ORIGINAL RESEARCH

The Effects of Patient-Provider Communication on 3-Month Recovery from Acute Low Back Pain

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Background: **Patient-provider communication has been indicated as a key factor in early recovery from acute low back pain (LBP), one of the most common maladies seen in primary care; however, associations between communication and LBP outcomes have not been studied prospectively.**

Methods: **Working adults ($n = 97$; 64% men; median age, 38 years) with acute LBP completed baseline surveys, agreed to audio recording of provider visits, and were followed for 3 months. Using the Roter Interaction Analysis System, 10 composite indices of communication were compared with 1- and 3-month patient outcomes.**

Results: **Patients ($n = 30$) with significant pain and dysfunction persisting at 3 months provided more biomedical information (t[75], 2.61; $P < .05$) and engaged in more negative rapport building (t[75], 2.33; $P < .05$) but showed no increase in psychosocial/lifestyle communication during the initial visit ($P > .05$). Providers asked these patients more biomedical questions ($r = 0.35$ with dysfunction), more psychosocial/lifestyle questions ($r = 0.30$), made more efforts to engage the patient (t[75], 4.49; $P < .05$), and did more positive rapport building (t[75], 2.13; $P < .05$).**

Conclusions: **Providers adapt their communication patterns to collect more information and establish greater rapport with high-risk patients, but patients focus more on biomedical than coping concerns. To better elicit psychosocial concerns from patients, providers may need to administer brief self-report measures or adopt more structured interviewing techniques.(J Am Board Fam Med 2011;24: 16–25.)**

Keywords: **Back Pain, Communication, Patient-Centered Care, Patient-Provider Communication, Prognosis**

Patient-centered communication has become a core value in primary care medicine.[1,2] The basic tenets of patient-centered communication are to understand medical problems in the context of a patient's lifestyle, preferences, and beliefs and to engage patients in collaborative decision making.[3,4] More patient-centered communication is associated with improved patient satisfaction,[5] fewer malpractice complaints,[6] increased adherence,[7] and improved perceptions of health status.[5] Moreover, patient-centered communication seems consistent with ideals of enabling patients, forming a therapeutic alliance, being culturally competent,[8] and making medical care accessible and understandable to patients.[1,9,10] Though not all studies of patient-centered communication have shown benefits,[11] there is substantial evidence of a relationship with patient health outcomes, patient satisfaction, and patient adherence in primary care.[12–15] In general, patients prefer a balance between psychosocial and biomedical topics and the opportunity to ask questions.[15] These aspects of care may be especially pertinent to long-term management and recovery from acute episodes of musculoskeletal pain.

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Low back pain (LBP) is one of the most common pain conditions affecting working-age adults, and LBP is a leading cause of lost productive time at work.[16] Though acute LBP is typically benign and remits spontaneously over several weeks with little or no treatment, a quarter of patients experience problems for longer than 3 months,[17] and approximately 10% will go on to experience chronic LBP and disability.[18] Prognostic studies have shown that once rare, but serious, biomedical "red flags" have been ruled out, the perpetuation of chronic LBP is tied to personal circumstances, pain beliefs, and other nonmedical psychosocial factors.[18–20] Workplace factors include physical job demands, inability to modify work, job stress, lack of social support, job dissatisfaction, poor expectations for resuming work, and fear of reinjury.[18] Psychological factors include pain catastrophizing, poor expectations for recovery, worries, distress, and fear of movement.[19,20] Though there are efforts to translate this body of evidence on prognostic factors into practical advice for providers,[21–24] more research is needed to assess the role of general practitioners in identifying and addressing these factors.

As with other medical conditions, patient-centered interactions should speed LBP recovery by integrating psychosocial and workplace concerns in early evaluation, counseling, advice, case management, and referral. For example, an individual with an unaccommodating employer may benefit from a provider call to the workplace, a more detailed exploration of workplace conditions and physical job demands, or a more explicit recommendation for temporary job accommodations.[25] Workers who report high levels of emotional distress may benefit from interventions that provide greater reassurance and support, counter dysfunctional pain beliefs, provide ways to manage stress and discouragement, and involve gradual activity exposure and goal setting.[26] Though the advice and counseling of a single visit alone may be insufficient to overcome the negative impact of psychosocial factors on LBP recovery,[27–29] it may provide a basis for screening and referral of high-risk patients to workplace, physical, or psychosocial interventions shown to prevent chronic back disability.[30]

We designed a study of routine visit communication during initial consultations for acute LBP to contribute to this important area of inquiry. We used the Roter Interaction Analysis System (RIAS), a widely used and well-validated method of interaction coding,[31–33] to objectively measure elements of patient-provider communication without the problem of patient recall bias. We previously reported findings that related patterns of patient-provider communication during an initial LBP medical visit to the presence of psychosocial "yellow flags" identified by patient report before the visit using the Back Disability Risk Questionnaire.[34] We found that visit communication differed by patients' disability risk, although not in the way we had expected, considering the presence of psychosocial flags. Compared with patients determined to be of low or moderate risk for long-term disability, visit dialogue with high-risk patients was significantly more focused on medical explanations and therapeutic regimen. Despite the presence of psychosocial yellow flags among the high-risk patients, they engaged in little discussion of lifestyle and psychosocial factors during their visits.

The current analysis extends our earlier work by relating LBP visit communication prospectively to 3-month outcome measures of patient pain, disability, and return to work. We hypothesized that patient outcomes would be improved when the initial visit was characterized by higher levels of rapport, engagement, and attention to lifestyle and psychosocial issues.

Methods

Participants

Providers

As described in detail elsewhere, 14 clinicians—including 6 physicians, 4 nurses practitioners, 2 physician assistants, 1 osteopath, and 1 chiropractor—participated in the study and were recruited from 10 free-standing, community-based medical clinics in the northeastern United States. The age of providers ranged from 28 to 63 years (mean, 48.4 years); clinical experience ranged from 2 to 35 years (mean, 20.2 years). Each provider was asked to recruit at least 6 consecutive patients who met eligibility criteria.

Patients

Ninety-seven patients (62 men, 35 women) were recruited from the consecutive caseload of patients who were seeking an initial medical evaluation for work-related, acute LBP. Inclusion criteria were (1) nonspecific sacral or lumbar back pain; (2) acute onset or exacerbation during the past 14 days; (3) pain presumed to be of occupational origin; (4) age ≥18 years; and (5) fluency in English. Patients were predominantly young, white, blue-collar workers employed by medium to large companies, with moderate income and some technical or college training (detailed demographic data are reported elsewhere).[34] Clinicians estimated patient voluntarism rates from 50% to 75%, and the actual number of recruited patients per provider in the final data set ranged from 2 to 11 (mean, 6.6).

Procedure

Study procedures were approved by the Institutional Review Boards of the Liberty Mutual Research Institute for Safety and the Johns Hopkins Bloomberg School of Public Health. Eligible patients were identified by front desk staff before an initial medical evaluation for work-related, acute LBP. Details of the research study were described, and a consent form was provided for patients to review and sign. The consent form described confidentiality of surveys and audiotapes, assurance that no surveys would be placed in medical records or shared with employers, and notice that the patient would receive a $30 retail gift card for completing the survey. After signing the consent form, volunteer patients completed a baseline questionnaire before being ushered to an examination room for a customary patient interview and examination. Providers were blind to results from the baseline questionnaire. At 1 and 3 months after the initial medical evaluation, participants completed a follow-up questionnaire assessing pain, function, and disability status.

Measures

Roter Interaction Analysis System

As reported previously,[34] the LBP visit audio tapes were coded by 2 trained raters at the Johns Hopkins Bloomberg School of Public Health using the RIAS. The RIAS coders were blind to patient outcome data. A random sample of 15% of the audiotapes was double coded to assess interrater reliability. As in many other RIAS studies, average intercoder correlation was adequate (88% for provider codes and 91% for patient codes occurring at least twice per interaction on average). (See Shaw et al[34] for more details about the coding approach and examples of the RIAS codes.) The individual coded variables were consolidated into 10 composite scores for ease of interpretation and to reduce the likelihood of type I errors. These 10 composite variables represented the principal level of analysis for the study.

Numerical Pain Rating Scale

At 1- and 3-month follow-up, participants rated back pain on an 11-point numerical rating scale from 0 ("no pain at all") to 10 ("worst pain possible"). The reliability and validity of the pain numerical rating scale has been well documented,[35] and the scale has demonstrated sensitivity to pain treatments for LBP.[36]

Roland-Morris Disability Questionnaire

Functional limitation caused by LBP was assessed at 1- and 3-month follow-up using a 16-item abbreviated form of the Roland-Morris Disability Questionnaire (RMDQ).[37,38] The RMDQ has good reproducibility, construct validity, and responsiveness to intervention.[39] One-week test-retest reliability for the RMDQ is 0.88, and it correlates well with other established measures of physical function.[40]

Return to Work

At 1- and 3-month follow-up, participants provided details about current work status, any temporary modifications or physician restrictions, and the cumulative duration of work absences and work modifications.

Data Analysis

Medical visits were successfully recorded for 94 participants (the recording device was not properly activated in 3 cases). Associations between the 10 composite variables from the RIAS coding system and the outcomes of pain and functional limitation (RMDQ) at 1- and 3-month follow-up were assessed using Pearson correlations. For the outcome of return to work, associations with RIAS variables were assessed using independent samples 2-tailed t tests. A composite clinical case rating that indicated the need for continued medical follow-up ("remitted" vs "unresolved") provided an additional outcome measure, and associations with the RIAS variables were assessed using independent samples 2-tailed t tests. The $\alpha = 0.05$ for all analyses.

Use of multilevel analysis was considered because patients in the study were nested within providers, but this would have required a minimum of

30 providers.[41] Because intraclass correlations[42] for each of the 10 composite patient communication variables were nonsignificant ($P > .05$), we concluded that simple analysis of variance models should yield unbiased standard error estimates. In other words, variability between patients who were seeing the same provider far exceeded variability between the pooled results of individual providers.

Results

Visit duration was from 3.2 to 31.0 minutes (mean ± SD, 15.4 ± 7.0 min), and the mean initial pain intensity rating was 6.3 (SD, 2.1). The mean number of statements from clinicians was 256.7 (SD, 99.0) compared with 154.3 from patients (SD, 70.7). Visit duration and the frequency of patient statements were similar to that of prior studies of primary care visits in the United States,[43,44] but the frequency of clinician statements were somewhat greater (256.7 vs 176.3).[44] At 1-month follow-up, 83 patients (86%) were reachable by telephone. The mean pain rating (0–10) was 3.0 (SD, 2.2); the mean RMDQ functional limitation (0–100) was 44.3 (SD, 30.7); and 69% had returned to full-duty work. Patients were categorized as either "remitted" (48%) or "unresolved" (52%) at 1 month based on a composite clinical case rating method. Cases were classified as "unresolved" if any of the following criteria were met: (1) pain rating >5; (2) functional limitation (RMDQ) exceeding 50; and/or (3) no full-duty return to work. This "case rating" method has been used in previous studies to denote cases of acute LBP that are likely to require continued clinical assessment, care, or monitoring.[45]

At 3-month follow-up, 81 patients (84% of original sample) were able to be reached by telephone. The mean pain rating (0–10) was 2.8 (SD, 2.0); the mean RMDQ score of functional limitation (0–100) was 29.2 (SD, 30.3); and 70% had returned to full duty work. The same composite clinical case rating method led to a categorization of 62% as remitted and 38% unresolved at 3 months. Five participants who were categorized as "remitted" at 1 month relapsed to meet criteria for "unresolved" at 3 months.

Correlations between the 10 RIAS communication categories and the outcomes of pain and functional limitation are shown in Table 1 (significant correlations at .05 level shown in bold typeface). Results were generally similar for both 1- and 3-month follow-up periods. With respect to patient communication, providing more biomedical information, engaging in more emotional rapport building with providers, and using more procedural language was associated with poorer outcomes of pain and functional limitation at follow-up. More negative rapport building was correlated with 3-month but not 1-month outcomes. In terms of provider communication, asking more biomedical and psychosocial/lifestyle questions and engaging in more facilitation/engagement and positive rapport building with patients was associated with poorer outcomes at follow-up. The majority of psychosocial/lifestyle questions asked by clinicians were about health habits, work demands, self-care regimen, and daily activities (sample psychosocial/lifestyle questions are shown in Table 2). Outcomes of pain and dysfunction were correlated with more total patient and provider statements at the initial visit (correlation range, 0.30–0.37) but not with a longer visit duration. In contrast with the results for longitudinal pain outcomes, none of the patient or provider communication variables were significantly correlated ($P > .05$) with pain ratings at the initial visit.

Communication patterns of patients and providers at the initial evaluation were also compared based on return to work and clinical case ratings using independent samples *t* tests (Table 3). patients who would fail to return to usual work with no restrictions or modifications by 3 months (30%), biomedical questions from providers were 59% more frequent and clinician utterances related to facilitation/engagement were 56% more frequent at the initial evaluation. With respect to patient communication, patients who failed to return to usual job responsibilities provided 42% more biomedical information and had nearly 4 times the rate of negative rapport building and procedural language.

Results were similar when communication variables were compared based on the composite clinical case rating (39% unresolved). Providers asked more biomedical and psychosocial/lifestyle questions and did more facilitation/ engagement, whereas patients provided more biomedical information. Both failed return to work and an "unresolved" case rating were associated with more total patient and provider statements at the initial visit (independent samples *t* tests) but not with a longer

Table 1. Pearson Correlations of Patient and Provider Communication with Pain and Function Outcomes

Verbal Exchanges	Pain Rating First Visit (n = 90)	Pain Rating At 1 Month (n = 80)	Pain Rating At 3 Months (n = 77)	Functional Limitation At 1 Month (n = 80)	Functional Limitation At 3 Months (n = 77)
Provider					
Biomedical/therapeutic questions	0.16	**0.41**[†]	**0.27**[*]	**0.31**[†]	**0.35**[†]
Lifestyle/psychosocial questions	0.03	**0.34**[†]	0.16	**0.30**[†]	**0.30**[†]
Biomedical/therapeutic information	0.17	0.06	0.03	0.08	0.08
Lifestyle/psychosocial information	0.15	−0.08	−0.06	−0.09	−0.02
Facilitation/engagement	0.14	**0.50**[†]	**0.43**[†]	**0.40**[†]	**0.46**[†]
Rapport building					
Positive	0.11	**0.31**[†]	**0.27**[*]	**0.32**[†]	**0.31**[†]
Negative	0.19	0.20	0.17	0.21	−0.13
Emotional	0.01	−0.05	−0.06	0.15	**0.23**[*]
Socializing/chit-chat	−0.20	0.00	−0.06	−0.05	−0.03
Procedural language	0.16	**0.34**[*]	0.19	0.15	0.21
Patient					
Biomedical/therapeutic questions	0.08	−0.06	−0.01	−0.12	−0.02
Lifestyle/psychosocial questions	0.18	0.06	0.00	0.10	−0.03
Biomedical/therapeutic information	0.02	**0.43**[†]	**0.29**[†]	**0.22**[*]	**0.30**[†]
Lifestyle/psychosocial information	0.00	0.09	0.13	0.13	0.20
Facilitation/engagement	0.01	-0.01	0.05	0.05	0.00
Rapport building					
Positive	0.10	0.20	0.19	0.03	0.10
Negative	0.10	0.04	**0.23**[*]	0.17	**0.23**[*]
Emotional	**−0.27**[*]	**0.26**[*]	**0.26**[*]	0.21	**0.24**[*]
Socializing/chit-chat	−0.20	-0.08	−0.11	-0.10	−0.10
Procedural language	0.06	**0.25**[*]	**0.25**[*]	0.02	**0.24**[*]

[*] $P < .05$.

[†] $P < .01$.

visit duration. Results for the 1-month outcome measures of return to work and clinical case rating (not shown) were nearly identical, with slightly reduced measures of association.

Discussion

This study is the first that we are aware of to relate the dialogue during the medical visit for LBP to 3-month pain and recovery outcomes. Though practice guidelines[46] for LBP treatment emphasize the importance of psychosocial and workplace factors, few of these provide detailed methods for screening or counseling patients. The goal of this study was to determine whether variations in communication during an initial evaluation for LBP might relate to 3-month patient outcomes, especially in light of the presence of lifestyle/psychosocial concerns. Though not conclusive, study results suggest that providers do adopt more patient-centered interviewing strategies for patients with ultimately poorer outcomes, despite little disclosure of psychosocial or lifestyle concerns from patients.

Patient and provider communication variables that predicted longitudinal pain outcomes were not related to pain ratings at the initial visit. Although most patients reported high baseline pain ratings (after all, this is why they sought care), differences in pain ratings may have minimal prognostic value to predict the duration of a pain episode. Clinicians apparently use other cues besides presenting pain level (ie, physical examination results, patient distress) to shape their communication approach. A previous study by the research team[47] has shown that clinician ratings of a poor prognosis in this patient population are based not only on pain in-

Table 2. A Representative Sampling of Psychosocial and Lifestyle Questions Asked by Clinicians during Recorded Visits

Domain	Question	RIAS Code
Worries or concerns	Any other concerns or anything?	Psychosocial, open-ended
Emotional state	How do you feel about that?	Psychosocial, open-ended
	Why were you upset with yourself?	Psychosocial, open-ended
Workplace barriers	What's happening with work?	Lifestyle, open-ended
	Have you talked to them about this?	Lifestyle, closed-ended
Health habits	Drink a lot of alcohol?	Lifestyle, closed-ended
Exercise regimen	Did you do the exercises? Daily?	Lifestyle, closed-ended (2)
Self-care	Are these inserts in your shoes?	Lifestyle, closed-ended
Work status	Have you been working or out of work totally?	Lifestyle, closed-ended
Work habits	You know you don't have to work long shifts, right?	Lifestyle, closed-ended
Injury factors	Shoveling or just the snowplow?	Lifestyle, closed-ended
Recreation	What kind of sports do you play?	Lifestyle, open-ended
Job modification	Did Mr. M. say you're not able to work at all?	Lifestyle, closed-ended
	If I bumped you to 25 lb, would that change the work you can do?	Lifestyle, closed-ended
Workplace exposures	Do you do a lot of that kneeling and crawling in your work?	Lifestyle, closed-ended
Daily activities	Are you back in your bed?	Lifestyle, closed-ended
Job description	What kind of animals do you raise?	Lifestyle, closed-ended
Lifting technique	Are you lifting them with good body mechanics?	Lifestyle, closed-ended
Daily activities	Have you been raising your daughter by yourself?	Lifestyle, closed-ended
	Have you traveled recently?	Lifestyle, closed-ended

RAIS, Roter Interaction Analysis System.

tensity but also on radicular pain, high levels of functional limitation, observations of depressed mood, and poor workplace support. These types of factors may signal the need for a more detailed, patient-centered interview.

Patients in this study who experienced delayed recovery from acute LBP did not show any greater tendency to talk with their clinicians about lifestyle and psychosocial concerns than patients with a more positive trajectory. This is unfortunate considering evidence from the literature that these concerns could be important prognostic factors. Consequently, an important implication of the study is that patients may be reluctant to overtly discuss psychosocial problems and concerns with providers early in the course of LBP treatment. Previous studies of patient-provider communication have demonstrated a consistent need to encourage the voicing of patients' agendas and questions in daily clinical practice.[48] Half of patients in this study asked no lifestyle or psychosocial questions, and only 6 patients asked more than 2 questions. Thus, even patients with serious concerns and worries about LBP recovery may be reluctant to discuss these concerns with clinicians. Explicit probing by clinicians may be necessary to accurately elicit and identify these patient concerns.

Patients with poorer outcomes, however, did provide more biomedical information, engage in more rapport building with providers, and use more procedural language. The increase in biomedical information provided is probably a result of the increased biomedical questions from providers. Increased rapport building may relate to an increased need for social support, reassurance, or care demands. More use of procedural language may simply reflect the need to make more frequent changes to the course of conversation. Though these differences in patient communication were not profound, providers seemed to distinguish high-risk patients and adapt their communication patterns when interacting with them. This included an increase in the number of biomedical and lifestyle/psychosocial questions, more use of facilitation and engagement, and more positive rapport building. Thus, without any special instructions, providers in this study seemed to make adjustments while interviewing high-risk patients to establish greater rapport and collect additional background information. However, given the observational na-

Table 3. Comparison of Initial Patient-Provider Communication to 3-Month Return-to-Work and Case Ratings

	Return to Work*			Clinical Case Rating		
Verbal Exchanges	Returned (n = 54) (mean [SD])	Not returned (n = 23) (mean [SD])	Statistic	Remitted (n = 47) (mean [SD])	Unresolved (n = 30) (mean [SD])	Statistic
Biomedical/therapeutic questions						
Provider	32.35 (19.06)	51.35 (27.97)	t(75) = 2.98[†]	32.23 (19.10)	47.10 (27.20)	t(75) = 2.82[†]
Patient	1.93 (3.15)	2.35 (2.69)	NS	2.00 (3.35)	2.13 (2.43)	NS
Lifestyle/psychosocial questions						
Provider	6.24 (4.08)	8.65 (6.41)	NS	6.30 (4.28)	8.00 (5.82)	NS
Patient	0.81 (1.12)	0.61 (0.78)	NS	0.75 (0.99)	0.77 (1.10)	NS
Biomedical/therapeutic information						
Provider	53.11 (40.03)	49.17 (27.26)	NS	52.14 (41.98)	51.60 (26.55)	NS
Patient	63.56 (29.65)	90.04 (45.62)	t(75) = 3.03[†]	63.00 (31.01)	84.73 (41.87)	t(75) = 2.61[†]
Lifestyle/psychosocial information						
Provider	28.02 (22.67)	20.70 (15.00)	NS	27.66 (23.31)	22.97 (16.24)	NS
Patient	25.78 (26.09)	33.35 (27.30)	NS	26.15 (26.89)	31.00 (26.08)	NS
Facilitation/engagement						
Provider	30.02 (14.71)	46.91 (21.28)	t(75) = 4.01[†]	27.68 (12.03)	46.63 (21.01)	t(75) = 4.49[†]
Patient	2.07 (2.74)	2.43 (2.48)	NS	2.13 (2.88)	2.27 (2.30)	NS
Positive rapport building						
Provider	37.17 (18.41)	46.30 (19.49)	t(75) = 1.96[†]	36.28 (17.16)	45.57 (20.79)	t(75) = 2.13[†]
Patient	35.20 (19.88)	37.17 (19.88)	NS	34.85 (20.33)	37.27 (19.10)	NS
Negative rapport building						
Provider	0.35 (0.78)	0.17 (0.39)	NS	0.38 (0.82)	0.17 (0.38)	NS
Patient	0.41 (0.94)	1.57 (3.38)	t(75) = 2.33[†]	0.34 (0.92)	1.40 (3.00)	NS
Emotional rapport building						
Provider	18.54 (11.56)	20.22 (14.38)	NS	17.23 (11.00)	21.87 (14.05)	NS
Patient	9.89 (9.03)	13.57 (11.43)	NS	9.49 (9.23)	13.33 (10.55)	NS
Socializing/chit-chat						
Provider	1.91 (3.71)	1.74 (3.51)	NS	0.38 (0.82)	0.17 (0.38)	NS
Patient	1.52 (3.86)	0.96 (2.18)	NS	0.34 (0.92)	1.40 (3.00)	NS
Procedural language						
Provider	32.85 (16.37)	47.78 (28.30)	t(75) = 2.91[†]	0.38 (0.82)	0.17 (0.38)	NS
Patient	0.57 (1.09)	2.17 (2.72)	t(75) = 3.70[†]	0.34 (0.92)	1.40 (3.00)	NS

*Resumption of normal, full-duty responsibilities.

[†] $P < .05$

NS, not significant.

ture of the study, it was difficult to assess whether this had any beneficial effects on patient outcomes.

Given the reluctance of patients to share key psychosocial information during an initial consult for LBP, the use of self-report questionnaires or other interview guides might assist with history taking and risk factor identification. For example, a very brief 4-question screener is available to efficiently assess for history of major depression or anxiety (Patient Health Questionnaire 4).[49] Other screening questionnaires designed specifically for LBP include the Orebro Musculoskeletal Pain Questionnaire,[50] the Back Disability Risk Questionnaire,[45] and the Vermont Disability Prediction Questionnaire.[51] Such brief screens were designed to identify patients at highest risk based on pain catastrophizing, difficulties of job modification, unnecessary activity restriction, and similar factors. Such brief assessments might be easily applied in clinical settings, and this could identify candidates for more intensive case management, education, or rehabilitation efforts. Also, there are brief interview guides that are intended to provide clinicians with added information about eliciting psychosocial and workplace information from patients with LBP.[52] Table 4 shows open-ended interview questions that

Table 4. Open-Ended Questions to Elicit Patient Information about Psychosocial and Workplace Factors

Psychosocial Domain	Recommended Open-Ended Interview Questions
Physical job demands	Are you concerned about resuming any particular job tasks?
Ease of job modification	Do you think your work might be modified to ease your transition back to work?
Job stress	Is that a stressful type of work?
Workplace social support	How do you think your supervisor and co-workers will react?
Return-to-work expectations	Any other concerns about returning to work?
Fear of reinjury	Why do you think you have the pain? Are you worried about more serious injury?
Job commitment and tenure	Have you been doing this type of work for long?
Fear avoidance beliefs	Do you have any fears about your pain? What do you fear the most?
Pain catastrophizing	What does your pain mean for your body?
Depressed mood	Any history of mood problems?
High distress/anger	How are you managing with the pain? Why do you think you have the pain?
Low self-efficacy	What are the best ways that you cope with pain?
Symptom expectations	How severe is your pain? How long do you think it will last?
Pain behavior/lifestyle	What are the biggest problems that your pain will cause for you?

have been recommended to assess these factors in patients with LBP.[24,53]

In light of the study findings that suggest patient reticence in psychosocial disclosure and question asking, patient activation interventions may be an especially promising approach. These interventions are designed to assist patients in the development of communication skills that engage them in the medical dialogue and decision-making process. In contrast to the many programs designed to enhance physicians' communication skills, relatively few have been devoted to helping patients develop communication skills for use during medical visits. Nevertheless, this small body of work has grown substantially since the earliest patient activation interventions some 30 years ago, in which a brief waiting-room intervention was successful in increasing questions asked by patients and the discussion of psychosocial and lifestyle topics during a subsequent medical visit.[54] A systematic review of patient activation interventions through 2004 identified 20 studies of this kind, the majority of which reported significant, albeit modest, effects on increasing questions asked by patients.[55]

Limitations

Limitations of this study include the relatively small sample size of patients and providers, a potential for bias in the selection and volunteerism of participants, and a short follow-up duration (3 months). All participants in this study were reporting work-related cases of acute LBP, and this may limit its generalizability to other types of back problems. Patients in the study had no longstanding history with providers, and patients may have been more reluctant to share personal information with clinicians that they perceived to be "company doctors," responsible for the medicolegal aspects of documenting work injuries. Also, our analyses were limited to the initial visit, before disagreements between the patient and physician (eg, about pain medications or work status) might be likely to develop. The observational nature of the study prohibited a test of whether patient-centered communication might buffer the negative impact of lifestyle/psychosocial factors, but future studies might test this hypothesis in response to specific instructions to providers. Use of composite RIAS variables limited the possibility of conducting more fine-grained analyses; however, inclusion of all 40 variables from the RIAS coding method would have substantially inflated type II error rates.

Conclusion

Despite limitations, results of this study suggest that providers recognize the need to adapt their communication style when confronting patients at risk for delayed recovery, even when high-risk patients ask few questions and make infrequent declarations of lifestyle/psychosocial concerns. These barriers to communication may be even more pronounced in a more ethnically and linguistically diverse patient populations, given the notable effects of culture on pain experience.[53] Future work might involve examining patient-provider interactions more qualitatively to extract emergent themes of the interactions, and future studies might examine whether screening questionnaires and other interview aids might facilitate patient-centered communication to improve LBP outcomes.

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References

1. Kellerman R, Kirk L. Principles of the patient-centered medical home. Am Fam Physician 2007;76: 774–5.
2. Hurtado MP, Swift EK, Corrigan JM, eds., Committee on the National Quality Report on Health Care Delivery, Board on Health Care Services. Envisioning the National Health Care Quality Report. Washington, DC: National Academies Press; 2001.
3. Mead N, Bower P. Patient-centeredness: a conceptual framework and review of the empirical literature. Soc Sci Med 2000;51:1087–110.
4. Epstein RM, Franks P, Fiscella K, et al. Measuring patient-centered communication in patient-physician consultations: Theoretical and practical issues. Soc Sci Med 2005;61:1516–28.
5. Little P, Everitt H, Williamson I, et al. Observational study of effect of patient centredness and positive approach on outcomes of general practice consultations. BMJ 2001;323:908–11.
6. Levinson W, Roter DL, Mullooly JP, Dull VT, Frankel RM. Physician-patient communication. The relationship with malpractice claims among primary care physicians and surgeons. JAMA 1997;277:553–9.
7. Charlton CR, Dearing KS, Berry JA, Johnson MJ. Nurse practitioners' communication styles and their impact on patient outcomes: an integrated literature review. J Am Acad Nurse Pract 2008;20:382–8.
8. Teal CR, Street RL. Critical elements of a culturally competent communication in the medical encounter: a review and model. Soc Sci Med 2009;68:533–43.
9. Kurtz SM. Doctor-patient communication: principles and practices. Can J Neurol Sci 2002;29 (Suppl 2):S23–9.
10. Barrier PA, Li JT, Jensen NM. Two words to improve physician-patient communication: what else? Mayo Clin Proc 2003;78:211–4.
11. Mead N, Bower P. Patient-centered consultations and outcomes in primary care: a review of the literature. Patient Educ Couns 2002;48:51–61.
12. Brown JB, Stewart M, Ryan BL. Outcomes of patient-provider interaction. In: TL Thompson, Dorsey AM, Miller KI, Parrott R, eds. Handbook of health communication. New York: Routledge; 2003: 141–61.
13. Greenfield S, Kaplan S, Ware JE Jr. Expanding patient involvement in care. Effects on patient outcomes. Ann Intern Med 1985;102:520–8.
14. Griffin SJ, Kinmonth AL, Veltman MW, Gillard S, Grant J, Stewart M. Effect on health-related outcomes of interventions to alter the interaction between patients and practitioners: a systematic review of trials. Ann Fam Med 2004;2:595–608.
15. Roter DL, Stewart M, Putnam S, Lipkin M, Stiles W, Inui T. Communication patterns of primary care physicians. JAMA 1997;270:350–5.
16. Stewart WF, Ricci JA, Chee E, Morganstein D, Lipton R. Lost productive time and cost due to common pain conditions in the US workforce. JAMA 2003;290:2443–54.
17. Grotle M, Brox JI, Veierod MB, Glomsrod B, Lonn JH, Vollestad NK. Clinical course and prognostic factors in acute low back pain: patients consulting primary care for the first time. Spine 2005; 30:976–82.
18. Schiottz-Christensen B, Nielsen GL, Hansen VK, Schødt T, Sorensen HT, Olesen F. Long-term prognosis of acute low back pain in patients seen in general practice: a 1-year prospective follow-up study. Fam Pract 1999;16:223–32.
19. Pincus T, Burton AK, Vogel S, Field AP. A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. Spine 2002;27:E109–20.
20. Crook J, Milner R, Schultz IZ, Stringer B. Determinants of occupational disability following a low back injury: a critical review of the literature. J Occup Rehabil 2002;12:277–95.
21. Linton SJ, Gross D, Schultz IZ, et al. Prognosis and the identification of workers risking disability: Research issues and directions for future research. J Occup Rehabil 2005;15:459–74.
22. Shaw WS, Pransky G, Fitzgerald TE. Early prognosis for low back disability: Intervention strategies for health care providers. Disabil Rehabil 2001;23:815–28.
23. Crawford C, Ryan K, Shipton E. Exploring general practitioner identification and management of psychosocial Yellow Flags in acute low back pain. N Z Med J 2007;120:U2536.
24. Shaw WS, van der Windt DA, Main CJ, Loisel P, Linton SJ, the Decade of the Flags Working Group. Early patient screening and intervention to address individual-level occupational factors ("blue flags") in back disability. J Occup Rehabil 2009;19:64–80.
25. Franche RL, Cullen K, Clarke J, et al. Workplace-based return-to-work interventions: a systematic review of the quantitative literature. J Occup Rehabil 2005;15:607–31.

26. Shaw WS, Linton SJ, Pransky G. Reducing sickness absence from work due to low back pain: how well do intervention strategies match modifiable risk factors? J Occup Rehabil 2006;16:591–604.
27. Jellema P, van der Windt DA, van der Horst HE, Twisk JW, Stalman WA, Bouter LM. Should treatment of (sub)acute low back pain be aimed at psychosocial prognostic factors? Cluster randomized clinical trial in general practice. BMJ 2005;331:84.
28. Jellema P, van der Windt DA, van der Horst HE, Blankstein AH, Bouter LM, Stalman WA. Why is a treatment aimed at psychosocial factors not effective in patients with (sub)acute low back pain? Pain 2005;118:350–9.
29. van der Windt DA, Hay E, Jellema P, Main C. Psychosocial interventions for low back pain in primary care: lessons learned from recent trials. Spine 2008;33:81–9.
30. Sullivan MJ, Feuerstein M, Gatchel R, Linton SJ, Pransky G. Integrating psychosocial and behavioral interventions to achieve optimal rehabilitation outcomes. J Occup Rehabil 2005;15:475–89.
31. Roter D, Larson S. The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. Patient Educ Couns 2002;46:243–51.
32. Sandvik M, Eide H, Lind M, Graugaard PK, Torper J, Finset A. Analyzing medical dialogues: Strength and weakness of Roter's interaction analysis system (RIAS). Patient Educ Couns. 2002;46:235–241.
33. Roter DL, Stewart M, Putnam SM, Lipkin M Jr, Stiles W, Inui TS. Communication patterns of primary care physicians. JAMA 1997;277:350–6.
34. Shaw WS, Pransky G, Winters T, Tveito TH, Larson SM, Roter DL. Does the presence of psychosocial "yellow flags" alter patient-provider communication for work-related, acute low back pain? J Occup Environ Med 2009;51:1032–40.
35. Jensen MP, Karoly P, Braver S. The measurement of clinical pain intensity: a comparison of six methods. Pain 1986;27:117–26.
36. Childs JD, Piva SR, Fritz JM. Responsiveness of the numeric pain rating scale in patients with low back pain. Spine 2005;30:1331–4.
37. Patrick D, Deyo R, Atlas S, Singer DE, Chapin A, Keller RB. Assessing health-related quality of life in patients with sciatica. Spine (Phila Pa 1976) 1995;20:1899–908.
38. Roland M, Morris R. A study of the natural history of low back pain: Part 1. Development of a reliable and sensitive measure of disability in low-back pain. Spine (Phila Pa 1976) 1983;8:141–4.
39. Roland M, Fairbank J. The Roland-Morris Disability Questionnaire and the Oswestry Disability Questionnaire. Spine (Phila Pa 1976) 2000;25:3115–24.
40. Johansson E, Lindberg P. Subacute and chronic low back pain: reliability and validity of a Swedish version of the Roland and Morris Disability Questionnaire. Scand J Rehabil Med 1998;30:139–43.
41. Goldstein M. Multilevel models in educational and social research. New York, NY: Oxford University Press; 1987.
42. MacLennan RN. Interrater reliability with SPSS for Windows 5.0. Am Stat 1993;47:292–6.
43. Paasche-Orlow M, Roter DL. The communication patterns of internal medicine and family practice physicians. J Am Board Fam Pract 2003;16:485–93.
44. Bensing JM, Roter DL, Hulsman RL. Communication patterns of primary care physicians in the United States and The Netherlands. J Gen Intern Med 2003;18:335–42.
45. Shaw WS, Pransky G, Patterson W, Winters T. The Back Disability Risk Questionnaire for work-related acute back pain: prediction of persistent problems at 3-month follow-up. J Occup Environ Med 2009;51:185–94.
46. In: Hegmann KT, Glass LS, Harris JS, eds. Occupational medicine practice guidelines: evaluation and management of common health problems and functional recovery in workers. 2nd edition, 2008 revision. Elk Grove Village, IL: American College of Occupational and Environmental Medicine; 2008:525–45.
47. Kapoor S, Shaw WS, Pransky G, Patterson W. Initial patient and clinician expectations of return to work after acute onset of work-related low back pain. J Occup Environ Med 2006;48:1173–80.
48. Barry CA, Bradley CP, Britten N, Stevenson FA, Barber N. Patients' unvoiced agendas in general practice consultations: qualitative study. BMJ 2000; 320:1246–50.
49. Kroenke K, Spitzer RL, Williams JBW, Lowe B. An ultra-brief screening scale for anxiety and depression: the PHQ-4. Psychosomatics 2009;50:613–21.
50. Linton SJ, Boersma K. Early identification of patients at risk of developing a persistent back problem: the predictive validity of the Örebro Musculoskeletal Pain Questionnaire. Clin J Pain 2003;19:80–6.
51. Hazard RG, Haugh LD, Reid S, Preble JB, MacDonald L. Early prediction of chronic disability after occupational low back injury. Spine (Phila Pa 1976) 1996;21:945–51.
52. Kendall N, Burton K, Main C, Watson P. Tackling musculoskeletal problems: a guide for the clinic and workplace—identifying obstacles using the psychosocial flags framework. London: TSO Information and Publishing Solutions; 2009.
53. Otis JD, Cardella LA, Kerns RD. The influence of family and culture on pain. In: Dworkin RH, Breitbart WS, eds. Psychosocial aspects of pain: a handbook for health care providers. Seattle, WA: IASP Press; 2004:29–45.
54. Roter DL. Patient participation in the patient-provider interaction: the effects of patient question asking on the quality of interaction, satisfaction, and compliance. Health Educ Monogr 1977;50:281–315.
55. Harrington J, Noble LM, Newman SP. Improving patients' communication with doctors: a systematic review of intervention studies. Patient Educ Counsel 2004;52:7–16.