ORIGINAL ARTICLES

Managed Care, Time Pressure, and Physician Job Satisfaction: Results from the Physician Worklife Study

Mark Linzer, MD, Thomas R. Konrad, PhD, Jeffrey Douglas, PhD, Julia E. McMurray, MD, Donald E. Pathman, MD, MPH, Eric S. Williams, PhD, Mark D. Schwartz, MD, Martha Gerrity, MD, PhD, William Scheckler, MD, JudyAnn Bigby, MD, and Elnora Rhodes for the Society of General Internal Medicine (SGIM) Career Satisfaction Study Group (CSSG)

OBJECTIVE: To assess the association between HMO practice, time pressure, and physician job satisfaction.

DESIGN: National random stratified sample of 5,704 primary care and specialty physicians in the United States. Surveys contained 150 items reflecting 10 facets (components) of satisfaction in addition to global satisfaction with current job, one's career and one's specialty. Linear regression–modeled satisfaction (on 1–5 scale) as a function of specialty, practice setting (solo, small group, large group, academic, or HMO), gender, ethnicity, full-time versus part-time status, and time pressure during office visits. "HMO physicians" (9% of total) were those in group or staff model HMOs with >50% of patients capitated or in managed care.

RESULTS: Of the 2,326 respondents, 735 (32%) were female, 607 (26%) were minority (adjusted response rate 52%). HMO physicians reported significantly higher satisfaction with autonomy and administrative issues when compared with other practice types (moderate to large effect sizes). However, physicians in many other practice settings averaged higher satisfaction than HMO physicians with resources and relationships with staff and community (small to moderate effect sizes). Small and large group practice and academic physicians had higher global job satisfaction scores than HMO physicians ($P < .05$), and private practice physicians had quarter to half the odds of HMO physicians of intending to leave their current practice within 2 years ($P < .05$). Time pressure detracted from satisfaction in 7 of 10 satisfaction facets ($P < .05$) and from job, career, and specialty satisfaction ($P < .01$). Time allotted for new patients in HMOs (31 min) was less than that allotted in solo (39 min) and academic practices (44 min), while 83% of family physicians in HMOs felt they needed more time than allotted for new patients versus 54% of family physicians in small group practices ($P < .05$ after Bonferroni's correction).

CONCLUSIONS: HMO physicians are generally less satisfied with their jobs and more likely to intend to leave their practices than physicians in many other practice settings. Our data suggest that HMO physicians' satisfaction with staff, community, resources, and the duration of new patient visits should be assessed and optimized. Whether providing more time for patient encounters would improve job satisfaction in HMOs or other practice settings remains to be determined.

KEY WORDS: job satisfaction; time pressure; HMO, managed care
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Health Maintenance Organizations have introduced new working conditions into the professional lives of American physicians. Group and staff-model HMOs are seen by many physicians as organizations that provide a more controllable lifestyle and freedom from administrative hassles. What is less clear is the trade off that may be inherent in these benefits, i.e., what is the physician giving up in exchange for these freedoms? Remarkably, there have been few studies of physician satisfaction with practice in HMOs until recently.[1–3]

A related issue that has received little attention is the time pressure that physicians may face during patient visits under different practice arrangements. One article from New Zealand in 1995 defined time pressure as a crucial issue for specialists,[4] and a recent article[5] noted a trend for physicians to prescribe inappropriate medications during shorter office visits. But few, if any, articles

have specifically addressed the following key questions: (1) How does time pressure impact upon physician job satisfaction and the quality of care physicians feel they are able to provide?, and (2) Does time pressure vary among different systems of care?

The Physician Worklife Study, conducted between 1996 and 1997, was designed to assess aspects of physician job satisfaction that are relevant to policy. In this analysis, we addressed the association between HMO practice, time pressure, and physician job satisfaction. We also examined the impact of time pressure on numerous components of job satisfaction.

METHODS

Development Phase

Qualitative analysis in the *development phase* of the study that resulted in the survey instrument has been described in detail elsewhere.[6] In brief, we performed a formal content analysis of open-ended data from a national survey of 7,000 physicians in large group practices from 1988.[7] We merged the findings of this analysis with findings from previous studies (especially the work of Stamps and Cruz,[8] and Lichtenstien[9]) to develop a working model of physician job satisfaction.[6] The model was then refined with input from 4 focus groups conducted in 1995 and 1996 with women (Madison, Wis), minority (Boston, Mass), inner city (New York, NY), and managed care (Portland, Ore) physicians. The final model was then used to develop a measure of physician job satisfaction with 10 hypothesized factors. This measure was pilot tested on 2,000 physicians ($n = 888$ respondents, adjusted response rate = 55%) and was divided into two samples for development purposes. Factor and reliability analyses supported the hypothesized 10-factor structure for both samples.[10] Each facet was comprised of 2 to 5 items and used a 5-point, agree-disagree Likert scale. Psychometric scales for these facets were formed by averaging corresponding items. The hypothesized 10-factor structure was tested for reliability through factor analyses using oblique rotations.[10] Reliability coefficients (sample 1, sample 2) calculated for job facets in each sample included autonomy (0.70, 0.68), personal time (0.79, 0.78), relationships with patients (0.70, 0.68), patient care issues (0.74, 0.73), relationships with colleagues (0.72, 0.72), relationships with staff (0.71, 0.69), relationships with the community (0.80, 0.77), income (0.79, 0.75), administrative support (0.72, 0.75), and resources (0.69, 0.55). Global measures of satisfaction with current job (0.86, 0.82), career (0.88, 0.85), and specialty (0.82, 0.80) were also developed and tested. The instrument for the national survey was designed based on the facets identified in these analyses.

The items comprising each of the 10 facets and the 3 global measures are shown in the Appendix, and the derivation of the final item list is provided in reference 10.

The National Survey

A national sample of physicians in primary care specialties (family medicine, general internal medicine, and general pediatrics) and in medical and pediatric subspecialties was selected from the American Medical Association (AMA) Masterfile. Generalists were sampled only if they reported no secondary specialty in the Masterfile. Respondents were asked to specify their practice setting as either solo, small group (2–9 MDs), large single specialty group (10+ MDs), large multispecialty group (10+ MDs), group/staff-model HMO, academic group, or other (e.g., urgent care, emergency department). Stratified sampling with disproportionate weighting[11] was used to assure both ethnic diversity and representation of physicians in geographic areas known to have a relatively high penetration by managed care plans in each of these specialty groups. The selected final sample was 5,704 physicians. Endorsements were obtained from national organizations (e.g., the Society of General Internal Medicine, the American College of Physicians, the American Academy of Family Practice, and the Ambulatory Pediatric Association), and cover letters from local leadership of these organizations were included in each mailing. A letter from prominent minority physicians in the Doctors of Color Caucus of the Society of General Internal Medicine also was sent to minority physicians. Surveys were mailed up to 4 times along with telephone follow-up to nonrespondents in subgroups with the lowest response rates. Application of sampling weights permitted generalizability to a relevant national population of approximately 171,000 primary care and medical and pediatric subspecialist physicians.

Analysis

Response rate was assessed by determining the inaccurate address rate in the AMA Masterfile with telephone calls to 200 nonrespondents. This showed an inaccurate address rate of 18%. This information allowed us to construct sampling weights using the Lessler and Kalsbeek technique.[11] To assess nonresponse bias, we searched for trends between survey variables and the time until the questionnaire was returned, calculating Spearman correlation coefficients. Of 140 assessed items, only 4 had coefficients >0.10 in absolute value, suggesting only a modest impact of late (or non) response.

In all analyses, the data were weighted to adjust for differing response rate and sampling probabilities. The software package STATA (STATA, Version 5.0, College Station, Tex) was used for weighted statistical analysis incorporating the weights and strata. STATA uses Taylor series linearization to adjust for the complex sample design when computing from its weighted linear and logistical regression procedures.

Linear regression was used to model satisfaction, measured on scales ranging from 1 to 5, for facets of satisfaction depending on specialty, practice setting, gender,

work status (full-time/part-time), underrepresented minority status, age, and a dummy variable (time stress) which took the value 1 for those reporting needing more time for office visits than allocated. Effect sizes were calculated by dividing coefficients by variable standard deviations (small effect size = 0.2; medium = 0.5; large = 0.8). Multiple linear regression models for the respondent-estimated percentages of patients with complex medical or psychosocial problems (case mix) were constructed using the same independent variables listed above, excluding the indicator of time pressure (which would not be expected to have a major impact on case mix). Logistic regression was used for modeling the probability of citing a moderate or greater chance of leaving the current practice situation within 2 years with the following independent variables: specialty, practice setting, gender, work status (full-time/part-time), underrepresented minority status, age, and the indicator variable for time stress. A multiple linear regression model was developed for global job satisfaction using the specific facets of satisfaction as the independent variables. "Time pressure" was assessed in two ways. One was to tabulate a ratio of reported time needed and the time allotted. The "time pressure ratio" was defined as:

$$\frac{(\text{time needed to provide quality care} - \text{time allotted})}{\text{time allotted}} \times 100 \, .$$

The result of this ratio can be stated as "*x* percent additional time needed to provide quality care." The second way of looking at time pressure was to calculate the percent of physicians experiencing any "time stress" as defined above (i.e., physicians reporting needing *any* more time than allotted).

Underrepresented minority physicians were those who were black (African American or African), Hispanic (Puerto Rican or Mexican), Native American, or Alaskan Native. Minority physicians included these groups plus Asian or Pacific Islanders, other Hispanic physicians, and those endorsing an "other" category (nonwhite and none of the other groups). We defined our referent group of "HMO physicians" as those who practiced in a group or staff model HMO and acknowledged having >50% of their patients in capitated or other managed care arrangements.

RESULTS

Usable responses were received from 2,326 physicians. After accounting for refusals (n = 58), ineligibles (those sampled physicians who were later found not to meet entry criteria, n = 91), returned surveys (n = 224), and an inaccurate address rate of 18%, the adjusted response rate was 52%. As shown in Table 1, females comprised 32% of the respondents, and minority physicians were 26% of the total sample. About 20% were in each specialty strata (general medicine, general pediatrics, family medicine, and grouped medical and pediatric subspecialties.) Most physicians were in group practices.

Table 1. Respondents (*N* = 2,326) to the Physician Worklife Study

Characteristic	n (%)	Weighted %
Mean age, (SD)	47 (9.6)	
Female	735 (32)	27
Any minority	607 (26)	17
Underrepresented minority	108 (5)	4
Specialty		
General pediatrics	590 (25)	18
Family medicine	502 (22)	38
General internal medicine	451 (19)	32
Internal medicine subspecialty	438 (19)	10
Pediatric subspecialty	345 (15)	3
Practice setting		
Solo	411 (18)	19
Small group	778 (34)	40
Large single specialty group	120 (5)	5
Large multispecialty group	304 (13)	12
Academic	300 (13)	8
Group or staff model HMO	203 (9)	6
Other	173 (8)	9

Nine percent (n = 203) were in HMO practice as defined above. The adjusted percentages of respondents due to weighting are also shown in Table 1.

Satisfaction Facets and Global Job Satisfaction

The 10 facets explained 60% of the variance in global job satisfaction. Variables with the largest coefficients of association with job satisfaction were patient care issues (β = 0.32), income (β = 0.21), and relationships with patients (β = 0.15), colleagues (β = 0.15) and nonphysician staff (β = 0.13).

Satisfaction Components and Global Satisfaction Measures

Table 2a shows mean satisfaction scores by specialty, practice setting, gender, and ethnicity. Some of the highest satisfaction scores were seen in the area of patient relationships, and the lowest satisfaction was with administration. Global job and career satisfaction was relatively high, averaging from 3.5 to 3.8 on summed and averaged item scales from 1 to 5. Specialty satisfaction was lowest for general internists (3.17) and solo practitioners (3.22). Table 2b shows effect sizes for the 10 satisfaction facets and 3 global measures by practice type and specialty. The table also shows the impact of time stress on satisfaction. The referent groups are HMO physicians (for practice type) and family medicine (for specialty). Coefficients greater than zero imply that the practice type or specialty was more satisfied than the referent group. Coefficients less than zero imply that the specialty or practice type was less satisfied. The most striking findings here are that HMO physicians were considerably more satisfied on

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Table 2a. Satisfaction Scores by Specialty, Practice Setting, Gender, and Ethnicity

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	Autonomy (SE)	Personal Time (SE)	Patient Relationships (SE)	Patient Care Issues (SE)	Colleague Relationships (SE)	Staff Relationships (SE)
Family medicine	3.37 (.04)	2.92 (.04)	3.90 (.04)	3.08 (.04)	3.64 (.04)	3.79 (.04)
General internal medicine	3.27 (.05)	2.84 (.06)	3.77 (.06)	3.01 (.06)	3.59 (.04)	3.69 (.04)
General pediatrics	3.42 (.04)	2.96 (.05)	3.92 (.04)	3.31 (.05)	3.72 (.04)	3.81 (.04)
Internal medicine subspecialty	3.34 (.05)	2.69 (.05)	3.89 (.05)	3.26 (.05)	3.80 (.04)	3.75 (.04)
Pediatric subspecialty	3.50 (.04)	2.66 (.05)	3.75 (.05)	3.45 (.04)	3.77 (.04)	3.81 (.04)
Solo practice	3.12 (.06)	2.76 (.07)	4.01 (.06)	3.07 (.06)	3.44 (.04)	3.71 (.05)
Small group	3.37 (.04)	2.86 (.04)	3.93 (.04)	3.15 (.04)	3.70 (.03)	3.83 (.03)
Large single specialty group	3.45 (.12)	2.85 (.11)	3.69 (.09)	3.11 (.11)	3.84 (.08)	3.65 (.10)
Large multispecialty group	3.41 (.07)	2.77 (.08)	3.80 (.08)	3.08 (.07)	3.64 (.06)	3.84 (.04)
HMO	3.74 (.09)	2.95 (.10)	3.65 (.14)	2.98 (.11)	3.65 (.09)	3.54 (.07)
Academic	3.50 (.06)	2.85 (.07)	3.77 (.10)	3.36 (.07)	3.94 (.05)	3.80 (.07)
Male	3.38 (.03)	2.88 (.02)	3.84 (.03)	3.13 (.03)	3.65 (.02)	3.76 (.02)
Female	3.26 (.04)	2.86 (.05)	3.88 (.05)	3.11 (.05)	3.67 (.04)	3.75 (.04)
Nonminority	3.38 (.03)	2.86 (.03)	3.84 (.03)	3.13 (.03)	3.66 (.02)	3.79 (.02)
Minority	3.18 (.05)	2.95 (.05)	3.91 (.05)	3.14 (.05)	3.62 (.04)	3.59 (.04)
Underrepresented minority	3.41 (.09)	2.98 (.11)	3.95 (.11)	3.38 (.10)	3.71 (.09)	3.68 (.10)

	Community (SE)	Income (SE)	Administration (SE)	Resources (SE)	Global (SE)	Career (SE)	Specialty (SE)
Family medicine	3.84 (.05)	3.13 (.05)	2.57 (.05)	3.73 (.04)	3.77 (.04)	3.79 (.05)	3.69 (.05)
General internal medicine	3.59 (.06)	2.92 (.06)	2.62 (.06)	3.62 (.05)	3.52 (.06)	3.55 (.07)	3.17 (.07)
General pediatrics	3.73 (.06)	3.02 (.06)	2.66 (.05)	3.76 (.04)	3.81 (.05)	3.80 (.05)	3.76 (.06)
Internal medicine subspecialty	3.70 (.06)	2.97 (.06)	2.58 (.05)	3.70 (.04)	3.71 (.05)	3.77 (.06)	3.47 (.07)
Pediatric subspecialty	3.62 (.05)	3.08 (.06)	2.79 (.04)	3.62 (.04)	3.69 (.05)	3.74 (.05)	3.60 (.05)
Solo practice	3.77 (.07)	2.70 (.06)	2.27 (.06)	3.82 (.05)	3.57 (.06)	3.56 (.07)	3.22 (.09)
Small group	3.85 (.05)	3.23 (.05)	2.53 (.04)	3.82 (.04)	3.83 (.04)	3.78 (.05)	3.63 (.05)
Large single specialty group	3.82 (.10)	2.98 (.14)	2.61 (.11)	3.77 (.11)	3.80 (.10)	3.90 (.13)	3.61 (.11)
Large multispecialty group	3.86 (.07)	3.14 (.08)	2.70 (.06)	3.63 (.07)	3.71 (.08)	3.74 (.09)	3.51 (.10)
HMO	3.39 (.13)	3.05 (.13)	3.19 (.10)	3.49 (.07)	3.37 (.13)	3.50 (.12)	3.46 (.12)
Academic	3.51 (.09)	2.84 (.09)	2.68 (.09)	3.38 (.09)	3.70 (.10)	3.94 (.09)	3.88 (.10)
Male	3.79 (.03)	3.07 (.03)	2.59 (.03)	3.75 (.03)	3.71 (.03)	3.73 (.04)	3.46 (.04)
Female	3.55 (.05)	2.90 (.06)	2.64 (.05)	3.54 (.05)	3.65 (.05)	3.65 (.05)	3.64 (.05)
Nonminority	3.76 (.03)	3.07 (.03)	2.60 (.03)	3.73 (.03)	3.72 (.03)	3.71 (.03)	3.50 (.04)
Minority	3.52 (.05)	2.79 (.07)	2.65 (.05)	3.56 (.05)	3.59 (.06)	3.71 (.06)	3.54 (.06)
Underrepresented minority	3.81 (.10)	3.01 (.16)	2.73 (.11)	3.62 (.14)	3.89 (.12)	4.06 (.11)	3.98 (.13)

average with autonomy and administrative issues (moderate to large effect sizes) than all other practice types, while they were less satisfied with resources and relationships with staff and community (small to moderate effect sizes) than many practice types. Global job satisfaction favored other (non-HMO) practice types. Small group, large group, and academic physicians had significantly greater job satisfaction (effect sizes 0.38 to 0.51) when compared with HMO physicians ($P < .05$ to $P < .01$).

With regard to specialty, family physicians had greater satisfaction than internists with community relationships and lower satisfaction than general pediatricians with patient care issues, although effect sizes were small. General internists and internal medicine subspecialists had lower specialty satisfaction than family physicians (effect sizes −0.49 and −0.27; $P < .001$ and $P < .01$, respectively).

Time stress was significantly correlated with lower satisfaction in 7 of 10 facets. While the more "intrinsic" patient relationship facet was not affected by time stress, the more "operational" facet patient care issues, which included an item concerning time pressure, was affected (effect size −0.43, $P \leq .001$). Global job, career and specialty satisfaction were also diminished by time stress (effect sizes −0.22 to −0.33; $P < .01$).

Time Pressure, Setting, and Specialty

Time allotted for new and comprehensive patient visits in HMOs (31 min) was significantly less than time allotted in solo (39 min) and academic practices (44 min) (Table 3). The time pressure ratio for new patient visits was highest in HMOs (32% more time needed than allotted), although there were no statistically significant differ-

Table 2b. Effect Sizes for Satisfaction Components, and Global Job, Career, and Specialty Satisfaction

	Autonomy	Personal Time	Patient Relationships	Patient Care Issues	Colleague Relationships	Staff Relationships
General internal medicine	−.14	−.16	−.18	−.09	−.03	−.14
General pediatrics	.01	−.09	−.01	.20†	.07	.02
Internal medicine subspecialty	−.10	−.33†	−.05	.16	−.20†	−.08
Pediatric subspecialty	.09	−.44*	−.16	.38*	−.03	.05
Solo	−.91*	−.37‡	.35	.05	−.43‡	.19
Small group	−.57*	−.15	.32	.22	.05	.42*
Large single specialty group	−.47*†	−.11	.08	.16	.33	.19
Large multispecialty group	−.51*	−.19	.19	.16	−.05	.47*
Academic	−.36†	−.09	.07	.49‡	.43‡	.36†
Time stress	−.31*	−.31*	−.11	−.43*	−.05	−.11

	Community	Income	Administration	Resources	Global	Career	Specialty
General internal medicine	−.26‡	−.18*	.00	−.18	−.28*	−.27‡	−.49*
General pediatrics	−.12	−.09	−.04	.04	−.04	−.07	.02
Internal medicine subspecialty	−.20*	−.15	−.04	−.07	−.14	−.12	−.27‡
Pediatric subspecialty	−.14	.03	.14	.00	−.17	−.21†	−.25‡
Solo	.23	−.43‡	−1.2*	.31†	.14	−.12	−.28
Small group	.44‡	.13	−.80*	.38†	.48‡	.25	.13
Large single specialty group	.46‡	−.17	−.70*	.37†	.51†	.44†	.15
Large multispecialty group	.50‡	.05	−.57*	.15	.38†	.24	.04
Academic	.07	−.24	−.54*	−.19	.41†	.52*	.35†
Time stress	−.18‡	−.27*	−.24*	−.19‡	−.33†	−.26*	−.22†

*Effect sizes 5 regression coefficient divided by standard deviation of dependent variable. Effect sizes >0 imply that row titles (e.g., small group practice) are more satisfied than referent group. The referent group for specialties is family medicine; for practice setting it is group/staff-model HMO. All satisfaction facets measured on scales from 1 to 5. Time stress defined in text. *P ≤ .001; †P < .05; ‡P < .01. Regressions controlled for specialty, practice setting, gender, age, ethnicity, and part-time status. For effect sizes, 0.2 = small, 0.5 = moderate, 0.8 = large.*

ences with other practice settings. The percent of physicians who reported *any* time stress (i.e., those who said they needed any additional time over that allotted) was highest in HMOs (61%), which was significantly greater than the number of time-stressed physicians in solo practice (37%). Time pressure ratios did not differ markedly by specialty, although there were large differentials in time available. For example, general internal medicine had significantly more time allotted than family medicine and general pediatrics for new patients, but significantly less time available for a new or comprehensive patient than the time allotted by internal medicine subspecialists for such patients.

Table 4 shows the association between group and staff-model HMO practice and time pressure within individual specialties. Compared with physicians in small groups, family physicians and pediatric subspecialists in HMOs had significantly less time allotted for new patients. HMO primary care physicians had high time pressure ratios (30%–41% more time needed than allotted), although the differences between physicians in different practice settings failed to reach statistical significance. A very large proportion of family physicians in HMOs (83%) reported being stressed for time with new patient visits. This was significantly greater than the percent of time-stressed family physicians in small group practices (54%, *P* < .05 after Bonferroni's correction).

Case Mix

Table 5 shows regression analyses of physician case mix estimates for complex medical and complex psychosocial patients. Aside from academic practices, physicians in all practice settings reported similar case mix when compared with HMO physicians. Both general and subspecialty internists reported significantly more complex medical and psychosocial patients than did family physicians (*P* < .001 for both comparisons).

Intent to Leave the Current Practice

Table 6 shows regression analyses of intent to leave the current practice situation within 2 years. Private practice (solo, small and large group) physicians had quarter to half the odds of intending to leave their current practice compared with HMO physicians (*P* < .05 to *P* < .001). In a separate analysis (data not shown), intent to leave was found to be highly correlated with job and career satisfaction (Spearman correlation coefficients −0.37 and −0.25, respectively).

DISCUSSION

In this national survey of 2,326 physicians, job satisfaction in group and staff-model HMOs was a trade-off:

Table 3. Time Pressure and Its Relationship to Specialty and Practice Setting

	Time Allotted (Min) (SE)	Time Needed (Min) (SE)	Time Pressure Ratio (SE)	Percent Time Stressed (SE)
New or comprehensive patient				
Solo	39.4 (1.3)*	44.1 (1.4)*	18% (3.6)	37 (4.2)*
Small group	35.5 (0.8)	41.2 (0.8)	23% (2.0)	48 (2.8)
Large single specialty group	32.1 (1.6)	39.1 (1.9)	31% (7.8)	51 (8.2)
Large multispecialty group	35.0 (1.3)	40.4 (1.3)	22% (3.9)	44 (4.8)
Academic	43.6 (2.3)*	49.8 (2.3)*	27% (6.6)	42 (5.7)
HMO	31.1 (1.6)	37.9 (1.5)	32% (5.5)	61 (6.6)
Follow-up patient				
Solo	15.0 (0.4)	15.8 (0.5)	7% (2.7)	28 (3.9)
Small group	14.4 (0.2)	15.6 (0.4)	11% (2.0)	31 (2.7)
Large single specialty group	14.4 (0.5)	15.7 (0.7)	11% (3.8)	31 (7.5)
Large multispecialty group	14.9 (0.3)	16.4 (0.5)	11% (2.3)	31 (4.2)
Academic	19.2 (0.9)*	22.2 (1.0)*	23% (4.3)	46 (5.9)
HMO	15.4 (0.4)	17.0 (0.7)	16% (6.2)	39 (6.4)
New or comprehensive patient				
Family practice	34.1 (0.8)*	40.7 (0.9)*	25% (2.5)	50 (3.1)
General internal medicine	39.4 (1.0)	45.6 (1.0)	25% (4.2)	45 (3.6)
General pediatrics	25.6 (1.1)*	30.3 (1.1)*	29% (3.3)	49 (3.5)
Internal medicine subspecialty	51.2 (1.2)*	56.0 (1.3)*	17% (2.9)	34 (3.4)
Pediatric subspecialty	39.5 (1.6)	47.1 (1.9)	24% (3.0)	48 (4.2)
Follow-up patient				
Family practice	14.1 (0.2)*	15.1 (0.3)*	9% (1.7)	33 (2.8)
General internal medicine	15.7 (0.3)	18.0 (0.5)	20% (4.3)	36 (3.5)
General pediatrics	13.3 (0.5)*	14.1 (0.5)*	8% (3.0)	22 (2.7)*
Internal medicine subspecialty	19.1 (0.5)*	20.6 (0.5)*	13% (2.2)	35 (3.3)
Pediatric subspecialty	18.1 (0.7)*	19.3 (0.7)	12% (3.1)	33 (4.0)

P < .05, comparing HMO to other practice settings and general internal medicine to other specialties, using Bonferroni-corrected P values. For definitions of "time pressure ratio" and "percent time stressed," see text.

more satisfaction with autonomy and administrative issues versus less satisfaction with resources and relationships with nonphysician staff and community. Time allotted for new patients in HMOs was significantly less than in 2 other practice settings (solo and academic), and 83% of family physicians practicing in HMOs felt stressed for time during new patient visits. HMO doctors had significantly less global job satisfaction and a higher intent to leave their current practice within 2 years when compared with physicians in most other settings. Finally, we found that time pressure, independent of practice setting, significantly detracted from 7 of 10 satisfaction components and from satisfaction with current job, career and specialty.

Why study physician satisfaction? Crucial medical outcomes have been linked to physician satisfaction, including prescribing behavior, patient adherence to medications, patient satisfaction and quality of care.[12–16] Burnout of physicians is an expensive and unfortunate outcome,[3] and the career choices of medical students and residents may be influenced by stressed and dissatisfied teachers.[17]

HMOs were less satisfying globally than many other practice types. HMO physicians, more satisfied with their overall autonomy and freedom from administrative issues, appear to feel unencumbered but still relatively dis-

satisfied. Their lower satisfaction with resources and with staff and community relationships provide areas for assessment and intervention. The impact of the relatively smaller amount of time allotted for patient visits requires further investigation, as time stress had a broad and negative impact on job satisfaction.

The potential impact of shortened patient visits has been studied by Levinson et al., who described physician-patient encounters and the risk of a malpractice suit.[18] Primary care physicians who had been sued spent an average of 15 minutes with each patient while physicians who had not been sued spent 18.6 minutes, a difference of 3.6 minutes. Researchers from Cleveland and Cincinnati have likewise shown that patient satisfaction is strongly associated with visit time, especially for visits over 15 minutes,[19] and several other recent articles[20–23] and an editorial[24] have echoed the importance of adequate time for patient visits. The amount of additional time that respondent physicians said they would need to provide quality care ranged from 1 to 6 minutes (Table 3). What remains to be tested is whether providing physicians with these small increments of time would increase job satisfaction and the quality of care.

It may be that HMOs allot less time for patient visits because they provide other resources (e.g., nonphysician

Table 4. Influence of Practice Setting and Specialty on Time Allotted, Time Needed, Time Pressure Ratios, and Time Stress for New Patient Visits

	Time Allotted (Min) (SE)	Time Needed (Min) (SE)	Time Pressure Ratio (SE)	Percent Time Stressed (SE)
HMOs (*n*)				
Primary care				
Family practice (34)	29.4 (1.6)	39.8 (2.5)	41% (8.6)	83 (9.1)
General internal medicine (49)	34.2 (2.8)	41.1 (2.4)	30% (10.0)	53 (12.0)
General pediatrics (89)	24.3 (2.5)	28.1 (2.1)	32% (7.8)	55 (9.4)
Subspecialty				
Internal medicine subspecialty (30)	47.8 (3.3)	51.2 (2.9)	16% (6.3)	58 (16.5)
Pediatric subspecialty (21)	23.0 (2.5)	28.4 (2.3)	32% (10.7)	45 (13.4)
Small groups (*n*)				
Primary care				
Family practice (197)	35.4 (1.2)*	41.9 (1.4)	24% (3.4)	54 (4.6)*
General internal medicine (131)	41.6 (1.6)	46.0 (1.4)	15% (3.1)	40 (6.1)
General pediatrics (216)	21.1 (0.7)	26.2 (1.1)	31% (4.2)	55 (5.3)
Subspecialty				
Internal medicine subspecialty (142)	48.5 (1.9)	54.8 (1.8)	23% (6.0)	34 (5.6)
Pediatric subspecialty (92)	40.2 (3.5)*	44.0 (3.3)*	11% (4.5)	32 (7.6)
Large multispecialty groups (*n*)				
Primary care				
Family practice (66)	30.5 (1.1)	39.9 (1.8)	35% (7.0)	60 (8.6)
General internal medicine (74)	38.8 (2.7)	41.4 (2.5)	12% (5.2)	37 (8.6)
General pediatrics (69)	24.5 (2.8)	29.3 (2.8)	29% (12.8)	40 (9.4)
Subspecialty				
Internal medicine subspecialty (71)	48.8 (2.2)	51.5 (2.5)	7% (2.8)	26 (7.7)
Pediatric subspecialty (24)	42.6 (8.2)	48.1 (8.6)	18% (10.5)	59 (14.4)

*P < .05, comparing each of 5 specialities in HMOs to corresponding specialties in other settings, using Bonferroni-corrected P values.

staff) to oversee disease management programs for chronic illnesses. However, the HMO physicians in our study reported relatively lower satisfaction with resources and with their relationships with nonphysician staff than did many other respondents. A less complex patient mix would be another potential explanation for less time availability in

HMOs, but according to the respondents, case mix in HMOs was comparable to that seen in nonacademic settings.

Doctors felt time pressure in all settings, not just in HMOs, and acknowledged needing up to 41% more time than allotted to provide quality care during new patient

Table 5. Regression Analyses of Case Mix by Practice Setting, Specialty, and Gender

	% of Patients with					
	Complex Psychosocial Problems			Complex Medical Problems		
	Coefficient	95% CIs	*P*	Coefficient	95% CIs	*P*
Setting*						
Solo	−5.6	−12.4 to 1.2	.108	−5.7	−13.1 to 1.7	.134
Small group	−5.6	−11.8 to .6	.078	−5.7	−12.5 to 1.1	.103
Large single specialty group	−4.1	−12.6 to 4.4	.340	−1.5	−10.5 to 7.5	.738
Large multispecialty group	−5.3	−12.1 to 1.6	.130	−6.8	−14.1 to .5	.068
Academic	13.2	5.2 to 21.2	.001	8.6	−0.4 to 17.6	.062
Specialty†						
General internal medicine	6.3	2.5 to 10.1	.001	17.2	12.9 to 21.5	<.001
General pediatrics	−9.4	−13.0 to −5.9	< .001	−16.3	−19.8 to −12.8	<.001
Internal medicine subspecialty	11.1	6.9 to 15.3	< .001	37.3	33.1 to 41.5	<.001
Pediatric subspecialty	−6.7	−10.8 to −2.6	.001	11.4	6.3 to 16.6	<.001

*vs HMOs as referent group.
†vs family practice as referent group.
Regressions controlled for specialty, practice setting, gender, ethnicity, age, and part-time status. Coefficients mean that physicians in certain settings and specialities reported x percent fewer or more patients with complex problems than reported by physicians in the referent group.

Table 6. Intent to Leave the Practice: Impact of Practice Setting

	Odds Ratio*	95% CI	p
Solo	0.45	0.24 to 0.84	.012
Small Group	0.36	0.21 to 0.64	<.001
Large Single Specialty Group	0.24	0.10 to 0.57	.001
Large Multispecialty Group	0.33	0.17 to 0.62	.001
Academic	1.31	0.68 to 2.55	.422

vs HMO as referent group, controlling for specialty, gender, age, ethnicity, time pressure, and part-time status.

visits. Our data do not make clear *who* is allotting less than adequate time for doctors and patients to spend together. While it could be organizations attempting to streamline care, another plausible explanation is that it is physicians themselves who have shortened the duration of patient visits to maintain panel sizes and access to care.

The odds of intending to leave the practice were high among HMO physicians and is a troublesome finding, particularly since it is correlated with job and career dissatisfaction. Prior research[25,26] shows a strong correlation between intent to leave and actually leaving a practice. This high intent to leave, coupled with the low odds of global satisfaction, suggests that group and staff-model HMO physicians may be a relatively unstable group. Periodic surveying of HMO physicians concerning sources of satisfaction and dissatisfaction could allow timely interventions that would maintain continuity and preserve the quality of care.

Our data also show some interesting findings outside the HMO setting. That is, time pressure in patient visits is a source of dissatisfaction in many domains and requires attention. General internal medicine has low specialty satisfaction and, at least by self-report, a complex patient mix among primary care specialties. Finally, our study provides "normative" data on time allotted and time needed in patient visits by specialty and practice setting. These data can be used by physicians and health care organizations to assess their own visit times.

There are several strengths and weaknesses to our study. We surveyed a large representative national random sample of physicians emphasizing diversity within our respondents. We had an extensive developmental process resulting in a highly validated survey instrument[10] that is available for use by other researchers and health care organizations. The weaknesses include the less than optimal 52% response rate, although this is comparable to the reported response rate average of 54% in national physician surveys.[27] Interestingly, our "wave analysis" of late versus early responders showed that fourth (last) wave respondents had higher time pressure than all others, with a gradual increase with each successive wave. Thus, our study may actually have underestimated the impact of time pressure on physicians. Another weakness

was the difficulty we encountered in defining an "HMO physician." Many physicians practice in settings which accommodate multiple types of managed care plans, and group and staff-model HMO physicians vary in the number of their patients that are capitated or under managed care contracts. (Our HMO physician respondents ranged from a few who noted that none of their patients were capitated or in managed care to many who noted >75%.) By defining HMO physicians as those who practice in a group or staff-model HMO and have the majority of their patients in capitated or other managed care arrangements, we believe we have identified a clearly defined and homogeneous group. Indeed, a recent article showed substantial heterogeneity between group or staff-model HMO physicians and other office-based physicians with 1 or more contracts with an HMO or Independent Practice Association.[14] Thus, we have chosen to limit our analysis to the former group. Finally, despite sampling only generalists with no secondary AMA specialty classification, some physicians sampled as generalists still claimed to be practicing as specialists. We chose to analyze physicians based upon the category (specialty) in which they were sampled and acknowledge some uncertainty in specialty classification.

In summary, while some aspects of daily practice are viewed positively by physicians practicing in group or staff-model HMOs, the balance is tipped in the direction of less global satisfaction and a significantly higher intent to leave the practice within 2 years when compared with physicians in many other practice settings. Potential explanatory factors include resource availability, staff and community relationships, and insufficient time allotted for new patient visits. To improve satisfaction and stability in HMO physicians, all of these factors require attention and further investigation.

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APPENDIX

Items in Final Satisfaction Measure

	Item Text	Scoring
Autonomy	Clinical guidelines restrict my freedom to practice.	−
	Outside reviewers rarely question my professional judgments.	+
	Formularies or prescription limits restrict the quality of care I provide.	−
	I am able to refer patients or receive referrals when necessary.	+
	Gatekeeping requirements seldom conflict with my clinical judgment.	+
Personal time	Work rarely encroaches on my personal time.	+
	My work schedule leaves me enough time for my family life.	+
	The interruption of my personal life by work is a problem.	−
	The amount of call I am required to take is not excessive.	+
Relationships with patients	I feel a strong personal connection with my patients.	+
	The gratitude displayed by my patients keeps me going.	+
Patient care issues	My relationship with patients is more adversarial than it used to be.	−
	I am overwhelmed by the needs of my patients.	−
	Many patients demand potentially unnecessary treatments.	−
	Time pressures keep me from developing good patient relationships.	−
Relationships with colleagues	My physician colleagues are a good source of professional stimulation.	+
	I get along well with my physician colleagues.	+
	My physician colleagues value my unique perspective in practice.	+
	My physician colleagues are an important source of personal support.	+
Relationships with staff	Nonphysicians in my practice support my professional judgment.	+
	My nonphysician colleagues are a major source of personal support.	+
	Nonphysician staff in my practice are not accommodating.	−
	Nonphysicians in my practice reliably carry out clinical instructions.	+
Relationships with community	I do not feel at home in the community where I practice.	−
	I feel a sense of belonging to the community where I practice.	+
	My family and I are strongly connected to the community where I work.	+
Income	My total compensation package is fair.	+
	I am not well compensated given my training and experience.	−
	I am not well compensated compared to physicians in other specialties	−
Administration	My role in managing the business aspects of my practice is not a burden to me.	+
	Paperwork required by payers is a burden to me.	−
	I have too much administrative work to do.	−
Resources	Medical supplies are available when I need them.	+
	I have sufficient exam room space to see my patients.	+
	I have adequate equipment for office procedures.	+
	There are not enough support staff in my practice.	−
Global job satisfaction	I find my present clinical work personally rewarding.	+
	Overall, I am pleased with my work.	+
	Overall, I am satisfied in my current practice.	+
	My current work situation is a major source of frustration.	−
	My work in this practice has not met my expectations.	−
Career satisfaction	If I were to choose over again, I would not become a physician.	−
	All things considered, I am satisfied with my career as a physician.	+
	In general, my medical career has met my expectations.	+
	I would recommend medicine to others as a career.	+
Specialty satisfaction	My specialty no longer has the appeal to me it used to have.	−
	If I were to start my career over again, I would choose my current specialty.	+
	I would recommend my specialty to a student seeking advice.	+