines patient perceptions of quality care and health outcomes.[10–12]

A handful of studies suggest that when physicians are more satisfied with their jobs, quality of care benefits.[13–16] Haas et al.[13] report that patients of physicians who rated themselves to be very or extremely satisfied with their work were more satisfied with their health care and most recent physician visit. Managed care controls may partly explain this relationship.[13,17,18] As the intensity of managed care controls increase, physicians may become more dissatisfied with their jobs,[4,19–21] and patients may experience worse quality care,[22–26] creating a spurious relationship between physician job satisfaction and quality of care.

If managed care and physician job dissatisfaction contribute to lower quality of primary care, health outcomes may be reduced.[17,18,27–29] While patient dissatisfaction is associated with worse health outcomes,[30–33] few studies have examined whether physician job dissatisfaction also is associated with worse health outcomes.

The aim of the study is to examine whether physician job satisfaction is associated with patient perceptions of the quality of primary care among patients with pain and depressive symptoms. A second aim is to determine whether physician job satisfaction is associated with health outcomes. We address patients with pain and depressive symptoms because they are common conditions in primary care, and physician job satisfaction may influence the quality of care differently for physical and mental health problems.

METHODS

Design and Populations

Data for this analysis come from the Physician Referral Study.[34,35] The physician population consisted of 832 primary care physicians (family practitioners, general internists, and general practitioners) in private practice at least 50% time in the Seattle metropolitan area in 1997. Of these, 261 physicians (31%) in 72 offices consented to participate. Office managers and participating physicians, as well as a random sample of 300 nonparticipating physicians, were asked to complete self-administered questionnaires at baseline.

In total, 17,187 English-speaking patients aged 18 and over were screened in the waiting rooms of the offices for 2 weeks. Of these, 691 patients were ineligible due to age below 18 or language, physical, or mental limitations, and 4,107 eligible patients refused to participate. Of the remaining 12,389 patients, 2,850 consenting patients had depressive symptoms (6 items from the Symptom Checklist for Depression) and/or at least 1 of 8 common, often persistent pain symptoms (back and neck pain, chest pain, abdominal pain, sinus or facial pain, headache or migraine, pain from indigestion/constipation, pain or arthritis in arms/legs/joints, and pelvic pain from female problems).[36,37] Three patient cohorts were recruited: 1) patients with pain only (n=1,514; 53%); 2) patients with pain and depressive symptoms (n=761; 27%); and 3) patients with depressive symptoms only (n=575; 20%). Patients received mail or telephone surveys at 6 months to collect personal

Accepted for publication March 1, 2004

The authors have no conflicts of interest to report.

Address correspondence and requests for reprints to Dr. Grembowski: Department of Health Services, University of Washington, 1959 NE Pacific Street, Box 357660, Seattle, WA 98195-7660 (e-mail: grem@u.washington.edu).

characteristics, measures of patient-rated quality of care, and health status.

Dependent Variables

Physician Job Satisfaction. Primary physician job satisfaction was measured with a 6-item scale adapted from Greenfield et al.[38] and validated.[39] Physicians rated their satisfaction on a 1 (very dissatisfied) to 5 (very satisfied) scale for: the care you provide to your patients (mean, 4.4); degree of personal autonomy you have (mean, 3.7); the way you are paid for your services (mean, 3.3); current volume of patients that you see (mean, 3.5); the way that your practice is managed (mean, 3.3); and your current work setting overall (mean, 3.7). A physician's job satisfaction was measured by averaging the 6 items in the scale (mean, 3.7; standard deviation, [SD], 0.73).

Quality of Care. Four quality-of-care measures were constructed. Patients rated the health care provided by their primary physicians at the 6-month follow-up on a 6-point scale of poor (1), fair, good, very good, excellent, and outstanding (6).[40]

The quality-of-care (QC) index was constructed from patients' reports to 4 questions, derived from Picker Institute survey instruments, at the 6-month follow-up (see Table 1).[41] Factor analysis revealed a single factor with factor loadings between 0.66 and 0.87 and Cronbach's α of .73. The QC index was constructed by summing the 4 (0, 1) items, and the index ranged between 0 and 4. The QC index was correlated with all patients' rating of care (0.63).

From Picker Institute instruments, patient trust and confidence in the primary physician at the 6-month follow-up was measured on a 5-point scale of (1) none, a little, some, quite a lot, and total confidence (5). Patient trust was correlated with the patient rating of care (0.73) and the QC index (0.59) among all patients.

The fourth measure, continuity of primary physician, indicated whether the patient reported having the same primary care physician at baseline and 6-month follow-up.[42] Patients who changed physicians had lower ratings of their primary care physicians, less trust, and lower QC index scores (P=.000).

Health Status. For patients with depressive symptoms, the severity of symptoms was measured at the waiting room screen and 6-month follow-up by the 20-item Symptom Checklist for Depression (SCL-20), where scores ≥ 1.70 indicate severe depressive symptoms.[37,43,44] Disability was measured by the number of restricted activity days due to emotional problems in the past 4 weeks.[45]

For patients with pain, the severity of pain symptoms was measured at the waiting room screen and the 6-month follow-up by a 10-point scale indicating the bothersomeness of the pain in the past 4 weeks, from "not bothersome" (0) to "extremely bothersome" (10).[46] Functional health status was measured by the 3-item pain interference scale, from "no interference" (0) to "unable to carry on activities" (10).[47] Disability was measured by the number of days the patient was limited in usual activities due to physical health problems in the past 4 weeks.[45]

For each measure, health outcome was calculated as the change in health status between the waiting room screen and the 6-month follow-up, where bigger values indicated more improvement.

Independent Variables

Managed Care Controls. Based on our conceptual model of managed care,[48] we identified managed care controls in primary care offices and controls targeting primary physicians. Managed care controls in patients' health plans were excluded because they were not associated with our quality-of-care measures.[22] Further, while primary physicians generally experienced a single set of office and practice controls, physicians typically saw patients with many health plans, and we lacked data for all plans of each physician.

Office managed care was measured through the following controls: utilization management (the office's referral preauthorization requirements), financial incentives (percentage of office revenue from capitation), and whether the office uses referral guidelines or clinical guidelines for specific conditions. Because the office variables were correlated strongly, we created an office managed care index using principal component

Table 1. Descriptive Statistics for the Items in the Quality of Care Index at 6-Month Follow-up

Item	% Patients with Pain (n=884)	% Patients with Depressive Symptoms (n=358)	% Patients with Pain and Depressive Symptoms (n=442)
Were you involved in decisions about your health care as much as you wanted?			
Involved as much as wanted	87	86	82
Involved too little or too much	13	13	18
Did your doctor explain what to do if problems or symptoms continued, got worse, or came back?			
Doctor explained not at all, little, or somewhat	47	30	36
Doctor explained completely	53	70	64
Did you get as much information about your condition and treatment as you wanted from this doctor?			
No, a little, or some information	51	36	45
Complete information	49	64	55
Did you spend as much time with your doctor as you wanted?			
No	12	16	17
Yes	88	84	83

analysis. A single factor explained 60% of the total variation of the 5 variables; factor loadings were positive and ranged between 0.62 and 0.87. Factor scores were transformed to create a 0 to 100 office managed care index, where higher scores indicated more managed offices.

To validate the index, we hypothesized that, on average, solo physician offices would be the least managed, primary group offices would be more managed, and multispecialty group offices would be the most managed. As expected, mean index scores increased from solo to multispecialty group offices (mean scores: solo, 9; primary group, 30; multispecialty group, 55; $P<.000$).

Physician managed care was measured by financial incentives (how the primary physician was paid, whether the physician received a productivity bonus, or whether the physician had a financial withhold for referrals) and the number of Agency for Healthcare Policy and Research (AHCPR) clinical guidelines read or used by the physician.[49,50]

Patient Characteristics. Patient measures included age, gender, race, living alone, employment status, education, and annual household income. The number of comorbidities at baseline was assessed using a checklist of 21 comorbid conditions based on the Medical Outcomes Study.[51] We also measured the context of care: whether the primary physician at baseline was the patient's usual source of care, whether the baseline visit was the patient's first visit with the primary physician for the pain problem, and whether the patient had sought care for the pain problem in the 6 months before the baseline visit.

Primary Physician Characteristics. Physician characteristics included gender, years in practice, and whether the physician's race was white or not. Specialty and board certification were measured using the American Medical Association Physician Masterfile. Physicians rated their tolerance for uncertainty in patient care, indicating agreement or disagreement on a 1-to-4 scale with 2 statements from an instrument by Gerrity et al.[52]: 1) the uncertainty of patient care often troubles me; and 2) uncertainty in patient care makes me uneasy. Scores ranged from 2 to 8, where 8 indicates strong disagreement, or greater tolerance for uncertainty.

Medical Office and Physician Practice Characteristics. Office characteristics included office type (solo, primary group, or multispecialty group practice), the number of physicians in the office, and whether the office was owned privately. Physicians also rated how difficult or easy it was to refer a patient to a specialist on a 1-to-5 scale, where 1 indicates very difficult and 5 indicates very easy.

Physician workload was measured by patient visits per hour, administrative hours per week, and percentage of patients referred in a typical month. Patient mix was measured by the percentages of patients who were female, nonwhite race, aged 18 and under, aged 65 and above, and from middle- or upper-class households.

Data Analysis

With patients as the unit of analysis, separate ordinary least squares and logistic regression models were estimated to determine the association between physician job satisfaction and each quality-of-care variable. Covariates for both conditions included the patient's age, gender, race, marital status, education, annual household income, employment status, and the number of comorbid conditions. Covariates for patients with pain also included the following baseline health characteristics: pain interference, pain bothersomeness, restricted activity days due to physical health, presence or absence of depressive symptoms, whether the primary care physician was the patient's usual source of care, whether the patient was seeing the physician for the first time about the pain problem, and whether the patient reported seeing a health professional for the pain problem in the 6 months prior to the waiting room screen. Additional covariates for patients with depressive symptoms included the following baseline health characteristics: SCL depression score, restricted activity days due to emotional health, presence or absence of pain, and whether the primary care physician was the patient's usual source of care. If no association was detected between job satisfaction and quality of care, physician characteristics were entered as control variables, and the regressions were reestimated.

An association between physician job satisfaction and patient-rated quality of care may be due to managed care. In this case, we reestimated the regressions, controlling for the managed care variables.

Separate ordinary least squares regression models were estimated to determine the association between physician job satisfaction and health outcomes. Covariates included the baseline score of the dependent variable, age, gender, race, marital status, education, annual household income, employment status, number of comorbidities, whether the patient had pain and depressive symptoms, whether the primary care physician was the patient's usual source of care, and whether the patient reported seeing a health professional for pain or depression in the 6 months prior to the waiting room screen.

Models were estimated with Stata statistical software (Stata, College Station, TX)[53] using general estimated equations (GEE) to account for correlations among patients in the same medical offices.

RESULTS

About 95% of the participating physicians and 96% of office managers completed their respective questionnaires. About 33% of the physicians were general internists, 64% were family medicine practitioners, and 3% were general practitioners. About 82% of the nonparticipating physicians completed their questionnaires. Participating and nonparticipating physicians had similar job satisfaction scores, referral rates, board certification, specialty and racial mix, but participants had a higher percentage of group practice and female physicians who had fewer years in practice, fewer office hours per week, and fewer patients aged 65 and over than nonparticipating physicians ($P<.05$).

Follow-up surveys were collected for 2,004 insured patients (70% response rate; 1,062 with pain only, 518 patients with pain and depressive symptoms, and 424 patients with depressive symptoms only). Patients with follow-up data were older and had less pain interference with activities or fewer depressive symptoms than excluded patients without follow-ups. Depressed patients with follow-up data were less likely to have seen a psychiatrist in the past than patients without follow-ups.

Table 2 presents baseline patient characteristics. The average age of patients was 49 years. A majority of patients were female, white, married, had education beyond high school,

Table 2. Patient Characteristics at Baseline

Measure	Patients with Pain (n=884)	Patients with Depressive Symptoms (n=358)	Patients with Pain and Depressive Symptoms (n=442)
Patient characteristics			
Mean age, y (SD)	51 (16.5)	45 (15.3)	48 (14.9)
Female, %	62	72	76
Nonwhite, %	10	13	15
Living alone, %	29	46	42
Employed, %	63	66	60
Mean years of education (SD)	15 (2.5)	14 (2.4)	14 (2.5)
Mean annual household income (SD)	$50,169 (28,008)	$39,092 (26,525)	$39,039 (27,334)
Mean number of comorbidities (SD)	2.3 (1.9)	2.5 (2.2)	3.1 (2.2)
Percent of patients whose physician at waiting room screen is patient's usual source of health care	79	83	84
Baseline pain symptoms (percent of patients with symptoms)			
Joint, arm, or leg pain	36	—	29
Back pain	21	—	26
Sinus, ear, or facial pain	13	—	14
Abdominal pain	10	—	8
Chest pain	8	—	7
Headache and migraine	7	—	11
Pain from indigestion and constipation	4	—	2
Pelvic pain	3	—	4
Mean pain interference (SD)*	4.3 (2.9)	—	6.0 (2.8)
Mean pain bothersomeness (SD)†	6.4 (2.8)	—	7.3 (2.5)
Mean restricted activity days due to physical health (SD)	3.7 (6.5)	—	9.3 (10.2)
Percent of patients seeing primary physician first time for pain problem at baseline visit	52	—	40
Percent of patients with visits to any health professional for pain problem in 6 months before baseline visit	52	—	73
Baseline depression			
Mean SCL depression score (SD)‡	—	1.8 (.7)	1.7 (.6)
Mean restricted activity days due to emotional health (SD)	—	6.0 (7.8)	6.1 (8.2)
Percent of patients with visits to a mental health specialist in past 6 months before baseline visit	—	32	30

**The pain interference scale consists of 3 items: 1) how much has the pain problem interfered with daily activities in past 4 weeks; 2) how much has the pain problem interfered with your ability to take part in recreational, social and family activities in past 4 weeks; and 3) how much has the pain problem interfered with your ability to work (including housework and school) in past 4 weeks. The 0-to 10-point scale for each item ranges from "no interference" (0) to "unable to carry on activities" (10).*[47]

†Pain bothersomeness is a single item, 0- to 10-point scale indicating the "bothersomeness" of the pain problem in the past 4 weeks, from "not bothersome" (0) to "extremely bothersome" (10).[46]

‡The 20-item Hopkins Symptom Checklist for Depression (SCL-20), where scores ≥ 1.70 indicate severe depressive symptoms in the past 4 weeks.[37,43,44]

SD, standard deviation.

had moderate family incomes, and were seeing their usual primary care physician at the waiting room screen. Patients averaged 2.6 comorbidities. For patients with pain, musculoskeletal pains were the most common. About 2% (n=36) of the pain cohort reported a cancer diagnosis in the past 3 years. About half the patients were seeing their primary care physician the first time for their pain symptom, and over half had seen a health professional for their pain problem in the past 6 months. For patients with depressive symptoms, about 30% had seen a mental health specialist in the past 6 months before the waiting room screen.

On average, patients rated their primary care physicians "very good" (mean, 4.1; SD, 1.31) and trusted their physicians (mean, 4.0; SD, 0.89) at the 6-month follow-up. The QC index averaged 2.83 (SD, 1.26). Compared to the pain cohorts, patients who only had depressive symptoms rated their physicians higher, trusted their physicians more, and had greater QC index scores (P=.000). About 80% of the patients had the same primary care physician throughout the 6-month follow-up period, and about 95% of the patients received primary care at the same medical office throughout the follow-up period.

Table 3 presents descriptive statistics of the office and physician managed care variables for the 3 patient cohorts.

Physician Job Satisfaction and Quality of Care

Table 4 summarizes the relationships between physician job satisfaction at baseline and patient-rated quality of care at follow-up. For pain patients, greater physician job satisfaction was associated with greater patient trust (coefficient, 0.06; P=.034) and greater continuity of primary physician (odds ratio, 1.64; P=.000). Controlling for the managed care variables did not change these relationships. Physician job satisfaction was not associated with patient ratings of care from their primary physician and the QC index.

For depression patients, greater physician job satisfaction was associated with higher patient ratings of care provided by their primary physician (coefficient, 0.14; P=.041). Controlling for the managed care variables did not change this relationship. Greater physician job satisfaction also was associated with greater patient trust (coefficient, 0.10; P=.024) only after the office managed care index and physician characteristics were added into the regression.

For depression patients, physician satisfaction also had a weak association with greater continuity of primary physician (odds ratio, 1.32; P=.054), but this association disappeared when controlling for the office managed care index or physician characteristics. Physician job satisfaction was not associated with the QC index.

Physician Job Satisfaction and Health Outcomes

Table 5 describes the health status of patients at the waiting room screen and the 6-month follow-up. On average, most patients improved. For pain and depression patients, physician job satisfaction was not associated with any of the change in health status measures.

DISCUSSION

Our study has three major findings. First, we found that physician job satisfaction at baseline is related to some but not all of our measures of patient-rated quality of primary care at the

Table 3. Descriptive Statistics of Managed Care Measures for Primary Care Offices and Physicians at Baseline

Managed Care Measures	Patients with Pain	Patients with Depressive Symptoms	Patients with Pain and Depressive Symptoms
Primary care offices	(n=997)	(n=380)	(n=480)
Mean office managed care index*	40	37	37
Primary physicians	(n=1,036)	(n=412)	(n=504)
Percent of patients seeing primary physicians with these characteristics			
Payment by salary	66	62	64
Productivity bonus	52	57	59
Financial withhold for referral	29	29	38
Depression patients			
Patient's primary physician has read or uses AHCPR depression guidelines (percent of patients)†	—	21	29
Pain patients			
Patient's primary physician has read or uses AHCPR back pain or depression guidelines (mean number of guidelines)†	.68	—	.65

*The mean office managed care index was calculated by identifying the primary care office for each patient at baseline, linking the index score of that office to the patient, and computing the mean index score for patients in each column. Patients were seen in offices that, on average, received 28% of their revenue from capitation. About 20% of patients were seen in offices where primary physicians required prior approval to refer inside the practice; about 62% of patients were seen in offices where prior approval was required to refer outside the practice; and about 38% of patients were seen in offices with guidelines.

†Guidelines were produced by the Agency for Healthcare Policy and Research (AHCPR), now known as the Agency for Healthcare Research and Quality.[49,50] For pain patients, the mean number of guidelines was calculated by identifying the primary physician of each patient at baseline, linking the number of guidelines (0, 1, or 2) read or used by the physician to the patient, and computing the mean number of guidelines for patients in the column.

6-month follow-up. For patients with pain or depressive symptoms, greater physician job satisfaction is associated with greater patient trust and confidence in their primary physicians. If the association is causal, the finding suggests that patient trust can be increased by reducing physicians' job dissatisfaction. Our regression results imply that if physician job satisfaction increased from very dissatisfied to very satisfied, patient trust would increase, on average, by 0.24 for pain patients and 0.40 for depression patients on the 1-to-5 trust/confidence scale.

For all patients, we also found that physician job satisfaction was not associated with the quality-of-care index. This finding suggests that physicians' views about their work are not related to their interactions with patients. Information sharing, patient participation in decision making, and the amount of time with patients are similar for satisfied and dissatisfied physicians in our sample.

The other relationships between physician job satisfaction and quality of care were different for patients with pain from those with depressive symptoms. For patients with pain, physician job dissatisfaction was associated with discontinuity of primary physician in the follow-up period. This association emerged likely because pain patients who changed physicians had lower ratings of their primary care physicians, less trust, and lower QC index scores, which may have precipitated the changes. The findings are similar to those in Federman et al.,[54] who found associations between patient dissatisfaction and discontinuity of primary physician. However, no relationship was found for patients with depressive symptoms.

Table 4. Summary of Associations Between Physician Job Satisfaction and Patient-rated Quality of Primary Care

Measure of Patient-rated Quality of Care	Patients with Pain	Patients with Depressive Symptoms
Patient trust and confidence in primary physician	*	*
Quality of care index	NS	NS
Patient rating of care provided by his or her primary physician	NS	*
Continuity of primary physician at follow-up	*	NS

**Statistically significant positive association was found: greater physician job satisfaction is associated with better patient-rated quality of care for this measure.*

NS, no statistically significant association exists between physician job satisfaction and the measure of patient-rated quality of care.

Table 5. Health Status at Waiting Room Screen and 6-Month Follow-up: Unadjusted Descriptive Statistics

Health Status Measure	Average at Waiting Room Screen (SD)	Average at 6-Month Follow-up (SD)	Average Change Score (SD)
Patients with pain			
Pain interference†	4.84 (2.97)	2.11* (2.74)	2.73 (3.22)
Pain bothersomeness‡	6.64 (2.75)	2.98* (2.99)	3.67 (3.55)
Restricted activity days due to physical health	5.44 (8.20)	3.60* (7.57)	1.79 (8.11)
Patients with depressive symptoms			
SCL Depression Score§	1.71 (.65)	.92* (.74)	.79 (.75)
Restricted activity days due to emotional health	6.04 (8.03)	2.73* (6.22)	3.24 (8.60)

**Difference between averages is significant ($P < .0001$).*

†*The pain interference scale consists of 3 items: 1) how much has the pain problem interfered with daily activities in past 4 weeks; 2) how much has the pain problem interfered with your ability to take part in recreational, social, and family activities in past 4 weeks; and 3) how much has the pain problem interfered with ability to work (including housework and school) in past 4 weeks. The 0-to 10-point scale for each item ranges from "no interference" (0) to "unable to carry on activities" (10).*[47]

‡*Pain bothersomeness is a single-item, 0-to 10-point scale indicating the "bothersomeness" of the pain problem in the past 4 weeks, from "not bothersome" (0) to "extremely bothersome" (10).*[46]

§*The 20-item Hopkins Symptom Checklist for Depression (SCL-20), where scores ≥ 1.70 indicate severe depressive symptoms in the past 4 weeks.*[37,43,44]

SD, standard deviation.

Different patterns also were found for patient ratings of the care delivered by their primary physicians. For patients with depressive symptoms, greater physician job satisfaction was associated with better patient ratings of the care provided by their primary physicians. Our regression results imply that if physician job satisfaction increased from very dissatisfied to very satisfied, patient ratings of care would increase, on average, by 0.56 on the 1-to-6 patient-rating scale. However, no association existed for patients with pain.

The reasons for these opposite findings for pain versus depressive patients are unclear. We speculate that depression patients may rate their care based more on affective aspects of the patient-physician relationship,[42] such as patient trust and physician job satisfaction, which may result in higher ratings of care provided by their physicians. In contrast, pain patients may rate the care from their primary physicians based on the amount of pain relief,[22] which may not build similar affective ties between physician job satisfaction and ratings of care. The relationship between physician job satisfaction and continuity of primary physician was weaker for depression patients than for pain patients, perhaps due to the smaller sample size for depression patients.

The second major finding is that managed care controls do not account for observed relationships between physician job satisfaction and patient-rated quality of primary care. This finding is supported by primary physician perceptions that managed care has little impact on their ability to provide quality care.[10]

The study's prospective design and the ruling out of managed care as an alternative explanation increase our confidence that physician job satisfaction may be causing better patient ratings of their care and greater continuity of primary physician. However, other explanations for this relationship may exist. Physicians with greater job satisfaction may have greater competence in technical and interpersonal aspects of primary care, and patients may be able to detect better competence, resulting in higher ratings of care provided by their primary physicians.[13,55,56]

The third major finding is that primary physician satisfaction at baseline is not associated with health outcomes. Physician job satisfaction may not have a direct, causal connection with health outcomes. At best, physician satisfaction might indirectly improve health outcomes through its effects on quality of primary care, which has closer links to health outcomes.[32,33,57]

Limitations and Conclusions

Findings are limited to our samples of physicians and patients with pain and depressive symptoms in the Seattle area and may not be generalizable to other cities with different mixes of managed care and delivery systems. Primary physicians in small practices were less likely to participate, and our findings may not apply to those settings.

Another limitation is that we measured the quality of primary care based solely on patient perceptions. The relationship between physician satisfaction and quality of care may be different for quality measures based on physician perceptions, chart reviews, medical claims, or other sources.[10,58] However, Meredith et al.[42] report that patient ratings of the patient-provider relationship are correlated with technical measures of the quality of care for patients with depression.

In conclusion, for both patients with pain or depressive symptoms, greater physician job satisfaction at baseline was related to greater patient trust and confidence in their primary physicians at the 6-month follow-up. Otherwise, the patient cohorts had different associations: pain patients of more satisfied physicians also were less likely to change physicians between baseline and the 6-month follow-up, while depression patients of more satisfied physicians had higher ratings of the care provided by their physicians. Physician satisfaction at baseline was not associated with health outcomes.

Funding support was from Agency for Healthcare Research and Quality grant HS11712.

REFERENCES

1. **Stoddard JJ, Hargraves JL, Reed M, Vratil A.** Managed care, professional autonomy, and income: effects on physician career satisfaction. J Gen Intern Med. 2001;16:675–84.
2. **Murray A, Montgomery JE, Chang H, Rogers WH, Inui T, Safran DG.** Doctor discontent. A comparison of physician satisfaction in different delivery system settings, 1986 and 1997. J Gen Intern Med. 2001;16:452–9.
3. **Linzer M, Konrad TR, Douglas J, et al.** Managed care, time pressure, and physician job satisfaction: results from the physician worklife study. J Gen Intern Med. 2000;15:441–50.
4. **Kerr EA, Mittman BS, Hays RD, Zemencuk JK, Pitts J, Brook RH.** Associations between primary care physician satisfaction and self-reported aspects of utilization management. Health Serv Res. 2000;35 (pt 2):333–49.
5. **Hadley J, Mitchell JM, Sulmasy DP, Bloche MG.** Perceived financial incentives, HMO market penetration, and physicians' practice styles and satisfaction. Health Serv Res. 1999;34(pt 2):307–21.
6. **Collins KS, Schoen C, Sandman DR.** The Commonwealth Fund Survey of Physician Experiences with Managed Care. The Commonwealth Fund; 1997. Available at: http://www.cmwf.org/publications/publications-show.htm? doc-id=221402. Accessed February 2, 2005.
7. **Donelan K, Blendon RJ, Lundberg GD, et al.** The new medical marketplace: physicians' views. Health Aff (Millwood). 1997;16:139–48.
8. **Hadley J, Mitchell JM.** Effects of HMO market penetration on physicians' work effort and satisfaction. Health Aff (Millwood). 1997;16:99–111.
9. **Deckard GJ.** Physician responses to a managed environment: A perceptual paradox. Health Care Manage Rev. 1995;20:40–6.
10. **Reschovsky J, Reed M, Blumenthal D, Landon B.** Physicians' assessments of their ability to provide high-quality care in a changing health care system. Med Care. 2001;39:254–69.
11. **Blumenthal D.** Effects of market reforms on doctors and their patients. Health Aff (Millwood). 1996;15:170–84.
12. **Koehler WF, Fottler MD, Swan JE.** Physician-patient satisfaction: equity in the health services encounter. Med Care Rev. 1992;49:455–84.
13. **Haas JS, Cook EF, Puopolo AL, Burstin HR, Cleary PD, Brennan TA.** Is the professional satisfaction of general internists associated with patient satisfaction? J Gen Intern Med. 2000;15:122–8.
14. **Linn LS, Brook RH, Clark VA, Davies AR, Fink A, Kosecoff J.** Physician and patient satisfaction as factors related to the organization of internal medicine group practices. Med Care. 1985;23:1171–8.
15. **Grol R, Mokkink H, Smits A, et al.** Work satisfaction of general practitioners and the quality of patient care. Fam Pract. 1985;2:128–35.
16. **DiMatteo MR, Sherbourne CD, Hays RD, et al.** Physicians' characteristics influence patients' adherence to medical treatment: results from the Medical Outcomes Study. Health Psychol. 1993;12:93–102.
17. **Mechanic D.** Changing medical organization and the erosion of trust. Milbank Q. 1996;74:171–89.
18. **Mechanic D, Schlesinger M.** The impact of managed care on patients' trust in medical care and their physicians. JAMA. 1996;275:1693–7.
19. **Dugdale DC, Epstein R, Pantilat SZ.** Time and the patient-physician relationship. J Gen Intern Med. 1999;14(suppl 1):S34–S40.
20. **Bates AS, Harris LE, Tierney WM, Wolinsky FD.** Dimensions and correlates of physician work satisfaction in a midwestern city. Med Care. 1998;36:610–7.

21. **Freeborn DK.** Satisfaction, commitment, and psychological well-being among HMO physicians. West J Med. 2001;174:13–8.
22. **Grembowski DE, Patrick DL, Williams B, Diehr P, Martin DP.** Managed care and the quality of care from primary physicians. Med Care Res Rev. 2005;62:31–55.
23. **Miller RH, Luft HS.** HMO plan performance update: an analysis of the literature, 1997–2001. Health Aff (Millwood). 2002;21:63–86.
24. **Forrest CB, Shi L, von Schrader S, Ng J.** Managed care, primary care, and the patient-practitioner relationship. J Gen Intern Med. 2002;17:270–7.
25. **Safran DG, Rogers WH, Tarlov AR, et al.** Organizational and financial characteristics of health plans: are they related to primary care performance? Arch Intern Med. 2000;160:69–76.
26. **Dudley RA, Miller RH, Korenbrot TY, Luft HS.** The impact of financial incentives on quality of health care. Milbank Q. 1998;76:649–86, 511.
27. **Woolhandler S, Himmelstein DU.** Annotation: patients on the auction block. Am J Public Health. 1996;86:1699–700.
28. **Davies HT, Rundall TG.** Managing patient trust in managed care. Milbank Q. 2000;78:609–24, iv–v.
29. **Waitzkin H, Cook MA.** Managed care and the geriatric patient-physician relationship. Clin Geriatr Med. 2000;16:133–51, x–xi.
30. **Covinsky KE, Rosenthal GE, Chren MM, et al.** The relation between health status changes and patient satisfaction in older hospitalized medical patients. J Gen Intern Med. 1998;13:223–9.
31. **Kane RL, Maciejewski M, Finch M.** The relationship of patient satisfaction with care and clinical outcomes. Med Care. 1997;35:714–30.
32. **Kaplan SH, Greenfield S, Ware JE Jr.** Assessing the effects of physician-patient interactions on the outcomes of chronic disease. Med Care. 1989;27(suppl):S110–S127.
33. **Patrick DL, Scrivens E, Charlton JR.** Disability and patient satisfaction with medical care. Med Care. 1983;21:1062–75.
34. **Grembowski DE, Martin D, Patrick DL, et al.** Managed care, access to mental health specialists, and outcomes among primary care patients with depressive symptoms. J Gen Intern Med. 2002;17:258–69.
35. **Grembowski DE, Martin D, Diehr P, et al.** Managed care, access to specialists, and outcomes among primary care patients with pain. Health Serv Res. 2003;38(pt 1):1–19.
36. **National Centers for Health Statistics.** National Ambulatory Medical Care Survey: 1989 Summary. Vital and Health Statistics. Hyattsville, MD: U.S. Department of Health and Human Services; 1992;13(110):1–80.
37. **Derogatis LRK, Rickels EH, Uhlenhuth L, Covi.** The Hopkins Symptom Checklist: a measure of primary symptom dimensions. In: Pichot P, ed Psychological Measurements in Psychopharmacology: Problems in Pharmacopsychiatry. Basel, Switzerland: Kargerman; 1974:79–110.
38. **Greenfield S, Sullivan S, Kaplan S, Stillman R.** Diabetes II—Patient Outcomes Research Team, Physician Questionnaire, Section 3: Job and Practice Satisfaction. Boston, MA: New England Medical Center, The Health Institute; 1992.
39. **Grembowski DE, Ulrich C, Paschane D, et al.** Managed care and primary physician satisfaction. J Am Board Fam Pract. 2003;16:383–93.
40. **Hays RD, Shaul JA, Williams VS, et al.** Psychometric properties of the CAHPS 1.0 survey measures. Consumer Assessment of Health Plans Study. Med Care. 1999;37(suppl):MS22–MS31.
41. **Gerteis M, Edgman-Levitan S, Daley J, Delbanco TL.** Through the Patient's Eyes: Understanding and Promoting Patient-centered Care. San Francisco, CA: Jossey-Bass Publishers; 1993:Picker Institute survey instruments are available at: http://www.pickerinstitute.org.
42. **Meredith LS, Orlando M, Humphrey N, Camp P, Sherbourne CD.** Are better ratings of the patient-provider relationship associated with higher quality care for depression? Med Care. 2001;39:349–60.
43. **Mulrow CD, Williams JW Jr, Gerety MB, Ramirez G, Montiel OM, Kerber C.** Case-finding instruments for depression in primary care settings. Ann Intern Med. 1995;122:913–21.
44. **Hough R, Landsverk J, Stone J, et al.** Comparison of Psychiatric Screening Questionnaires for Primary Care Patients. Final report for NIMH contract 278-81-0036 (DB); 1983.
45. **Ware J Jr, Kosinski M, Keller SD.** A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. Med Care. 1996;34:220–33.
46. **Patrick DL, Deyo RA, Atlas SJ, Singer DE, Chapin A, Keller RB.** Assessing health-related quality of life in patients with sciatica.. Spine. 1995;20:1899–908; discussion 1909.
47. **Von Korff M, Ormel J, Keefe FJ, Dworkin SF.** Grading the severity of chronic pain. Pain. 1992;50:133–49.
48. **Grembowski DE, Cook K, Patrick DL, Roussel AE.** Managed care and physician referral. Med Care Res Rev. 1998;55:3–31.
49. **Bigos S, Bowyer O, Braen G, et al.** Acute Low Back Pain Problems in Adults. Clinical Practice Guideline Number 14. AHCPR Publication No. 95–0642. Rockville, MD: U.S. Department of Health and Human Services; 1994.
50. **Rush AJ, Golden WE, Hall GW, et al.** Depression in Primary Care, Vols. 1 and 2: Clinical Practice Guideline Number 5. AHCPR Publication No. 93–0551. Agency for Health Care. Rockville, MD: Agency for Health Care Policy and Research; 1993.
51. **Wells KB, Rogers W, Burnam A, Greenfield S, Ware JE Jr.** How the medical comorbidity of depressed patients differs across health care settings: results from the Medical Outcomes Study. Am J Psychiatry. 1991;148:1688–96.
52. **Gerrity MS, DeVellis RF, Earp JA.** Physicians' reactions to uncertainty in patient care. A new measure and new insights. Med Care. 1990; 28:724–36.
53. **Stata Corporation.** STATA: Statistics/Stata Analysis. College Station, TX: Stata Corporation; 1999.
54. **Federman AD, Cook EF, Phillips RS, et al.** Intention to discontinue care among primary care patients: influence of physician behavior and process of care. J Gen Intern Med. 2001;16:668–74.
55. **Thom DH.** Physician behaviors that predict patient trust. J Fam Pract. 2001;50:323–8.
56. **Hall MA, Dugan E, Zheng B, et al .** Trust in physicians and medical institutions: what is it, can it be measured, and does it matter? Milbank Q. 2001;79:613–39.
57. **Marshall GN, Hays RD, Mazel R.** Health status and satisfaction with health care: results from the Medical Outcomes Study. J Consult Clin Psychol. 1996;64:380–90.
58. **Gandhi TK, Francis EC, Puopolo AL, et al .** Inconsistent report cards: assessing the comparability of various measures of the quality of ambulatory care. Med Care. 2002;40:155–65.