

# DOES PATIENT EDUCATIONAL LEVEL AFFECT OFFICE VISITS TO FAMILY PHYSICIANS?

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Significant disparities in health care based on patient socioeconomic status have been documented. The extent to which physician behavior accounts for these differences is not known. We examined the impact of patient socioeconomic status, measured by years of education, on physician behavior assessed by direct observation of office visits, chart audits, and patient reports among 138 family physicians in 84 practices. Outcomes included time use measured with the Davis Observation Code, delivery of preventive services recommended by the US Preventive Services Task Force, satisfaction assessed with the MOS 9-item Visit Rating Scale, and delivery of attributes of primary care measured by the Components of Primary Care Index. After controlling for patient characteristics among 2538 visits by adult patients who returned questionnaires, a high school education or less was associated with slightly greater proportion of time spent on physical examination and providing nutrition counseling, and less time on patient questions, assessing patient health knowledge, negotiation, and exercise counseling. This indicates that physicians adopt a more directive style with less educated patients. Screening tests were provided at lower rates among less educated patients, but there were no differences in rates of health habit counseling or immunization services delivered and no differences in delivery of patient-reported components of primary care. Less educated patients had similar overall visit satisfaction, but were slightly less likely to have their expectations met. These show that patients' education has relatively small, but potentially important, effects on the outpatient delivery of primary care. (*J Natl Med Assoc.* 2002;94:157-165.)

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Previous studies have documented significant disparities in health care according to pa-

tient socioeconomic status (SES). For example, lower patient SES is associated with avoidable or preventable hospitalizations,<sup>1-4</sup> hospital readmissions,<sup>5</sup> and delivery of less preventive care, including fewer Pap smears and mammograms,<sup>6-8</sup> less frequent immunizations,<sup>7</sup> and lower quality care.<sup>9</sup> In contrast, studies of the effect of patient SES on satisfaction with health care have reported mixed findings.<sup>10-12</sup>

It is not clear from these studies, however, what accounts for these disparities. Do socioeconomic disparities in health care primarily represent the impact of SES on access to care, patient behavior, understanding and adher-

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ence, or do they result primarily from differences in physician behavior? One study found that patients with lower socioeconomic status reported they received less diet and exercise counseling, but higher smoker cessation counseling than did higher socioeconomic patients.<sup>13</sup> Other studies based on patient self-report have reported no difference in physician delivery of preventive services recommendations by patient SES<sup>14</sup> or report that physicians were more likely to recommend preventive care to lower SES patients.<sup>15</sup>

In a meta-analysis of 41 small studies in which physician behavior was objectively assessed, Hall et al.<sup>16</sup> reported that physicians provided slightly less information to less educated patients. Similarly, Waitzkin<sup>17</sup> found that physicians spent slightly less time per visit and provided fewer multilevel explanations to lower socioeconomic patients. Scott<sup>18</sup> reported that lower socioeconomic patients received less testing and fewer prescriptions. In contrast, Kikano<sup>19</sup> reported no difference in testing based on patients education when physicians were presented with written simulation although less educated received less intense follow-up.

Data from the National Ambulatory Medical Care Survey show few differences in care by health insurance, a proxy for patients' SES. For example, there were no statistically significant differences in physicians' self-reported care by insurance type for physician questions about smoking status or smoking cessation counseling,<sup>20</sup> use of angiotensin-converting enzyme inhibitors in congestive heart failure,<sup>21</sup> cholesterol testing, or prescription of lipid lowering therapy,<sup>22</sup> rate control or maintenance medications,<sup>23</sup> or warfarin for atrial fibrillation,<sup>24</sup> or length of visits.<sup>25</sup>

Thus, on balance, it appears that patient socioeconomic position may have a small effect on physician behavior, although conclusions are limited by the age and small sample size of the data. In this study, we examine the impact of patient education on physician behavior assessed by direct observation of routine office

visits, chart audits, and patient reports of the components of primary care and satisfaction.

## METHODS

### Study Design and Data Collection

These analyses are part of the Direct Observation of Primary Care Study, a multi-method, cross sectional study designed to assess the content and context of outpatient visits to family physicians. The methods of the Direct Observation of Primary Care Study have been described in detail previously.<sup>26,27</sup> Briefly, family physician members of the Ohio Academy of Family Physicians practicing in northeast Ohio were invited to participate in the study, which was conducted between October 1994 and August 1995. Full-time academic physicians and physicians not practicing in a family practice setting were excluded, except for 30 faculty members from the Northeast Ohio Universities College of Medicine, who practice in community settings that function as family practice residency training sites. Based on power calculations, a sample of 120 physicians was determined adequate to test the original study's main hypotheses. Of the 531 family physicians invited to participate, 138 initially volunteered and constituted the physician sample.

Participating physicians were accompanied by a team of trained research nurses while providing outpatient care on two separate days. The patient sample consisted of consecutive patients seen during the two observation days. Patients were informed about the study in the waiting room prior to meeting with their physician and were enrolled if they gave verbal informed consent. To avoid biasing their behavior, patients and physicians were informed only that the study was examining the content of outpatient family practice.

A research nurse observed all visits between the physician and consenting patients. Following the visit, the research nurse completed a Post-Observation Checklist that measured specific visit characteristics, such as which services were delivered and the reason for visit. Multi-

ple other methods were used to collect data on the context and content of visits, including a review of medical records of consenting patients and patient exit questionnaires completed by the patients following their visit.

### Measures

The main independent variable for this study was the patient's educational level measured on the patient questionnaire. Patients were categorized into two groups by educational level: high school graduate or less and completed more than high school education.

The two groups of patients (low and high educational level) were compared on a number of characteristics including patient gender and reason for visit, measured by direct observation, and patient age, whether they were a new or established patient and number of visits in previous year, measured by medical record review. Patient race (white vs. nonwhite) was measured by self-report on the patient questionnaire when available, and by nurse assessment when the patient did not complete the data on race. Patient self-report of race was found to be highly concordant with the nurse assessment ( $\kappa = 0.90$ ). The patient's self-reported health status was measured by a 5-item index ( $\alpha = 0.81$ )<sup>28</sup> from the Medical Outcomes Survey 6-item General Health Survey.<sup>29</sup>

There were several outcomes of interest for the study, including physician time use during the visit, rate of preventive service delivery, patient report of the domains of primary care, and patient satisfaction. Time use by the physician during the visit was measured using the Davis Observation Code, which categorizes time use during every 20-s interval into 20 different behavioral categories.<sup>30</sup>

The rate at which patients were up to date on U. S. Preventive Services Task Force-recommended preventive services<sup>31</sup> for their age and sex was measured using a combination of direct observation of the patient-physician encounter and medical record review. Patients were considered up to date for a particular service for

which they were age- and sex-eligible if there was evidence on the medical record that they had previously received the service during the recommended time interval, or if the service was delivered at the observed encounter as measured by direct observation by a research nurse. Summary scores were created representing the proportion of services on which they were up to date for the three categories of preventive services<sup>32</sup>: screening, health habit counseling, and immunization services.

Patient attributes of the domains of primary care was measured using the Components of Primary Care Instrument<sup>28</sup> to which patients responded as part of the patient exit questionnaire. The four scale scores resulting from the Components of Primary Care Instrument are the patient's preference for their regular physician, interpersonal communication, physician's accumulated knowledge of the patient, and coordination of care. Scale scores ranged from 1 to 5, with low scores indicating low endorsement of the items in the scale and high scores indicating high endorsement.

Patient satisfaction was measured on the patient exit questionnaire using items from the Medical Outcomes Survey 9-item Visit Rating Scale.<sup>33</sup> Items were measured on a 5-point Likert-type scale, with a score of 1 indicating poor satisfaction and 5 indicating excellent satisfaction. Single items measured the patient's overall satisfaction with the visit and the degree to which their expectations were met. The patient's satisfaction with the doctor and with the site were measured with 4-item subscales ( $\alpha = 0.90$  and  $0.72$ , respectively).

### Analyses

A logistic regression model was used to determine the association of patient and visit characteristics with patient educational level. The variables that were uniquely associated with education were considered potential confounders and were used as control variables in the remaining analyses. Analysis of covariance was used to compare time use, preventive service delivery summary scores, satisfaction and

**Table 1. Patient Characteristics and Reason for the Visit According to Patient's Education**

	≤High school (n = 1262)	>High school (n = 1276)	Odds Ratio	p-value
Patient age (years)	56.4	47.1	0.97	<0.001
Sex (% female)	68.1	62.1	0.75	0.002
Race (% non-white)	10.8	9.6	0.76	0.02
New vs. established patient (%)	4.8	8.8	1.32	0.13
Number of visits in past year	4.7	4.1	1.00	<0.93
Health status (1 = poor)	3.5	3.8	1.39	<0.001
Reason for visit				
Acute illness	51.9	57.6		
Chronic illness	32.3	23.8	1.06	0.28
Well care	8.6	11.5	0.90	0.71
Other	7.2	7.1	0.73	0.06

attributes of primary care between the two patient groups while controlling for the potentially confounding patient and visit characteristics identified.

**RESULTS**

The characteristics of participating patients and physicians have been detailed elsewhere.<sup>26,27</sup> As previously noted, the characteristics of the patients are comparable to those based on national samples of ambulatory patients. The characteristics of the physicians in the sample are comparable to those of physician members of the American Academy of Family Physicians, although female and residency-trained physicians were overrepresented.<sup>26,27</sup> Patients returning questionnaires were slightly older, white, married, and to have a greater number of chronic illnesses and a longer relationship with the practice, and to have Medicare or fee-for-service insurance.<sup>26,27</sup> For these analyses, the study sample was restricted to adults who returned a questionnaire and who had completed the information on educational level attained (n = 2538).

A comparison of patient characteristics by educational category is shown in Table 1. Patients with a high school education or less were older and more likely to be female, black, and to report poorer health or the presence of a chronic illness.

The results of a multivariate analysis of time

use during the office visit, controlling for patient age, sex, reason for the visit, patient race, and health status are shown in Table 2. Lower patient education was associated with a slightly higher proportion of time spent on the physical examination and nutrition counseling, and a slightly lower proportion of time spent on patient questions, exercise counseling, assessment of patient's health knowledge, and negotiation. There was also a trend (p = 0.05) toward physicians spending a lower proportion of time with less educated patients in chatting, smoking assessment and counseling, and health promotion.

As shown in Table 3, there was a trend for less educated patients to receive fewer preventive services, after adjustment for patient characteristics, and the difference for screening services was statistically significant. There were no adjusted differences by education in patient reported delivery of the components of primary care of interpersonal communication, coordination of care, physician accumulated knowledge of the patient and patient preference for their regular physician (Table 4). A comparison of patient satisfaction by education showed that less educated patients were significantly less likely to report that their expectations were met during the visit (Table 5), although they were otherwise as satisfied as more educated patients.

**Table 2. Time Use During Office Visits According to Patient Education\***

	≤High school (n = 1262)	>High school (n = 1276)	p-value†
History taking	56.1	57.7	<0.04
Planning treatment	31.7	31.9	0.77
Physical examination	22.7	20.5	<0.001
Health education	19.5	20.1	0.35
Feedback on evaluation results	13.8	13.4	0.34
Family information	9.6	9.9	0.58
Structuring the interaction	8.1	7.7	0.12
Chatting	7.3	8.0	0.07
Patient questions	6.7	7.3	0.05
Preventive services	3.4	3.5	0.63
Procedures	3.0	2.9	0.78
Nutrition advice	2.1	1.7	<0.05
Counseling	1.9	1.8	0.72
Exercise advice	1.6	2.3	<0.001
Compliance assessment	1.6	1.5	0.36
Smoking behavior assessment or advice	1.6	1.2	0.06
Assessing patient's health knowledge	1.2	1.4	<0.03
Health promotion	1.4	1.1	0.04
Negotiation	1.1	1.3	<0.02
Substance use assessment or advice	0.5	0.4	0.45

\*Analyses adjusted for patient age, sex, race, reason for visit, and self-reported health status.

†p comparisons with the Benjamin-Hockberg procedure.

**DISCUSSION**

These findings, based on 2538 outpatient visits to 138 physicians, suggest small differences in the care provided by family physicians according to patient educational level. With less educated patients, physicians spent a slightly higher percent of the visit time on history taking, assessing patients' health knowledge, and negotiation, and a lower percent of the visit on physical examination. This indi-

cates a more directive style that is less open to the patients' agenda. The slightly higher proportion of time spent on providing health promotion advice, with greater nutrition counseling and less exercise counseling, indicates a greater focus on health habits among the less educated, but with greater emphasis on diet than on physical activity. The slightly lower rate of delivery of preventive services to less educated patients may be explained by these pa-

**Table 3. Delivery of Preventive Services According to Patient Education**

Percent of eligible individuals up to date for preventive service			
	≤High school	>High school	p-value
Preventive services summary measures			
Screening services	51.5	54.9	<0.001
Health habit counseling	8.6	9.2	0.08
Immunizations	17.8	19.4	0.16

\*Analyses adjusted for patient age, sex, reason for visit, whether or not they were a new or established patient and self-reported health status.

**Table 4. Components of Primary Care According to Patient Education\***

Components†	≤High school	>High school	p-value
Preference for regular physician	4.5	4.4	0.40
Interpersonal communication	4.3	4.3	0.90
Coordination of care	3.9	3.9	0.22
Physician accumulated knowledge of the patient	3.5	3.5	0.28

\*Analyses adjusted for patient age, sex, reason for visit, patient race, and self-reported health status.  
 †Scores reflect amount of endorsement of scale items: 1 = low, 5 = high.

tients' poorer health status, consistent with the competing demands hypothesis.<sup>34</sup> The lack of differences in patient report of receipt of relationship-centered satisfaction is reassuring. The Components of Primary Care Index emphasizes important aspects of the doctor-patient relationship,<sup>28</sup> and the lack of differences between educated and less educated patients indicates that the important relationship context of care does not differ by education.

In one sense, the small effect size of the observed differences are comforting for family physicians. The absence of large differences in care provided according to patient education suggests that family physicians provide nearly comparable levels of care regardless of the patient's socioeconomic position. In other words, the physicians appeared to be relatively unaffected by the SES of the patients they saw. For outcomes such as delivery of preventive services, providing key components of primary care, and most measures of patient satisfaction, these findings are indeed reassuring. These data may indicate that population-level differences in service delivery based on SES repre-

sent limitations in access to primary care rather than in what happens when patients see a family physician. For example, children with parents with less than a high school education have 30% fewer outpatient visits than do those with parents with a college education and are significantly more likely not to be seen at all.<sup>35</sup> Less educated adults also have fewer outpatient visits.<sup>36</sup> Thus, among patients seeing family physicians, SES does not represent a barrier to receipt of needed services, development of the doctor-patient relationship, or patient satisfaction.

The findings that physicians spent proportionately less time with less educated patients assessing health knowledge, responding to questions and negotiating, but more time on physical examination suggests that family physicians adopted a more directive, less patient-centered style. Although these differences may partly reflect educationally related differences in patient empowerment, they may contribute to the finding of higher unmet expectations by less educated patients. Low literacy, which is strongly related to education, has been associ-

**Table 5. Satisfaction According to Patient Education\***

Satisfaction measures†	≤High school	>High school	p-value
Satisfaction with physician	4.4	4.4	0.27
Satisfaction with site	4.1	4.1	0.99
Overall satisfaction with visit	4.4	4.4	0.88
Degree to which expectations were met	4.3	4.4	0.009

\*Analyses adjusted for patient age, sex, reason for visit, whether or not they were a new or established patient, and self-reported health status.  
 †Scores reflect amount of endorsement of scale items: 1 = very unsatisfied, 5 = very satisfied.

ated with less knowledge regarding smoking risks,<sup>37</sup> preventive health care,<sup>38-40</sup> contraception,<sup>41</sup> and chronic illnesses.<sup>42-44</sup> Moreover, high patient educational level is strongly associated with adoption of a healthier lifestyle and improved biopsychosocial health.<sup>45</sup> For example, in a nationally representative sample of adults in the United States, Lantz et al. found higher rates of smoking, excessive alcohol intake, physical inactivity, and obesity among those with less than a high school education compared to those with a college education.<sup>46</sup> Thus, physicians should spend more time with less educated patients on agenda setting, negotiating the purpose of the visit, assessing patients' health knowledge, providing health education, and answering questions.

The challenge to physicians who care for lower SES patients is how to respond to the multiple competing needs of the patients within the confines of office visits. The presence of chronic disease is associated with lower rates of preventive care.<sup>47,48</sup> How can physicians best prioritize and negotiate patient demands<sup>49</sup> while also providing appropriate preventive care?<sup>34</sup> Potential strategies include eliciting patient expectations earlier in the office visit and negotiating an agenda,<sup>50</sup> using office staff to provide supplemental education, and seeing patients more frequently.

There are several important limitations of this study that warrant comment. It is possible that physician behavior was influenced by being observed. In other words, the presence of an observer may have introduced a bias that minimizes differences in physician behavior according to patient socioeconomic position. However, the absence of differences in the delivery of preventive services, components of primary care, and all but one measure of patient satisfaction according to patient education tends to militate against this possibility, as do multiple aspects of the study design intended to diminish the potential biases.<sup>26</sup>

In addition, it is possible that selection factors in questionnaire return could have biased the results toward the null by diminishing vari-

ability in the patient satisfaction and components of primary measures. However, the magnitude of these effects is likely to be small compared to the consistent pattern of limited effect noted in the findings.

Last, it is not clear to what extent these findings can be generalized to family physicians nationally. Although the characteristics of the participating physicians approximated those of family physicians nationally and represented recent trends in increasing numbers of female and residency-trained physicians,<sup>51</sup> it is possible that participating physicians were less influenced by patient socioeconomic position than were physicians who did not participate. Similarly, it is not known whether similar results would be found with physicians from different specialties.

In conclusion, these findings lend support to the suggestion that physician factors play a relatively small role in socioeconomic differences in primary health care. The small magnitude of differences in care provided to a high-need population raises the question of how physicians can best meet the needs of lower socioeconomic patients. Effective strategies are needed to improve access to primary care to reduce socioeconomic disparities in health care and health.

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