

Clinical Research

In Orthopaedic Speciality Care, Longer Explanations Are Not More Caring or More Satisfying

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Abstract

Background Research consistently documents no correlation between the duration of a musculoskeletal specialty care visit and patient experience (perceived empathy of the specialist and satisfaction with care). Based on a combination of clinical experience and other lines of research, we speculate that longer visits are often related to discordance between specialist and patient interpretation of symptoms and weighting of available test and treatment options. If this is true, then the specific duration of time discussing the specialist's interpretations and options with the patient (expertise transfer) might correlate with satisfaction with care and perceived empathy of the clinician even if the total visit time does not.

Questions/purposes (1) What demographic or mental health factors are associated with the duration of expertise transfer? (2) What factors, including the duration of expertise transfer, are associated with the patient's satisfaction with the visit and perceived clinician empathy?

Methods In a cross-sectional study, 128 new and returning English-speaking adult outpatients seeking care from one of three orthopaedic specialists in two urban practices between September and November 2019 were enrolled and agreed to audio recording of the visit. A total of 92% (118) of patients completed the questionnaire and had a usable recording. Participants completed a sociodemographic survey, the Patient-Reported Outcome Measure Information System Depression computer adaptive test (PROMIS Depression CAT; a measure of symptoms of depression), the Short Health Anxiety Index (SHAI-5; a measure of symptoms of hypochondriasis, a form of symptoms misinterpretation), the Pain Catastrophizing Scale (PCS-4; a measure of misinterpretation of symptoms), an ordinal measure of patient satisfaction (dichotomized into satisfied or not because of strong ceiling effects), and the Jefferson Scale of Patient Perception of Physician Empathy (JSPPE; a measure of perceived clinician empathy). The duration of expertise transfer and the total duration of the visit were measured by two raters with acceptable reliability using software that facilitates segmentation of the visit audio recording. To determine factors associated with the duration of expertise transfer, satisfaction, and empathy, we planned a multivariable analysis controlling for potential confounding variables identified in exploratory bivariable analysis. However, there were insufficient associations to merit multivariable analysis. **Results** A longer duration of expertise transfer had a modest correlation with catastrophic thinking ($r = 0.24$; $p = 0.01$). Complete satisfaction with the visit was associated with less

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health anxiety (6 [interquartile range 5 to 7] for complete satisfaction versus 7 [5 to 7] for less than complete satisfaction; $p = 0.02$) and catastrophic thinking (4 [1 to 7] versus 5 [3 to 11]; $p = 0.02$), but not with the duration of expertise transfer. Greater perceived clinician empathy had a slight correlation with less health anxiety ($r = -0.19$; $p = 0.04$).

Conclusion Patients with greater misinterpretation of symptoms experience a slightly less satisfying visit and less empathetic relationship with a musculoskeletal specialist despite a longer duration of expertise transfer. This supports the concept that directive strategies (such as teaching healthy interpretation of symptoms) may be less effective than guiding strategies (such as nurturing openness to alternative, healthier interpretation of symptoms using motivational interviewing tactics, often over more than one visit or point of contact).

Level of Evidence Level II, therapeutic study.

Introduction

Adequate patient-clinician communication leading to a positive relationship is linked to increased patient satisfaction, increased patient adherence to medication and treatment regimens, improved clinical outcomes, and a decreased litigation risk [2, 8, 9, 26, 35, 39]. Consequently, patient-reported experience measures (including satisfaction, communication effectiveness, and perceived clinician empathy) are increasingly incentivized and reported [6, 10, 20, 23, 43]. Orthopaedic surgeons have the lowest scores on five ratings of communication effectiveness (explains things, listens carefully, gives easy-to-understand instructions, shows respect, and spends enough time) of any medical specialty in the United States [30]. Communication strategies can be learned and practiced [34] and need not lengthen the office visit [31].

Studies suggest that the duration of a visit does not correlate with the patient's experience (perceived empathy, communication effectiveness, and satisfaction with the visit) [12, 21, 27, 38]. Patient experience measures are correlated with one another and may measure a common underlying construct that might be conceptualized as "relationship" [11, 14]. Evidence to date suggests that the quality rather than the quantity of the visit enhances the patient-clinician relationship and patient experience [19, 43].

However, the duration of specific components of communication during a musculoskeletal specialty visit are not as well characterized. One study found that the largest percentage of orthopaedic visit time is spent explaining the diagnosis (interpretation of symptoms) and considering test and treatment options [17]. This can be considered the part of the visit where the specialist transfers expertise to the patient. Communication scholars refer to this as information support. Specialists tend to focus on technical

factors during expertise transfer [18], while patients wish to be heard and understood. Based on communication science and prior research [16, 24, 38], we propose that discrepancies between specialist and patient interpretation of symptoms may contribute to a longer duration of expertise transfer without improving satisfaction and perceived empathy. Common unhelpful thoughts and unhelpful feelings about symptoms are measured using questionnaires such as the Pain Catastrophizing Scale (a measure of worst-case thinking, or overinterpretation of symptoms) and the Short Health Anxiety Inventory (a measure of the tendency to interpret symptoms as serious illness in spite of reassurance to the contrary).

We therefore asked: (1) What demographic or mental health factors are associated with the duration of expertise transfer? (2) What factors, including the duration of expertise transfer, are associated with the patient's satisfaction with the visit and perceived clinician empathy?

Patients and Methods

Study Design and Setting

This cross-sectional study was performed in the outpatient practices of three upper extremity surgeons in two urban practices between September and November 2019. Before the visit, a research assistant invited English-speaking, new or returning adult patients seeking care for a musculoskeletal problem to participate. After written informed consent, the visit was audio recorded and a survey was completed at the end of visit.

Patients

Qualifying patients were invited by one of four research assistants (none of whom were involved with patient care) to enroll in the study before their visit. We excluded five patients after the audiotapes were found to be missing or flawed, and we excluded five patients who did not complete the survey (defined as two or more missing questionnaires), leaving 92% (118 of 128) of the patients for analysis. Their mean age was 45 ± 15 years, and 39% (46 of 118) of patients were men (Table 1).

Procedures

Before the visit began, the research assistant described the study to patients, obtained written informed consent, and started the audio recording with a digital recorder that was not connected to the internet. After the visit, the recording was stopped, and patients completed seven questionnaires

Table 1. Patient and visit characteristics

Variable	Patient and clinical characteristics (n = 118)
Age in years	45 ± 15
JSPPE	31 (27-35)
PROMIS depression	48 (42-55)
PCS-4	4 (2-9)
SHAI-5	6 (5-7)
Total time of visit in seconds	741 (540-1021)
Total time of expertise transfer in seconds	261 (123-382)
Total time of communication in seconds	683 (513-928)
Percentage expertise transfer or communication time	38 ± 18
Number of questions asked	2 (0-4)
Gender	
Men	39 (46)
Women	61 (72)
Level of education	
High school or less	19 (23)
Some college	29 (34)
Bachelor degree	27 (32)
Graduate or professional degree	25 (29)
Marital status	
Married or unmarried couple	50 (59)
Single or dating	36 (42)
Divorced, separated, or widowed	14 (17)
Work status	
Employed	58 (68)
Retired	11 (13)
Disabled or unemployed	24 (28)
Student or part-time	8 (9)
Trauma	
Trauma	33 (39)
Nontrauma	67 (79)
Follow-up	
New	31 (37)
Returning	69 (81)
Office	
Academic	70 (83)
Private practice	30 (35)
Provider	
Clinician 1	31 (37)
Clinician 2	24 (28)

Table 1. continued

Variable	Patient and clinical characteristics (n = 118)
Clinician 3	19 (23)
Clinician 4	8 (10)
Other	17 (20)
NRS satisfaction	
Not completely satisfied	50 (59)
Completely satisfied	50 (59)

Continuous numbers presented as mean ± SD or median (interquartile range); other data presented as % (n); JSPPE = Jefferson Scale of Patient Perceptions of Physician Empathy; PROMIS = Patient-reported Outcome Measure Information System; PCS-4 = four-item version of the Pain Catastrophizing Scale; SHAI-5 = Short Health Anxiety Inventory.

on password-secured tablets using Health Insurance Portability and Accountability Act-compliant Research Electronic Data Capture.

Four different research assistants recorded the total duration of the visit, duration of interruptions (when either or both the clinician and patient left the room), duration of expertise transfer, and the number of questions asked by the patient during expertise transfer.

To analyze the audio recordings, we used the program *praat* (Paul Boersma and David Weenink, Institute for Phonetic Sciences, University of Amsterdam) to play the recording and measure the duration of each type of conversation in seconds using the labeling and segmentation functions. We divided the conversation into the following categories: relationship building, information gathering for general administration, interview about the problem, agenda setting, examination, interpretation of tests and findings, technical explanation, expertise transfer, procedures, interruptions (such as, leaving to answer a call or get supplies), and planning future care.

We defined expertise transfer as the explanation of the illness and the test and treatment options (Appendix 1; <http://links.lww.com/CORR/A581>). The reliability of determining transitions between aspects of the visits and segmentation was confirmed by having two observers (KVM, MZK) each review 20 recordings independently, resulting in an intraclass correlation coefficient of 0.82 (95% confidence interval 0.59 to 0.92).

The median (interquartile range) number of questions patients asked during expertise transfer was two (0 to 4). The median duration of expertise transfer was 262 seconds (123 to 382), or 38% of the total conversation time. Continuous parametric variables are presented as the mean

± SD, continuous nonparametric variables as the median (IQR), and discrete data as proportions.

Measures Used

Patient satisfaction was measured using a numerical rating scale or 11-point ordinal scale from 0 (representing “not satisfied at all”) to 10 (representing “extremely satisfied”). Because of strong ceiling effects in the responses, we dichotomized the results into patients who had the highest score (classified as complete satisfaction) and those who had a lower score (classified as incomplete satisfaction) following the precedent of prior studies of patient experience [5, 15].

The Jefferson Scale of Patient Perceptions of Physician Empathy is a brief (five-item) measure of the patient’s perception of clinician empathy. Patients responded to each item of the survey on a 7-point Likert scale (1 representing strongly disagree; 7 representing strongly agree). A sample item is: “[My doctor] understands my emotions, feelings, and concerns” [10].

The Patient-reported Outcome Measure Information System Depression computer adaptive test measures symptoms of depression [29]. A score of 50 is scaled to the average for the US population, with each 10 points above or below 50 representing an SD from the mean [28]. A score of 53 is a cutoff point for mild depression with a sensitivity of 0.83 [7].

The four-question version of the Pain Catastrophizing Scale measures interpretation of symptoms in the form of worst-case thinking. Catastrophic thinking is an overly negative orientation toward harmful stimuli and plays an important role in the way an individual experiences and accommodates pain [36]. The total score ranges from 0 to 16, with higher scores representing greater catastrophic thinking.

The five-question version of the Short Health Anxiety Inventory measures symptoms of health anxiety (misinterpretation of symptoms in the form of a sense that one has a serious health problem in spite of evidence to the contrary, also known as hypochondriasis). Total scores range from 0 to 15, with higher scores representing greater symptoms of health anxiety.

Primary and Secondary Study Outcomes

Our primary study goal was to identify factors associated with duration of expertise transfer.

Ethical Approval

This cross-sectional observational study was approved by our institutional review board at the University of Texas at Austin (approval number 2019-07-0008).

Statistical Analyses

We performed a bivariate analysis of factors associated with the duration of expertise transfer in seconds (Table 1). Spearman rank correlation coefficients were calculated for continuous variables, and the Kruskal-Wallis H test or the Mann-Whitney U test was used for categorical variables, where appropriate. All variables with p values < 0.10 in the bivariate analysis were moved to a multivariable, negative binomial regression analysis (Appendix 2; <http://links.lww.com/CORR/A582>). For all non-normally distributed continuous variables, we performed a negative binomial regression analysis to assess factors independently associated with the duration of expertise transfer and perceived empathy. We also performed a logistic regression model to assess factors independently associated with satisfaction. Given the limited number and strength of associations, we decided against performing a multivariable analysis.

A sample size calculation demonstrated that 114 patients were needed to provide 80% statistical power, with alpha set at 0.05, in a regression with 11 variables if our complete model would account for 14% or more of the variability in the duration of expertise transfer. To account for 10% of incomplete data, we enrolled 128 patients.

Results

Factors Associated with Duration of Expertise Transfer

The duration of expertise transfer had a modest correlation with catastrophic thinking ($r = 0.24$; $p = 0.01$) (Appendix 2; <http://links.lww.com/CORR/A582>).

Factors Associated with Satisfaction and Perceived Empathy

Complete satisfaction with the visit was associated with less catastrophic thinking (4 [interquartile range 1 to 7] for complete satisfaction versus 5 [3 to 11] for less than complete satisfaction; $p = 0.02$) and less health anxiety (6 [5 to 7] versus 7 [5 to 7]; $p = 0.02$) (Appendix 3; <http://links.lww.com/CORR/A583>). There was a slight correlation between greater perceived clinician empathy and less health anxiety ($r = -0.19$; $p = 0.04$) (Appendix 3; <http://links.lww.com/CORR/A583>).

Discussion

There is evidence that visit duration does not correlate with perceived empathy, communication effectiveness, and

satisfaction with the visit [12, 21, 27, 38]. Based on a combination of clinical experience and other lines of research, we speculated that longer visits may be related to longer duration of expertise transfer specifically, and this part of the visit might relate to the degree of difference between specialist expert and patient interpretation of symptoms and weighting of available options. The duration of expertise transfer might also correlate with satisfaction and perceived empathy. We found that greater misinterpretation of symptoms (catastrophic thinking and health anxiety) was modestly associated with a longer duration of expertise transfer and lower satisfaction and perceived empathy. The finding that misinterpretation of symptoms contributes to longer visits and worse experience supports the concept that prioritizing the relationship and using guiding strategies (such as motivational interviewing) rather than directive or teaching strategies (directly confronting misinterpretations or contradicting a person) might improve patient experience without lengthening the visit. Said differently, more connecting, normalizing, and empathizing may contribute to better patient experience than would a visit with more teaching.

Limitations

We acknowledge a number of study limitations. First, we analyzed the audiotapes using a novel categorizing framework that might benefit from greater testing of reliability and accuracy. Given the noted interobserver reliability, we expect future studies to confirm the utility and applicability of the approach we used. Second, patients or clinicians, knowing the visit was being audio recorded, might have altered their behavior, which is sometimes called the Hawthorne effect. The Hawthorne effect has been studied and seems to have inconsistent and limited influence on experiments, although more study is merited [22]. We have extensive experience using audio and video tapes and performance measures such as grip strength confirming that it is possible to measure relationships between factors that may be influenced by the circumstance of knowing one is being observed (performance-based measures). In other words, complex phenomena may be attenuated, but they are not eliminated by experimental observation. One demonstration of the ability of experiments to provide useful evidence in spite of the Hawthorne effect is the observation that people do not complete measures of symptoms of depression and anxiety honestly, and yet, the observed relationships with symptom intensity are notable and consistent [4, 13, 33]. The bottom line is that although measurement introduces additional complexity or “noise,” it is still possible to measure the signal. It seems safe to assume that observed effects would be stronger outside of a study.

The inclusion of return patients merits attention as one might guess that less expertise transfer occurs at return visits and more than one visit might improve the patient-clinician relationship. The reader can note that the mean duration of expertise transfer was 267 seconds for the 37 new patients and 200 seconds in the 81 returning patients with similar interquartile ranges (Table 1). It is also notable that there was no difference in the ratio of expertise transfer to total time between new and return visits. There were no other differences in response variables between new and returning patients. The limited difference between new and returning patients than one might intuitively expect is a consistent finding in our research, and the reason why we take advantage of the practicality of enrolling both new and returning patients in our studies. We performed a separate analysis on only 81 returning patients, and we found no difference with our overall patient results.

Another limitation is that satisfaction needed to be dichotomized because of the strong ceiling effect. Future work to develop measures of the patient’s experience of care with more normally distributed outcomes is merited [32]. In addition, there were four principal clinicians, which might seem like a small number. Although the magnitude of the associations might change if we studied groups of specialists with more or less effective communication strategies, the associations identified—which lie mostly with patient factors—are unlikely to change.

We also recognize that the inclusion of six questionnaires might have contributed to survey fatigue. We think this is unlikely because we used short forms and computer adaptive tests to make the total time to complete the questionnaire less than 10 minutes. Although none of the variables met the traditional criteria for multicollinearity, we were thoughtful about the potential for multiple variables to attenuate associations in multivariable models [37]. Even though this merits additional study, the likely result of a better strategy for potential collinearity would likely strengthen the observed associations, which bolsters our confidence in the findings.

Factors Associated with Duration of Expertise Transfer

The observation that the duration of expertise transfer has a modest correlation with catastrophic thinking is consistent with evidence that symptom misinterpretation may contribute to a greater divide between the patient and the surgeon, hinder communication and trust, and result in longer conversations about diagnosis and options [40]. Specialists might assume that people are predisposed to defer to their expertise, and they can simply teach people about their pathology and tell them how to interpret their symptoms. We must not forget that people are the experts on their lived experiences. One might also wonder if we

should change practice on the basis of such a modest correlation. When making a decision, it is important that in the study of complex constructs like patient experience (satisfaction, perceived empathy, communication effectiveness) and visit logistics (time of visit), finding any signal in the noise is often notable and of interest. This is an important aspect of other disciplines that study complex phenomena such as the social sciences [25].

Factors Associated with Satisfaction and Perceived Empathy

The observation that complete satisfaction was slightly correlated with less catastrophic thinking and less health anxiety suggests that misinterpretation of symptoms may hinder the development of a supportive patient-clinician relationship. This finding is important even though the correlations were slight in magnitude because it has been difficult to identify factors associated with satisfaction with the exception of other experience measures [23]. Psychologists have identified cognitive fusion (when thoughts become facts) as one of the root issues of misinterpretation of symptoms and symptoms of worry or despair [3]. When a patient misinterprets a symptom and then fuses with that misinterpretation and considers it fact, any specialist advice that diverges from that perceived fact may seem inattentive, dismissive, arrogant, and demeaning. For instance, a person with new pain after an event may reasonably interpret the condition as an injury despite the fact that the pathology is age-appropriate (such as arthritis or rotator cuff tendinopathy). When the specialist teaches or directs the patient to a symptom interpretation that is more in line with the observed pathology, it might feel confrontational or argumentative. When there is conflict between the specialist and a patient's interpretation of symptoms, the patient may feel challenged rather than heard and understood, which may be one reason why longer visits are not rated as more satisfying. Instead of teaching or directing a patient toward a more accurate understanding, specialists might consider using motivational interviewing techniques to guide patients gently and incrementally to a healthier and more accurate interpretation of symptoms [1].

We interpret the finding that greater perceived empathy had a slight correlation with less health anxiety similarly. The observed association between greater misinterpretation of symptoms and a less satisfying experience may be the key to understanding consistent evidence from musculoskeletal specialty care that duration of the conversation is less important than the effectiveness of the communication [27, 41, 42]. Clinicians are familiar with the degree to which reassurance may feel dismissive when a patient is convinced he or she has a serious problem (health anxiety). This line of

evidence suggests that explanation of symptoms is not as important as compassion about symptoms because the latter can help build a relationship that allows a person to be more flexible in his or her thinking and consider an interpretation that leads to better accommodation. The relative effectiveness of prioritizing the relationship and using guiding rather than directing communication strategies merits additional investigation.

Conclusion

The observation that patients who experienced greater misinterpretation of symptoms had a less satisfying visit and a less empathetic relationship with their musculoskeletal specialists, despite a longer duration of expertise transfer, directs us to several specific communication strategies that have proven useful. First, prioritize the relationship: Use motivational interviewing techniques to validate and explore a person's illness experience and guide them toward healthier thoughts and feelings [1]. Second, expect the pathophysiology to be common and familiar with known options and limitations—the “medicine” is nearly always straightforward—and resist the temptation or pressures to default to tests or treatments. Third, develop and practice strategies to spread care out over time using various methods of contact, both asynchronous (email, portal, texts, voice mail, video mail) and synchronous (text chat, phone or video call, in-person visit). Allow time for the process of diagnosis and the consideration of options. Expect things to become more clear as you gain trust and the patient is given the opportunity to reconsider their initial interpretation of the symptoms. These strategies can be tested in future experimental research in musculoskeletal specialty care for their ability to improve patient experience without lengthening the visit.

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