

Health Education and Patient Satisfaction

Helen Halpin Schaffler, PhD, MSPH; Tracy Rodriguez, MPH, MBA;
and Arnold Milstein, MD, MPH

Berkeley and San Francisco, California

Background. The objective of this research was to determine whether patients who reported that their physician or other health care professional had discussed health education topics with them were more satisfied with their physician than were patients who reported they had not.

Methods. Data were from the 1994 Health Plan Value Check conducted by the Pacific Business Group on Health (52% response rate). The study sample included 5066 employees ranging in age from 19 to 64 years and representing four large corporations and 21 health plans. This population was randomly sampled by company and health plan. Bivariate and multivariate analyses were used to assess the relationship between level of patient satisfaction with physician and reported discussion of health education topics with a physician or other health professional in the last 3 years.

Results. Patients who reported that their physician or other health care professional discussed at least one

health education topic with them in the last 3 years were more likely to be satisfied with their physician (unadjusted odds ratio [OR]=1.96; 95% confidence interval [CI] 1.79 to 2.25) compared with patients who did not. In the multivariate model, the relationship remained positive and statistically significant (adjusted OR=1.49; 95% CI, 1.32 to 1.68). This relationship was observed for patients enrolled in all types of HMOs and managed care plans, as well as those with indemnity or fee-for-service insurance.

Conclusions. Patients who reported that their physician or other health care professional had discussed one or more health education topics with them in the last 3 years were more likely to be very satisfied with their physician than were patients who reported they had not.

Key words. Physician-patient relations; patient satisfaction; health education. (*J Fam Pract* 1995; 42:62-68)

Patient assessments of satisfaction with physician are important, not only as a measure of the quality of care patients receive,¹⁻⁵ but also in identifying potential areas for improving the content of care provided by physicians.^{3,6} Research also suggests that improving patient satisfaction with physician increases the likelihood that a patient will return to a given health care provider, a finding that takes on added significance in an increasingly competitive medical care marketplace.⁷⁻¹⁰

Submitted, revised, August 21, 1995.

From the Division of Health Policy and Administration, University of California at Berkeley School of Public Health (H.H.S.), and Pacific Business Group on Health (T.R., A.M.), San Francisco. Requests for reprints should be addressed to Helen Halpin Schaffler, PhD, MSPH, Division of Health Policy and Administration, University of California at Berkeley School of Public Health, 406 Warren Hall, Berkeley, CA 94720-7360. E-mail:helenhs@uclink2.berkeley.edu

Several reviews have summarized the factors associated with patient satisfaction with medical care. These include the sociodemographic characteristics of the patient (being older and female); better health status; positive attitudes and expectations; the structural, organizational, and financial characteristics of medical care (traditional fee-for-service, greater physician choice, lower cost, increased access, availability, and convenience of care); continuity of care; quality of care (technical skills, intelligence, and qualifications of the provider); interpersonal aspects of care (strong communication skills of the provider); and positive health outcomes.¹⁻⁴

The few studies that have examined the relationship between preventive care, health education or health promotion, and patient satisfaction with physician suggest that there is a positive association.^{11,12} In a study of members in one large health maintenance organization, Fin-

cham and Wertheimer¹¹ found that physicians' preventive health care practices were positively associated with patient satisfaction. In a study of patients receiving care from residents in an outpatient facility of a university medical center, Robbins and colleagues¹² found that the provision of health education by the physician was related to patient satisfaction with general care provided by the physician.

We undertook this study to examine the association between patients' self-reports that a physician or other health care professional discussed health education topics with them in the last 3 years and the level of patient satisfaction with the physician or other provider. This report includes patient experiences within a broad range of health plan types, and provides the opportunity to test if the observed relationship is independent of other known correlates of patient satisfaction.

Methods

Sample and Data Collection

The study sample includes respondents to the 1994 Health Plan Value Check (HPVC) conducted by the Pacific Business Group on Health (PBGH). A total of 17,432 employees and early retirees representing 21 health plans offered by four large corporations were randomly sampled. The 21 health plans included indemnity plans, staff or group health maintenance organizations (HMOs), independent practice association (IPA) HMOs, mixed HMOs, preferred provider organizations (PPOs), and point-of-service (POS) plans. The response rate to the mail survey was 52%. An analysis of the differences in the demographic characteristics and ambulatory care visits between survey respondents and nonrespondents found that respondents are likely to be older and female, with no differences observed in rates of ambulatory care visits.¹⁴

The final sample selected for this study excluded respondents who were aged 18 years or younger and 65 years or older (8%), those who reported that they had been members of their current health plan for less than 1 year (12%), those who reported that they had not visited a physician at least once in the last 3 years (12%), and those with missing data (12%). The final study sample included 5066 employees who met all the inclusion criteria.

Dependent Variable

The survey question that assessed overall satisfaction with physician was, "Overall, how satisfied are you with the doctor seen most frequently?" The response categories

were based on a 5-point Likert-type scale, ranging from 1=very dissatisfied to 5=very satisfied.

Independent Variable

The survey question assessing whether the respondent's physician or health care professional had discussed health education topics was, "Has your physician or other health professional discussed any of these health education topics with you in the last 3 years?" The positive response categories for this question included exercise, nutrition, smoking, injury prevention, motor vehicle safety, alcohol and substance use, and sexually transmitted disease. A single dichotomous variable was created for each employee to indicate if a physician or health professional had discussed any or none of these health education topics in the last 3 years.

Controlling Variables

To control for the use of health education programs offered by the health plan that are provided outside the context of the clinician visit, a variable was included indicating whether each employee had participated in any or no health promotion programs offered by their plan. Several variables measuring the sociodemographic characteristics of employees, including age, sex, health status, and education, were selected to control for confounding in the multivariate analysis.

A group of variables was created indicating the type of health plan in which each employee was enrolled as of December 1993. Data on employee health plan were provided for each employee by the companies participating in the survey. Health plans were grouped into three major types for the analysis based on the use of physicians as gatekeepers and physician payment method: staff/group model HMOs, in which physicians act as gatekeepers and are paid on salary; mixed/IPA/POS model plans, in which physicians act as gatekeepers but payment is a mix of capitation and fee-for-service reimbursement; and PPO/indemnity plans, in which the physician network is open, the physician does not serve as a gatekeeper, and payment is fee-for-service or discounted fee-for-service.

Several additional variables measuring health plan characteristics were selected. An ordinal variable was also created to indicate the number of years the employee had been enrolled in the current medical plan. To control for cost-sharing as an access barrier to receiving medical care, one variable was created measuring employee satisfaction with out-of-pocket health care costs under the plan.

An additional variable was selected to control for physician communication style based on answers to the

question, "How satisfied are you with the doctor's attention to what you have to say?" The response categories were reported on a 5-point Likert-type scale, ranging from 1=very dissatisfied to 5=very satisfied. We believed it was critical to control for physician communication style to estimate the independent effect of health education discussions because of the possibility that communication style might explain the hypothesized association between discussion of health education topics and patient satisfaction with physician.

Statistical Analysis

Bivariate analysis using the chi-square test was conducted to assess the relationship between level of satisfaction with physician and patients' self-reports that the physician or other health professional had discussed health education topics with them in the last 3 years. Unadjusted odds ratios (OR) and 95% confidence intervals (CI) were estimated for each level of satisfaction with physician.

Ordered logit models were estimated for the full sample and by health plan type to model the effect of health education on patient satisfaction with physician.¹⁵ The models were estimated in both unadjusted model and adjusted forms to control for potentially confounding variables including the patient's age, sex, education and health status, smoking status, participation in health-promotion programs offered by the plan, level of satisfaction with out-of-pocket costs, number of years in the current health plan, and physician communication style. Both adjusted and unadjusted odds ratios and 95% confidence levels were estimated for patient satisfaction with physician as a function of patient reports of health education for the full sample and by health plan type.

Results

Study Sample

Table 1 presents frequencies for the characteristics of the study sample. Most respondents were male (64%), were college graduates or had postgraduate education (61%), and reported their health to be good, very good, or excellent (89%). The mean age was 44.6 years. Fewer than 10% reported having participated in a health-promotion program offered by their health plan. More than one half (54%) reported that they were satisfied or very satisfied with their out-of-pocket costs, and most (77%) were very satisfied or satisfied with their physician's attention to what they have to say. Most patients reported being very satisfied (33%) or satisfied (48%) with their physician; 12% were neutral and 7% were dissatisfied or very dissatisfied.

Table 1. Characteristics of 5066 Patients Who Were Between the Ages of 19 and 64 Years, Had Been Enrolled in a Health Plan for at Least One Year, and Had Visited a Physician in the Last Three Years

Patient Characteristic	Frequency of Response, %
Physician discussed health education topics with patient in last 3 years	62.1
Topic discussed	
Exercise	49.1
Nutrition	42.7
Smoking	21.4
Injury prevention	11.3
Sexually transmitted disease	10.1
Alcohol/substance abuse	8.8
Motor vehicle safety	2.8
Participated in any health improvement programs offered by the health plan	9.0
Sex	
Male	64.4
Female	35.6
Education	
Some high school	0.6
High school graduate	8.7
Some college/technical school	29.1
College graduate	40.5
Postgraduate	21.0
Health status	
Excellent	16.9
Very good	37.1
Good	36.5
Fair	8.3
Poor	1.3
Smoking status	
Current smoker	11.1
Former smoker	32.9
Never smoked	56.0
Satisfaction with copayment, coinsurance and deductibles	
Very satisfied	10.7
Somewhat satisfied	43.8
Neutral	21.1
Dissatisfied	18.5
Very dissatisfied	5.9
Type of health plan	
Staff/group model HMO	23.9
Mixed/IPA/POS model HMO	43.5
Indemnity/PPO health plan	32.6
Years in health plan	
1-2 years	23.5
3-4 years	22.9
5-6 years	12.8
>6 years	40.5

More than one half (62%) of the respondents reported that one or more of the health education topics had been discussed with them in the last 3 years, but the

Table 1. Continued

Patient Characteristic	Frequency of Response, %
Patient satisfaction with physician communication style (doctor's attention to what patient says)	
Very satisfied	22.9
Somewhat satisfied	54.2
Neutral	14.6
Dissatisfied	6.8
Very dissatisfied	1.5
Overall patient satisfaction with physician	
Very satisfied	33.3
Somewhat satisfied	47.7
Neutral	11.9
Dissatisfied	5.7
Very dissatisfied	1.3

HMO denotes health maintenance organization; IPA, independent practice association; POS, point-of-service; PPO, preferred provider organization.

rates varied considerably by topic. Patients reported exercise (49%), nutrition (43%), and smoking (21%) as the topics most frequently discussed with them by physicians; motor vehicle safety (<3%) was the least frequently discussed topic. In addition, only 9% to 11% of patients reported that their physician or other health professional had discussed alcohol or substance abuse, injury prevention, or sexually transmitted diseases with them in the last 3 years.

An analysis of the characteristics of patients who reported that their health care provider had discussed health education topics in the last 3 years suggests that health education topics are discussed as frequently with men as with women, with no differences observed by level of education. However, patients of poor health status were more likely to report that physicians had discussed health education topics than were those of excellent health status (75.0% vs 56.4%, respectively). Smoking status was also associated with a greater likelihood of having discussed health education topics; current smokers reported the highest rates (73.2%), followed by former smokers (65.7%). Rates of reported discussion of health education

topics also differed by type of health plan. Persons in staff or group HMOs reported the highest rates (65.6%), and persons in indemnity and POS plans reported the lowest rates (59.9% and 57.5%, respectively). Reported rates of this type of discussion also varied by the length of time employees had been enrolled in their plan. Those who had been enrolled for more than 6 years reported the highest rates, while those enrolled for only 1 to 2 years reported the lowest (64.8% vs 55.0%, respectively).

Bivariate Analysis

Table 2 presents the results of the bivariate analysis of the relationship between patient reports of discussing health education and satisfaction with their physician. Patients who reported that their physician or other health professional had discussed health education topics with them in the last 3 years, compared with those who reported they had not, were more likely to be very satisfied (OR=1.60; 95% CI, 1.46 to 1.75) and were less likely to be somewhat satisfied (OR=0.91; 95% CI, 0.86 to 0.97), neutral (OR=0.65; 95% CI, 0.56 to 0.76), somewhat dissatisfied (OR=0.54; 95% CI, 0.43 to 0.67), and very dissatisfied (OR=0.39; 95% CI, 0.24 to 0.65) with their physician.

Multivariate Analysis

The unadjusted odds ratio of patient satisfaction with physician as a function of patient reports of health education is 1.96 (95% CI, 1.79 to 2.25), indicating that patients who reported that their physician or other health professional had discussed one or more health education topics with them in the last 3 years were nearly twice as likely to be satisfied with their physician as patients who reported they had not.

Table 3 presents the odds ratios and 95% confidence intervals estimated from the ordered logit models. Patient reports of health education discussions are positively associated with satisfaction with physician in both adjusted

Table 2. Results of Bivariate Analysis of Association Between Patient Self-report of Health Education and Level of Satisfaction with Physician

Health Education Question*	No.	Level of Patient Satisfaction with Physician, %				
		Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied
Answered yes	3145	0.8	4.3	9.9	46.1	38.9
Answered no	1921	2.1	8.0	15.2	50.4	24.3
Full sample	5066	1.3	5.7	11.9	47.8	33.3
Analysis of association						
Unadjusted odds ratio		0.39	0.54	0.65	0.91	1.60
(95% confidence interval)		(0.24-0.65)	(0.43-0.67)	(0.56-0.76)	(0.86-0.97)	(1.46-1.75)

*Has your physician or other health professional discussed health education topics with you in the last 3 years?

Table 3. Odds Ratios for Patient Satisfaction with Physician for Persons Who Report That They Have and Have Not Discussed Health Education Topics with Their Health Care Provider in the Last 3 Years (N=5066)

Ordered Logit Model	Unadjusted Odds Ratios (95% CI)	Adjusted Odds Ratios (95% CI)
Full sample	1.96 (1.79, 2.25)	1.49 (1.32, 1.68)
Insurance plan type		
Group/staff HMO	1.91 (1.52, 2.40)	1.40 (1.09, 1.81)
IPA/Mixed/POS HMO	2.01 (1.71, 2.36)	1.51 (1.26, 1.81)
Indemnity/PPO plans	2.06 (1.70, 2.51)	1.55 (1.25, 1.94)

95% CI denotes 95% confidence interval; HMO, health maintenance organization; IPA, independent practice association; POS, point-of-service; PPO, preferred provider organization.

and unadjusted models for the full sample and within each of the separate models estimated by health plan type. The overall adjusted odds ratio is 1.49 (95% CI, 1.32 to 1.68), indicating that patients who report that their physician or other health professional discussed one or more health education topics in the last 3 years were nearly 50% more likely to be satisfied with their physician than were patients who reported they did not. The adjusted odds ratios by health plan type are 1.40 (95% CI, 1.09 to 1.81) for group/staff model HMOs, 1.51 (95% CI, 1.26 to 1.81) for mixed/IPA/POS model HMOs, and 1.55 (95% CI, 1.25 to 1.94) for indemnity/PPO model health plans.

Age and education were not statistically significantly associated with level of patient satisfaction with physician, but many other variables were. Sex was significantly associated ($P < .001$): women were more satisfied with their physician than were men. Health status and employee satisfaction with out-of-pocket health care costs were also both positively associated with level of patient satisfaction with physician ($P < .001$). Being a member of a PPO, as compared with being a member of a staff or group model HMO, was positively associated with level of patient satisfaction with physician, but there was no statistically significant difference between members of indemnity plans, IPA and mixed HMOs, and POS plans as compared with those of staff or group model HMOs with respect to satisfaction with physician. A patient-centered practice style, measured in this study by the extent to which patients report satisfaction with their physician's attention to what they have to say, is positively associated with satisfaction with physician ($P < .001$). Finally, while participation in a health promotion program offered by the plan has been shown to be associated with overall patient satisfaction with the health plan,¹⁶ it was not found to be associated with satisfaction with physician.

Limitations

As with most patient satisfaction research, an important limitation of this study is that the survey data are cross-sectional rather than longitudinal. Therefore, only the associations between patient reports of health education and satisfaction with physician can be estimated. The temporal and causal relationships, if any, are unknown. One possible explanation for our findings is that persons who reported being more satisfied with their physician may have been more likely to receive health education from their physician or other health professional. However, the findings from this research do not support this explanation. For example, persons who were less healthy were more likely to report discussion of health education topics but less likely to be satisfied with their physician. Similarly, we found that smokers were more likely to report discussion of health education topics but no more likely to be satisfied with their physician than were nonsmokers. Studies with a longitudinal design would further explore the nature of the observed associations.

Patient recall is another possible limitation of this study. This study measured whether patients *recalled* if their physician or other health professional had discussed health education topics with them in the last 3 years, not whether they actually *had* discussed health education topics with their provider. No reliable means for verifying patient self-reports could be identified. The actual rates of health education discussions may be higher or lower than those reported here. Satisfaction with physician may be associated with the individual's recall rather than the act of discussing health education topics. However, patients' ability to recall health education discussions may reflect the effectiveness of this intervention.

The survey question upon which the health education discussion variable was based also has limitations in that it does not distinguish whether it was the patient or the provider who initiated the discussion of health education topics. It is not clear whether the patient's ability to recall the discussion is affected by which individual (patient or physician) initiated the discussion. In addition, it is not possible to tell the length or quality of discussion, only that a specific topic was or was not discussed. Thus, patient self-reports may vary from brief discussions to in-depth counseling related to a risk factor. Another limitation is that patients were asked to recall whether the topics had been discussed in the past 3 years. This time frame is based on the periodicity schedule for preventive health examinations, which should include counseling on risk factors, recommended for this age group by the US Preventive Services Task Force.¹⁷ It may be that patients are better able to recall discussions that took place more

recently and are less likely to recall discussions that occurred 2 or 3 years ago.

Finally, our model does not include other covariates, such as other patient health behaviors and risk factors for disease and injury, specific comorbidities, and the specialty of the physician, that may contribute to the observed relationships between discussion of health education topics and patient satisfaction with physician. However, data on these variables were not available from the survey.

Discussion

Our study demonstrates that patient satisfaction with physician is positively and statistically significantly associated with patients' reports that their physician or other health professional discussed one or more health education topics with them in the last 3 years, regardless of the type of health plan in which the person was enrolled. Patients who reported having discussed any health education topics with a health care provider were more likely to be satisfied with their physician than patients who reported that they did not. This relationship is observed for persons in all types of health plans including all types of HMOs, PPOs, and indemnity plans.

These findings are consistent with and build on the findings from the few other studies that have explored the association between preventive practices and patient satisfaction with physician.^{11,12} A number of studies, including a meta-analysis, have also shown that patient satisfaction with physician is positively associated with the physician's practice style and with the characteristics of partnership building, positive vs negative talk, and more communication overall.¹⁸⁻²¹ Stewart¹⁸ has characterized these elements as part of a patient-centered practice style. Our study confirms and extends this research and demonstrates that both a patient-centered practice style, in which the physician pays attention to what the patient says, and a prevention-oriented practice style, in which the physician discusses health education topics with the patient, are associated with level of patient satisfaction with physician.

The potential health benefits of discussing health education topics in the clinical setting have been widely studied and reported.¹⁷ The evidence is particularly strong on the impact of physician counseling for smoking cessation. Although most physicians value preventive care,^{22,23} many continue to provide preventive services less frequently than recommended in published guidelines and by the physicians themselves.²⁴⁻³⁰

Physician misperception of patients' needs and desires may be one factor that contributes to underprovision

of preventive counseling.³¹⁻³³ Physicians also cite patient reluctance as a barrier to providing certain preventive screening tests, particularly those that might cause embarrassment.^{26,33} Physicians are also less likely to give advice or counsel patients on health behaviors if they feel patients are not interested, do not want to make changes, or will not adhere to their recommendations.^{34,35} Some physicians may fear, for example, that counseling a smoker to quit or to attend a smoking cessation program may provoke anger or frustration and decrease the patient's satisfaction with physician. Physicians who weigh their knowledge of potential health benefits to the patient against their perceptions of the potential for patient dissatisfaction with unsolicited health advice may choose not to discuss health education topics. Alternatively, physicians might be more willing to offer health education and counseling if it were clear that providing these services would not adversely affect, but rather would be likely to increase patient satisfaction with their services.

While 62% of patients in our study reported that their physician or other health professional had discussed at least one health education topic with them in the last 3 years, fewer than one half reported that exercise, nutrition, or smoking had been discussed, and fewer than one sixth reported that injury prevention, alcohol or substance use, sexually transmitted diseases, or motor vehicle safety had been discussed. These behaviors and risk factors are major contributors to the leading causes of morbidity, disability, and death for persons 19 to 64 years old,³⁶ and the US Preventive Services Task Force recommends that all adults receive counseling on all these risk factors periodically or at least every 3 years as part of comprehensive clinical preventive care.¹⁷

The findings also suggest that, compared with healthier patients, those who are in poorer health are more likely to report that they have discussed health education topics. This suggests that discussion of health education may be conducted more for purposes of secondary as opposed to primary prevention. In addition, patients who had been members of their health plan for 5 or more years were more likely to report having discussed health education topics with a health care provider, suggesting the possibility that having a longer relationship with a health care provider may be associated with increased discussion of health education topics.

What are the implications of these findings for practicing physicians? This study suggests that physicians in all types of health plans may be able to achieve higher levels of patient satisfaction if lifestyle risk factors and health behaviors are discussed with patients during the visit. The results suggest that enhanced patient satisfaction may be an important rationale for offering health education coun-

selling to patients, particularly as the health care system moves into an environment of managed competition.

Acknowledgments

This research was funded by the Pacific Business Group on Health, San Francisco, California.

The authors thank David Austin, PhD, and Geetesh Solanki for assistance in computer programming.

References

1. Clearly PD, McNeil BJ. Patient satisfaction as an indicator of quality of care. *Inquiry* 1988; 26:26-36.
2. Pascoe GC. Patient satisfaction in primary health care: a literature review and analysis. *Eval Prog Plan* 1983; 6:185-210.
3. Aharony L, Strasser S. Patient satisfaction: what we know about and what we still need to explore. *Med Care Rev* 1993; 50:49-79.
4. Ware JE, Davies-Avery A, Stewart AL. Measurement and meaning of patient satisfaction: a review of the recent literature. *Health Med Care Serv Rev* 1978; 1:1-15.
5. Koehler WF, Fottler MD, Swan JE. Physician-patient satisfaction: equity in the health services encounter. *Med Care Rev* 1992; 49:455-84.
6. Rubin HR, Gandek B, Rogers WH, Kosinski M, McHorney C, Ware JE. Patients' ratings of outpatient visits in different practice settings. *JAMA* 1993; 270:835-40.
7. Marquis MS, Davies AR, Ware JE. Patient satisfaction and change in medical care provider: a longitudinal study. *Med Care* 1983; 21:821-30.
8. Herzlinger RE. The failed revolution in health care—the role of management. *Harvard Bus Rev* 1989; 99:95-103.
9. Singh J. A multifaceted topology of patient satisfaction with a hospital. *J Health Care Marketing* 1990; 10:8-21.
10. Ware JE, Davies AR. Behavioral consequences of consumer dissatisfaction with medical care. *Eval Prog Plan* 1983; 6:301-7.
11. Fincham JE, Wertheimer AI. Predictors of patient satisfaction in a health maintenance organization. *J Health Care Marketing* 1986; 6:5-11.
12. Robbins JA, Bertakis KD, Helms LJ, Azari R, Callahan EJ, Creten DA. The influence of physician practice behaviors on patient satisfaction. *Fam Med* 1993; 26:17-20.
13. Rubin HR. Patients evaluation of hospital care: a review of the literature. *Med Care* 1989; 30:S1-S9.
14. Pacific Business Group on Health. Response bias analysis for 1994 survey. San Francisco, Calif: Pacific Business Group on Health, 1994.
15. Hosmer DE, Lemeshow S, eds. Applied logistic regression. New York: John Wiley & Sons, 1989:216.
16. Schauffler HH, Rodriguez T. Availability and utilization of health promotion programs and satisfaction with health plan. *Med Care* 1994; 32:1182-96.
17. US Preventive Services Task Force. A guide to clinical preventive services: an assessment of the effectiveness of 169 interventions. Baltimore, Md: Williams & Wilkins, 1989.
18. Stewart MA. What is a successful doctor-patient interview? A study of interactions and outcomes. *Soc Sci Med* 1984; 19:167-75.
19. Buller MK, Buller DB. Physicians' communication style and patient satisfaction. *J Health Soc Behav* 1987; 28:375-88.
20. Bertakis KD, Roter D, Putnam SM. The relationship of physician medical interview style to patient satisfaction. *J Fam Pract* 1999; 32:175-81.
21. Hall JA, Roter DL, Katz NR. Meta-analysis of correlates of provider behavior in medical encounters. *Med Care* 1988; 26:657-75.
22. Wechsler H, Levin S, Idelson RK, Roman M, Taylor JO. The physician's role in health promotion—a survey of primary care practitioners. *N Engl J Med* 1983; 308:97-100.
23. Rosen MA, Logsdon DM, Demak NM. Prevention and health promotion in primary care: baseline results on physicians from the INSURE project on lifecycle preventive health services. *Prev Med* 1984; 13:535-48.
24. Lewis CE, Clancy C, Leake B, Schwartz JS. The counseling practices of internists. *Ann Intern Med* 1991; 114:54-8.
26. Russell NK, Roter DL. Health promotion counseling of chronic-disease patients during primary care visits. *Am J Public Health* 1993; 83:979-82.
26. Schwartz JS, Lewis CE, Clancy C, Kinoshian MS, Radany MH, Koplan JP. Internists' practices in health promotion and disease prevention. *Ann Intern Med* 1991; 114:46-53.
27. Radecki SA, Mendenhall RC. Patient counseling by primary care physicians: results of a nationwide survey. *Patient Educ Couns* 1986; 8:165-77.
28. Anda RF, Remington PL, Sienko DG, Davis RM. Are physicians advising smokers to quit? The patient's perspective. *JAMA* 1987; 267:1916-9.
30. Woo B, Woo B, Cook EF, Weisberg M, Goldman L. Screening procedures in the asymptotic: comparison of physician's recommendations, patient desires, published guidelines and actual practice. *JAMA* 1985; 264:1480-4.
30. Lurie N, Manning WG, Peterson C, Goldberg GA, Phelps CA, Lillard L. Preventive care: do we practice what we preach? *Am J Public Health* 1987; 77:801-4.
31. Belcher DW, Berg AO, Innui TS. Practical approaches to providing better preventive care: are physicians a problem or a solution? *Am J Prev Med* 1988; 4(suppl):27-48.
32. Geiger WJ, Neuberger MS, Bell GC. Implementing the US preventive services guidelines in a family practice residency. *Fam Med* 1993; 25:447-51.
33. Walsh JM, McPhee SJ. A systems model of clinical preventive care: an analysis of factors influencing patient and physician. *Health Educ Q* 1992; 19:157-75.
34. Kottke TS, Foels JK, Hill C, et al. Nutrition counsel in private practice: attitudes and activities of family practitioners. *Prev Med* 1984; 13:219-26.
35. Cummings KM, Giovino G, Scrandra R, et al. Physician advice to quit smoking: who gets it and who doesn't? *Am J Prev Med* 1987; 3:69-75.
36. McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA* 1993; 270:2207-12.