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Pain Assessment: The Roles of Physician Certainty and Curiosity

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Abstract

Undertreatment of pain is common even when caused by serious illness. We examined whether physician–patient communication (particularly language indicating physician certainty) was associated with incomplete (i.e., premature closure) of pain assessment among patients with serious illness. Standardized patients (SPs) trained to portray patients with serious illness conducted unannounced, covertly audio-recorded visits to 20 consenting family physicians and 20 medical specialists. We coded extent of pain assessment, physician voice tone, and a measure of the degree to which physicians explored and validated patient concerns. To assess physician certainty, we searched transcripts for use of words that conveyed certainty using the Linguistic Inquiry and Word Count program. SP role fidelity was 94%, and few physicians were suspicious that they had seen an SP (14% of visits). Regression analyses showed that physicians who used more certainty language engaged in less thorough assessment of pain ($\beta = -0.48$, $p < .05$). Conversely, physicians who engaged in more exploring and validating of patient concerns ($\beta = 0.27$, $p < .05$) had higher ratings on anxiety/concerned voice tone ($\beta = 0.25$, $p < .01$) and engaged in more thorough assessment of pain. Together, these three factors accounted for 38% of the variance in pain assessment. Physicians who convey certainty in discussions with patients suffering from pain may be more likely to close prematurely their assessment of pain. We found that expressions of physician concern and responsiveness (curiosity) were associated with superior pain assessment. Further study is needed to determine whether these associations are causal and mutable.

There is considerable variation in pain treatment, with up to 50% of severely ill patients not receiving adequate pain management (Deandrea, Montanari, Moja, & Apolone, 2008; Fairchild, 2010). Undertreatment is compounded by current concern about iatrogenic morbidity due to perceived overuse of pain medications for chronic noncancer pain. The

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reasons for variation in pain treatment are largely unknown; our study examines physician–patient communication as one potentially contributing factor.

Physician treatment of pain, whether with drugs (Mercadante & Arcuri, 2007) or with other modalities (Sherwood et al., 2005), may be hampered by the absence of an "objective" measure of pain. Pain assessment is based primarily on patient self-report (Caraceni et al., 2010). Patient reports of pain correlate poorly with exam findings, imaging, and other objective tests, especially for chronic pain (Dworkin et al., 2003). Pain assessment is fraught with uncertainty and the potential for conflict. Anticipating or experiencing cognitive overload involved in pain assessment (Burgess, 2009) leads some physicians to rely on cognitive shortcuts and/or unconscious stereotypes to simplify the decision of whether further evaluation and treatment of patients' pain is necessary. While making quick decisions in some circumstances may be highly adaptive, doing so in medical decision making may result in premature closure—making decisions before collecting sufficient data or engaging in sufficient deliberation (e.g., considering alternative diagnoses) (Berner & Graber, 2008; Croskerry & Norman, 2008; Epstein et al., 2006; Graber, Franklin, & Gordon, 2005; Redelmeier, 2005). One reason physicians do this is because, as with everyone, physicians are "cognitive misers"; that is, people resist having to process difficult information if easily accessible information is available that will help us feel certain about our decisions (Fiske & Taylor, 1991). Unfortunately, certainty appears to be associated with diagnostic and management errors, likely caused by premature closure. Expressing certainty can also silence the patient's description of the pain the patient is experiencing by physicians providing seemingly certain (but inaccurate) formulations. We hypothesize that physicians who communicate certainty, by using more certainty-conveying words, are less likely to assess patients' pain thoroughly. Greater understanding of communication processes associated with the premature closure of the exploration of patients' pain symptoms and experience should lead to improved education and training of physicians in conducting thorough pain assessment.

The conceptual framework underlying our study is patient-centered communication (PCC) (Epstein et al., 2005). We hypothesized that two PCC communication behaviors, curiosity and empathy, would be associated with greater assessment of patients' pain. When physicians demonstrate curiosity by exploring patients' concerns, they are likely to develop a better understanding of what is important to patients (Stewart et al., 2003). We also hypothesized that if physicians understand the importance of patients' pain, they are more likely to assess thoroughly their patients' pain (Dyche & Epstein, 2011; Fitzgerald, 1999; Keller & Carroll, 1994). Finally, we posit that when physicians communicate with an empathic (anxious/concerned or worried) voice tone, patients are apt to believe that physicians are concerned and interested in them as a person (Ambady et al., 2002; Haskard, Williams, DiMatteo, Heritage, & Rosenthal, 2008) leading to superior assessments of patients' concerns, particularly their pain.

METHODS

Overview

We controlled for variation in patient expression of pain by using standardized patients (SPs), who are actors trained to portray a patient role with high fidelity. SPs made covert unannounced visits to consenting physicians. The SPs portrayed patients who sought help for uncontrolled pain due to serious illness (for more details see Shields et al., 2009).

Participants

We recruited 46 physicians, 23 specialists and 23 family physicians, through the Family Practice Research Network in a Midwestern state and through senior specialists at a regional medical center. We contacted 36 specialists to recruit 23, giving us a 64% participation rate. Senior leaders at the medical center wrote letters to community specialists, and we followed up with personal phone calls. Primary care physicians were recruited through the Practice Research Network. Our final sample consisted of 40 physicians, 20 specialists and 20 primary care physicians. Two physicians withdrew from the study, two recordings were lost due to equipment failure, and two physicians moved before interviews could be conducted.

Procedures

The relevant human subjects review boards approved the study. Research assistants met with physicians face-to-face to explain the study and obtain consent. Physicians consented to seeing SPs unannounced and gave us the name of a staff member with whom we worked to arrange the visits. Research assistants communicated with the staff contact to set an appointment date and to resolve identity issues such as insurance coverage so that visits could proceed undetected. We sent a complete medical record to the physician prior to the visit that detailed the SP's worsening pain and a diagnosis of a serious illness. Each SP carried two concealed audio-recorders (one for backup). Three weeks after the visit, we sent physicians a fax asking them whether they suspected one of their patients to be an actor and asking them to describe the patient.

Three male SPs were trained to portray a patient with an advanced life-threatening illness with radiographic and laboratory evidence supporting the patient's complaint of severe pain. We prepared a complete script for the SPs detailing the clinical and personal history responses to potential physician question or actions. The SP role was that of an unmarried man, formerly a manager of a small motel until he became ill. SPs were trained to provide basic details about their concerns and to give additional information in response to specific or open-ended physician inquiry.

At the appointment, the SP provided a credible reason for seeing a new doctor, and reported worsening constant pain, exacerbated by movement. The SP was scripted to have had some misconceptions about the severity, extent, and/or progression of his illness. The portrayal was intended to prompt physicians to assess pain, prognosis, and disease progression.

We reviewed audiotapes and debriefed with SPs weekly to optimize SP role fidelity. We assessed role fidelity by rating each SP visit based on a coding checklist of twenty items, which encompassed the major dimensions of the role. Each dimension was assessed using a 1–5 Likert-type scale with 1 being *not portrayed at all* to 5 being a *very accurate portrayal of that part of the role*. Research assistants rated items related to role content on a 1–5 scale. We calculated the over-all percentage of adherence by dividing the average score by 5. Physicians reported suspecting SPs in only 14% of the encounters, a level found in similar studies (Franz et al., 2006). In cases of detection, physicians reported still treating SPs as they would a real patient.

Dependent Variables

Measure of physician pain assessment—We developed this measure to assess the premature closure of physician pain assessment by coding the presence and rating the degree of physician pain-assessment behavior (see Table 1). Items for the measure were generated from self-report pain questionnaires (Fishman et al., 1987; Melzack, 1975, 1987, 2005) and medical interviewing texts (Aldrich, 1999; Cohen-Cole, 1991; Lipkin, Putnam, & Lazare, 1995). We followed the same procedures for coding and reliability checking that we used in

a previous study (Shields et al., 2009). We calculated the intraclass correlation coefficients (ICC) for each item weekly, discussing results with coders weekly. Items with low ICC scores received special attention in order to improve their reliability. Table 1 shows the items used in the measure of physician pain assessment, the ICC for the coding of each item, and which items were retained or removed. The Cronbach's alpha was .66 and the intraclass correlation coefficient (ICC) for the mean of these seven items was .83, suggesting that the coding differentiated cases, not coders.

Independent Variables

Exploring and validating patient concerns—We measured the careful gathering of all relevant information by creating a list of patient concerns, based on the SP role, and rated the depth of physician exploration and validation of these concerns. We coded whether physicians responded with preliminary exploration, further exploration, or validation to discussion topics such as mood/depression, family support, disease's impact on life, previous physicians, and scans done since diagnosis. Three coders coded 20 transcripts each, resulting in one-third of the cases being coded for reliability. We calculated intraclass correlation coefficients to examine reliability and the coders and supervisors met regularly to discuss cases and resolve differences. The intraclass correlation coefficient for exploring and validating in our study was .88. This methodology and the reliability and validity are described in detail in other work (Fiscella et al., 2004; Shields et al., 2009).

Anxious/concerned voice tone—We measured anxious/concerned voice tone by rating audio recordings for each physician. Four independent raters listened and coded for anxious/concerned tone using a 1–7 scale in a manner similar to the Roter Interactional Analysis System (RIAS) (Roter & Larson, 2002) with two raters listening to each recording. Lower scores meant less anxious/concerned voice tone, while higher scores indicated greater anxious/concern voice tone. We met and discussed cases where there were discrepancies greater than two points on the scale. The ICC for anxious/concerned voice tone was .83, suggesting high interrater reliability.

Physician use of certainty language—We used the Linguistic Inquiry and Word Count (LIWC), a text analysis program (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007), to analyze the percentage of certainty words used by physicians in each encounter with SPs. LIWC uses words such as absolute, certain, clear, complete, confident, definite, sure, and unambiguous to capture cognitive processes indicating certainty (see http://www.liwc.net for more information). Individuals who use more certainty-conveying words seek causal understandings (Pennebaker & King, 1999), an important task for physicians making diagnoses. However, because those who have a need for certainty tend to be less tolerant of ambiguity, they may curtail data gathering and engage in premature closure (Furnham & Ribchester, 1995).

Statistical Analyses

We examined study variables for their adherence to assumptions of normality and for the presence of outliers. No variables violated the assumptions. To evaluate which variables contributed to the variance in pain assessment, we conducted correlation and regression analyses.

RESULTS

Physician Sample

Characteristics of the physician sample are shown in Table 2. The sample was 71% male with a mean age of 48.1 years ($SD = 9.2$). Sixty-eight percent were of European ancestry.

There were no significant differences between specialists and family physicians on these demographic variables.

Descriptive Statistics

The bottom of Table 3 shows the means and standard deviations of the study variables. We identified each instance of pain assessment and rated the depth of conversation about it on a 5-point scale. The mean of pain assessment was 1.22 ($SD = 0.53$). Physicians averaged 0.85 certainty words per transcript. Scores on exploring and validating, M 1.25 ($SD = 0.67$) were similar to those of pain assessment $M = 1.22$ ($SD = 0.53$). The mean anxious/concerned voice tone was 2.82 ($SD = 0.91$) on a 7-point scale.

Correlational Analyses

The top of Table 3 shows the correlations between study variables. Pain assessment was negatively and significantly associated with physician use of certainty language ($r = -.37$). Exploring and validating patient concerns was negatively and significantly associated with anxious/concerned voice tone ($r = -.39$).

Regression Analyses

Table 4 shows that more certainty language was associated with less pain assessment ($B = -0.48$, $p < .05$). In addition, more exploring and validating of patient concerns ($B = 0.27$, $p < .05$) and greater anxious/concerned voice tone ($B = 0.25$, $p < .01$) were significantly associated with more thorough pain assessment. The full model accounted for 38% of the variance in pain assessment and in general supports our study hypotheses. We conducted an additional regression analysis to see whether physician detection or suspicion that the "patient" was an SP would affect our findings, but the coefficients for these additional variables were not significant and did not change our results.

DISCUSSION

Using a rigorous study design that controlled for patient-to-patient differences in expression of pain and associated morbidity, we examined physician behaviors associated with how thoroughly physicians explored patients' pain. We identified three physician factors—certainty language, exploration/validation of concerns, and voice tone—that accounted for more than one-third of the variation in physician assessment of pain.

Patient-centered communication emphasizes that clinicians should explore patients' experience of illness in order to individualize patient care. Certainty language may be a direct measure of the quality of interpersonal care, which may have implications for the quality of technical care. Premature closure is antithetical to patient-centered care and may result in physicians making assumptions about patients' symptoms, expectations, and values. Premature closure is the most common cognitive problem associated with diagnostic errors (Graber, Franklin, & Gordon, 2005). Consistent with this view and our hypotheses, we found that physician use of certainty language was associated with less thorough pain assessment, implying a tendency toward premature closure, and that markers of patient-centered communication (exploring and validating of patient concerns and anxious/concerned voice tone) were positively associated with greater depth of pain assessment.

Exploring and Validating Patient Concerns

Exploring and validating patients' concerns was associated with greater pain assessment in the regression but not the bivariate analysis. It appears that physicians who explore and validate patients' concerns discover that patients' pain is a important issue and thus assess patients' pain in greater depth (Maly, Liu, Leake, Thind, & Diamant, 2010). Because this

relationship was not significant until demographic and other communication variables were controlled for, it is possible that the relationship between exploring and validating and pain assessment was masked or confounded by demographic and other communication variables.

Anxious/Concerned Voice Tone

We found that anxious/concerned voice tone related positively and significantly with pain assessment. Physicians who communicate concern/anxiety with patients during appointments seem more likely to manifest behavioral concern through greater pain assessment. The anxiety/concern that physicians experience may motivate them to explore patient's experience with pain in greater depth, leading to improved pain assessment.

Physician Use of Certainty Language

Certainty language was associated with premature closure, in particular, the clinicians' incomplete assessment of patient's pain symptoms. Previous studies have found that when individuals are more certain about their opinions, they pursue information that confirms their already formed beliefs (Brannon, Tagler & Eagly, 2007) and are unlikely to be persuaded to change their opinions when presented with additional information (Petrocelli, Tormala, & Rucker, 2007). This may provide a partial explanation as to why physicians appearing to be more certain may gather less information about pain symptoms. Most physicians are pressed for time, which leads some to extrapolate (or stereotype) based on their experience with similar patients. Thus, it is unsurprising that they may come to conclusions before they have collected sufficient data (Dugdale, Epstein, & Pantilat, 1999; Kimberlin, Brushwood, Allen, Radson, & Wilson, 2004; Linzer et al., 2000).

Limitations and Future Directions

The small sample of physicians in our study limits the extent to which our results can be generalized to other physicians. SPs have been widely used in physician–patient communication research. They have the advantage of controlling for variability in patient presentation; however, they also introduce the problem of first-visit bias (Beullens, Rethans, Goedhuys, & Buntinx, 1997) and the problem that even the best actor may not be able to convey the microfacial expressions and body language needed for the role. The measure of physician pain assessment is a new observational measure developed for this study and had good interrater reliability. However, the behaviors physicians used in assessing patient pain in our sample may be different from those in other samples of physicians, which limits the validity of the instrument. The mean of the seven items reliably distinguished cases, but the internal consistency of the items could be improved. Future studies with larger physician samples are needed to replicate and confirm these findings.

We did not expect to find a negative correlation between anxious/concerned physician voice tone and exploration of patient concerns. This finding suggest that greater concern/anxiety about a patient's pain may lead physicians to concentrate directly on evaluating the patient's pain instead of taking the time to engage with the patient to understand the patient's subjective and individualized experience of pain. This correlation deserves further exploration in future studies.

The LIWC measure of certainty has limitations. It assesses the use of specific words that may indicate a certainty attitude but does not account for the context of those words in the interaction between physician and patient. We did consider whether the LIWC certainty words that physicians uttered expressed their own certainty attitudes or whether they were indicators of physicians exploring the patients' certainty attitudes. Of note, the SPs were trained not to express certainty; rather, they were taught to express some confusion about

their diagnosis and symptoms. We thus have some confidence that the physicians' certainty language was more related to their own attitudes than to the patients'.

Implications

Patient-centered care increases the quality and thoroughness of healthcare services. The key component to patient-centered care is open and honest communication. Open and honest communication depends on physicians' willingness and ability to remain open to the patient's concerns and not shut the door prematurely to new information. We observed that premature closure, lack of mutual understanding, and lack of physician nonverbal expressions of concern were all related to the degree of certainty that physicians communicated, and to the quality of care provided.

Inadequate assessment of pain in seriously ill patients is a widespread problem (IOM, 2011). We found several physician behaviors associated with improved pain assessment. Future research should assess the degree to which these behaviors are mutable (as opposed to relatively immutable traits), and whether training physicians to tolerate and express uncertainty can result in improved pain assessment and ultimately improved pain control.

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TABLE 1

Measure of Physician Pain Assessment Items

Items retained in scale	**M**	**SD**	**ICC**
1. Onset (when, duration, time course)	1.4	1.3	.62
2. Location	2.5	0.9	.93
3. Intensity/severity	0.9	1.1	.92
4. Aggravating/alleviating factors	1.1	1.2	.72
5. Associated symptoms	1.9	1.4	.46
6. Previous/current methods of treatment	2.8	0.9	.67
7. Other med/surge procedures	2.4	1.1	.64
Items removed	M	SD	ICC
1. Temporal pattern	0.7	1.0	.81
2. Substance use (tobacco, alcohol, illegal)	2.6	1.3	.71
4. Evaluate pain on the 0–10 scale	0.1	0.6	.95
5. Was medication offered	1.4	1.4	.75
6. Did physician insist patient take new medication	0.3	0.9	.98
7. Did physician deny patient new or more medication	0.2	0.8	.54

Note. After item analysis, 7 items remained in scale with Chronbach's alpha = .66. Coding reliability ICC = .83. Asterisk indicates items removed from scale.

TABLE 2

Physician Demographics

Variable	Physicians, %/M (SD)	Oncologists, %/M (SD)	Family Physicians, %/M (SD)
Male	71%	75%	67%
European ethnicity	68%	60%	76%
Age	48.1 (9.2)	47.7 (8.0)	48.5 (10.5)

TABLE 3

Correlation Table

Variables	1	2	3	4	5	6
1. Pain assessment	—					
2. Physician certainty	−.37*	—				
3. Exploring/validating	.29	−.23	—			
4. Anxious/concerned voice tone	.28	.15	−.39*	—		
5. Male[a]	−.08	−.01	−.11	−.13	—	
6. Oncologist[b]	−.12	−.10	−.10	−.27	−.10	—
M	1.22	0.85	1.25	2.82	0.70	0.50
SD	0.53	0.39	0.67	0.91	0.46	0.51

*$p < .05$ *Note*. Significance indicated by **$p < .01$, and ***$p < .001$.

[a]Male: 0 = female, 1 = male.

[b]Oncologist: 0 = family physician, 1 = oncologist.

TABLE 4

Regression of Exploring and Validating Concerns, Voice Tone, & Certainty on Pain Assessment

Variables	B	SE	*95% CI*
Intercept	0.69	0.42	−0.17 – 1.55
Oncologist[a]	−0.05	0.14	−0.34 – 0.24
Male[b]	−0.09	0.15	−0.40 – 0.22
Certainty	−0.48	0.20	−0.88 – 0.84*
Exploring/validating	0.27	0.12	0.02 – 0.51*
Concerned voice tone	0.25	0.08	0.08 – 0.42**

*Note. CI, confidence interval. Signficance indicated by $p < .05$

**$p < .01$.

***$p < .001$.

[a]Oncologist: 0 = family physician, 1 = oncologist.

[b]Male: 0 = female, 1 = male.