Patient Pain: Its Influence on Primary Care
Physician-Patient Interaction

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Background and Objectives: Heightened awareness of the importance of appropriate pain management in health care delivery has stimulated researchers to examine the impact of patient pain on medical encounters. In this study, we explored how patient pain might influence the physician-patient interaction during medical visits. Methods: New adult patients (n=509) were randomized to see primary care physicians in videotaped visits at a university medical center. Self-reported patient pain was measured before the visit using the Visual Analog Scale and the Medical Outcomes Study Short Form-36 (MOS SF-36) pain scale; patient sociodemographics were also measured. Physician practice style during the visit was analyzed with the Davis Observation Code (DOC). Results: Regression analyses revealed that patient pain during the medical visit was associated with the physician spending a greater portion of the visit on technical tasks and a smaller portion on preventive services and other activities designed to encourage the patients’ active participation in their own health care. Conclusions: Patient pain may influence the physician-patient interaction and its outcomes. Primary care physicians should be aware that there may be less focus on patients’ active involvement in their own care and less emphasis on providing disease prevention when treating patients who are experiencing pain.

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Pain is one of the most common reasons for patients to seek medical care, yet it frequently goes unrecognized or is inadequately treated. Without proper treatment, the pain accompanying illness slows recovery, impairs the patient’s quality of life, and may lead to unnecessary expenditure of health care resources. In recognition of this, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) recently mandated that individuals receiving care at accredited hospitals, nursing homes, home care agencies, outpatient clinics, and behavioral health facilities be screened for the presence of pain and given appropriate pain management.

Little research to date has examined the influence of pain on the physician-patient encounter. It has been previously demonstrated, however, that physician practice style is influenced by patient gender, age, income, education, depression, and self-reported health status. Better health is predictive of a greater portion of the visit being spent on chatting and physical examination and a smaller portion on history taking. We hypothesized that the physician-patient interaction would be affected by the presence of patient pain, resulting in more technically oriented practice style behaviors and less visit time devoted to disease prevention.

Methods

Study Design

This study was part of a larger project examining physician practice styles and associated patient outcomes. Subjects were recruited from new patients requesting outpatient appointments at the University of California, Davis Medical Center. From the first 956 nonpregnant adults not having a preference for a specific physician or specialty, 821 patients (85%) agreed to participate during an initial telephone contact and were then randomly assigned for care in either the family practice clinic or general medicine clinic. These clinics were adjacentally located in the same primary care center. A total of 312 (38%) of these patients were excluded from the study because they canceled their appointment, did not keep their appointment, or could not be included for scheduling reasons. A total of 509 patients participated in the study, providing informed consent in compliance with protocols approved by the

From the Department of Family and Community Medicine (D. Bertakis and Callahan) and the Department of Statistics (D. Azari), University of California, Davis.
institutional human subjects review committee. Care was provided by 26 family practice and 79 general internal medicine second- and third-year residents. These 105 primary care physicians each saw an average of 4.8 of the patients in this study (standard deviation [SD]=4.6 patients).

Patient data collected before the medical visit included sociodemographic information and self-reported pain. Physicians were not provided with the information from the pre-visit interview. The initial visit was then videotaped in its entirety.

**Measures**

*Medical Outcomes Study Short Form-36.* The Medical Outcomes Study Short Form-36 (MOS SF-36) is a reliable and valid 36-item questionnaire that consists of scales that include general health, physical function, energy, mental health, and pain.9,10 All scales are scored so that higher scores reflect better health status.

**Visual Analog Pain Scale.** The scale consists of a 10 cm (100 mm) horizontal line with “No pain” and “The worst pain you could possibly imagine” placed at the left and right ends, respectively. Patients mark the spot on the line correlating to the level of pain experienced. The level of pain is calculated by measuring (in millimeters) the distance from the left end of the scale to the mark. Study patients were instructed to complete a visual analog pain scale for each type of pain, as well as a “global” pain rating for all pain experienced at the time of the medical visit. The visual analog scale has been widely used in research that monitors pain increase or decrease as a therapeutic result, predictor, or other outcome measure. Validity, sensitivity, and reliability have been confirmed.11-13

**Davis Observation Code.** Physician practice styles were analyzed by coding the videotapes using the Davis Observation Code (DOC).14,15 DOC is a reliable and valid interactive analysis system that has been used previously to detect physician practice style differences in a variety of previous studies.5,7,15-18 Observers recorded the occurrence of each of 20 clinically significant behaviors during successive 15-second observation intervals of the medical visit. For each DOC code, the number of intervals during which the associated behavior was observed and expressed as a percentage of the total of all DOC-coded behaviors noted during the visit. To determine the presence of any observer bias, approximately 20% of the videotapes were coded by a second observer, with a stratified kappa coefficient of agreement of 91.6%.19

Six different clusters of physician practice behaviors have been identified to characterize practice style based on an evaluation of the clinical and statistical relationships among the 20 DOC codes.16 The six practice behavior clusters include from one to eight DOC-coded behaviors: technical, health behavior, addiction, patient activation, preventive services, and counseling. Because they are expressed as a fraction of the total number of observed behaviors, the values for the six clusters sum to 100%, and the measures should be interpreted as the relative emphasis on these behaviors during the visit.

**Results**

**Subjects**

The study patient population was 62% female (n=316) and 38% male (n=193), with a mean age of 41.3 years. The ethnic distribution was 63% white, 22% African-American, 8% Hispanic, 4% Asian, and 3% Native American. Patients had a median education of 12 years. Almost half of the patients (48.5%) reported family incomes less than $10,000 per year.

**Pain Scores**

Pain scores measured by the visual analog scale ranged between 0 and 100. Patients had a mean global pain score of 41.1. Two-tailed t tests comparing the scores of female and male patients revealed that women reported a significantly greater amount of global pain than men reported (46.4 versus 32.3, P<.0001). Women also complained of significantly more head, abdomen, and back pain and pain from “all other” body regions. A similar gender difference was observed for the MOS SF-36 pain scale and total score, with women reporting more pain and lower health status. Global visual analog pain scale scores were highly correlated with MOS SF-36 pain scale scores (.77).

**Pain and Practice Behaviors**

Regression equations were developed to relate the six DOC clusters of physician practice behaviors to self-reported patient global pain measured by the visual analog scale. Given the importance of sociodemographic patient characteristics to the physician-patient interaction, these variables were controlled by including those explanatory variables that achieved statistical significance at P<.05. In Table 1, the physician behavior cluster dependent variables are listed at the left of each row. The independent explanatory variables, along with their respective standard coefficients and levels of significance, are listed next in each row, followed by the R² value, which provides an estimate of the proportion of variance of the dependent physician behavior explained by the equation. The first row displays the equation that examines the degree to which a physician’s technical practice style is predicted by the patient’s report of pain, controlling for other sociodemographic patient variables. The physicians spent relatively more time in the technical aspects of medical care for patients in pain (P<.0001), control-
ling for female gender ($P=0.0862$), advanced age ($P=0.0064$), lower educational level ($P=0.0171$), and income less than $10,000$ ($P=0.0492$).

The second equation explores the extent to which a practice style promoting patients' active involvement in their own health care is predicted by patient pain and other patient factors. Patient activation activities took place less often when patients reported more pain ($P=0.0150$), controlling for female gender ($P=0.0760$) and higher educational level ($P=0.0014$) and income levels ($P=0.0331$).

The final equation looks at factors associated with a practice style emphasizing disease prevention. A physician was less likely to discuss or perform preventive services when the patient was in pain ($P<0.0001$), controlling for gender ($P<0.0001$) and ethnicity ($P=0.0040$).

Similar results were found in separate regression equations relating physician practice style behavior clusters to head, joint, abdominal, and back pain and in another set of regressions using the MOS SF-36 pain scale scores. There were no significant findings in regression equations relating patient pain to the other three practice behavior clusters.

Figure 1 provides another approach to displaying how physician practice style changes with the level of patient pain. Patients were divided into three groups based on their global visual analog pain scale scores: 1) pain score ≤10, low pain (n=125), 2) pain score >10 and <70, medium pain (n=264), 3) pain score ≥70, high pain (n=119). The bar graphs demonstrate the percent changes from the average physician practice style values in technical, patient activation, and preventive services according to patient pain levels. In medical encounters with patients having little or no pain, physicians spent less time on technical behaviors and a greater percentage of the visit on patient activation and

### Table 1

<table>
<thead>
<tr>
<th>Dependent Variable: Physician Practice Style Cluster</th>
<th>Independent Variables</th>
<th>Standardized Coefficients</th>
<th>$P$ Value</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical (structuring interaction, history taking, family information, physical examination, evaluation feedback, planning treatment, treatment effects, procedure)</td>
<td>Female</td>
<td>-0.0758</td>
<td>0.0862</td>
<td>0.0984</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.1188</td>
<td>0.0064</td>
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</tr>
<tr>
<td></td>
<td>Education</td>
<td>-0.1056</td>
<td>0.0171</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low income &lt; $10,000</td>
<td>0.0867</td>
<td>0.0492</td>
<td></td>
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<tr>
<td></td>
<td>Global pain</td>
<td>0.2228</td>
<td>&lt;0.0001</td>
<td></td>
</tr>
<tr>
<td>Patient activation (patient questions, health knowledge and beliefs, chatting)</td>
<td>Female</td>
<td>-0.0795</td>
<td>0.0760</td>
<td>0.0681</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>0.1418</td>
<td>0.0014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low income &lt; $10,000</td>
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<td>0.0331</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Global pain</td>
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<td>0.0150</td>
<td></td>
</tr>
<tr>
<td>Preventive service (discussion or performance)</td>
<td>Female</td>
<td>0.3171</td>
<td>&lt;0.0001</td>
<td>0.1247</td>
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<tr>
<td></td>
<td>White</td>
<td>-0.1214</td>
<td>0.0040</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Global pain</td>
<td>-0.2147</td>
<td>&lt;0.0001</td>
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</table>
preventive services. On the other hand, when patients reported high levels of pain, the physicians’ practice styles were characterized as more focused on the technical aspects of medical care, and less time was devoted to patient activation and preventive services behaviors.

Conclusions

Many patient factors influence physician practice styles. Increased awareness of the importance of identifying and treating patient pain has stimulated health service researchers to examine the impact of patient pain on the delivery of medical care. This study demonstrated the correspondence of patient pain with differential physician practice style. Pain appears to significantly alter the primary care physicians’ practice behaviors during the visit.

As hypothesized, when the patient was experiencing pain at the time of the medical encounter, the physician was more likely to structure the interaction spending more time on technical behaviors, such as history taking, doing a physical examination or procedure, and discussing diagnostic and therapeutic strategies. It would appear that the physician’s activity is focused on determining the etiology, evaluation, and treatment for the pain.

These findings also supported the hypothesis that the presence of patient pain affects the amount of time devoted to disease prevention. In visits where the patient reported being in pain, less time was spent providing preventive service. This may have long-term health implications. Alternately, less pain was predictive of more preventive services. Without the necessity of addressing painful symptoms, the physician has more time to discuss, plan, or perform disease prevention screening tasks.

Pain can be expressed by the patient in a variety of verbal and nonverbal ways. Anger, depression, and anxiety are common affective responses accompanying pain. These affective responses may, in turn, influence the manner in which the physician and patient communicate. It was also found in this study that when patients were in pain, the physician was less likely to engage in other behaviors that encouraged the patient’s active participation in the interaction, such as asking questions or sharing their health beliefs. This is significant because it has been previously demonstrated that patients whose physicians encourage them to actively participate in their medical treatment decisions have improved health outcomes.

Limitations

Our study has a number of limitations that affect the generalizability of its findings. The primary care physicians in the study were senior residents in their second or third year of training. The practice styles of physicians practicing in the community may be different, although professional practice patterns are developed during residency training. In addition, the study patients may represent a different population than those cared for in the community.

Conclusions

Patient pain may have an important influence on the physician-patient interaction. Primary care physicians should be cognizant of this when treating patients who may be experiencing pain. With improvement in the assessment of pain and more accurate and timely diagnosis, we may be able to provide our patients with a higher level of pain relief and better health outcomes. This is a start in dealing effectively with the health needs of patients and families.

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References