Vulnerability and the Patient–Practitioner Relationship: The Roles of Gatekeeping and Primary Care Performance

| Leiyu Shi, DrPH, Christopher B. Forrest, MD, PhD, Sarah von Schrader, MA, and Judy Ng, MPH

The patient–practitioner relationship (PPR) is at the heart of effective medical care.[1–3] Current changes in the delivery of medical care, particularly under managed care, may have profound effects on the PPR. Gatekeeping arrangements, a hallmark of health maintenance organizations, appear to undermine patients' trust that their primary care practitioners (PCPs) act on their behalf, particularly when referrals to specialty services are discouraged or denied.[4]

There are several reasons for examining the impact of gatekeeping on disparities among vulnerable populations. First, gatekeeping is a hallmark of managed care, the dominant form of health care delivery in the commercial market and nearly so in the Medicaid market, where many vulnerable populations receive health care services.[5,6] In light of the recent US Department of Health and Human Services initiative to reduce racial and ethnic disparities in health,[7] data are needed to monitor the influence of managed health plans on socioeconomic and racial disparities in health care services delivery. Second, rates of dissatisfaction with managed care are highest among lower socioeconomic and minority persons.[8] Although the reasons for this finding remain unclear, cost containment strategies associated with managed care, such as gatekeeping, may be particularly restrictive to poor and minority plan members, who are most in need of health care by reason of a greater morbidity burden than more affluent persons.

Prior research has not examined factors that might modify the impact of gatekeeping on disparities in the PPR among populations with varying levels of vulnerability. We hypothesize that better primary care, measured by its cardinal features, will reduce disparities in the PPR. In particular, enhanced access to and continuity with a PCP would disproportionately benefit vulnerable populations, who face greater access barriers and

Objectives. We examined whether patients' perceptions of their relationships with primary care practitioners (PCPs) vary by vulnerability status and assessed the extent to which gatekeeping arrangements and primary care performance moderate potential disparities.

Methods: We used the nationally representative 1996–1997 Community Tracking Study Household Survey as our data source.

Results. Whites reported better patient–practitioner relationships than minorities. Requirements that patients select a PCP and obtain referral authorization neither reduced nor exacerbated racial disparities in the patient–practitioner relationship. On the other hand, access to and continuity with a PCP substantively reduced disparities, especially for the most vulnerable group.

Conclusions. Enhancing primary care performance may reduce some of the barriers to care experienced by vulnerable populations, thereby improving patients' relationships with their PCPs. (*Am J Public Health.* 2003;93:138–144)

lack continuity of care, compared with the general population.

Previously, we found that gatekeeping arrangements were associated with lower patient satisfaction with their relationships with their PCPs, an effect partially attenuated by better primary care performance.[9] With this study, we aimed to determine whether patients' perceptions of their PPR vary by vulnerability status (i.e., the likelihood of poor future health because of greater-than-average health care needs) and assess the extent to which gatekeeping arrangements and primary care performance moderate potential disparities.

METHODS

Data Source and Study Samples

Data for the study were drawn from the 1996–1997 Community Tracking Study (CTS) Household Survey, which monitored the effects of health system change on health care among civilian, noninstitutionalized persons in the 48 contiguous states.[10,11] The survey was administered by telephone to a nationally representative sample of people from 60 randomly selected local health care markets. To improve precision of national estimates, a supplemental sample was randomly

obtained constituting about 10% of the total sample. Sixty-eight percent of the joint sample completed the household composition questions, and 95% completed the insurance questions, for a cumulative response rate of 65%.

Several inclusion/exclusion criteria were used to yield the analytic sample. The sample included only people whose last visit in the past 12 months was to their usual source of care—the "place they usually go when they are sick or need advice about their health"—because some of the questions were linked to the practitioner whom the individual last visited. Those without insurance were also included. Of the 60 446 persons in the overall survey sample, 33 022 had a usual source of care that they visited within the past 12 months. We excluded (1) children under age 18 years (n=6879), because information on some of the PPR items was not collected for this age group; (2) adults aged 18 to 64 years with military or public insurance coverage that was not Medicare or Medicaid (n=673), because of small sample sizes; (3) adults older than age 64 years (n=4802), because of the substantial differences in health care financing between elderly and nonelderly adults; (4) persons whose last visit was not covered by their current health plan (n=1253); and

(5) non-Hispanic persons who were in the Asian/Other race category (n=1006), because of small sample size. These selection criteria resulted in a final unweighted sample size of 18 409, 30.5% of the original survey sample.

Measures

Defining and operationalizing vulnerability. The framework used to assess vulnerability was adapted from Aday and Andersen's access to care model.[12] Vulnerability can be measured by predisposing, enabling, and need characteristics.[13] Poor health can be manifested physically, psychologically, or socially. As poor health along one dimension can be compounded by poor health along others, the health care needs are greater for those with problems along multiple dimensions than those with problems along a single dimension.

"Predisposing" characteristics describe the propensity of individuals to use services.[12] These characteristics include basic demographic characteristics (e.g., age, sex), social structure variables (e.g., race/ethnicity, education, employment status, occupation), and health beliefs (e.g., general beliefs and attitudes about the value of health services). "Enabling" characteristics refer to the means individuals have available to them for the use of services, including resources specific to individuals and families (e.g., income, insurance coverage) and attributes of the community or region in which an individual lives. "Need" characteristics include health status and illnesses. These characteristics can occur singly or, more commonly, in combination to determine individuals' access to health care.[12] These same factors also influence individuals' risk of contracting illness or, for those already sick, recovering from illness. Whereas need characteristics directly show individuals' health or illness status, predisposing characteristics indicate the propensity of becoming ill, and enabling characteristics reflect resources available to overcome illness. Thus, individuals are most vulnerable if they experience a convergence of predisposing, enabling, and need attributes of risk.

Vulnerability may be studied by using distinct population groups defined by 1 or more attributes. Examples of vulnerable groups defined by the convergence of predisposing, enabling, and need attributes of risk include low-income elderly patients in poor health, or uninsured minorities in poor health. The conceptualization of vulnerable subpopulations should be guided by the study purpose and availability of sufficient sample size for both the vulnerable groups and the groups with whom they are compared.

We prefer operationalizing vulnerability as a combination of disparate factors over studying individual factors separately, because vulnerability when defined as a convergence of risks can best capture reality. Indeed, individuals or population groups considered more vulnerable rarely experience only 1 particular risk.

For the purpose of this study, we identified measures within the survey that denote predisposing, enabling, and need attributes of risk. Three of these variables were combined into a new vulnerability measure that reflects the co-occurrence of risk characteristics: race/ethnicity (predisposing dimension), income (enabling dimension), and self-perceived health status (need dimension). Self-rated health has strong predictive validity for mortality, morbidity, and mental health, independent of other physiological, behavioral, and psychosocial risk factors.[14–17]

This measure also underscores our belief that it is difficult to address disparities in one risk factor without addressing others. Indeed, both race/ethnicity and socioeconomic status have been shown to be independent predictors of health care access and quality.[18–21] The CTS Household Survey can be used to create measures incorporating other vulnerability attributes (e.g., behavioral risks such as smoking, alcohol, and drug abuse for predisposing factors; education and occupation for enabling factors; various chronic illness measures for need factors). However, a measure that incorporates these other characteristics would result in sample sizes for some subgroups too small for meaningful comparative analysis (e.g., chronic illness is concentrated among the elderly population).

Due to small subgroup sample size, we further recoded variables into limited categories so that the final vulnerability measure was restricted to 4 categories within each race/ethnic group: the low income–poor health group (the most vulnerable group, with vulnerability attributes in 2 dimensions), the low income–good health and high income–poor health groups (intermediate groups with vulnerability attributes in 1 of the 2 dimensions), and the high income–good health group (the least vulnerable group, with neither of the 2 vulnerability attributes). Low-income referred to those whose family income was at 200% of the federal poverty line or below, and high-income referred to those whose family income was above 200% of the federal poverty line. Poor health referred to those whose self-reported health was fair or poor, and good health referred to those whose self-reported health was excellent, very good, or good. We also included age and sex because they may be associated with patients' experiences with the PPR.

PPR. PCPs included MDs, physician assistants, and nurse practitioners. Consistent with the literature,[22–24] the conceptualization of the PPR was based on 3 content areas: trust, communication, and competence. These areas are likely enhanced by positive primary care experiences, such as accessible and continuous relationships with PCPs. They may be weakened by managed care constraints that deter PCPs from acting on their patients' behalf.[25]

Seven items were used to construct a PPR scale. Four assessed patients' trust in their PCPs: referring to specialty care when necessary, doing medically necessary tests, putting medical needs above other factors, and making decisions without undue health plan influence. Two examined patient–practitioner communication: how well the PCP listens, and how well the PCP explains things. One competence item was used: the PCP's thoroughness and carefulness. Each of the 7 items had 5 response categories on the ordinal scale. Items were given equal weight in scale construction. The scale score was the mean item-level score obtained when no more than 2 items had missing information. For respondents with 1 (5.6%; n=1036) or 2 (1.4%; n=158) missing items, this method imputes the missing responses at the mean for the scale. Respondents with 3 or more missing items (0.5%; n=95) were treated as missing on the measure. The Cronbach α for the final scale was 0.80.[9]

Health plan characteristics. Two measures of gatekeeping were used to operationalize managed care: respondents' perceptions of whether their plan required them to select a PCP[1] and obtain authorization for specialty referrals from a PCP.[2] These items were coded as yes/no responses. They reflect managed care plan restrictiveness and have been shown to adversely affect the PPR for the general population.[9] We included a payer variable to measure individuals' insurance coverage. It was coded as Medicare, employer-based private insurance, individually purchased private insurance, Medicaid, or uninsured.

Primary care characteristics. The specification of the principal domains of primary care is consistent with the Institute of Medicine's characterization of primary care attributes as accessibility, comprehensiveness, coordination, continuity, and accountability.[26] The 2 primary care domains captured in this study were accessibility and continuity. We equated the usual source of care with the PCP, because having a place or clinician to go to for routine and illness care is the hallmark of primary care.[27] Three questions addressed travel time to the primary care site (geographic access), as well as the length of time the individual waited for an appointment and the length of the office wait (organizational access). To be consistent with prior research,[28–30] these 3 variables were dichotomized at 30 minutes for travel time and office wait, and 5 days for appointment wait.[30] Two questions reflected continuity with the PCP.[31,32] The first divided individuals into those who usually see the same clinician at the primary care site vs those who do not. The second separated the sample into persons whose relationship with their primary care source was <12 months and ≥12 months.

Data Analysis

We performed analyses using SUDAAN (Research Triangle Institute, Research Triangle Park, NC) because of the multistage, stratified cluster sampling of the CTS Household Survey. All analyses accounted for both the design effect and the sampling weights. We weighted our estimates to reflect national population totals. The weight adjustment for national population estimates was computed

by investigators of the CTS Household Survey. Bivariate comparisons were made between individuals' vulnerability status and the PPR, health plan characteristics, and primary care. A set of multiple regressions was performed to examine the extent to which managed care and primary care influence disparities in the PPR across vulnerability groups.

In model 1, we examined the patient–PCP interpersonal scale score as a function of vulnerability status and sociodemographic characteristics. In model 2, we examined the patient–PCP interpersonal scale score as a function of vulnerability status, sociodemographic characteristics, and managed care plan characteristics (members are required to select PCP, and PCP authorizes specialty referral). In model 3, we examined the patient–PCP interpersonal scale score as a function of vulnerability status, sociodemographic characteristics, managed care plan characteristics, and primary care experience (travel time to PCP is <30 minutes, PCP office wait is <30 minutes, PCP appointment wait is <5

days, PCP is a specific clinician, and duration of relationship with PCP is >12 months). We present standardized regression coefficients of the vulnerability measures along with tests of significance of the coefficients. We used White as the reference group to which Hispanics and Blacks were compared. Thus, changes in the regression coefficients across models reflect the extent to which managed care and primary care moderate potential disparities.

RESULTS

Table 1 displays the study population's distribution of vulnerability status as the co-occurrence of race, income, and self-perceived health status. Due to the selection criteria, the analytic sample of 18 409 individuals can be generalized to nearly 69 million individuals in the US population. In the weighted study sample, racial and ethnic minorities were more likely to be classified as low-income or in poor health than Whites. Whereas 22% of

TABLE 1—Distribution of Vulnerability Status: US Nonelderly Adult Population, 1996–1997

Vulnerability Characteristics	Unweighted Nos. Adults (%)	Weighted Nos. Adults (%)
High income–good health	12 793 (100.0)	44 824 560 (100.0)
Hispanic	714 (5.6)	2 915 772 (6.5)
Black, non-Hispanic	1 143 (8.9)	4 290 230 (9.6)
White, non-Hispanic	10 936 (85.5)	37 618 558 (83.9)
High income–poor health	1 276 (100.0)	4 823 412 (100.0)
Hispanic	116 (9.1)	502 838 (10.4)
Black, non-Hispanic	168 (13.2)	614 897 (12.8)
White, non-Hispanic	992 (77.7)	3 705 677 (76.8)
Low income–good health	3 265 (100.0)	13 642 505 (100.0)
Hispanic	410 (12.6)	2 001 282 (14.7)
Black, non-Hispanic	643 (19.7)	2 780 094 (20.4)
White, non-Hispanic	2 212 (67.7)	8 861 129 (64.9)
Low income–poor health	1 075 (100.0)	5 352 110 (100.0)
Hispanic	196 (18.2)	1 110 659 (20.7)
Black, non-Hispanic	282 (26.2)	1 409 777 (26.3)
White, non-Hispanic	597 (55.5)	2 831 674 (52.9)
Total	18 409 (100.0)	68 642 588 (100.0)
Hispanic	1 436 (7.8)	6 530 551 (9.5)
Black, non-Hispanic	2 236 (12.2)	9 094 999 (13.3)
White, non-Hispanic	14 737 (80.0)	53 017 038 (77.2)

Note. Sample includes 18- to 64-year-old persons whose last visit within the past 12 months was to their usual source of care and whose current insurance plan was the same for the past 12 months. Respondents with military or other public insurance were excluded, as were non-Hispanic persons in the Asian/Native/Pacific/Other race category. Self-pay respondents were included.

TABLE 2—Bivariate Comparisons of Vulnerability, Health Plan Characteristics, Primary Care, and the Patient–Physician Relationship: US Nonelderly Adult Population, 1996–1997

Vulnerability Characteristics	Patient–PCP Interpersonal Scale Score Mean	Managed Care Characteristics		Access to PCP			Continuity with PCP	
		Members Required to Select a PCP (%)	PCP Authorizes Specialty Referrals (%)	Travel Time to PCP <30 Minutes(%)	PCP Office Wait <30 Minutes (%)	PCP Appointment Wait <5 Days (%)	Have a Specific Clinician (%)	Duration of Relationship with PCP >12 Months (%)
High income–good health								
Hispanic	3.96***	57.6*	66.1**	81.4	60.8	61.2	82.2**	86.6
Black, non-Hispanic	4.05***	55.0***	57.4	81.4	68.2	57.1	85.6	88.6
White, non-Hispanic	4.20	47.4	57.4	84.3	72.5	57.9	87.8	88.0
High income–poor health								
Hispanic	3.84***	54.9	60.4	76.0	51.6	61.7	81.7*	84.5
Black, non-Hispanic	3.75***	43.5	53.1	71.3	55.8*	60.3	79.1**	79.0
White, non-Hispanic	4.09	45.6	51.7	73.9	65.6	51.5	90.3	83.9
Low income–good health								
Hispanic	3.79***	51.2***	53.6	79.2	53.0**	58.1	80.5	86.1
Black, non-Hispanic	3.85***	50.0**	48.0	67.7***	58.0***	64.9	75.9**	85.6
White, non-Hispanic	4.13	38.9	47.7	81.7	68.6	64.6	84.6	84.5
Low income–poor health								
Hispanic	3.63***	45.8**	46.6	72.1	40.6**	57.4	85.2	83.4
Black, non-Hispanic	3.76**	37.3*	36.6	64.5	53.1	61.4	74.4**	85.3
White, non-Hispanic	3.94	27.2	38.6	67.2	57.4	58.9	85.9	88.7

Note. PCP = primary care practitioner. *P* values compare Hispanics and Black, non-Hispanic groups to the White, non-Hispanic group using χ^2 tests for dichotomous outcomes and Bonferroni means tests for continuous outcomes.
*.01<*P*<.05; **.001<*P*<.01; ***P<.001. All *P* values are 2-tailed.

the Whites were of low income and 12% had poor health, 48% of Hispanics were of low income and 25% had poor health, and 46% of Blacks were of low income and 22% had poor health. Among individuals with low income and poor health, Whites were significantly underrepresented (52.9% vs their overall 77.2% population distribution), whereas Hispanics (20.7% vs their overall 9.5% population distribution) and Blacks (26.3% vs their overall 13.3% population distribution) were more than twice overrepresented. Conversely, compared with the total population, a higher percentage of Whites (83.9% vs 77.2%) but lower percentages of Blacks (9.6% vs 13.3%) and Hispanics (6.5% vs 9.5%) were in the high income–good health category.

Table 2 presents bivariate comparisons between vulnerability status and the PPR, managed care, and primary care characteristics. For each race/ethnicity, respondents rated their PPR the highest among the high income–good health group but lowest among the low income–poor health group.

Whites reported better PPRs than either Hispanics or Blacks across all groups.

In terms of managed care characteristics, we noted greater racial and ethnic disparities in the requirement that members select a PCP than the need for physician referral authorization. Whites were significantly less likely to be required to select a PCP than minorities, regardless of income and health status. On the other hand, only Hispanics in the high income–good health group were significantly more likely than their White counterparts to have a PCP authorize specialty referrals.

In terms of vulnerability status and primary care experiences, we noted racial disparities primarily in office waiting time and having a specific clinician at the primary care site. Regardless of vulnerability status, Whites were significantly more likely than minorities (particularly Hispanics) to wait less time during office visits. In most cases, they were also significantly more likely to see the same clinician during primary care visits. We noted few significant racial differences on other primary care indicators including travel

time, appointment scheduling time, and duration of PPR.

Table 3 displays regression results examining the extent to which managed care and primary care affect racial and ethnic disparities in PPRs across vulnerability groups. The full test results are available upon request. In model 1, we examined the association between vulnerability status and PPRs while controlling for sociodemographic characteristics. We noted significant racial disparities in all vulnerability groups, with Hispanics and Blacks reporting less satisfaction with their PPRs than Whites.

In model 2, we examined the effects of health plan characteristics on the PPR while controlling for sociodemographics. Racial and ethnic disparities in PPRs persisted, even after taking into account differences in the likelihood of having a gatekeeping arrangement. Reductions in most of the regression coefficients between models 2 and 1 were modest (with the exception of the Black–high income–poor health group). These small changes suggest that managed care attenu-

TABLE 3—Multivariate Analysis of Vulnerability, Health Plan Characteristics, Primary Care, and the Patient–Physician Relationship: US Nonelderly Adult Population, 1996–1997

Independent Variables: Vulnerability Characteristics	Dependent Variable: Patient–PCP Interpersonal Scale Score				
	Model 1[a]: β (SE)	Model 2[b]: β (SE)	Model 3[c]: β (SE)	Model 2 vs Model 1, % reduction in coefficient	Model 3 vs Model 2, % reduction in coefficient
High income–good health					
Hispanic	–.21 (.05)***	–.19 (.05)***	–.13 (.04)**	–10%	–32%
Black, non-Hispanic	–.13 (.03)***	–.12 (.03)***	–.10 (.03)***	–8%	–17%
White, non-Hispanic	Reference	Reference	Reference	Reference	Reference
R^2 for model	.029	.047	.117		
High income–poor health					
Hispanic	–.22 (.08)**	–.19 (.08)*	–.17 (.07)*	–14%	–11%
Black, non-Hispanic	–.33 (.08)***	–.33 (.08)***	–.27 (.08)**	0%	–18%
White, non-Hispanic	Reference	Reference	Reference	Reference	Reference
R^2 for model	.038	.054	.114		
Low income–good health					
Hispanic	–.32 (.05)***	–.30 (.05)***	–.24 (.05)***	–6%	–20%
Black, non-Hispanic	–.29 (.04)***	–.28 (.04)***	–.20 (.04)***	–3%	–29%
White, non-Hispanic	Reference	Reference	Reference	Reference	Reference
R^2 for model	.059	.066	.127		
Low income–poor health					
Hispanic	–.24 (.08)**	–.22 (.08)**	–.13 (.07)	–8%	–41%
Black, non-Hispanic	–.18 (.07)*	–.18 (.07)*	–.13 (.09)	0%	–28%
White, non-Hispanic	Reference	Reference	Reference	Reference	Reference
R^2 for model	.043	.046	.134		

Note. PCP = primary care practitioner.
[a]Model 1 comprises vulnerability groups + age + sex + payer (5-level variable: Medicare, employer-based private insurance, individually purchased private insurance, Medicaid, and uninsured).
[b]Model 2 comprises Model 1 + managed care variables (members are required to select a PCP, and PCP authorizes specialty referrals).
[c]Model 3 comprises Model 2 + primary care variables (travel time to PCP < 30 minutes, PCP office wait < 30 minutes, PCP appointment wait < 5 days, PCP is a specific clinician, and duration of relationship with PCP > 12 months).
*.01 < P < .05; **.001 < P < .01; ***P < .001. All P values are 2-tailed.

ates the disparities somewhat, particularly between Hispanics and Whites.

In model 3, we examined the effects of primary care experiences on the PPR, while controlling for managed care and sociodemographics. The addition of the primary care variables improved the explanatory power of the model from 5%–7% to 11%–13% of the variation in the PPR scale score. Shorter office waits, having a specific clinician at the primary care site, and a longer duration of relationship with PCPs were associated with a better PPR (data not shown). The reductions in the sizes of the coefficients between models 3 and 2 are much larger than between models 2 and 1. These changes show that primary care substantively reduced racial disparities in PPRs to a larger degree than managed care. Furthermore, primary care exerted the strongest effect on the most vulnerable group, where racial and ethnic disparities were no longer significant after including primary care. Although racial and ethnic disparities remained in other groups, they were largely reduced, ranging from an 11% reduction in the Hispanic high income–poor health group to a 41% drop in the Hispanic low income–poor health group. In sum, the greater reduction in the magnitude of the regression coefficients after primary care was included indicates that primary care exerted a greater effect on mediating racial disparities than managed care.

DISCUSSION

This study provides new information on racial and ethnic disparities in PPRs for individuals with different vulnerability statuses.

Whites reported better PPRs than either Hispanics or Blacks across all groups. Minorities were disproportionately overrepresented in the low income or poor health vulnerability groups. Blacks and Hispanics were more than twice as likely to be of low income and poor health compared with Whites. Any adverse association between income, poor health, and the PPR would affect minorities disproportionately more than Whites.

The main purpose of the study was to examine the extent to which gatekeeping arrangements and primary care experiences influence disparities in the PPR among individuals with different levels of vulnerability. Our results indicate that requiring patients to select a PCP and obtain referral authorization neither reduced nor exacerbated racial disparities in the PPR. On the other hand, access

to and continuity with PCPs substantively reduced disparities, particularly for the most vulnerable group.

Better access facilitates first contact and continuity with PCPs.[30] Continuity of care implies that individuals have a person-focused, regular source of care, regardless of the nature of illness.[31] Improvements in access and continuity are needed for vulnerable populations who are more likely to suffer in these areas, in part as a result of their vulnerable status. Although no studies have directly examined the role of primary care in reducing disparities in the PPR, our finding that primary care reduces disparities is consistent with previous studies that examined the effect of primary care on reducing the adverse impact of income inequality on health. Studies at the state, metropolitan statistical area, and individual level have demonstrated that primary care is associated with reductions in the negative effects of income inequality on population and individual health.[18,32–35] To the extent that health plans improve the primary care experience of all enrollees, a stronger PPR could reduce significant disparities across socioeconomic and racial/ethnic groups.

Several limitations should be considered when interpreting the results from this study. First, the analyses presented reflect statistical association rather than causality. Causal relationships between gatekeeping arrangements, primary care experiences, and PPRs are difficult to ascertain due to the cross-sectional nature of the data set. Second, limitations in the data source prevented us from studying a broad array of vulnerable characteristics. The CTS Household Survey sample frame excludes several of the most vulnerable segments of the US population (including the homeless, migrant workers, and certain racial/ethnic minorities) and did not contain measures of behavioral risks such as smoking, alcohol consumption, and drug abuse, all of which likely contribute to vulnerability.

Third, the R^2 of each of the models is relatively low, indicating that other factors that may explain PPR satisfaction were not measured or captured. For example, the paucity and incompleteness of the primary care measures in the data set precluded our considering all the major measures of primary care

domains, in particular those reflecting comprehensiveness, coordination,[36–38] or family and community focus.[23] The measures used address only 2 of the attributes of primary care, and even these are only approximations of the complexity of primary care attributes.

Fourth, this study relied on respondents' reports of their health plans and primary care experience to form the gatekeeping and primary care variables. The validity of these responses is unclear. In general, studies on consumers' knowledge of their health plan benefits indicate that they have incomplete knowledge, particularly if they have not used many services.[39]

Despite these limitations, the findings of this study provide a foundation for future studies. Further progress will be made by incorporating better measures of the primary care domains and delineating the pathways through which primary care experiences attenuate the adverse effects of managed care. Longitudinal data will be necessary to yield more conclusive findings and determine the nature and direction of effects. ■

About the Authors

The authors are with the Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Md.

Requests for reprints should be sent to Leiyu Shi, DrPH, Department of Health Policy and Management, 624 N Broadway, Room 409, Baltimore, MD 21205 (e-mail: lshi@jhsph.edu).

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Contributors

L. Shi was the principal author and conceptualized the research with significant inputs from C.B. Forrest. S. von Schrader and J. Ng conducted the analyses. All of the authors participated in the review and revisions on numerous drafts of the paper.
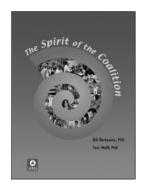
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