The Impact of Practice Setting on Physician Perceptions of the Quality of Practice and Patient Care in the Managed Care Era

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Background: Managed care is practiced in both traditional institutional health maintenance organization (HMO) settings and in a variety of complex and decentralized office-based arrangements. This study examines how practice setting affects physician perceptions of the quality of professional practice and patient care in a managed care environment.

Participants and Methods: A survey was conducted in 1998 of 1081 physicians in San Mateo County, California, who practice in either a traditional staff group model HMO (SGM-HMO) (n=113) or office-based independent practice (OBIP) (n=250). Respondents were surveyed about current and past practice characteristics, income changes, current satisfaction with professional and patient care matters, utility of treatment guidelines and formularies, and general perceptions of managed care. Responses were compared between practice settings using bivariate comparisons and logistic regression analyses.

Results: Physicians in the SGM-HMO and those in OBIP reported similar hours worked per week, time spent with patients during office visits, and total patient encounters per week. Declining income was more frequent in OBIP (61% vs 47%) and relatively more substantial (27% with income declines >25% vs 4% in SGM-HMO). Adjusting for income changes, practice setting, years in practice, and sex, SGM-HMO physicians were significantly more satisfied with a variety of professional and quality of care issues (P<.001), viewed more favorably the utility of treatment guidelines and drug formularies (P<.001), and held more positive general perceptions of managed care (P<.001) than OBIP physicians.

Conclusions: In a managed care environment, SGM-HMO physicians are significantly more satisfied with the quality of practice and patient care than physicians in OBIP. This study suggests that the myriad managed care contracts, formularies, and guidelines received by physicians in OBIPs may lead to more negative perceptions of the quality of professional practice and patient care.

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PARTICIPANTS AND METHODS

SAMPLE

The survey population consisted of 1081 actively practicing doctors of medicine and doctors of osteopathy who were members of the San Mateo County Medical Association (SMCMA) in 1998. Membership in the SMCMA comprises 80% to 85% of the physicians actively practicing in San Mateo County, according to Medical Association surveys, and includes 222 (79%) of the 281 KP physicians who practice in San Mateo County. Primary care physicians28 (defined as internal medicine, family practice, pediatrics, and obstetrics-gynecology) constitute 36% of the SMCMA. Membership of the SMCMA appears to be reasonably representative of all San Mateo County physicians, including KP physicians.

San Mateo County is an affluent community adjacent to prosperous Silicon Valley and ranks in the top 1% of all counties in the United States in per capita income.29 A health and quality-of-life survey released in 1990 revealed, in 1997, the median housing cost was $430,000, among the highest in the nation, and had risen 34% in only 3 years. The economic growth in San Mateo County accelerated and outpaced the state of California and the nation. The inflation adjusted gross regional product rose 7% in 1996 alone. The unemployment rate in 1997 was 2.8% in San Mateo County vs 6.2% throughout California.30

SURVEY QUESTIONNAIRE

The survey was conducted in 1998 by a self-administered mailed questionnaire. An identification code was assigned to allow for follow-up, while protecting confidentiality. One primary and 2 follow-up mailings were conducted, with the third mailing preceded by telephone contact to encourage return of the questionnaire. Surveys were mailed to the members of the SMCMA and were accompanied by a cover letter written by P.R.A., member of the SMCMA; T.A.R., Co-Director of the Stanford University Center for Biomedical Ethics; and R. Jay Whaley, President of the SMCMA.

All questionnaires returned with forwarding addresses were resent. A total of 381 completed questionnaires were returned, for an overall response rate of 35.3%. Of this group, 18 did not indicate their current practice setting. Among the remaining 363 respondents, 113 (31%) indicated a SGM-HMO practice setting. Assuming only KP physicians indicated practicing in a SGM-HMO, this is a response rate of 51% for the SGM-HMO physicians in the SMCMA and approximately 40% of all SGM-HMO physicians practicing in the county. The remaining 250 respondents practiced in OBIPs (defined as solo practice, single specialty groups, multispecialty groups, or urgent care clinics). A total of 861 physicians in the SMCMA practice outside a SGM-HMO, giving a response rate of 29%, which is an estimated 24% of actively practicing OBIP physicians in the county.

The questionnaire defined managed care as follows: “Managed care is care based on networks of providers, ie, HMOs, PPOs, and IPAs, with selective contracting, pre-negotiated fees, oversight of MD decision-making, and often, sharing of insurance risk.”35,36

The questionnaire was 4 pages. It inquired about demographic and practice characteristics including principal specialty, practice setting, managed care contacts, number of patients seen in an average week, sources of practice revenue, relative changes in income, sex, and years in practice. When appropriate, respondents were instructed to provide this information for “now” (1998) and “5 years ago.” Using 5-point Likert scales, physicians indicated (1) their current degree of satisfaction with practice and patient care issues (from very dissatisfied to very satisfied); (2) the utility of treatment guidelines and drug formularies with regard to their effect on physician workload (from very much

aged care in San Mateo County began in 1852 when a voluntary prepaid health plan, La Société Française de Bienfaisance Mutuelle, was created to care for people of French descent arriving primarily in San Francisco and extending to nearby San Mateo County during the Gold Rush.28 The “French Hospital Plan” functioned continuously until it was absorbed by Kaiser-Permanente (KP) in 1989.

Managed care rapidly expanded in California during World War II, when KP grew to serve 100000 patients with 100 physicians.29 After a brief period of post-war decline, KP embarked on a program of steady expansion, opening 2 medical centers within San Mateo County in the 1950s opened. Kaiser Permanente remains the sole traditional SGM-HMO in the county (Stephen A. Gilford, oral communication, February 1999).

Community physicians seeking to better compete with KP entered into managed care in 1978 with the founding of the San Mateo Independent Practice Association (IPA). Currently, there are 7 separate IPAs and myriad preferred provider organization (PPO) plans in San Mateo County. In recent years, managed care plans throughout San Mateo County have moved from a position of prominence to one of dominance. Notably, patient enrollment in exclusively HMO plans has increased from 34.6% in 199526 to 58.7% in 199831 in San Francisco–San Mateo County. Nearly all nongovernmental and noninstitutional physicians in San Mateo County now work with managed care plans, whether as members of a SGM-HMO or as physicians in office-based independent practices (OBIPs) who devote varying portions of their practice time to managed care patients.

The present analyses focus on differences in perceptions between physicians practicing in SGM-HMOs and those in OBIPs, which involve substantial managed care exposure through IPAs or other managed care organizations. While previous literature has examined the effects of managed care on satisfaction and quality of care generally, it is quite plausible that the perceptions of physicians in SGM-HMOs may differ from the perceptions of physicians working in other types of managed care organizations. Practice specialty, income changes, years in practice, and sex also may be important determinants of physicians’ perceptions, and these factors were investigated. Identifying differences in the effects of these forms of managed care may help identify policy strategies to alleviate some of the dissatisfaction associated with managed care.

Continued on next page
harder to very much easier) and on the quality of patient care (from very strong decrease to very strong increase); and (3) their general perceptions of managed care and its impact on several practice and patient care issues (from strongly disagree to strongly agree). The topics covered were derived from the perceptions of both proponents and opponents of managed care as gleaned from the literature, and the statements were worded so that neither view was dominant.

STATISTICAL ANALYSIS

The principal comparison was between physicians practicing in a SGM-HMO or in OBIPs, either solo, single specialty, or multispecialty.

Demographic information and current practice characteristics were compared by practice setting (SGM-HMO vs OBIP) as means or proportions, as appropriate. Practice characteristics in 1998 and 5 years prior were compared within each practice setting, and physicians not in practice 5 years prior were excluded. Differences in means and proportions were evaluated with 2-tailed t tests and chi2 tests, respectively.

Items that related to the quality of professional practice and items that related to the quality of patient care were grouped into 2 summary sets. Both summary sets were composed of subset items relating to professional satisfaction, the utility of specific tools of managed care, and general perceptions of managed care—each with its own 5-point Likert scale.

Descriptive statistics for each item in the survey were calculated by collapsing the 5-point Likert scales to 3 categories: “very dissatisfied/dissatisfied,” “neutral,” and “satisfied/very satisfied” (similar categories were used for the other Likert scales). Response frequencies for each item are displayed separately for SGM-HMO and OBIP physicians. The relative odds of SGM-HMO vs OBIP physicians being satisfied as opposed to neutral or dissatisfied were calculated for each item. (Again, similar analyses were used for the other Likert scales.)

Within the quality of professional practice and patient care summary sets, the average of the 5-point Likert scale responses was calculated for each of the 3 subsets of items (satisfaction, tools of managed care, and general perceptions of managed care). The average responses for SGM-HMO and OBIP physicians were included in the analysis to control for potential confounding factors. Although the overall averages included items from the 3 different 5-point scales, all of the scales ranged from negative to positive. The direction of the scale was reversed, when necessary, in order for a positive view to be consistently represented by a higher score. Cronbach coefficient a for the quality of professional practice set (a = .89) and the quality of patient care set (a = .90) were sufficiently high to justify grouping the items in this manner. For an item to be included in the overall average, we required answers from at least 80% of respondents. Sixteen items in each set met this criterion. We included in the overall average only individuals who answered at least two thirds of the items in each summary set. The average number of items completed for each respondent was greater than 15, and their individual averages were based on only the items to which they responded (ie, missing items were excluded). For both of the quality of professional practice and patient care sets, 309 and 305 respondents, respectively, met all the criteria outlined above to be included in the multivariate analyses.

RESULTS

DEMOGRAPHIC AND PROFESSIONAL CHARACTERISTICS

The demographic characteristics of the respondents in SGM-HMO and OBIP groups were generally similar (Table 1), except that SGM-HMO physicians had been in practice on average 4 years less than those in OBIPs (since 1982 vs 1978; P = .005). Correspondingly, the proportion who had been in practice more than 10 years was lower among SGM-HMO physicians (69%) than physicians in OBIPs (78%).

Approximately 90% of the respondents who were in practice in 1993 were in the same setting in 1998. Only 5% of 1998 SGM-HMO physicians had moved to the 1998 setting from another practice setting, and less than 2% of OBIP physicians had moved there from an SGM-HMO practice setting. Hence, any changes reported during the 5-year interval would appear to reflect changes within the respondents’ practices as opposed to changes due to movement between practice settings.

No significant differences were found (Table 2) between SGM-HMO and OBIP physicians in the number of patient encounters per week in 1998 (93 vs 87), hours worked per week (48 vs 48), minutes spent with patients in an average office visit (17 vs 19), percentage of time spent giving primary care (44% vs 43%), or the annual number of major surgical procedures performed (60 vs 68). The SGM-HMO respondents experienced changes in practice characteristics during the preceding 5 years that were of smaller magnitude and generally opposite in sign compared with OBIP physicians. The OBIP physicians indicated significant increases between 1993 and 1998 in the number of IPAs to which they “now” belong (up by approximately 2; P < .001), the percentage of patient encounters that are “now” with HMO patients (up 17%; P < .001), and the percentage of patients who are seen through capitation (up 22%; P < .001). In addition, OBIP physicians reported a small but significant decrease in minutes spent in an average office visit (down 1.4; P < .001). The SGM-HMO physicians also reported a decrease in minutes spent per patient visit (down 0.5), but the decrease was not statistically significant. Differences between 1993 and 1998 in the number of patients seen per week, the number of hours worked per week, the number of surgical procedures per year, and the percentage of practice time spent giving primary care were not statistically significant in either group.
A decrease in practice revenue was much more prevalent among OBIP physicians than SGM-HMO physicians (61% vs 47%; P=.08), although a substantial proportion of both groups experienced decreases (especially when the effect of inflation is considered for those whose income remained constant) (Figure 1). A significantly higher proportion of OBIP physicians reported declines in income greater than 25% (27% vs 4%; P<.001). The major shift in primary revenue source for OBIP physicians from 1993 to 1998 (Figure 1 inset) was from fee-for-service (down from 56.1% to 29.4%) to HMOs and PPOs (up from 36.5% to 63.1%).

PHYSICIAN PERCEPTIONS OF THE QUALITY OF PROFESSIONAL PRACTICE

When average scores for the subsets of items pertaining to the quality of professional practice were compared (Figure 2), SGM-HMO physicians were significantly more satisfied than OBIP physicians (mean, 3.3 and 2.7, respectively; P<.001), had more positive views of the effects of treatment guidelines and drug formularies on workload (mean, 3.5 and 2.2; P<.001), and had more favorable perceptions of the professional impact of managed care (mean, 2.6 and 1.7; P<.001). Both SGM-HMO and OBIP physicians were most satisfied with the trust patients had in them (71% and 61% were satisfied, respectively) and most dissatisfied with their freedom to spend time with patients (47% and 65% dissatisfied, respectively), and their freedom to care for patients who require heavy use of time and resources (42% and 69% dissatisfied, respectively). The SGM-HMO physicians were particularly more satisfied than OBIP physicians with time spent on administrative matters (41% satisfied/24% dissatisfied vs 9% satisfied/79% dissatisfied; odds ratio [OR], 7.0); their ability to establish long-term relations with patients (72% satisfied/10% dissatisfied vs

### Table 1. Demographic and Practice Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>SGM-HMO Group (n = 113)</th>
<th>OBIP Group (n = 250)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/F, %</td>
<td>75/25 (n = 111)</td>
<td>82/18 (n = 245)</td>
<td>.1</td>
</tr>
<tr>
<td>Specialists/primary care, %</td>
<td>64/36 (n = 112)</td>
<td>62/38 (n = 243)</td>
<td>.7</td>
</tr>
<tr>
<td>Years practicing medicine, %</td>
<td>&lt;5</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>5-10</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>&gt;10</td>
<td>69</td>
<td>78</td>
</tr>
<tr>
<td>Year completed training</td>
<td>1982 (SD, 10)</td>
<td>1978 (SD, 11)</td>
<td>.005</td>
</tr>
<tr>
<td>Practice setting, 1998/1993, † %</td>
<td>Solo</td>
<td>0/1</td>
<td>39/41</td>
</tr>
<tr>
<td></td>
<td>Single specialty group</td>
<td>0/3</td>
<td>45/43</td>
</tr>
<tr>
<td></td>
<td>Multispecialty group</td>
<td>0/0</td>
<td>12/11</td>
</tr>
<tr>
<td></td>
<td>SGM-HMO</td>
<td>100/95</td>
<td>0/2</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0/1</td>
<td>4/3</td>
</tr>
</tbody>
</table>

*SGM-HMO indicates staff group model health maintenance organization; OBIP, office-based independent practice.
†As reported in 1998.

### Table 2. Reported Practice Characteristics in 1998 and Change From 1993 for Staff Group Model Health Maintenance Organization (SGM-HMO) and Office-Based Independent Practice (OBIP) Physicians

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>1998, Mean (n)</th>
<th>Mean Change From 1993† (n)</th>
<th>1998, Mean (n)</th>
<th>Mean Change From 1993‡ (n)</th>
<th>P‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients seen per week, No.</td>
<td>93 (87)</td>
<td>+3.6 (72)</td>
<td>87 (225)</td>
<td>−4.6 (183)</td>
<td>.3</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>48 (102)</td>
<td>+1.5 (91)</td>
<td>48 (232)</td>
<td>−1.2 (198)</td>
<td>.9</td>
</tr>
<tr>
<td>Minutes in an average office visit</td>
<td>17 (96)</td>
<td>−0.5 (84)</td>
<td>19 (227)</td>
<td>−1.4 (191)</td>
<td>.2</td>
</tr>
<tr>
<td>Surgical procedures per year, No.</td>
<td>60 (87)</td>
<td>+3.0 (75)</td>
<td>68 (209)</td>
<td>−4.9 (175)</td>
<td>.5</td>
</tr>
<tr>
<td>IPAs, No.</td>
<td>NA</td>
<td>NA</td>
<td>3.8 (213)</td>
<td>+1.86 (183)</td>
<td>. .</td>
</tr>
<tr>
<td>HMO patients, %</td>
<td>NA</td>
<td>NA</td>
<td>48 (220)</td>
<td>+178 (174)</td>
<td>. .</td>
</tr>
<tr>
<td>PPO patients, %</td>
<td>NA</td>
<td>NA</td>
<td>25 (212)</td>
<td>−1.9 (165)</td>
<td>. .</td>
</tr>
<tr>
<td>Patients seen on capitation, %</td>
<td>NA</td>
<td>NA</td>
<td>31 (221)</td>
<td>+25 (174)</td>
<td>. .</td>
</tr>
<tr>
<td>Practice time spent giving primary care, %</td>
<td>44 (96)</td>
<td>+0.4 (86)</td>
<td>43 (222)</td>
<td>+0.6 (187)</td>
<td>.9</td>
</tr>
</tbody>
</table>

* n indicates number of respondents; IPAs, independent practice associations; PPO, preferred provider organization; and NA, question not applicable.
†As reported in 1998. Change calculated for respondents in practice ≥5 years. The mean value for 1993 cannot be calculated by summing the present mean value and the mean change, since the present value includes physicians in practice for <5 years.
‡For comparisons of 1998 practice characteristics between SGM-HMO and OBIP.
§P<.001, paired t tests (mean change ≠ 0). Only physicians in practice >5 years who answered for both 1998 and 1993 were included.
Comparisons of item response frequencies between SGM-HMO physicians and OBIP physicians are shown in Figure 2. Data were based on a 5-point Likert scale indicating physicians being very dissatisfied/dissatisfied (1 or 2), neutral (3), or satisfied/very satisfied (4, 5). Similar simplifications were used for other data based on the Likert scales (harder/easier and disagree/agree). The asterisk indicates unadjusted odds ratios (ORs) computed by the proportion of SGM-HMO to OBIP physicians who indicated satisfied/very satisfied (or easier/very easy) vs dissatisfied/very dissatisfied (or harder/very hard). The double dagger indicates adjusted odds ratios (AORs) from multiple logistic regression analysis that controlled the effects of age (in years), sex, income change, practice setting, years in practice, and practice specialty on responses. The P values in parentheses are based on 2-tailed tests of the null hypothesis, with significance as P < .001.

<table>
<thead>
<tr>
<th>Professional Satisfaction</th>
<th>OBIP†</th>
<th>SGM-HMO†</th>
<th>Mean (SD) Responses</th>
<th>OR*</th>
<th>SGM-HMO†</th>
<th>OBIP†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissatisfied Neutral Satisfied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present satisfaction with regard to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your freedom to spend as much time with patients as you deem necessary</td>
<td>70</td>
<td>1.2</td>
<td>3.3 (0.8) n = 111 2.7 (0.8) n = 244</td>
<td>18</td>
<td>P = .001</td>
<td></td>
</tr>
<tr>
<td>Time spent on administrative matters</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your ability to establish long-term relationships with patients</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your freedom to care for patients who require heavy use of time and resources</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust patient has in you</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethical stresses related to patient care</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of vulnerability to malpractice suits</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of appointment cancellations and no-shows</td>
<td>206</td>
<td>206</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceptions</th>
<th>OBIP†</th>
<th>SGM-HMO†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you believe managed care as practiced today improves physician satisfaction with their practice‡</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Reduces my social and economic standing compared with other professionals with equal training and work effort</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Improves professional relationships with colleagues</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Creates a more adversarial relationship with patients‡</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Fairly distributes insurance premiums between carriers and medical doctors</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Professionally I am better off today than I was 5 years ago</td>
<td>2.3</td>
<td></td>
</tr>
</tbody>
</table>

39% satisfied/42% dissatisfied; OR, 4.0); and ethical stresses related to patient care (48% satisfied/25% dissatisfied vs 21% satisfied/53% dissatisfied; OR, 3.5).

Treatment guidelines and drug formularies were viewed differently in terms of their effects on physician workload. Treatment guidelines made work easier for SGM-HMO physicians (56% easier to 12% harder) but relatively harder for OBIP physicians (4% easier to 39% harder). Likewise, drug formularies made work easier for SGM-HMO physicians, who confront only 1 formulary (42% easier to 18% harder) and harder for OBIP physicians, who confront many formularies (1% easier to 64% harder).

The OBIP physicians clearly had more negative perceptions of managed care than did SGM-HMO physicians, but negative views were common in both settings. Both groups disagreed with the assertion that managed care improved economic and social standing compared with other types of professionals (86% OBIP and 62% SGM-HMO). However, OBIP physicians were much more likely than SGM-HMO physicians to agree with the statement that managed care reduces physician satisfaction (93% OBIP and 60% SGM-HMO) and to disagree that it improves professional relationships with other colleagues (86% OBIP and 37% SGM-HMO). Only 11% of OBIP physicians and 22% of SGM-HMO physicians agreed that their circumstances had improved compared with 5 years ago; 75% and 50%, respectively, disagreed.

To summarize the information in the item responses in Figure 2 and to facilitate investigation of the relationship of practice setting, income change, practice specialty, years in practice, and sex to responses, an average “summary score” for the quality of professional practice items was calculated as previously described. Scores for the quality of professional practice were independently associated with practice setting and income decreases, but not with practice specialty (primary care vs specialty care), or years in practice and sex (Table 3). The SGM-HMO physicians had higher quality of professional practice scores than OBIP physicians (adjusted means, 3.0 and 2.2, respectively; P < .001). Physicians whose income had decreased had lower scores (mean, 2.3) than physicians whose income had increased (mean, 2.6) or remained the same (mean, 2.7) (P < .001). The 2-way interactions among practice setting, income changes, and practice specialty were not significant.

**PHYSICIAN PERCEPTIONS OF THE QUALITY OF PATIENT CARE**

When average scores for the subsets of items pertaining to the quality of patient care were compared (Figure 3),
Table 3. Quality of Professional Practice and Patient Care Summary Scores by Practice Setting, Income Changes, Practice Specialty, Years in Practice, and Sex

<table>
<thead>
<tr>
<th>Practice Setting</th>
<th>Quality of Professional Practice (N = 309)</th>
<th>Quality of Patient Care (N = 305)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Adjusted Mean†</td>
</tr>
<tr>
<td>Practice setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGM-HMO</td>
<td>98</td>
<td>3.0</td>
</tr>
<tr>
<td>OBIP</td>
<td>211</td>
<td>2.2</td>
</tr>
<tr>
<td>Income changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up</td>
<td>75</td>
<td>2.6</td>
</tr>
<tr>
<td>Same</td>
<td>60</td>
<td>2.7</td>
</tr>
<tr>
<td>Down</td>
<td>174</td>
<td>2.3</td>
</tr>
<tr>
<td>Practice specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care</td>
<td>112</td>
<td>2.5</td>
</tr>
<tr>
<td>Specialty</td>
<td>197</td>
<td>2.5</td>
</tr>
<tr>
<td>Years in practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤10</td>
<td>66</td>
<td>2.5</td>
</tr>
<tr>
<td>&gt;10</td>
<td>243</td>
<td>2.4</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>58</td>
<td>2.5</td>
</tr>
<tr>
<td>Male</td>
<td>251</td>
<td>2.5</td>
</tr>
<tr>
<td>Overall</td>
<td>309</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*SGM-HMO indicates staff group model health maintenance organization; OBIP, office-based independent practice; and ellipses, data not applicable.
†Adjusted means computed from the results of a multivariate regression controlling for practice setting, income changes, practice specialty, sex, and years in practice. None varied more than 0.1 from the unadjusted means.
‡P after controlling for all other predictor variables.

Professional Satisfaction

<table>
<thead>
<tr>
<th>Present satisfaction with regard to:</th>
<th>Dissatisfied</th>
<th>Neutral</th>
<th>Satisfied</th>
<th>Mean (SD) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of medical-surgical consults done at your request</td>
<td><img src="https://example.com/graph1" alt="Graph" /></td>
<td><img src="https://example.com/graph2" alt="Graph" /></td>
<td><img src="https://example.com/graph3" alt="Graph" /></td>
<td>OR‡ SGM-HMO† OBIP†</td>
</tr>
<tr>
<td>Your ability to get care that patients need</td>
<td><img src="https://example.com/graph4" alt="Graph" /></td>
<td><img src="https://example.com/graph5" alt="Graph" /></td>
<td><img src="https://example.com/graph6" alt="Graph" /></td>
<td>3.7 (0.9) 2.8 (0.9) n=110 n=244 P&lt;.001</td>
</tr>
<tr>
<td>Your ability to get care that patients want</td>
<td><img src="https://example.com/graph7" alt="Graph" /></td>
<td><img src="https://example.com/graph8" alt="Graph" /></td>
<td><img src="https://example.com/graph9" alt="Graph" /></td>
<td>4.8 <img src="https://example.com/graph10" alt="Graph" /> 3.1 <img src="https://example.com/graph11" alt="Graph" /></td>
</tr>
<tr>
<td>Overall quality of care you are able to offer</td>
<td><img src="https://example.com/graph12" alt="Graph" /></td>
<td><img src="https://example.com/graph13" alt="Graph" /></td>
<td><img src="https://example.com/graph14" alt="Graph" /></td>
<td><img src="https://example.com/graph15" alt="Graph" /> 1.8 <img src="https://example.com/graph16" alt="Graph" /></td>
</tr>
<tr>
<td>Overall quality of care offered in the community</td>
<td><img src="https://example.com/graph17" alt="Graph" /></td>
<td><img src="https://example.com/graph18" alt="Graph" /></td>
<td><img src="https://example.com/graph19" alt="Graph" /></td>
<td><img src="https://example.com/graph20" alt="Graph" /></td>
</tr>
</tbody>
</table>

Managed Care Tools

<table>
<thead>
<tr>
<th>How do treatment guidelines affect the quality of care you offer to patients?</th>
<th>Decrease</th>
<th>No Effect</th>
<th>Increase</th>
<th>Mean (SD) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do drug formularies affect the quality of care you offer to patients?</td>
<td><img src="https://example.com/graph21" alt="Graph" /></td>
<td><img src="https://example.com/graph22" alt="Graph" /></td>
<td><img src="https://example.com/graph23" alt="Graph" /></td>
<td>&gt;20 <img src="https://example.com/graph24" alt="Graph" /> 3.5 (0.8) n=97 n=228 P&lt;.001</td>
</tr>
</tbody>
</table>

General Perceptions

<table>
<thead>
<tr>
<th>I believe managed care as practiced today...</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Mean (SD) Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces the quality of care for well patients</td>
<td><img src="https://example.com/graph25" alt="Graph" /></td>
<td><img src="https://example.com/graph26" alt="Graph" /></td>
<td><img src="https://example.com/graph27" alt="Graph" /></td>
<td>0.2 <img src="https://example.com/graph28" alt="Graph" /></td>
</tr>
<tr>
<td>Improves the quality of care for sick patients</td>
<td><img src="https://example.com/graph29" alt="Graph" /></td>
<td><img src="https://example.com/graph30" alt="Graph" /></td>
<td><img src="https://example.com/graph31" alt="Graph" /></td>
<td><img src="https://example.com/graph32" alt="Graph" /> 9.1 <img src="https://example.com/graph33" alt="Graph" /></td>
</tr>
<tr>
<td>Reduces patient satisfaction with their care</td>
<td><img src="https://example.com/graph34" alt="Graph" /></td>
<td><img src="https://example.com/graph35" alt="Graph" /></td>
<td><img src="https://example.com/graph36" alt="Graph" /></td>
<td><img src="https://example.com/graph37" alt="Graph" /> 0.2 <img src="https://example.com/graph38" alt="Graph" /></td>
</tr>
<tr>
<td>Increases access to medical care for covered patients</td>
<td><img src="https://example.com/graph39" alt="Graph" /></td>
<td><img src="https://example.com/graph40" alt="Graph" /></td>
<td><img src="https://example.com/graph41" alt="Graph" /></td>
<td><img src="https://example.com/graph42" alt="Graph" /> 0.2 <img src="https://example.com/graph43" alt="Graph" /></td>
</tr>
<tr>
<td>Decreases access to specialists for covered patients</td>
<td><img src="https://example.com/graph44" alt="Graph" /></td>
<td><img src="https://example.com/graph45" alt="Graph" /></td>
<td><img src="https://example.com/graph46" alt="Graph" /></td>
<td><img src="https://example.com/graph47" alt="Graph" /> 0.1 <img src="https://example.com/graph48" alt="Graph" /></td>
</tr>
<tr>
<td>Improves preventive medical care for covered patients</td>
<td><img src="https://example.com/graph49" alt="Graph" /></td>
<td><img src="https://example.com/graph50" alt="Graph" /></td>
<td><img src="https://example.com/graph51" alt="Graph" /></td>
<td><img src="https://example.com/graph52" alt="Graph" /> 11 <img src="https://example.com/graph53" alt="Graph" /></td>
</tr>
<tr>
<td>Overemphasizes the needs of populations of patients to the detriment of the individual patient</td>
<td><img src="https://example.com/graph54" alt="Graph" /></td>
<td><img src="https://example.com/graph55" alt="Graph" /></td>
<td><img src="https://example.com/graph56" alt="Graph" /></td>
<td><img src="https://example.com/graph57" alt="Graph" /> 0.2 <img src="https://example.com/graph58" alt="Graph" /></td>
</tr>
<tr>
<td>Improves the level of care offered by most physicians</td>
<td><img src="https://example.com/graph59" alt="Graph" /></td>
<td><img src="https://example.com/graph60" alt="Graph" /></td>
<td><img src="https://example.com/graph61" alt="Graph" /></td>
<td><img src="https://example.com/graph62" alt="Graph" /> 0.2 <img src="https://example.com/graph63" alt="Graph" /></td>
</tr>
<tr>
<td>My patients are better cared for today than they were 5 years ago</td>
<td><img src="https://example.com/graph64" alt="Graph" /></td>
<td><img src="https://example.com/graph65" alt="Graph" /></td>
<td><img src="https://example.com/graph66" alt="Graph" /></td>
<td><img src="https://example.com/graph67" alt="Graph" /> 5.7 <img src="https://example.com/graph68" alt="Graph" /></td>
</tr>
</tbody>
</table>

Figure 3. Quality of patient care: comparison of item response frequencies for staff group model health maintenance organization (SGM-HMO) and office-based independent practice (OBIP) physicians. The data are based on a 5-point Likert scale indicating being very dissatisfied/dissatisfied (1 or 2), neutral (3), or satisfied/very satisfied (4, 5). Similar simplifications were used for other data based on the Likert scales (harder/easier and disagree/agree). Asterisk indicates unadjusted odds ratios (ORs) computed by the proportion of SGM-HMO to OBIP physicians who indicated satisfied/very satisfied (or easier/very much easier, agree/strongly agree) vs all other responses; dagger, the average Likert response for each set of related items (compared by univariate analysis); and double dagger, items reflected so that a favorable view is indicated by a higher Likert score.

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SGM-HMO physicians were significantly more satisfied than OBIP physicians (mean, 3.7 and 2.8, respectively; P<.001), had more positive views of the effects of treatment guidelines and drug formularies on the quality of patient care (mean, 3.5 and 2.5; P<.001), and had more favorable perceptions of the impact of managed care on patient care (mean, 3.2 and 2.0; P<.001). Considering the items individually, SGM-HMO and OBIP physicians were most satisfied with the quality of care they personally offered (71% satisfied and 44% satisfied, respectively). The SGM-HMO physicians were more satisfied than OBIP physicians with their ability to provide the care patients want (44% satisfied/27% dissatisfied vs 14% satisfied/ 70% dissatisfied, respectively; OR, 4.8) and their ability to obtain the care patients need (69% satisfied/14% dissatisfied vs 19% satisfied/62% dissatisfied; OR, 9.5).

Treatment guidelines anddrug formularies again were viewed differently by the 2 groups of physicians in terms of how they affect the quality of patient care. The SGM-HMO physicians indicated that treatment guidelines increased the quality of patient care (58% increased/69% decreased), whereas OBIP physicians overwhelmingly believed treatment guidelines had no effect on patient care (83%). Drug formularies were generally considered to increase the quality of patient care for SGM-HMO physicians (33% increased/11% decreased) although more than half believed they had no effect. The majority of OBIP physicians viewed formularies as having a negative effect on the quality of patient care (1% increased/55% decreased).

The OBIP physicians had more negative perceptions of the impact of managed care on the quality of patient care than did SGM-HMO physicians. In particular, OBIP physicians agreed that managed care reduces the quality of care for well patients (51%), reduces patient satisfaction (86%), decreases access to specialists (88%), and overemphasizes the needs of populations over the needs of individual patients (78%). They disagreed that managed care, as practiced in 1998, improves the quality of care for sick patients (81%), increases access to care for covered patients (76%), improves preventive care for covered patients (41%), and improves the level of care offered by most physicians (84%). The SGM-HMO physicians tended to be neutral or more equally divided between positive and negative views of the impact of managed care, except they tended to believe managed care improves preventive care and the quality of care for well patients. Only 5% of OBIP but 23% of SGM-HMO physicians agreed that their patients are better cared for today than they were 5 years ago; 70% and 32%, respectively, disagreed.

A summary score for the quality of patient care items in Figure 3 was calculated as previously described. Scores for the quality of patient care items were independently associated with practice setting, income decline, and practice specialty, but not with years in practice and sex (Table 3). The SGM-HMO physicians had a higher quality of patient care score than OBIP physicians after controlling for the other variables (adjusted means, 3.3 and 2.3, respectively; P=.001). Physicians whose income had decreased had a significantly lower quality of patient care score than physicians whose income had increased (adjusted means, 2.5 and 2.8, respectively; P= .002). Primary care physicians had a higher score than specialty physicians (adjusted means, 2.7 and 2.5, respectively; P=.01). The 2-way interactions of practice setting, income changes, and practice specialty were not significant.

This study found that physicians in a SGM-HMO had more positive perceptions of the quality of their professional practice and of patient care than did physicians practicing in OBIPs in the same county. The influence of practice setting on physician perceptions persisted even after controlling for changes in income. The SGM-HMO physicians were specifically more satisfied than OBIP physicians with time spent on administrative matters, ethical stresses in practice, and with their ability to obtain care patients need and want. Physicians in primary care and specialty practices did not view differently the quality of their professional practice although primary care physicians had more positive perceptions of the quality of patient care than specialists.

As expected, physicians who reported income declines between 1993 and 1998 had more negative perceptions of the quality of their professional practice and of patient care than physicians whose income had increased or stayed the same. Decreases in income were widespread, especially for OBIP physicians, but decreases had the same effect regardless of practice setting (ie, the interactive effect of practice setting and income was not significant). The magnitude and prevalence of a decline in real income is further seen in the proportions whose income remained unchanged, since these groups would have experienced some decrease in purchasing power due to inflation between 1993 and 1998. Considering that San Mateo County is prospering economically and is one of the wealthier counties in California, the decoupling of physician income from that of the rest of the community is striking. Furthermore, a marked increase in income for nonrespondents would have to be present to discount this finding as the product of a respondent bias.

Practice setting also significantly affected how physicians viewed the utility of tools commonly adopted by managed care, ie, treatment guidelines and drug formularies. The SGM-HMO physicians saw these as positive contributors to easing physician workload and increasing the quality of patient care. In contrast, OBIP physicians, unlike SGM-HMO physicians, deal with multiple, conflicting guidelines and formularies typically developed without their input. They held strikingly negative views, particularly of drug formularies. Though little is known about the application of guidelines in practice37,38 and many physicians have mixed feelings about them,39 there is a preference for guidelines that are internally developed.60

Between 1993 and 1998, OBIP physicians reported significant increases in the proportion of patients they saw who were insured under various managed care plans (IPAs, PPOs, and HMOs) and, consequently, in the proportion of revenue derived from these plans. These reported changes were consistent with documented developments in the San Mateo County health care marketplace. Nei-
Physicians in a SGM-HMO work within a single, centralized organization with uniform rules and geographic proximity; however, OBIP physicians, belong to IPAs with up to a dozen HMOs, each of which may offer many different contracts and benefit packages with patients. The aggregate number of differing HMO contracts with patients approached 2000 in 1 IPA, requiring significant time and expense to manage (Brian Roach, MD, oral communication, January 1999). It has been hypothesized that the myriad managed care contracts, approvals, formularies, and guidelines affecting physicians who do not practice in a traditional SGM-HMO would result in a less satisfied group of physicians with more negative perceptions of the quality of patient care provided through decentralized managed care.42 The present results are consistent with this hypothesis.

We believe the degree of physician distress we have found in San Mateo County for physicians in OBIP is real. It may also be significant for patient care in 2 respects. First, these physicians are claiming to be currently dissatisfied with the quality of patient care being provided. Second, their distress may affect their ability to care for patients and advocate on their behalf. Grumbach et al43 have stated “high quality care is unlikely to flourish in an environment that leaves physicians demoralized.” Poor work satisfaction has been associated with careless prescribing patterns.44 Kassirer13 adds that the extent of discontent among physicians has not been widely studied nor does there appear to be much interest in doing so on the part of payers, insurers and legislators, who must “stop pretending that doctor discontent doesn’t matter.” It is well known that “a happy staff leads to happy customers,”45,46 but neither managers nor consumers seem to have considered physician discontent as an explicit threat to their own well-being.14,47,48 Physican criticism of managed care has been portrayed as economically self-serving,49 and physician reports of reductions in the quality of care may be dismissed as biased by their own loss in income, as is often done. However, physicians do have an important proximity to the clinical situation and a valuable perspective to contribute. It could be argued that the handling of physicians under managed care to date has violated one of Drucker’s50 cardinal precepts for dealing with knowledge workers: “To find out how to improve productivity, quality, and performance, ask the people who do the work.”

The decoupling of physician income from the general economy has taken place in San Mateo County during good times in a wealthy county. This may raise the question of how physicians and patients will fare under managed care in bad times and in poorer locales with typically sicker patients who have greater social and medical needs. In the present forms of managed care, the traditional SGM-HMO model may produce happier physicians with a better perception of the state of patient care and with greater allegiance to managed care itself. However, the present study obviously cannot address the objective similarities or differences between practice settings in the actual quality of care provided. Although SGM-HMO and OBIP physicians both experienced income declines, OBIP physicians were more vulnerable to market pressures and experienced a higher prevalence and more substantial income decline than physicians in SGM-HMOs. Powerful employer groups such as CalPERS (the state employee retirement fund) and the Pacific Business Group on Health exerted a strong downward pressure on health insurance premiums during the study period.51 Financial pressure was also increased by physician participation in multiple IPAs, which rose on average more than 75% for OBIP physicians in this study. A peculiar form of competition can result from such pressures in which physicians essentially compete against themselves. This occurs when IPAs with overlapping physician membership negotiate for the same contracts with payers. One IPA would refuse to sign only to have another IPA accept the contract for either the same or lesser reimbursement.52 Antitrust considerations do not permit collective action by the IPAs. “Fair Capitation” legislation, introduced in 1998 in California as Senate Bill 317 (SB-317; Senator Calderon, D, Montebello), which would have required capitation rates to be based on an actuarially sound basis rather than “bottom-fishing” for the lowest attainable price, was opposed by the managed care industry and ultimately vetoed by former Governor Pete Wilson.53,54

We did not ask OBIP physicians why they joined multiple IPAs. Though disadvantageous in contract negotiations, multiple IPA participation provides access to more insurance plans and increases access to patients because HMOs typically contract selectively. Presumably, access to patients was the principal motivation, given the stated level of dissatisfaction with managed care. This interpretation is consistent with one national study that found noninstitutional HMO participation to be motivated primarily by a desire not to lose patients rather than by more positive reasons.55

Kaiser-Permanente, however, was not immune to the managed care climate affecting the rest of San Mateo County. In 1993, KP lost members for the first time.56 In 1997 and 1998, KP experienced its first-ever financial losses57 and a downgrading of the investment quality of its debt.58 In response, new construction projects were stopped before completion,59 a moratorium was declared on inducing new physicians into partnership, and salaries of some physicians were reduced. Kaiser-Permanente also terminated unprofitable East Coast plans. The interdependence of the KP SGM-HMO and the OBIP economies has been previously discussed in terms of
Our results suggest that physicians working in the traditional managed care model with its mixture of professional inputs and oversights are happier than those who are subject to conflicting externally imposed guidelines, formularies, and approval processes over which they have no meaningful input. Would all physicians, therefore, be more satisfied in SGM-HMOs? Since KP physicians are self-selected, it is not known whether others in the community would react as they do. Physicians in SGM-HMOs may be individuals who are more comfortable with the current mix of freedoms and controls that are inherent in a SGM-HMO62,63; and OBIP physicians may have opposite biases.64 In addition, it is unclear that the public would favor SGM-HMO practice as the only alternative.

Our study has a number of limitations regarding response rate and selection bias. The response rate of 113 of SGM-HMO physicians (51%) and 250 of OBIP physicians (24%) in the SMCMA places limits on confidence in the generalizability of the results. We note, however, that responses in the first 2 waves of questionnaires were not appreciably different from the third wave, as might be expected if the likelihood of response were strongly related to the views expressed. Furthermore, the nonresponding OBIP physicians would need to be much more content with their practices than their responding colleagues to alter significantly the results. The 189 additional OBIP respondents needed to match the 51% response rate of SGM-HMO physicians would require a mean quality of professional practice score of approximately 3.7 (vs 2.2 for those who responded) and a mean quality of patient care score of 4.2 (vs 2.3) to negate statistically significant differences found in this study. This possibility is remote. It is also possible that higher levels of disaffection among OBIP physicians may have been partly responsible for their significantly lower survey response rate. The rate disparity may be in part a reaction to the proliferation of burdensome practice surveys used by managed care organizations, pharmaceutical benefit managers, and oversight agencies such as the National Committee for Quality Assurance and its Health Plan Employer Data and Information Set. Kaiser-Permanente physicians, working with only a single health plan using a single drug formulary, are less subject to such intrusions. The OBIP physicians also indicated much more dissatisfaction with their administrative burdens, perhaps making them less cooperative in responding to yet another detailed survey. If this is true, the present results may actually underestimate the level of dissatisfaction among OBIP physicians.

The KP Medical Group is the only SGM-HMO in San Mateo County. It is conceivable that different SGM-HMOs may affect physician satisfaction differently. However, as the largest such organization, the views of KP clinicians are an important benchmark in looking at other organizations and practice settings.65

This study did not gather actual income data or try to establish what is appropriate physician compensation. Conceivably, physician earnings in San Mateo County were abnormally high in 1993, thereby negating some of the significance of the relative income decline during the next 5 years. However, anecdotal evidence of young physicians now leaving San Mateo County for economic reasons argues otherwise. Furthermore, West Coast physicians’ net income averages 10% to 15% lower than elsewhere in the country.66 Actual work time and how much of that was spent seeing patients vs doing administrative tasks were also not measured directly. There was no breakdown of the frequency of new patient visits as compared with follow-up appointments in the 5-year comparison. Finally, it is likely, based on basic research on the ability to estimate change, that perceptions of changes that have occurred from 5 years ago are more influenced by present satisfaction than by the actual circumstances 5 years ago.67 When evaluating changes in physicians’ practices, we therefore cannot assume that the reported changes are valid estimates of the true differences between present and past perceptions as would have been measured in a survey done in 1993.

In conclusion, a comparison of physician perceptions of professional and patient care issues in a climate of increasing managed care showed considerable difference in response among those practicing in a SGM-HMO and those in OBIPs. The former are more satisfied, view the utility of treatment guidelines and drug formularies more positively, and perceive managed care more favorably than physicians who deal with managed care in a decentralized fashion. Although decline in income also negatively affects perceptions of the quality of practice and patient care, the effect of practice setting is not eliminated by adjusting for differences in income change. Within an otherwise robust local economy, more than twice as many physicians reported a decrease rather than an increase in income during the past 5 years despite working approximately the same number of hours per week and seeing about the same number of patients. Physicians outside a traditional SGM-HMO were dissatisfied with the time spent on administrative matters, the ethical stresses related to patient care, and their ability to obtain care that patients need and want. These results suggest that the structure of managed care plans for physicians not in a traditional SGM-HMO is suboptimal and negatively affects physician perceptions of the quality of their professional practice and the quality of care offered to patients.

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