

Special Article

ASSESSMENTS OF MEDICAL CARE BY ENROLLEES IN FOR-PROFIT AND NONPROFIT HEALTH MAINTENANCE ORGANIZATIONS

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ABSTRACT

Background It is uncertain how assessments of medical care differ between enrollees in for-profit and nonprofit health maintenance organizations (HMOs).

Methods We analyzed the relation between the profit status of HMOs and enrollees' assessments of their care. We used data from two national surveys from the Community Tracking Study: the Household Survey, 1996–1997, and the 1997–1998 Insurance Followback Survey. The final sample included 13,271 persons under 65 years of age (10,654 adults and 2617 children) with employer-sponsored insurance who obtained health care through an HMO. A total of 12,445 enrollees who reported their health status as excellent, very good, or good were considered to be healthy; 826 with self-reported fair or poor health were considered to be sick.

Results In the sample as a whole, enrollees in nonprofit plans were more likely to be very satisfied with their overall care than enrollees in for-profit plans (adjusted means, 64.0 percent and 58.1 percent, respectively; $P=0.01$). Among enrollees in for-profit HMOs, sick enrollees were more likely than healthy enrollees to report unmet need or delayed care (17.4 percent vs. 13.1 percent, $P=0.004$) and organizational or administrative barriers to care (12.9 percent vs. 9.0 percent, $P<0.001$); they also reported higher out-of-pocket spending during the previous year (\$731 vs. \$480, $P=0.002$). For nonprofit HMOs, there was only one significant difference between the ratings of healthy and sick enrollees; sick enrollees expressed more trust in doctors to refer when needed.

Conclusions Although there are few overall differences in assessments of medical care between enrollees in for-profit and nonprofit HMOs, for-profit HMOs are rated less favorably than nonprofit HMOs by patients who have self-reported fair or poor health. (N Engl J Med 2002;346:1288-93.)

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INVESTOR-owned, for-profit companies have a major role in the health maintenance organization (HMO) industry. Thanks to the widespread conversion of nonprofit health plans to for-profit status and the aggressive expansion of large for-profit companies, the market share of for-profit plans increased from one quarter of HMO enrollment in the mid-1980s to approximately two thirds by the late 1990s.¹

This trend has aroused concern that the delivery and quality of health care are being compromised.^{2,3} Critics of for-profit plans contend that accountability to profit-seeking shareholders can lead to incentives to withhold needed care.⁴ This concern is especially acute for people in poor health, who consume a disproportionate share of the medical budgets of health plans. At the same time, this group of patients is most vulnerable to adverse outcomes if care is inadequate. Others argue, however, that whatever differences may have distinguished nonprofit from for-profit health plans in the past, all plans now face similar market pressures and economic constraints, which have resulted in greater similarity of incentives and behavior by the two types of plans.^{5,6}

Empirical evidence regarding the effect of profit status on patient care is limited and inconclusive.⁷⁻¹⁰ We used data from large, nationally representative surveys of consumers and insurers to analyze the relation between the profit status of commercial HMOs and consumers' assessments of the care they receive.

METHODS

Study Population and Data

The study population was composed of persons under 65 years of age who had employer-sponsored insurance and were enrolled in HMO or point-of-service health plans. Point-of-service plans are HMOs that offer access to physicians outside of the HMO network, usually with higher copayments and deductibles. We used data from two national surveys from the Community Tracking Study — the Household Survey, 1996–1997,^{11,12} and the 1997–1998 Insurance Followback Survey — supplemented by data from the InterStudy

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Competitive Edge data base.¹³ The Household Survey, which has an overall response rate of 65 percent, is a nationally representative survey of civilians who are not living in institutions. Interviews were conducted primarily by telephone, supplemented by field interviews for households without telephones. The sampling frame and survey methods have been described elsewhere.^{14,15}

The Followback Survey provides information (obtained from insurers, supplemented if necessary by information from employers) about specific insurance plans covering privately insured respondents to the Household Survey.¹⁴ Of the 38,310 respondents to the Household Survey who were covered by private insurance, 28,578 were matched to insurance plans included in the Followback Survey. In the Followback Survey, weights are used for the merged data set in order to adjust for nonresponse to the Household Survey and for unmatched cases in an attempt to provide adjusted estimates that are representative of the entire privately insured population, not just of those who are matched to plans included in the Followback Survey.

We excluded from the sample 13,489 persons who were covered by indemnity insurance or preferred-provider organizations, 268 persons who had multiple insurance policies, 796 persons with individually purchased insurance policies, and 172 persons covered by policies held by someone outside of their household. These exclusions reduced the sample to 13,853 persons.

We then matched the names of plans included in the Followback Survey to those listed in the InterStudy Competitive Edge data base in order to add information about the health plans that was not available from the Followback Survey (e.g., years in operation and number of enrollees) and to fill in missing data (e.g., profit status). Data from the Followback Survey could be matched to data from the Competitive Edge data base for 13,271 persons (10,654 adults and 2617 children), who composed the final sample for our analysis. Adult proxies (typically a parent) responded on behalf of children.

The study was not reviewed by an institutional review board. In the Community Tracking Study survey, extensive procedures were followed to obtain informed consent from respondents and to protect the confidentiality of respondents' information, in accordance with the standards of the U.S. Census Bureau.¹⁴

Statistical Analysis

To address whether the profit status of the HMO affected enrollees' access to care or assessments of care, we used multivariate logistic-regression models. All analyses and outcome measures were prespecified. The models included a dummy variable indicating the profit status of the HMO and an extensive set of variables designed to control for various organizational characteristics of the health plan, individual and family characteristics of the enrollee, and characteristics of the local health care market.

With one exception, dependent variables were dichotomous. The one continuous dependent variable (out-of-pocket expenditures) had a skewed distribution, so we used a two-part model that is commonly used in analyses of health care utilization.¹⁶ In the first part, the probability of incurring any cost was estimated by logistic-regression analysis; in the second part, the logarithm of the annual expenditures, if there were any, was estimated by ordinary least-squares-regression analysis. Therefore, two P values are reported.

Each model used the same set of explanatory variables. Individual and family-related covariates included age, family income, and family size as continuous variables; sex and marital status as dichotomous variables; and the following categorical variables: health status (for adults, all 12 variables included in the short-form health index [SF-12]¹⁷; for children, an estimate of general health status on a five-point scale), race or ethnic group (Hispanic, non-Hispanic white, non-Hispanic black, or other), level of education (no high-school diploma, high-school diploma, some college, college degree, or postgraduate education), preferences in terms of risk (degree of agreement, on a five-point scale, with a statement that the respond-

ent is more likely to take risks than the average person), and degree of willingness to trade off increased health care costs for a greater choice of health care providers (on a five-point scale). These explanatory variables are described in detail elsewhere.¹⁸ Covariates for location were dummy variables for 59 of the 60 local health care markets that make up the sample for the Household Survey. Because nonprofit and for-profit plans vary substantially in terms of organizational characteristics, covariates for characteristics of the HMO were especially important. These included the number of years in operation; number of enrollees; model type (staff or group, mixed, or network or independent-practice association); whether or not the plan was a point-of-service plan; and geographic coverage (whether or not the health plan had a substantial presence in more than one of the nine Census divisions).

For most of the explanatory variables, 0 to 4 percent of the data were missing. Income was the only covariate with more extensive missing data (9 percent). No observations were excluded due to missing values for these covariates. For income, health status, and all demographic variables, missing values were imputed with the use of weighted sequential hot-decking procedures.¹⁹ For other explanatory variables, missing values were not imputed; instead, the observations were included in the analysis with indicators of missing data.

The models were first used to analyze data for all nonelderly HMO enrollees who were covered by employer-sponsored insurance. We then analyzed whether profit status had different effects on sick enrollees and healthy enrollees by adding a term to the basic multivariate model that related the profit status of the health plan to the health status of the enrollee. For this analysis, 12,445 enrollees were categorized as healthy on the basis of self-reported excellent, very good, or good general health status, and 826 were categorized as sick on the basis of self-reported fair or poor health status.

All reported P values are based on two-sided tests of the coefficients from the multivariate models. Standard errors were estimated with the use of SUDAAN statistical software in order to adjust for the complex survey design.²⁰ No formal adjustment to the P values was made for multiple comparisons. The unit of measurement was the enrollee.

All dependent variables were considered to be primary outcomes and were derived from questions on the Household Survey. Measures of access to care included an indicator of whether persons reported having failed to get or having postponed needed medical care during the previous year. Those who reported unmet need or delayed care were asked for the reasons, which were classified into two categories that were not mutually exclusive: financial barriers (e.g., concern about out-of-pocket expenses or lack of coverage by insurer) and organizational or administrative barriers (e.g., difficulties in obtaining referrals, delays in getting appointments, or insurance that was not accepted by providers). As another measure of potential financial barriers to care, we also measured out-of-pocket expenditures for health care (excluding the employee's share of the premium) at the family level during the previous year.

We created six dichotomous consumer assessment measures from five-point Likert scales. One measure indicated the level of satisfaction with health care in general, and responses were dichotomized as "very satisfied" and "not very satisfied." Persons who had visited a physician during the previous year (83 percent of respondents) were asked to rate their most recent visit in terms of the thoroughness of the examination, how well the doctor listened, and how well the doctor explained things. Responses were dichotomized as "excellent" and "not excellent." Finally, we examined two indicators of trust in physicians by adult respondents: strong agreement that the physician put the patient's medical needs above all other considerations and strong agreement that the physician would refer the patient to a specialist when necessary. Adult respondents were asked these two questions if they reported having a regular physician or having visited a physician during the previous year (95 percent of all adult respondents).

We also constructed dichotomous variables indicating dissatisfac-

tion, unfavorable ratings of care by physicians, and distrust of physicians. The results for these variables were highly consistent with the results for high levels of satisfaction, high ratings of physicians, and a high degree of trust in physicians and are therefore not reported.

For measures of access to care, 3 percent or less of the data were missing because of nonresponse to items on the survey; for consumer assessment measures, 1 percent or less of the data were missing. In each analysis, observations with missing values for the outcome measure were excluded.

RESULTS

The characteristics of the HMOs, weighted according to the number of enrollees, are summarized in Table 1. For-profit HMOs were more likely than nonprofit HMOs to have a broad geographic presence but less likely to adopt, either fully or partially, a group or staff model. Characteristics of the enrollees, stratified according to the profit status of their HMO, are summarized in Table 2. Characteristics of enrollees in the two types of plans were similar, although for-profit plans had a higher percentage of female enrollees.

All Enrollees

Unadjusted and adjusted means for the measures of access to care and the consumer assessments are presented in Table 3. The percentage reporting unmet need or delayed care did not differ significantly between enrollees in nonprofit and for-profit HMOs, nor did measures of underlying financial and organizational barriers to care. After adjustment for individual and family characteristics of the enrollees, characteristics of the local health care market, and organization-

al characteristics of the HMO, annual family out-of-pocket expenditures for medical care were \$440 for enrollees in nonprofit plans and \$498 for enrollees in for-profit plans ($P=0.02$ for the first part of the model, $P=0.03$ for the second part of the model).

Enrollees in nonprofit plans were more likely to be very satisfied with their overall care than enrollees in for-profit plans (adjusted means, 64.0 percent vs. 58.1 percent; $P=0.01$). There were no significant differences in the other consumer assessment measures we examined.

Healthy and Sick Enrollees

Differences between the assessments of enrollees who defined themselves as healthy and the assessments of those who defined themselves as sick are shown in Table 4. We first compared healthy and sick enrollees within each category of profit status. Previous research has found that sick persons report less access to care and higher out-of-pocket expenditures than healthy persons.^{21,22} We found this pattern only in the group enrolled in for-profit HMOs, in which sick enrollees were significantly more likely than healthy enrollees to report unmet need or delayed care (17.4 percent vs. 13.1 percent, $P=0.004$) and organizational or administrative barriers to care (12.9 percent vs. 9.0 percent, $P<0.001$); they also reported higher out-of-pocket expenditures (\$731 vs. \$480 per year; $P=0.05$ for the first part of the model, $P=0.002$ for the second part of the model). In the group enrolled in nonprofit HMOs, there were no significant differences between healthy and sick enrollees in terms of any of the measures of access to care.

In terms of the consumer assessment measures, sick enrollees in for-profit HMOs were less likely than healthy enrollees in for-profit HMOs to rate physicians highly on two measures: quality of listening (34.4 percent vs. 42.1 percent, $P=0.02$) and putting the patient's medical needs first (58.7 percent vs. 64.2 percent, $P=0.03$). In contrast, sick enrollees in nonprofit HMOs had greater trust that their physician would put their medical needs first than did healthy enrollees in nonprofit HMOs (67.7 percent vs. 60.7 percent, $P=0.04$).

We next compared enrollees in for-profit HMOs with enrollees in nonprofit HMOs within each category of health status. Among healthy enrollees, the differences between for-profit HMOs and nonprofit HMOs were significant for the following measures: out-of-pocket expenditures (\$480 vs. \$432 per year; $P=0.03$ for the first part of the model, $P=0.04$ for the second part of the model), satisfaction with overall care (58.3 percent vs. 63.8 percent, $P=0.01$), and ratings of the physician in terms of thoroughness (36.4 percent vs. 37.5 percent rated as excellent, $P=0.05$) and explanations (42.0 percent vs. 44.8 percent rat-

TABLE 1. SELECTED CHARACTERISTICS OF NONPROFIT AND FOR-PROFIT HEALTH MAINTENANCE ORGANIZATION (HMO) PLANS.*

CHARACTERISTIC	FOR-PROFIT HMO PLANS (N=713)	NONPROFIT HMO PLANS (N=190)
Years in operation		
Mean	14	24
Interquartile range	10–17	13–33
Geographic presence — no. (weighted %)		
Local or regional	200 (33)	167 (80)
Broad-based	511 (67)	23 (20)
Model type — no. (weighted %)		
Staff or group	22 (6)	24 (24)
Mixed	168 (22)	60 (34)
Network or independent-provider association	478 (72)	100 (42)

*Except for the number of insurance plans in each category, data are weighted according to the number of enrollees; thus, the percentages cannot be calculated from the numbers given. $P=0.004$ for the comparison between for-profit and nonprofit HMOs in terms of the percentage with a mixed model; $P<0.001$ for all other comparisons between for-profit and nonprofit HMOs. Data on geographic presence were missing for 2 plans, and data on model type were missing for 51 plans.

FOR-PROFIT AND NONPROFIT HMOs

TABLE 2. CHARACTERISTICS OF THE 13,271 ENROLLEES IN HEALTH MAINTENANCE ORGANIZATIONS (HMOs).*

CHARACTERISTIC	FOR-PROFIT HMOs (N=8750)	NONPROFIT HMOs (N=4521)	P VALUE
Mean age — yr	30.1	30.8	0.13
Age group — no. (weighted %)			0.70
Adults	7,022 (71.2)	3,632 (70.8)	
Children	1,728 (28.8)	889 (29.2)	
Sex — no. (weighted %)			<0.001
Male	4,000 (48.3)	2,166 (51.8)	
Female	4,750 (51.7)	2,355 (48.2)	
Race or ethnic group — no. (weighted %)			
Hispanic	1,048 (12.2)	404 (10.6)	0.33
Non-Hispanic black	802 (13.3)	335 (10.4)	0.07
Non-Hispanic white	6,371 (68.9)	3,525 (72.7)	0.12
Other	529 (5.6)	257 (6.4)	0.33
Mean level of education — yr†	13.7	13.7	0.81
Mean family income — \$	56,113	56,987	0.82
Health status — no. (weighted %)			
Excellent	2,959 (36.1)	1,561 (37.4)	0.41
Very good	3,530 (38.4)	1,734 (36.1)	0.02
Good	1,734 (18.9)	927 (19.6)	0.48
Fair	438 (5.3)	258 (6.0)	0.29
Poor	89 (1.2)	41 (1.0)	0.31

*All data other than the number of enrollees in each category are weighted according to the number of enrollees; thus, the percentages cannot be calculated from the numbers given.

†Data are for adults only.

TABLE 3. ACCESS TO CARE AND CONSUMER ASSESSMENTS ACCORDING TO THE PROFIT STATUS OF THE HEALTH MAINTENANCE ORGANIZATION (HMO).

MEASURE	UNADJUSTED MODEL			ADJUSTED MODEL*		
	FOR-PROFIT HMOs	NONPROFIT HMOs	P VALUE	FOR-PROFIT HMOs	NONPROFIT HMOs	P VALUE
Access to care						
Unmet need or delayed care (%)	13.8	12.9	0.18	13.6	13.4	0.57
Financial barriers	6.3	5.0	0.004	6.1	5.4	0.59
Organizational or administrative barriers	9.6	9.9	0.64	9.4	10.3	0.51
Mean annual family out-of-pocket expenditures (\$)†	508	382	<0.001	498	440	0.02 0.03
Consumer assessment						
Very satisfied with overall care (%)	57.6	65.4	<0.001	58.1	64.0	0.01
Rating of last physician visit (%)						
Thoroughness excellent	35.8	37.8	0.24	36.0	37.6	0.20
Explanation excellent	41.6	44.6	0.098	41.6	45.0	0.14
Listening excellent	41.2	42.3	0.52	41.6	42.2	0.63
Trust in physician (%)						
Doctor puts medical needs first (strongly agree)	62.7	62.9	0.88	63.7	61.4	0.12
Doctor will refer when necessary (strongly agree)	64.0	63.3	0.71	64.2	62.9	0.20

*Data are adjusted for individual and family characteristics of the enrollee, characteristics of the local health care market, and organizational characteristics of the HMO.

†Two P values are reported because the measure was derived from a two-part model; in the first part, the probability of incurring any cost was estimated by logistic-regression analysis, and in the second part, the logarithm of the annual expenditures was estimated by ordinary least-squares-regression analysis.

TABLE 4. ACCESS TO CARE AND CONSUMER ASSESSMENTS ACCORDING TO HEALTH STATUS OF ENROLLEE AND PROFIT STATUS OF THE HEALTH MAINTENANCE ORGANIZATION (HMO).*

MEASURE	HEALTHY ENROLLEES (N=12,445)			SICK ENROLLEES (N=826)			P VALUE FOR COMPARISON BETWEEN HEALTHY AND SICK ENROLLEES
	FOR-PROFIT HMOs	NONPROFIT HMOs	P VALUE	FOR-PROFIT HMOs	NONPROFIT HMOs	P VALUE	
	Access to care						
Unmet need or delayed care (%)	13.1	13.3	0.50	17.4†	14.6	0.09	0.27
Financial barriers	5.9	5.2	0.57	7.3	6.6	0.57	0.89
Organizational or administrative barriers	9.0	10.4	0.39	12.9†	9.9	0.08	0.01
Mean annual family out-of-pocket expenditures (\$) [‡]	480	432	0.03, 0.04	731†	507	0.04, 0.009	0.33, 0.14
Consumer assessment							
Very satisfied with overall care (%)	58.3	63.8	0.01	55.3	65.7	0.007	0.27
Rating of last physician visit (%)							
Thoroughness excellent	36.4	37.5	0.05	30.4	39.7	0.02	0.06
Explanation excellent	42.0	44.8	0.05	36.1	47.5	0.01	0.08
Listening excellent	42.1	42.2	0.64	34.4†	43.5	0.05	0.06
Trust in physician (%)							
Doctor puts medical needs first (strongly agree)	64.2	60.7	0.07	58.7†	67.7§	0.55	0.003
Doctor will refer when necessary (strongly agree)	64.6	62.5	0.14	60.1	66.5	0.74	0.02

*All data are adjusted for individual and family characteristics of the enrollee, characteristics of the local health care market, and organizational characteristics of the HMO. Enrollees were defined as healthy if their self-reported health status was excellent, very good, or good and as sick if their self-reported health status was fair or poor.

†P<0.05 for the comparison with healthy enrollees in for-profit HMOs.

‡Two P values are reported because the measure was derived from a two-part model; in the first part, the probability of incurring any cost was estimated by logistic-regression analysis, and in the second part, the logarithm of the annual expenditures was estimated by ordinary least-squares-regression analysis.

§P<0.05 for the comparison with healthy enrollees in nonprofit HMOs.

ed as excellent, $P=0.05$). All the differences indicated better ratings for nonprofit plans than for for-profit plans. Among sick enrollees, significant differences were found between for-profit HMOs and nonprofit HMOs in terms of out-of-pocket expenditures (\$731 vs. \$507 per year; $P=0.04$ for the first part of the model, $P=0.009$ for the second part of the model), satisfaction with overall care (55.3 percent vs. 65.7 percent, $P=0.007$), and ratings of the physician in terms of thoroughness (30.4 percent vs. 39.7 percent rated as excellent, $P=0.02$), explanations (36.1 percent vs. 47.5 percent rated as excellent, $P=0.01$), and listening (34.4 percent vs. 43.5 percent rated as excellent, $P=0.05$). All these measures also indicated higher ratings for nonprofit plans than for for-profit plans.

Finally, we examined whether the differences between for-profit and nonprofit plans according to sick enrollees were significantly different from the differences according to healthy enrollees. On three measures, healthy enrollees gave for-profit HMOs higher ratings than nonprofit HMOs but sick enrollees gave for-profit HMOs lower ratings than nonprofit HMOs. These measures were organizational or administrative barriers to care (difference between for-profit and nonprofit HMOs, 3.0 percentage points in ratings by sick

enrollees vs. -1.4 percentage points in ratings by healthy enrollees; $P=0.01$), trust in the physician to put medical needs first (difference, -9.0 and 3.5 percentage points, respectively; $P=0.003$), and trust in the physician to refer when necessary (difference, -6.4 and 2.1 percentage points, respectively; $P=0.02$).

DISCUSSION

We found that among all enrollees in HMOs, assessments of medical care appear to be largely unaffected by whether their health plan is for-profit or nonprofit. Because most enrollees are healthy, however, they are unlikely to have meaningful encounters with the health care system.²³ It is therefore important to focus on the experiences of enrollees who are in poor health, although they account for only a small proportion of all enrollees. Because health care for such patients costs more, there may be strong incentives to stint on their care.

Among enrollees in for-profit HMOs, sick enrollees gave significantly lower ratings than healthy enrollees for half of the outcome measures we studied. In contrast, the single significant difference between the ratings of sick and healthy enrollees in nonprofit HMOs indicated that sick enrollees had greater trust in their

physician to put their medical needs first than did healthy enrollees. When we compared the assessments of enrollees in for-profit HMOs with those of enrollees in nonprofit HMOs, we found significant differences among both healthy and sick enrollees, all of which indicated higher ratings for nonprofit HMOs.

Some limitations to our analysis should be noted. First, because we performed multiple comparisons, some significant associations that support our interpretation may have been due to chance. Second, because we did not include objective indicators of clinical quality or outcomes, we have no information about whether people in poor health were more or less likely to receive adequate care in a for-profit HMO than in a nonprofit HMO. Rather, our findings suggest that there is something about for-profit HMOs that leads patients in poor health to perceive them as providing a lower standard of care. Perception-based measures may be influenced by the negative publicity that HMOs receive²⁴; in particular, there is widespread public suspicion and mistrust of for-profit companies,^{23,25} which may bias survey responses and therefore study results. However, since consumers are often not knowledgeable about the characteristics of their own health plans,^{26,27} some may not know whether their health plan is for-profit or nonprofit. Research should be undertaken to explore whether the differences we observed between for-profit and nonprofit HMOs persist when more objective clinical measures of the quality of health care are used.

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