ORIGINAL ARTICLES

Self-selection of enrollers at the creation of a managed care organization

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Factors affecting choice between a managed care organization (MCO) and a fee-for-service insurance plan were examined when the University of Geneva health insurance plan was transformed into an MCO, in October 1992. A case-control study using a mailed questionnaire (response rate 84%) was conducted to compare former members who joined the MCO (joiners, n=421) to former members who opted out in order to keep fee-for-service coverage (non-joiners, n=222). Non-joiners were more likely to be women (odds ratio (OR) from multivariate model was 1.15, p=0.50), to be born in Switzerland (OR=2.04, p<0.01), to have an annual income >75,000 Swiss francs (OR=2.00, p<0.01), to have a personal physician (OR=1.96, p<0.01) and to have consulted a specialist (OR=1.69, p=0.02) or used unconventional medicine (OR=4.59, p<0.01) in the past year. During the previous year, non-joiners had more health care visits than joiners (14.6 versus 9.1, p=0.01). Non-joiners reported better mental health and fewer complained of persistent fatigue (OR=2.18, p=0.03). The choice of health plan was strongly influenced by socio-demographic characteristics, past patterns of health services utilization and health status. The self-selection process was paradoxical: MCO joiners had used fewer health care visits than non-joiners, but their self-reported health status was worse. The differences we have observed between self-selected populations have important implications for the financial performance of competing health care delivery systems.

Key words: managed care organizations, selection process, health status, health services utilization

Managed care is becoming increasingly popular. In the United States, enrolment in managed care organizations (MCOs) has grown rapidly over the past few decades[1] and similar organizations have been recently created in Europe,[2] including Switzerland. As a consequence, the health care consumer is now faced with a greater diversity in health care delivery systems. Both managed care and competition between delivery systems are expected to improve the efficiency of the health care sector. However, some health care plans may be able to attract healthier members than others. Such selection may provide a substantial competitive advantage, over and beyond that derived from improved efficiency of health care.[3] Thus, understanding the self-selection of enrollers for specific health care delivery systems is becoming increasingly important.

Most studies conducted in the United States suggest that MCOs experience a favourable selection of enrollers: persons who choose managed care appear to be less costly to care for than persons who choose fee-for-service coverage.[4] These conclusions are based on the examination of socio-demographic characteristics,[5–14] pre-enrolment use of health services,[6–11] self-reported indicators of health or disease,[8–14] usual source of care,[8,9,14] health practices,[10-12,15,16] health concerns[8,14] and subsequent mortality.[17] The utility of published results regarding self-selection is limited by the fact that only 1 cultural context has been studied (United States) and that most studies include only few explanatory variables. Moreover, because both MCOs and fee-for-service delivery systems are changing rapidly, some of the older results may be obsolete now.

The transformation of the group health insurance for University of Geneva students into an MCO provided a new opportunity of examining the consumer's choice between different health care delivery systems. We examined whether former enrollers who opted for fee-for-service coverage differed from those who accepted the MCO, in terms of socio-demographic characteristics, economic status, use of health services in the previous year, self-reported health status, health-related lifestyles, health-related concerns and satisfaction with previous medical care.

METHODS

Study setting

Traditionally, in Switzerland, ambulatory health care has been provided by independent private practitioners and reimbursed by insurance companies on a fee-for-service basis. Insurance premiums are paid by the plan members; the state grants subsidies to persons with low income. The state also subsidizes non-profit hospitals.[18,19] In 1989, the

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federal government authorized health insurance contracts 'with limited choice of physician', i.e. managed care organizations.

Under this new provision, the group health insurance plan for students and teaching staff at the University of Geneva was transformed into an MCO in October 1992. In the MCO, patients have to consult a designated primary care physician who regulates access to specialists and to hospital care. MCO premiums were approximately 25–40% lower than premiums in fee-for-service insurance plans available in Geneva; the annual deductible was maintained at 150 Swiss francs (the same as in fee-for-service plans), but the 10% co-payment for ambulatory care (used by all fee-for-service plans) was dropped. University insurance plan members were sent the MCO contract by mail and were automatically enrolled in the new plan. Those who did not want to join the MCO had to resign from the group insurance plan and select a fee-for-service insurance plan, which they could choose regardless of their health status.

Study population and sampling

The population consisted of all students and family members who had been enrolled in the group insurance for at least 1 year, who were 18–44 years old, lived in Geneva, spoke French and were eligible for group insurance in the next academic year. A total of 2,714 persons were identified as potentially eligible from the insurance membership roll. Of these, 2,353 joined the MCO (joiners) and 361 opted for a fee-for-service insurance plan (non-joiners). A random sample of 500 joiners and all 361 non-joiners were contacted. The final eligible sample consisted of 473 joiners and 293 non-joiners, after elimination of persons who had moved out of Geneva, mostly following completion of their studies.

Study design and variables

A case-control study design was used to compare non-joiners ('cases') and MCO joiners ('controls'). Explanatory variables included the following.

- Socio-demographic data: age, gender, place of birth, number of years living in Geneva, household composition, professional activity and total annual household income (more or less than 75,000 Swiss francs, equivalent to approximately $ 50,000).
- Utilization of health services during the year before the creation of the MCO: having a personal physician in Geneva, number of visits to physicians of different specialities and other providers of care, treatments received for specific diseases and number of hospitalization days.
- Health status was assessed by a translated version of the SF–36 health survey,[20] which measures physical functioning, social functioning, role limitations due to physical and to emotional problems, mental health, vitality, bodily pain and general health. Each dimension was summarized by a score between 0 (worst) and 100 (best). Participants were also asked about health-related worries, such as stress, anxiety or fatigue and whether they would have liked more medical help to deal with them.
- Health-related lifestyles: use of tobacco and alcohol, driving in a state of inebriation, use of seat belts, number of sexual partners, use of condoms and frequency of exercise.
- Satisfaction with medical care received during the year before the creation of the MCO was measured by questions adapted from the patient satisfaction questionnaire.[21] Six dimensions of patient satisfaction were studied: physician's behaviour, access to health care, continuity in care, advice on prevention by physician, general satisfaction with medical care and coverage and cost of health insurance. Each dimension was summarized by a score between 0 (worst) and 100 (best).
- Reasons for giving up the group health insurance plan, in non-joiners only. Possible reasons were loss of free choice of physician, fear of a lower quality of care in the MCO and the fact that the new health plan disallowed coverage of some ongoing treatments.

Data collection

Questionnaires were mailed 3 weeks after the opening of the MCO. Persons who had not answered were sent another questionnaire every 2 weeks (up to 5 questionnaires). Two incentives to increase the response rate (the offer of 10 Swiss francs to respondents and a reminder 'thank you' postcard) were tested in the initial mailing and used in all follow-up mailings.[22] In addition, 4 weeks after the beginning of the data collection, research assistants phoned subjects who had not yet answered and asked them to return the questionnaire. Data collection was stopped 2 months after the first mailing. A total of 643 eligible persons (84%) answered: 421 joiners (89%) and 222 non-joiners (76%).

Analysis

Cases and controls were compared using cross-tabulations for categorical variables and boxplots for continuous variables.[23] Chi-square tests and t-tests were used for significance testing (p values ≤ 0.05 were considered statistically significant). Odds ratios and 95% confidence intervals were used to assess associations between explanatory and outcome variables. Logistic regression was used to model simultaneous effects of several explanatory variables. Successive models were compared using likelihood ratio tests. Data were processed with Epi Info,[24] Systat[25] and SPSS for Windows[26] software.

RESULTS

Univariate analysis

Only 12% of all eligible persons chose to give up the University of Geneva group insurance plan in order to keep fee-for-service coverage. The mean age was 29 years in both joiners and non-joiners. However, the 2 groups differed according to socio-demographic variables and economic status *(table 1)*. Non-joiners were more likely to be women, to have a high household income and to have been born in Switzerland. Students born in Africa and Latin America were particularly likely to join the MCO.

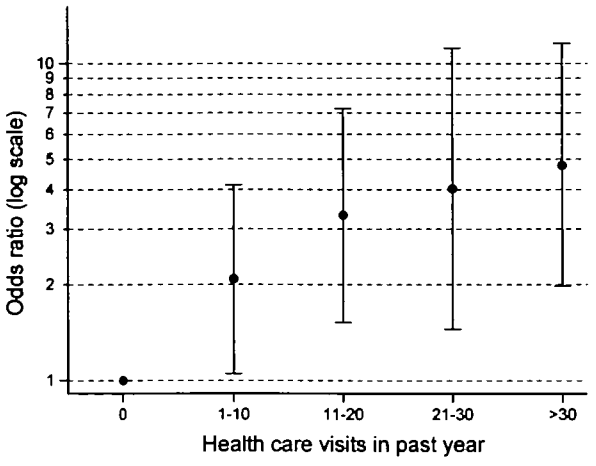

Figure 1 Odds ratios for choosing fee-for-service coverage over a managed care organization, according to the number of health care visits in the year preceding enrolment, Geneva, Switzerland, 1992

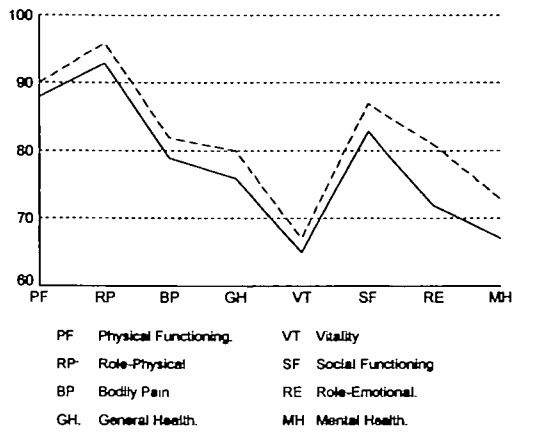

Figure 2 Self-reported health status, measured by the SF–36 health survey, among enrollers in a managed care organization (joiners, solid line) and in a fee-for-service plan (non-joiners, dashed line), Geneva, Switzerland, 1992

More non-joiners (69%) than joiners (48%, p<0.01) had a personal physician in Geneva before the creation of the MCO. During the year before the creation of the MCO, non-joiners had 60% more out-patient visits than joiners and 125% more visits to psychiatrists or psychologists (*table 2*). Visits to mental health specialists represented 34% of all refundable ambulatory visits among non-joiners and 27% among joiners. Differences between joiners and non-joiners were especially important in the use of unconventional medicines, such as acupuncture or homeopathy. In contrast, non-joiners had fewer hospital days than joiners, but this result did not reach statistical significance.

The association between the number of health care visits in the past year and the odds of not joining the MCO was progressive, suggesting a dose-response relationship (*figure 1*).

Non-joiners had been treated in the past year for slightly more specified illnesses (1.36) than joiners (1.25, p=0.19). There were no substantial differences in the 1 year period prevalence of treatment for each of hay fever, asthma, hypertension, diabetes, lower back pain, accidents, urinary tract infection, sexually transmitted disease, depression, dental cavities, dermatologic problems and flu syndrome.

Despite their higher use of ambulatory care, non-joiners reported a better health status than joiners (*figure 2*). In particular, they had better mental health scores and fewer role limitations due to emotional problems. They also reported fewer symptoms related to mental well-being, notably stress, anxiety and constant fatigue (*table 3*).

Non-joiners also had healthier lifestyles: they smoked less, fastened their seat belts more often and took fewer risks with respect to acquiring sexually transmitted disease. The 2 groups were similar in terms of physical exercise and drinking and

Table 1 Socio-demographic characteristics of managed care organization enrollers (joiners) and fee-for-service enrollers (non-joiners), Geneva, Switzerland, 1992

	Joiners	Non-joiners	P-value
Mean age (years)	29	29	0.66
Women (%)	48	56	0.06
Born in Switzerland (%)	27	46	<0.01
Years spent in Geneva (mean)	9	14	<0.01
Living arrangements			0.20
Alone (%)	27	21	
With husband/wife/partner (%)	36	48	
Other (%)	37	30	
Has a professionnal activity (%)	57	68	0.01
Annual family income >75,000 Swiss francs (%)	17	34	<0.01

Table 2 Use of health services during the year before enrolment in a managed care organization, Geneva, Switzerland, 1992

	Number of visits (or days)			Per cent with ≥1 visit (or day)		
	Joiners	Non-joiners	P-value	Joiners	Non-joiners	P-value
All out-patient visits	9.1	14.6	0.01	89	95	0.01
Out of which, visits to						
Physicians (except psychiatrists)	3.4	4.6	0.03	80	90	<0.01
Psychiatrists and psychologists	2.0	4.5	0.05	8	12	0.12
Unconventional medicine [a]	0.9	2.7	0.15	10	21	<0.01
Dentists	1.5	1.4	0.65	50	58	0.04
Physiotherapists	1.2	1.3	0.85	8	13	0.04
Other (family planning, nurse, midwife)	0.1	0.2	0.48	4	5	0.91
Hospitalizations (days)	0.6	0.4	0.29	11	10	0.82

a Homeopathy, acupuncture, etc.

driving. Non-joiners drank half a glass of alcohol more per week than joiners (*table 3*).

Finally, non-joiners were more satisfied with the medical care they had received during the year before the creation of the MCO (*table 3*). The greatest differences in satisfaction were seen with regard to the continuity in care, general satisfaction and insurance coverage, while joiners and non-joiners did not differ in their satisfaction with regard to the advice they had received about prevention.

Multivariate analysis

Explanatory variables which were significantly associated with being a non-joiner in univariate analyses were used to build multivariate logistic regression models. The final model, based on 574 persons with complete data (89% out of 643), was adjusted for sex despite a lack of statistical significance for the latter variable (*table 4*). Being born in Switzerland, having a household income over 75,000 Swiss francs (or $ 50,000) and having a personal physician in Geneva approximately doubled the odds of selecting fee-for-service coverage. The odds ratios were >4 for users of unconventional medicines and 1.6 for those who had consulted a specialist in the past year. Not having a complaint of chronic fatigue and reporting better mental health were also independently associated with the likelihood of selecting fee-for-service coverage. However, satisfaction with health care and risk taking in sexual practices were not significantly associated with choice of health plan after adjustment for other explanatory variables and were dropped from the final model.

Reasons for not joining the MCO

A large majority (84%) of non-joiners said that the loss of free choice of physician had influenced 'a lot' their decision not to join the MCO, 9% 'a little' and 7% 'not at all'. Four out of 5 said they did not join the MCO because they feared (38% 'a lot' and 42% 'a little') a lower quality of care in the MCO. Forty-seven per cent said they opted out because the new health plan disallowed coverage of some ongoing treatments.

Table 3 Other characteristics of managed care organization enrollers (joiners) and fee-for-service enrollers (non-joiners), Geneva, Switzerland, 1992

	Joiners	Non-joiners	P-value
Health-related concerns for which more medical help was desired in past year			
Stress, overwork (%)	13	8	0.06
Nervousness, anxiety (%)	15	9	0.02
Sadness, feeling depressed (%)	12	8	0.10
Constant fatigue (%)	13	6	0.01
Relational problems (spouse/friends/parents) (%)	8	5	0.09
Health-related lifestyles			
Current smokers (%)	38	31	0.12
Alcohol use (number of glasses per week)	3.9	4.3	0.42
Fastened seat belt worn at all times (%)	37	44	0.11
Drove in state of inebriation at least once in the past year (%)	18	16	0.51
Had >1 sexual partner *and* did not use condoms at all times (%)	21	13	0.03
Exercised at least once a week (%)	48	49	0.52
Satisfaction with medical care received in past year (mean score, 0–100)			
Physician behaviour	65	68	0.05
Access to care	63	66	0.03
Continuity in care	63	69	<0.01
Advice on prevention by physician	60	60	0.93
General satisfaction of care	56	61	0.01
Benefits and cost of health insurance	31	35	0.02

DISCUSSION

This study indicated that the choice of a particular health insurance plan is strongly influenced by socio-demographic characteristics, past patterns of health services utilization and health status of the consumer. These variables have substantial independent effects on the choice between a managed care organization and a fee-for-service health insurance plan. On the other hand, the consumer's satisfaction with past health care and health-related lifestyles are less important in predicting health plan choice when the previous variables are known.

Our study confirms the global result of research on self-selection conducted in the United States over the past decades, namely that self-selection does exist. In addition, it provides 2 new insights. Previous studies examined only 1[4,16,17,27] or a few[6–15] predictor variables at a time. Thus, the first important contribution of this study is the demonstration that socio-economic status, past utilization of services and health status are *independent* determinants of the choice of a health care plan. Secondly, findings of

Table 4 Odds ratios of choosing fee-for-service coverage over a managed care organization from a multivariate logistic regression model, Geneva, Switzerland, 1992

Predictor	Odds ratio	95% CI
Born in Switzerland	2.04	1.40–2.99
Family income >75,000 Swiss francs	2.00	1.31–3.07
Woman	1.15	0.76–1.74
Mental health score (for 10 points increase[a])	1.17	1.03–1.31
No complaint of chronic fatigue	2.19	1.07–4.47
Had a personal physician before MCO creation	1.96	1.33–2.90
Consulted a specialist in past year	1.69	1.08–2.66
Used unconventional medicine[b] in past year	4.59	1.58–13.32

a A higher score is better (scale 0–100)
b Homeopathy, acupuncture, etc.
CI: confidence interval

favourable or adverse selection are usually considered to be mutually exclusive. In our study the selection process could be interpreted as *both* favourable and adverse to the MCO: past use of services was lower in MCO joiners (favourable selection), but their self-reported health status was worse (adverse selection). Thus, apparent contradictions between previous findings may merely reflect the fact that different studies examined different variables.

In contrast to other studies, fee-for-service enrollers in our sample reported a significantly better subjective health status, especially in the area of mental health. Until now, most studies which examined health status in relation to health plan selection have concluded that there was no significant difference,[8–10,12,14] or found managed care enrollers to be healthier.[11,15] Inconclusive findings in some of the older studies may be due to their using crude measurement instruments (often a single question to assess health status). The more recent studies, which used more refined instruments, examined middle-aged[11] and elderly[15] populations, whereas our study included young adults only. Another reason for the discrepancy may be the lower participation rates in previous studies, ranging from 47[5,9] to 71%,[11] as compared to 84% in our study.

Paradoxically, despite lower self-reported health status, MCO joiners had used fewer health services in the past year than fee-for-service enrollers. Lower pre-enrolment utilization in managed care enrollers has been observed in most,[6–8,10,13] but not all[9,27] published studies. Our hypothesis to explain this paradoxical finding is that managed care enrollers have a different attitude towards health care, which induces them to use fewer health services for a given level of self-perceived health. The inverse association with hospital days (MCO enrollers having used more than fee-for-service enrollers) speaks in favour of this hypothesis, since hospitalization is usually not decided by the patient and is therefore a better reflection of poor health than use of ambulatory services. The different socio-economic composition of the MCO joiners and non-joiners may contribute to different attitudes toward health care.

While in the short-term, the lower threshold for use of ambulatory care in MCO joiners seems favourable for the plan, this may be reversed in the long-term. The risk is that poor health status in the absence of health care use may reflect delays in care seeking, which may translate into higher health care costs in the future. An important question, which we cannot answer using our data, is whether MCO joiners had abstained from using necessary or superfluous health services.

Other findings from our study confirm previous reports. Compared to fee-for-service enrollers, managed care enrollers have been reported to be less likely to have a personal physician,[8,9,14] to have resided in the study area for shorter periods of time[12] and to have lower income, in all studies[5,9,11–13] but 1.[8] No differences in health-related habits, such as smoking, alcohol use, use of seat belts and exercise were noted in 2 studies[10,16] which did not, however, address sex-related behaviours.

Among reasons for preferring a fee-for-service plan, ability to freely choose physicians was given by 76% of respondents in 1 study,[12] much as in our study, but by only 7% of respondents in another.[9] This may reflect the very limited choice of primary care physicians in the Geneva MCO.

Participants were asked to report their utilization of health services during the past 12 months. Not all of them may have remembered exactly the number of visits they had during such a long period. Imprecise measures generally attenuate and dilute the observed effects. Had we used more precise measures, we would probably have observed wider and more statistically significant between-group differences.

The generalizability of our findings is limited by the fact that study participants were young, urban residents and of high educational level, as well as by the practical conditions of the creation of the Geneva MCO. These conditions were rather unusual: all former enrollers were automatically transferred into the MCO, only 1 month after having received the new contract. Persons who decided to opt out had to actively disenrol and select a private insurance plan. Thus, non-joiners have also been selected on their capacity to react rapidly and take an important decision without delay. These conditions, perhaps more than attractive monthly premiums, explain why 88% of group insurance members selected the MCO. In contrast, in the United States, typically only 5–25% of employees select managed care over fee-for-service coverage when given a choice.[6,7,9,10,13,15]

The demonstration of substantial differences between enrollers in different health insurance plans underscores the importance of studying self-selection of enrollers in MCOs and other health care structures. In particular, self-selection must be taken into account when comparing the economic performance and quality of care of competing systems of health care delivery[3] and when setting fair health insurance premiums.[4]

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