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## Health Literacy and Control in the Medical Encounter: A Mixed-Methods Analysis Original Communication

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### Abstract

**Background**—Physician-patient communication can be described according to four prototypes of control – paternalism, mutuality, consumerism, or default. Patients with inadequate health literacy skills may be less active participants in their care and more likely to have paternalistic encounters.

**Methods**—Two independent coders analyzed 31 transcribed outpatient medical visits between physicians and African-American patients with diabetes according to the four prototypes of control. Differences in communication and the balance of power by level of patients' health literacy were analyzed by quantitative and qualitative methods.

**Results**—Fourteen patients (45%) had inadequate health literacy, and most of them (N=8, 57%) had paternalistic encounters. Among patients with marginal or adequate health literacy skills, only 4 (23%) had paternalistic visits ( $p=0.06$ ), and encounters marked by mutuality were most common (N=9, 53%).

**Conclusion**—Patients with inadequate health literacy appear more likely to have paternalistic interactions with their physicians.

### Keywords

health literacy; physician-patient communication; diabetes

### Introduction

Successful management of chronic illnesses such as diabetes requires patient participation through lifestyle modification, self-monitoring, and adherence to prescribed medications.<sup>1</sup> Essential to the successful performance of these tasks are effective physician-patient communication and patient education. Previous research suggests that suboptimal communication between patients with diabetes and their physicians may contribute to poor disease management and outcomes.<sup>2–4</sup>

Patients with inadequate health literacy skills may be particularly at risk for poor physician-patient communication.<sup>5</sup> *Healthy People 2010* describes health literacy as “the degree to

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which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”<sup>6</sup> Inadequate health literacy is especially common among racial and ethnic minority groups.<sup>7</sup> It is associated with poor knowledge and management of chronic diseases such as diabetes, as well as higher mortality rates.<sup>3, 8–11</sup>

Research is beginning to show that poor physician-patient communication may be at least partly responsible for the apparent effects of inadequate health literacy on knowledge and outcomes. Physicians do not accurately estimate patients’ health literacy skills,<sup>12</sup> and they feel ill-equipped to address health literacy in clinical settings.<sup>13</sup> For example, physicians rarely confirm patient understanding of important instructions.<sup>4</sup> Patients with low health literacy also contribute to the challenge by hiding their lack of understanding and asking few questions during office visits.<sup>14</sup> These patterns may indicate more passive communication styles on the part of patients with low health literacy, but published studies that examine this issue directly are rare.<sup>15</sup>

Roter and Hall describe four different styles of physician-patient interaction, each varying in the level of control demonstrated by both parties.<sup>16</sup> *Paternalism* refers to a dynamic in which physicians exercise greater control and patients are passive participants. Conversely, patient dominance and physician passivity define *Consumerism*. *Mutuality* describes the shared control between patient and physician, whereas in *Default*, both patient and physician lack control over the encounter.

We performed an exploratory, mixed-methods analysis to describe medical interactions between African-American patients with diabetes and their primary care physicians according to the four prototypes of control described by Roter and Hall. We also sought to examine how these different styles of interaction may differ by health literacy level.

## Methods

### Design

Between April and November 2004, data for the present study were collected as part of a larger investigation on physician-patient communication. Researchers audiotaped primary care visits between patients and their physicians, and they interviewed patients immediately after the visits to collect demographic information and measure patients’ literacy levels.

### Participants

Study participants were African-American patients in the primary care clinic of a large, urban, public hospital in the southeastern United States. The clinic is staffed by residents and faculty physicians from an affiliated university, and it serves a primarily older, African-American population of lower socioeconomic status. Close to 50% of the hospital’s patients have poor literacy skills.<sup>17</sup> Patients were eligible to participate if they spoke English, demonstrated visual acuity of better than 20/60, and were scheduled to see 1 of 16 medical residents in the primary care clinic who had already provided consent to be audiotaped.

### Data Collection

Eligible patients were approached in the clinic waiting room by the researchers and invited to participate in a study of physician-patient communication that involved audiotaping of their medical visit and a brief interview. Participants were offered \$5 compensation.

After obtaining patient consent, the researchers used a tape recorder in the clinic examination room to record the visit that day. The audio recordings, which varied in length,

captured discussion of the patients' current health, directions for future care, social issues that may affect disease management, and other relevant health issues. Because some physicians initiated dialogue with their patients while walking with them to the examination room, several recordings lacked the first one to two minutes of conversation.

The researchers collected 102 audio recordings for the parent study that were transcribed by an external service. Of these, the current study used only the 31 transcripts which corresponded to African-American patients whose diabetes was discussed during the office visit. After the office visit, patients completed a questionnaire that included demographic items as well as the Rapid Estimate of Adult Literacy in Medicine (REALM).<sup>18</sup> A reliable and valid measure, as well as the most frequently used indicator of literacy in the health care setting,<sup>19</sup> the REALM assesses patients' ability to read and pronounce 66 common medical terms. Patients' scores on the measure can be categorized by reading level: 3<sup>rd</sup> grade (score 0–18), 4<sup>th</sup>–6<sup>th</sup> grade (19–44), 7<sup>th</sup>–8<sup>th</sup> grade (45–60), or 9<sup>th</sup> grade (61–66). For this study, patients' REALM scores were classified as either inadequate (0–44) or marginal-to-adequate (45–66).

### Ethical Considerations

The study was approved by the university institutional review board and hospital research oversight committee. All patients and physicians provided written consent. Anonymity of data was preserved by using unique identifiers rather than names.

### Data Analysis

**Transcript Coding and Qualitative Analysis**—Two readers independently analyzed the transcribed encounters according to the classification scheme of physician-patient communication described by Roter and Hall.<sup>16</sup> Transcripts were examined for patterns of paternalism, consumerism, mutuality, or default, and they were categorized according to the most predominant theme. The level of agreement between the readers in their initial categorization was 77%. A kappa statistic was also calculated to assess reader agreement; it indicated moderate to high concordance ( $\kappa = 0.64$ ). After the initial classification process, the two readers addressed any coding discrepancies by reviewing inconsistencies and agreeing upon a final assignment through discussion. Readers were blinded to the patients' health literacy level at the time of coding.

Encounters were classified as paternalistic if they were marked by displays of passivity on the part of the patient, as well as physician-dominated agenda setting. In such transcripts, the patient's voice was largely absent, rarely questioning the physician but rather expressing agreement with his or her advice. If the patient did interject comments or questions, the physician still dominated the discussion. Interactions characterized by patient demands for information and services that were accommodated by a cooperating physician were placed in the consumerism category. In these transcripts, the patient's voice was much more present, often directing the course of the visit. Encounters in which the patient and physician exercised shared control were considered to exemplify mutuality. In such transcripts, both patient and physician participated in formulating the care plan and jointly influenced the course of the visit, and decisions were often reached as a result of negotiation between parties. Lastly, interactions marked by unclear or contested goals were categorized as default. The patient and physician seemed at odds with one another in such transcripts, as both attempted to promote their own agendas. Following the classification of transcripts into one of the four mutually exclusive categories, the readers selected representative passages from each category.

**Statistical Analysis**—Descriptive statistics were used to analyze demographic information, which included gender, level of education completed, and health literacy level. The classifications of physician-patient interaction (i.e., paternalism, consumerism, mutuality, and default) were tabulated overall. The frequency of paternalistic encounters versus other types of encounters (i.e., grouping together consumerism, mutuality, and default) was then examined by level of health literacy, using a 2×2 Chi-squared test to assess the significance of differences. Statistical analysis was performed using SPSS version 14.0 for Windows.

## Results

### Patient and Physician Characteristics

The sample consisted of 31 African-American patients with type 2 diabetes. The majority of patients were female (79.4%). On average, participants had completed 11.6 years of education (SD=2.3). About half (45%, N=14) demonstrated inadequate health literacy skills on the REALM.

The primary care visits were conducted by 16 different physicians. Each physician saw between one and four study patients. Eight physicians were women, and gender concordance between physician and patient was present in 16 of the 31 visits. Two of the physicians were African American, eight were Caucasian, and six were Asian. Race concordance was present in 4 of the 31 visits.

### Quantitative Results

Most of the interactions were categorized as indicating mutuality (45%, N=14) or paternalism (39%, N=12). Fewer were indicative of consumerism (13%, N=4) or default (3%, N=1).

Most patients with inadequate health literacy had paternalistic encounters with their physicians (57%, N=8). (See Table 1.) Only one interaction (7%) between a physician and patient with inadequate health literacy was marked by consumerism, and 36% (N=5) by mutuality. Of those patients with marginal or adequate health literacy, 53% (N=9) had interactions characterized by mutuality, while 23% (N=4) had paternalistic encounters, 18% (N=3) had interactions marked by consumerism, and 6% (N=1) were labeled as default. The frequency of paternalistic medical encounters appeared to differ by patients' health literacy level such that participants with inadequate health literacy tended to have more paternalistic medical encounters ( $\chi^2 [1 \text{ df}] = 3.656, p=0.06$ ).

The balance of power in encounters did not vary consistently according to patient gender, physician gender, patient-physician gender concordance, patients' educational attainment, or the individual physician. For example, among the 10 physicians who completed two or more encounters, none had all of his or her encounters coded as belonging to a single control prototype.

### Qualitative Results

A qualitative examination of the 31 transcripts offers further insight into the nature of the relationship between health literacy and style of physician-patient interaction.

The following excerpt, featuring a 65 year-old male patient with inadequate health literacy, typifies the paternalistic encounters in this study:

MD: How many days did you not have any medicine for your blood pressure?

Patient: *You'll be mad at me.*

MD: No, no, I'm not going to be mad at you.

Patient: *About three weeks.*

MD: So you haven't been taking any medicines for your diabetes or blood pressure for three weeks?

Patient: *Yeah. Go ahead and say it.*

MD: No, I'm not going to say anything because I thought we talked about this before. Okay, we're going to focus on your diabetes and blood pressure today. That's going to be our focus. We're going to talk about and spend a lot of time talking about both your diabetes and your blood pressure. Okay? We're going to get straight about what we need to do. Because in the end those are the two things that pretty much, they are going to kill you, okay? The diabetes if it's out of control and your blood pressure if it continues to run in the high 180/100, we're really, really going to focus on that today and I'm going to go over all your medicines and tell you exactly what they are and what you need to do with them. Okay? Do you agree?

Patient: *Yeah, okay.*

The following patient, a 60 year-old woman, also had a paternalistic encounter in which the physician maintained dominance by asserting his medical knowledge. However, note the patient's own use of medical terminology and attempts to participate more actively in the conversation, perhaps reflective of her level of health literacy, which was marginal-to-adequate.

MD: Your bad cholesterol, your LDL is 125. For some people 125 is perfectly fine but when you have diabetes, it makes your risk of having heart disease a lot higher and so what we like to do is have your cholesterol even lower than that.

Patient: *Oh, okay.*

MD: See we like to have that LDL number to be less than 100.

Patient: *Okay.*

MD: So we have great medicines now. Um, have you ever been on a cholesterol medicine, Mrs. XXX?

Patient: *No, I never had any cholesterol problems.*

MD: Well, some people, if you didn't have diabetes I probably wouldn't worry about it.

Patient: *But I've never really been diagnosed with having diabetes.*

MD: Yeah, but your sugars have just been running real high and this test shows that it's still been running high for the last three months, so I think

Patient: *Well now what is high?*

MD: Yeah, we can go over that. Our definition of high changes.

Patient: *Okay.*

MD: And basically if you haven't eaten and your sugar level is above 120 or 126 to be exact, then that's higher than normal and that means you have diabetes. Okay?

Patient: *Oh, okay.*

MD: There's all sorts of criteria.

Patient: *I wonder what –*

MD: When you were fasting, you were in 136 is how high your sugars were when you were fasting. So your sugars aren't terrible.

Patient: *Okay.*

The consumerism model is evident in the following excerpt from an office visit for a 58 year-old woman with adequate literacy:

Patient: *I was just going to ask, I was going to ask the glaucoma doctor because, you know, I was listening to one of the cardiologists on TV and they were saying that some of the cholesterol drugs like Statin helps the glaucoma vessels in your eye. I was going to ask them, but he wasn't there so I could ask him.*

MD: Hum.

Patient: *What do you know, could I have it or could I take it?*

MD: I haven't heard. I am not exactly sure what that doctor on TV was talking about. With your diabetes and your hypertension, if you can control your cholesterol to an appropriate level then it can help with the diabetic damage. If you also keep your blood sugar under control, then it can help with the diabetic damage in your eyes.

Patient: *Right.*

MD: Moreso the blood pressure control than the cholesterol. I don't know the effect on glaucoma.

Patient: *That is what they were saying. This new drug called Statin. It is for cholesterol. People that are on cholesterol they did a study and a survey and people that was taking that, the glaucoma that was in the eye because there is some kind of blood vessels that pulls off and this helps to keep the fluid and stuff down in it.*

MD: Alright, let me see if I can look that up and ask the doctors in the back when I sign out. I will see if they have heard anything about that. But, it makes some sense. We will see if we can find the study.

Only one patient with inadequate health literacy had an encounter consistent with consumerism. This 33 year-old woman brought in a list of potential side effects and warnings for one of her blood pressure medicines, but as she sought the physician's input, it was clear that she had misunderstood the printed medication information.

MD: All right. Let's see. Other stuff you mentioned on this here – eliminate alcohol with nisoldipine, you underlined... It says limit using alcohol while on this medication.

Patient: *Yeah. I was – I was going – Now, why was I asking you this? Something I read in the paper something about that. I don't drink alcohol, but I was just wondering about – why was I going to ask you. Is it—I was just wondering. Is there something in this medicine, with alcohol in it or something? That's what I wanted to ask you. Is something like that in your medicine, in this medicine?*

MD: No, there's nothing like alcohol necessarily in that medicine, no.

Patient: *It's not?*

MD: No, no.

Examples of mutual encounters were found among patients of both health literacy levels. The following excerpt, exemplifying mutuality, features a 56 year-old female patient with marginal-to-adequate health literacy:

MD: You are taking care of your mother?

Patient: *Yes, and I'm going through a lot trying to deal with her.*

MD: With this stress it sounds like it is affecting your own health too.

Patient: *I knew I shouldn't be eating like I'm eating. I have to learn to eat better.*

MD: Right, it sounds like you realize that your eating now isn't healthy for you.

Patient: *It's hurting me and I just have to stop it.*

MD: What's one thing you would be willing to change in the foods that you're eating now to get back to eating on the right track?

Patient: *I love sweets. I get so stressed out and that's the first thing I grab is sweets and food.*

MD: When I go home stressed out, I go for the Doritos.

Patient: *I've got to stop buying those things.*

MD: Can you try the sweets that don't have sugar in them? They make sugar-free sweets. It's diabetic candy. They would actually be pretty safe.

Patient: *I know. Then if I want cookies or sweets I can substitute.*

MD: Can you do those couple of things?

Patient: *I've just got to realize that I've got to stop this.*

MD: Let's try making this one change that you've picked up on. Either give it up altogether or try the sugar free candy. You know what, that would be such a big step in the right direction.

Patient: *I gave up smoking and I guess I can do this same thing now.*

MD: Let's take this one big step today and next time we'll worry about the next step. Okay?

Patient: *Okay.*

MD: Don't put too much pressure on yourself to try and change your whole diet overnight.

Patient: *I'm not. I just have to stop buying those sweets when I go to the store. I need to stop bringing those sweets home. I bring them for Momma but I eat more than she does and they are supposed to be for her. I just have to stop doing it.*

While the majority of encounters marked by mutuality belonged to patients with marginal or adequate health literacy, several patients with inadequate literacy were also found to have such encounters. The following excerpt, featuring a 58 year-old male with inadequate health literacy, is still suggestive of mutuality, although the type of language used by the patient differs:

Patient: *I be snoring real loud.*

MD: Let's take a look at your chart real quick. Alright...

MD: So as far as the snoring, sometimes the best thing you can do for snoring is to lose a little weight.

Patient: *Right. There ain't no pill or nothing.*

MD: ...If you can do a little more of that and then if your partner says that it's helping with your snoring, then that's a step in the right direction.

Patient: *I'll lose some weight.*

## Discussion

The results of this mixed-methods analysis suggest that patients with inadequate health literacy tend to have more paternalistic encounters with their physicians than do their counterparts with marginal or adequate health literacy. In addition, the consumerism model was observed more frequently among patients with marginal or adequate health literacy. Interestingly, mutuality was the most common prototype of physician-patient interaction observed in the sample and was prevalent across levels of health literacy.

The finding that patients with inadequate health literacy skills tend to have paternalistic encounters with physicians indicates that such patients may be less involved in this important aspect of their health care. Other research has also indicated that low-literacy patients are less likely to ask questions in the medical encounter, which also represents lower levels of participation.<sup>14</sup> Less involvement in aspects of medical care may partially explain the relationships that have been observed between inadequate health literacy and health behaviors, as well as health outcomes. Previous research has demonstrated, for example, that patients with inadequate health literacy skills have lower rates of cancer screening, worse chronic disease control, and even higher mortality.<sup>8, 10, 20</sup> Further study would be required to substantiate this theory.

In the several paternalistic encounters that occurred among patients with marginal or adequate health literacy skills, the patients tended to be more assertive and use more medical terminology than their counterparts with inadequate health literacy. However, the physician still dominated the discussion, sometimes by cutting off the patient or conveying more knowledge of the topic. Conversely, in the one encounter that was coded as consumerism for a patient with inadequate health literacy, the patient asked many questions and tried to be assertive, but it was clear she had a poor understanding of the subject matter.

Despite the differences observed between health literacy groups, mutuality was the most predominant style of physician-patient interaction observed overall. Certain characteristics of these mutual encounters, including patient language and the amount of physician dialogue, seemed to differ by health literacy levels. In recent years, researchers have commented on a shift in the medical community towards joint decision-making in the medical encounter.<sup>21, 22</sup> The prevalence of mutual interactions in the study sample may reflect this shift, even in a public hospital setting in which many patients are of lower socioeconomic status and demonstrate inadequate health literacy skills.

It is important that physicians continually strive to communicate clearly and engage patients in balanced discussions, particularly in traditionally underserved populations, where the prevalence of inadequate health literacy is highest.<sup>7</sup> However, others have shown that physicians often use medical jargon without explaining what it means,<sup>23</sup> and that they rarely confirm patient understanding of important instructions.<sup>4</sup> Patients in underserved settings are interested in receiving medical information and disease management support to help them participate in shared decision-making.<sup>24, 25</sup> In one large survey, 40% reported that their diabetes would likely improve if they communicated better with their health care provider.<sup>25</sup> Training programs in clear communication are available for medical students, physicians, and other health professionals.<sup>26-29</sup> Through such programs, providers can



practice skills such as communicating in plain language and effectively encouraging patients to ask questions. These programs, which were developed with attention to health literacy, are part of a broader line of communication skills research and training which has sought to encourage shared goal-setting, elicitation of patients' explanatory models, and other behaviors that help lead to mutuality in the physician-patient encounter.<sup>30-32</sup>

This exploratory investigation has several limitations. First, a small sample size limits our ability to draw firm conclusions regarding group differences. Second, all participants had diabetes and were African-American, limiting our ability to generalize across medical conditions and to other demographic groups. Third, owing to the small number of encounters with African-American physicians, we were unable to perform a meaningful analysis to relate racial concordance with dialogue characteristics. Fourth, there was some subjectivity in the process of assigning encounters to the Roter and Hall typology, although we had good agreement between two independent readers in categorizing transcripts and they reached consensus easily.

## Conclusion

These limitations notwithstanding, the present study suggests there is a relationship between health literacy and the balance of power in the medical encounter. Additional research is needed to attempt to replicate these findings in larger, more diverse populations, and perhaps by employing different measures of physician-patient interaction.

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**Table 1**

Roter-Hall prototypes of control by health literacy level

	Paternalism	Consumerism	Mutuality	Default	Total
Inadequate literacy	8 (57%)	1 (7%)	5 (36%)	0 (0%)	14 (45%)
Marginal to adequate literacy	4 (23%)	3 (18%)	9 (53%)	1 (6%)	17 (55%)
Total	12 (39%)	4 (13%)	14 (45%)	1 (3%)	

Note: Comparison of paternalism vs. non-paternalism (i.e., grouping together consumerism, mutuality, and default);  $\chi^2$  [1 df] = 3.656, p=0.06

Definition of each prototype of control: *Paternalism* – refers to a dynamic in which physicians exercise greater control and patients are passive participants. *Consumerism* – characterized by patient dominance and physician passivity. *Mutuality* – describes the shared control between patient and physician. *Default* – both patient and physician lack control over the encounter.