

# Distinguishing Patient Satisfaction With Treatment Delivery From Treatment Effect: A Preliminary Investigation of Patient Satisfaction With Symptoms After Physical Therapy Treatment of Low Back Pain

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**ABSTRACT.** George SZ, Hirsh AT. Distinguishing patient satisfaction with treatment delivery from treatment effect: a preliminary investigation of patient satisfaction with symptoms after physical therapy treatment of low back pain. *Arch Phys Med Rehabil* 2005;86:1338-44.

**Objective:** To investigate the discrepancy between ratings of pain intensity and patient satisfaction by evaluating a questionnaire item that assesses patient satisfaction with treatment effect.

**Design:** Inception cohort.

**Setting:** Ambulatory care.

**Participants:** Sixty-six consecutive patients referred to outpatient physical therapy (PT) with acute low back pain (LBP).

**Intervention:** PT using treatment-based classification guidelines.

**Main Outcome Measure:** Patient satisfaction 6 months after receiving PT for LBP.

**Results:** Patient satisfaction with symptoms was considerably lower than the other patient satisfaction items. Patient satisfaction with symptoms was responsive to measures of treatment effect (Spearman  $\rho$  range, .36-.44,  $P < .01$ ) and with whether expectations were met (Spearman  $\rho = .45$ ,  $P < .01$ ). Patients who were satisfied with symptoms reported higher physical function, lower pain intensity, and less symptom bothersomeness ( $P < .01$ ) at 6 months. The 2 strongest absolute and unique predictors of patient satisfaction with symptoms at 6 months were whether treatment expectations were met and change in symptom bothersomeness.

**Conclusions:** This study suggested that a questionnaire item assessing patient satisfaction with symptoms allows patients to distinguish between satisfaction with treatment effect and treatment delivery.

**Key Words:** Pain; Rehabilitation; Treatment outcome.

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**T**HE AMERICAN PAIN SOCIETY'S and American Physical Therapy Association's quality assurance standards include the assessment of patient satisfaction among their dictates.<sup>1,2</sup> This attitude likely can be attributed to the conceptualization of patients as consumers in the medical marketplace<sup>3,4</sup> and the subsequent interest in patient-centered outcomes.<sup>5</sup> Several self-report questionnaires have been developed that are appropriate to measure patient satisfaction after rehabilitation of low back pain (LBP).<sup>6-13</sup> Items on these questionnaires assess key components of a multidimensional conceptualization of patient satisfaction, including satisfaction with the quality of care, satisfaction with the health care provider, likelihood of seeking the same treatment again, and convenience of the treatment.<sup>6-13</sup>

The assessment of patient satisfaction after rehabilitation of LBP yields information about the patient-provider interaction. Recent investigations in chronic pain populations suggest that the patient-provider relationship is just as important for patient satisfaction as symptom reduction.<sup>14,15</sup> In the rehabilitation literature, Beattie et al<sup>16</sup> found that patient satisfaction with care is strongly related to the quality of the patient-therapist interactions. Important components of these interactions that were identified (eg, time spent with the patient, therapist's communication skills, provision of a clear explanation of treatment) are consistent with previous work on patient satisfaction in other medical samples.<sup>7,17-19</sup> The assessment of patient satisfaction is also believed to provide information on the patient's perception of treatment effectiveness.<sup>7,20,21</sup> However, investigations in the literature have provided equivocal support for the relation between patient satisfaction and treatment effectiveness. Specifically, patients experiencing minimal pain reduction and those with moderate to severe levels of pain concurrently report high levels of satisfaction with their pain management.<sup>7,17,22,23</sup> The presence of such a discrepancy raises questions about whether patient satisfaction is a valid outcome measure of treatment effectiveness, especially if treatment effectiveness is considered synonymous with symptom reduction.<sup>24</sup>

The definitive reason for the discrepancy between pain reduction and patient satisfaction has not been elucidated in the literature, but we believe it is likely related to the nature of satisfaction questionnaire items and the way the questionnaires are administered. Items on patient satisfaction questionnaires tend to focus on factors related to treatment delivery. Additionally, in clinical settings, the person or organization that is providing the treatment typically assesses patient satisfaction, which may result in a response bias that inflates estimates of patient satisfaction.<sup>23</sup> It is likely that in rehabilitation settings in particular, an imprecise assessment of patient satisfaction is problematic because it could be interpreted as satisfaction with treatment delivery, treatment effectiveness, or both. Thus, the investigation of questionnaire items that explicitly address treatment effect may provide additional information on the

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association between pain intensity and patient satisfaction with LBP rehabilitation.

Questionnaire items that assess patient satisfaction with symptoms potentially provide a way to distinguish between treatment delivery and treatment effect. Frequently used satisfaction questionnaires do not explicitly make this distinction,<sup>3,6,7,11-13</sup> which seems especially relevant for patients who are satisfied with various treatment domains (ie, access and convenience, interpersonal factors, cost, technical quality) but remain dissatisfied with their resultant symptoms. As a result, we believe responses to these questionnaire items are unlikely to capture patient satisfaction with treatment effect. The assessment of patient satisfaction with symptoms may also provide unique information about health care utilization.<sup>7</sup> It seems logical that patients who are satisfied with their symptoms would be less likely to seek additional treatment for the same problem, regardless of their satisfaction with treatment delivery. Therefore, we believe an investigation of patient satisfaction with symptoms is warranted, because it could provide meaningful information pertinent to outcome assessment after rehabilitation of LBP. The purpose of this study was to report a preliminary investigation of patient satisfaction with symptoms in a prospective cohort of patients receiving physical therapy (PT) treatment for LBP.

## METHODS

### Participants

From August 2000 to April 2001, 202 consecutive patients referred to PT with LBP were evaluated for participation in a randomized controlled trial. The inclusion criteria for the trial were 18 to 55 years of age, duration of LBP for present episode less than 60 days, and English speaking. Exclusion criteria for the trial were less than 6 months postsurgical status, signs and symptoms consistent with nerve root compression, known tumor, fracture, infection, osteoporosis, and pregnancy. The institutional review board at the participating university approved this study, all subjects provided informed consent before enrolling, and participants' confidentiality was protected throughout the duration of this study.

Of the 202 patients screened, 53 were excluded for excessive duration of symptoms, 60 for exceeding the age limit, and 7 for other reasons (ie, known tumor, fracture, osteoporosis, infection, pregnancy, recent postsurgical status). Therefore, 82 patients were study eligible; of these, 66 patients enrolled in the trial and completed the self-report measures. Because of patient confidentiality guidelines, it was not possible to compare statistically the patients who participated in the study with the patients who did not participate in the study.

The trial investigated 2 types of PT, treatment-based classification and treatment-based classification enhanced with management of fear-avoidance beliefs.<sup>25</sup> Patients participated in 4 weeks of supervised PT, consistent with their random assignment, with a median of 6 clinic visits for both groups. After 6 months, 58 of 66 participants (87.9%) were reassessed by mail. No significant differences existed in age, sex, pain intensity, or physical function ( $P > .05$ ) between those who responded by mail and those who did not respond by mail. The primary purpose of the clinical trial was to assess the relative effectiveness of the 2 PT interventions, and the results suggested that treatment-based classification with management of fear-avoidance beliefs was more effective only for those patients with high fear-avoidance beliefs. Patient satisfaction did not differ between the 2 treatment groups. The present study was a planned subgroup analysis on patient satisfaction, involving only patients completing the 6-month assessment. Patient sat-

isfaction was assessed 6 months after receiving treatment by an investigator who was independent of the therapists who delivered the treatment. Selected questionnaire items from the North American Spine Society's lumbar spine outcome assessment instrument (NASS outcome assessment)<sup>8</sup> were used to assess patient satisfaction with treatment delivery and treatment effect.

### Measures

All information reported below was obtained with standard self-report forms completed in the clinic (initial) or by mail (6mo).

**Demographic, historical, and treatment-related information.** Demographic and historical data collected were sex, age, duration of present symptoms, number of previous episodes of LBP, and presence of leg pain with LBP. The treatment-related information collected was a description of any additional LBP treatment sought during the 6-month follow-up period.

**Patient satisfaction.** Patient satisfaction at 6 months was assessed via patient responses to 3 items from the NASS outcome assessment.<sup>8</sup> It should be noted that the entire satisfaction scale has known psychometric properties,<sup>8</sup> but the individual use of satisfaction items using single ordinal rating scales (ORS) has not been previously reported. Patients mailed the questionnaires directly to the investigators and were assured that clinical staff would not view their satisfaction ratings. The first item was, "If you had to spend the rest of your life with the symptoms you have right now, how would you feel about it?" (range, 1 [very dissatisfied] to 5 [very satisfied]). We hypothesized that this item was primarily related to treatment effect, and the question is likely to provide a frame of reference from which patients could conceptualize the impact and/or severity of their present symptoms. The second item was, "Would you have the same PT treatment again if you had the same condition?" (range, 1 [definitely not] to 5 [definitely yes]). The third item was, "How would you rate the overall results of your PT treatment for your back or leg pain?" (range, 1 [terrible] to 6 [excellent]). We hypothesized that the second and third items were primarily related to treatment delivery, based on our previous experiences with such items and because these items did not explicitly ask the patient to consider factors related to treatment effect when assessing satisfaction.

**Patient expectation.** Patient expectation of complete symptom relief also was rated using items from the NASS outcome assessment.<sup>8</sup> The individual use of expectation items using single ORS has not been previously reported. Initially, patients rated their expectations for complete symptom relief (range, 1 [not at all likely] to 5 [extremely likely]), and at 6 months, patients rated whether their expectations for symptom relief had been met (range, 1 [definitely not] to 5 [definitely yes]).

**Physical and mental function.** The Medical Outcomes Survey 36-Item Short-Form Health Survey (SF-36) was used as a self-report of health status for physical and mental function.<sup>26-28</sup> The SF-36 covers 8 domains of physical and mental components of health.<sup>26,26-28</sup> The physical component summary (PCS) scale consists of physical functioning, role limitation due to physical functioning, general health perceptions, bodily pain, and energy/fatigue domains.<sup>26-28</sup> The mental component summary (MCS) scale consists of social functioning, role limitation due to emotional health, emotional well-being, and energy/fatigue domains.<sup>26-28</sup> The PCS and MCS scales are usually reported in normalized values ranging from 0 to 100, with 50 representing mean population values. These scales account for 80% of the variance in the original 8 SF-36 do-

mains.<sup>27</sup> Therefore, the 2 scales are believed to be valid options to represent the 8 domains of physical and mental components of health.<sup>29</sup> Physical and mental function were assessed at baseline and at 6 months.

**Pain intensity.** Patients rated pain intensity on a numeric rating scale (NRS) (range, 0 [no pain intensity] to 10 [maximum pain intensity]) over the previous 24 hours under 2 conditions: present pain intensity and worst pain intensity.<sup>30</sup> Present pain intensity referred to the pain intensity the patient was currently experiencing. The 11-point NRS has acceptable reliability and discrimination.<sup>31,32</sup>

**Symptom bothersomeness.** Symptom bothersomeness during the past week was rated using items from the NASS outcome assessment.<sup>8</sup> Patients rated bothersomeness (1 [not at all bothersome] to 6 [extremely bothersome]) in 4 different categories: low back and/or buttock pain, leg pain, numbness or tingling in leg and/or foot, and weakness in leg and/or foot. Ratings for the 4 areas were summed and divided by 4, and an overall level of symptom bothersomeness was reported. The psychometric properties of this index as calculated for this study have not been reported in the literature.

### Data Analysis

All statistical analyses were performed with SPSS, version 11.0.1 for Windows.<sup>a</sup> The appropriate descriptive statistics were generated for measures and scatterplots were visually scanned for outliers. Our research hypotheses were tested at an  $\alpha$  level of .01 because of the number of analyses involved.

We hypothesized that a measure of patient satisfaction with symptoms would correlate weakly ( $<0.3$ ) with commonly used measures of satisfaction, giving preliminary indication that they assess different components of a multidimensional patient satisfaction construct (ie, treatment effect vs treatment delivery). To test the first hypothesis, Kendall  $\tau$ -b correlation coefficients were generated between the 3 different satisfaction measures. Then, Fisher  $z$  transformations tested for differences in these correlation coefficients.

We also hypothesized that a measure of patient satisfaction with present symptoms at 6 months would be related to measures of treatment effectiveness. We tested this hypothesis with 2 separate analyses. First, Spearman  $\rho$  correlation coefficients were generated between these factors: the 3 satisfaction items, whether treatment expectations were met at 6 months, and the raw 6-month change scores in measures of treatment effect (ie, 6-mo changes in physical function, mental function, pain intensity, and symptom bothersomeness). Second, patients were dichotomized into "satisfied" (those who rated their satisfaction with symptoms for rest of life as "satisfied" or "very satisfied") and "not satisfied" (those who rated their satisfaction as "neutral," "dissatisfied," or "very dissatisfied") groups based on their 6-month satisfaction with symptoms rating. Independent  $t$  tests, Mann-Whitney  $U$  tests, and chi-square analyses (as appropriate) were used to test for group differences in the 6-month scores of whether expectations were met, physical function, mental function, pain intensity, symptom bothersomeness, and additional treatment sought.

Last, we performed an exploratory multivariate analysis to investigate the relative and absolute contributions of treatment effectiveness (ie, raw 6-mo changes in physical function, mental function, pain intensity, and symptom bothersomeness) in predicting satisfaction with symptoms at 6 months. To perform the exploratory analysis, measures that correlated significantly to satisfaction with symptoms (from previous analysis involving generation of Spearman  $\rho$  coefficients) were simultaneously entered into a discriminant function analysis that predicted "satisfied" group membership. The rationale for this

**Table 1: Descriptive Statistics for Patients Completing Satisfaction Items**

Evaluation	Potential Range of Measure	Observed Value
At initial evaluation (n=58)		
Age (y)	18–55	37.8±9.6
Sex (no. female, %)	NA	34/58, 58.6
Duration LBP (d)	1–64	27.0±16.0
History LBP (no. with previous episodes, %)	NA	33, 56.9
Leg pain with LBP (no. with leg pain and LBP, %)	NA	35, 60.3
Expectations (ORS)	1–5	NA
Mean rating	NA	3.8±1.2
Median rating	NA	4.0
PCS score	0–100	34.2±9.2
MCS score	0–100	50.2±10.2
Present pain rating (NRS)	0–10	4.5±2.6
Worst pain rating (NRS)	0–10	6.7±2.3
Bothersomeness index (ORS)	1–6	NA
Mean rating	NA	2.6±1.0
Median rating	NA	2.3
At 6-mo assessment (n=58)		
Expectations met (ORS)	1–5	NA
Mean rating	NA	4.2±1.0
Median rating	NA	4.5
PCS score	0–100	47.9±9.1
MCS score	0–100	53.7±6.8
Present pain rating (NRS)	0–10	1.5±2.1
Worst pain rating (NRS)	0–10	2.3±2.2
Bothersomeness (ORS)	1–6	NA
Mean rating	NA	1.7±0.9
Median rating	NA	1.5

NOTE. Values are mean  $\pm$  standard deviation (SD) unless otherwise indicated.

Abbreviation: NA, not applicable.

analysis was to provide clinicians and researchers preliminary information that may guide rehabilitation treatment selection or future research in this area. We tested no specific hypothesis with the exploratory analysis.

## RESULTS

Visual inspection of scatterplots showed no obvious outliers. Demographic, historical, and self-report data are summarized in table 1 for the 58 study participants. The mean MCS scores indicate that this group was at the mean population level for mental function, and the PCS scores indicate that this group was below the mean population level for physical function. At 6 months, 23 of 58 patients (39.6%) indicated they were "somewhat" or "very" satisfied with their symptoms. In contrast, 52 of 58 patients (89.7%) indicated they would "probably" or "definitely" have the same PT treatment again, and 53 of 58 patients (91.4%) indicated their overall rating of their PT treatment results was "good," "very good," or "excellent."

Satisfaction with present symptoms for rest of life associated significantly with satisfaction with overall results of treatment but not with selecting the same treatment again (fig 1). The association between satisfaction with overall results of treatment and selecting the same treatment again was significantly higher than the association between satisfaction with symptoms and overall results of treatment (Fisher  $z$  of difference=3.2,  $P<.01$ ). These analyses supported our first hypothesis by

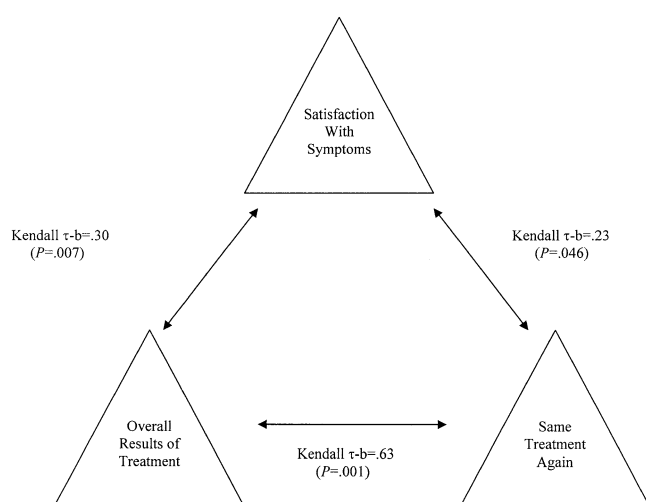


Fig 1. Associations between satisfaction items.

showing that satisfaction with symptoms correlated weakly (<0.3) with other satisfaction measures.

All satisfaction measures associated significantly with whether expectations were met at 6 months (table 2). Satisfaction with symptoms also associated significantly with 6-month changes in physical function, pain intensity, and symptom bothersomeness (see table 2). This gave a preliminary indication that the satisfaction with symptoms item was more likely to be associated with measures of treatment effect when compared with the other satisfaction items. Significant differences between “not satisfied” and “satisfied” patients were observed at 6 months for all hypothesized measures, with the exception of additional treatment sought (table 3). Patients who were satisfied with their symptoms had higher physical function, less pain intensity, and lower symptom bothersomeness at 6 months. These analyses confirmed our second hypothesis that the satisfaction with symptoms item would be related to measures of treatment effect.

The discriminant analysis that predicted membership in the satisfaction with symptoms group included expectations met and changes in physical function, worst pain intensity, and symptom bothersomeness. This function was statistically significant (Wilks  $\lambda = .66$ ,  $\chi^2$  test = 22.28,  $P < .01$ ) with a canonical correlation of .59. The function predicted group membership with 82.5% accuracy (77.2% with leave-one-out cross-validation technique), and its 2 strongest absolute and unique contributors were whether expectations were

met at 6 months and changes in symptom bothersomeness (table 4).

## DISCUSSION

A questionnaire item assessing patient satisfaction with symptoms may have utility because it did not show a discrepancy between satisfaction ratings and symptom reduction. Several limitations should be noted when considering the results of this study. First, this study involved a sample of patients receiving outpatient PT for acute LBP, which is quite different than previous satisfaction studies that focused on inpatient<sup>22-24,33,34</sup> or chronic pain populations.<sup>14,15,35</sup> Second, we did not measure the patient-therapist interaction, which is another factor related to patient satisfaction. Third, we assessed patient satisfaction with symptoms at 6 months without explicitly considering the number of recurrent episodes.<sup>36,37</sup> It is conceivable that patient satisfaction with symptoms could change if more distal follow-up points were used or if recurrence were explicitly considered in the assessment. Fourth, parallel data analyses (ie, group comparison, prediction) could not be completed on the other satisfaction items because membership was severely skewed toward satisfied groups. Last, this was a preliminary study and, as such, involved a small sample size for the multivariate analysis. Therefore, there is an increased chance of type II error (not reporting a significant predictor of patient satisfaction) associated with this study.

The results of this study support a multidimensional definition of patient satisfaction and demonstrate that satisfaction with 1 rehabilitation treatment dimension does not imply satisfaction with all treatment dimensions.<sup>38</sup> Patient satisfaction rates of 75% or greater have consistently been reported in the literature.<sup>12,13,17,33,34</sup> Patient satisfaction was very high (exceeding 85%) for the 2 items that we believe are related to treatment delivery, which was in agreement with previous reports. In contrast, satisfaction was quite low (39%) for the 1 item that we believe is related to treatment effect. This study empirically showed that after LBP rehabilitation, patients could be dissatisfied with ineffective treatment but satisfied with the care received. This finding is consistent with recent work by Hirsh et al,<sup>14</sup> who found a potential discrepancy in patient satisfaction with care and patient satisfaction with improvement in a heterogeneous sample of chronic pain patients. Therefore, ignoring one of these aspects of patient satisfaction or combining them into one general satisfaction construct may be inappropriate.<sup>20</sup>

As was hypothesized, the satisfaction items we used in this study were weakly associated with each another. We believe

Table 2: Associations Between Satisfaction Measures, Expectations Met, and Changes in Self-Report Measures

Measure	Satisfaction With Symptoms for Rest of Life (Spearman $\rho$ coefficient, $P$ )	Select Same Treatment Again (Spearman $\rho$ coefficient, $P$ )	Overall Results of Your Treatment (Spearman $\rho$ coefficient, $P$ )
Expectations met	<b>.45, .001</b>	<b>.73, &lt;.001</b>	<b>.79, &lt;.001</b>
6-mo changes			
PCS score	<b>.36, .006</b>	.23, .088	.24, .070
MCS score	.11, .421	.03, .854	-.01, .925
Present pain intensity	.29, .028	.14, .314	.20, .131
Worst pain intensity	<b>.37, .005</b>	.25, .066	<b>.39, .003</b>
Symptom bothersomeness	<b>.44, .001</b>	.11, .419	.16, .386

NOTE. Boldface indicates  $P < .01$ .

**Table 3: Differences for Patients Not Satisfied Versus Satisfied With Symptoms for Rest of Life at 6-Month Assessment**

Measure	Not Satisfied (n=35)	Satisfied (n=23)	Effect Size	P
<b>Expectations met</b>				
Mean rating*	3.9±1.1	4.8±0.4	1.01	<.001
Median rating†	4.00	5.00	0.09	<.001
<b>PCS score*</b>	44.3±8.8	53.2±6.6	1.11	<.001
MCS score*	53.7±6.9	53.8±6.9	0.01	.986
<b>Present pain*</b>	2.4±2.3	0.3±0.5	1.15	<.001
<b>Worst pain*</b>	3.4±2.1	0.6±0.9	1.62	<.001
<b>Bothersomeness index*</b>	2.0±1.0	1.2±0.3	1.00	<.001
Additional treatment‡§	NA	NA	0.09 <sup>  </sup>	.57
Yes (n, %)	12, 34.3	6, 26.1	NA	NA
No (n, %)	23, 65.7	17, 73.9	NA	NA

NOTE. Values are mean ± SD unless otherwise indicated. Boldface indicates  $P < .01$  for group difference.

\*Statistical significance determined by independent  $t$  test.

†Statistical significance determined by Mann-Whitney  $U$  test.

‡Statistical significance determined by chi-square test.

§Determined from response to following item, "Other than treatment prescribed by the physical therapist participating in this study, what other treatment(s) (surgery, medication, or additional therapy) have you had?"

<sup>||</sup>Cramer V.

this finding is another indication that these items assess different components of a multidimensional satisfaction construct. Further, this finding suggests that assessment of multiple components of patient satisfaction provides nonredundant information. We hypothesized that the item on patient satisfaction with symptoms was related to satisfaction with treatment effect, whereas the other items were related to satisfaction with treatment delivery. We believe the additional information gained from allowing patients to consider their satisfaction with treatment outcome, independent of the process of receiving treatment. Although we believe these items assess different aspects of patient satisfaction, we lack definitive empirical support for these claims. Future studies should incorporate larger sample sizes that allow for the investigation of latent variables and the development of causal models.

All 3 satisfaction measures were significantly associated with whether treatment expectations were met at 6 months ( $r$  range, .45–.79), which is consistent with the theoretical and empirical links between those 2 constructs.<sup>39</sup> However, satisfaction with symptoms distinguished itself from the other items by having the lowest association with expectation and by correlating consistently with measures of treatment effect (ie, changes in physical function, pain intensity, symptom bothersomeness). In contrast, only 1 of the hypothesized treatment delivery items had a significant association with a measure of treatment effect (overall results of treatment with improvement in worst pain intensity,  $r = .39$ ). The group comparisons provided additional support that patient satisfaction with symptoms assessed treatment effect. Collectively, these findings indicate that satisfaction with symptoms diverged from the other satisfaction items by considering the patients' perceptions of the treatment effect, independent of treatment delivery.

Not satisfied and satisfied patient groups were equally likely to have sought additional treatment for LBP during the 6-month follow-up period. This was one finding that refuted our original hypotheses and suggests that satisfaction with symptoms is not related to future health care utilization. This finding is surprising, considering that pain is a primary reason for seeking health care,<sup>40,41</sup> but apparently, factors other than patient satisfaction with symptoms are associated with seeking additional treatment. Another possible reason for this finding is that this study lacked a precise measure of health care utilization and the statistical power to detect the small difference in

patients who sought additional treatment (34% of the not satisfied patients, 26% of the satisfied patients). Future studies should include specific outcome measures of health care utilization (ie, cost) and consider whether satisfaction with symptoms is predictive of future health care utilization for LBP. Future studies should also consider more specific measures of mental function, because recent investigations found that measures of negative mood (eg, depression, anxiety) were significant predictors of patient satisfaction.<sup>14,15,35</sup> Studies that include these measures of cognition and affect and others that are specific to chronic LBP (ie, coping style, fear-avoidance beliefs) will properly evaluate their role in patient satisfaction with symptoms. These results also suggest that future studies focused on developing patient satisfaction measures should consider the inclusion of items that explicitly assess satisfaction with treatment effect. We recommend that future studies give equal attention to the internal and external validity of patient satisfaction measures. Admittedly, the selected questionnaire items used in the current study lack a thorough analysis of their internal validity, but we have subjected them to a level of ecologic scrutiny not commonly reported in the satisfaction literature.

Longitudinal studies that investigate factors that predict patient satisfaction are underreported in the literature. Items that rate symptom bothersomeness and/or unpleasantness are believed to capture an affective dimension of the pain experience.<sup>42</sup> To our knowledge, ours is the first study to directly compare affective and intensity pain measures for prediction of patient satisfaction with symptoms. Our results show that the affective measure was a stronger predictor of patient satisfac-

**Table 4: Absolute and Relative Contributions to Patient Satisfaction With Symptoms at 6 Months**

Measure	Structure Coefficients	Standardized Coefficients
Expectations met	.73	.72
6-mo changes		
PCS score	.33	.16
Worst pain intensity	.46	-.04
Symptom bothersomeness	.68	.65

tion with symptoms (see table 4, Standardized Coefficients), suggesting that it is inadequate to assess only pain intensity when investigating patient satisfaction. Previous investigations<sup>7,17,22,23</sup> have focused on associations between pain intensity and patient satisfaction measures, with equivocal results. A reason for these inconsistent findings could be that patient satisfaction has a stronger relation with affective measures of pain. Although this explanation for the discrepancy between pain reduction and patient satisfaction is tentative, the relation between pain intensity, pain affect, and patient satisfaction certainly merits future investigation in studies of LBP.

### CONCLUSIONS

Patient satisfaction has been highlighted as an important outcome assessment after LBP rehabilitation, yet the existence of a discrepancy between symptom reduction and patient satisfaction has led some to question its utility. We studied patient satisfaction with symptoms in a group of patients receiving PT for LBP. Patient satisfaction with symptoms correlated weakly with other satisfaction items and was related to self-report measures of treatment effect. These results suggest that a questionnaire item that assesses patient satisfaction with symptoms allows patients to distinguish between treatment effect and delivery.

### References

- Max M, Donovan M, Portenoy RK, et al. American Pain Society quality assurance standards for relief of acute pain and cancer pain. In: Bond M, Charlton J, Woolf C, editors. Proceedings: VIth World Congress on pain. Amsterdam: Elsevier; 1991. p 186-9.
- Guide to physical therapist practice. Second Edition. American Physical Therapy Association. *Phys Ther* 2001;81:9-746.
- Davies AR, Ware JE Jr. Involving consumers in quality of care assessment. *Health Aff (Millwood)* 1988;7(1):33-48.
- Pascoe GC. Patient satisfaction in primary health care: a literature review and analysis. *Eval Program Plann* 1983;6:185-210.
- Cleary PD, McNeil BJ. Patient satisfaction as an indicator of quality care. *Inquiry* 1988;25:25-36.
- Hays RD. The quality of patients' ratings. *Health Aff (Millwood)* 1988;7(5):174-5.
- McCracken LM, Klock PA, Mingay DJ, Asbury JK, Sinclair DM. Assessment of satisfaction with treatment for chronic pain. *J Pain Symptom Manage* 1997;14:292-9.
- Daltroy LH, Cats-Baril WL, Katz JN, Fossel AH, Liang MH. The North American spine society lumbar spine outcome assessment Instrument: reliability and validity tests. *Spine* 1996;21:741-9.
- Ware JE, Snyder MK, Wright WR. Development and validation of scales to measure patient satisfaction with health care services: Volume I of a final report. Part A: Review of literature, overview of methods, and results regarding construction of scales. Springfield: National Technical Information Service; 1976. Publication No. PB 288-329.
- Ware JE, Snyder MK, Wright WR. Development and validation of scales to measure patient satisfaction with health care services: Volume I of a final report. Part B: Results regarding scales constructed from the patient satisfaction questionnaire and measures of other health care perceptions. Springfield: National Technical Information Service; 1976. Publication No. PB 288-330.
- Roush SE, Sonstroem RJ. Development of the physical therapy outpatient satisfaction survey (PTOPS). *Phys Ther* 1999;79:159-70.
- Goldstein MS, Elliott SD, Guccione AA. The development of an instrument to measure satisfaction with physical therapy. *Phys Ther* 2000;80:853-63.
- Deyo RA, Battie M, Beurskens AJ, et al. Outcome measures for low back pain research. A proposal for standardized use [published erratum in: *Spine* 1999;24:418]. *Spine* 1998;23:2003-13.
- Hirsh AT, Atchison JW, Berger JJ, et al. Patient satisfaction with treatment of chronic pain. Predictors and relationship to compliance. *Clin J Pain*. In press.
- McCracken LM, Evon D, Karapas ET. Satisfaction with treatment for chronic pain in a specialty service: preliminary prospective results. *Eur J Pain* 2002;6:387-93.
- Beattie PF, Pinto MB, Nelson MK, Nelson R. Patient satisfaction with outpatient physical therapy: instrument validation. *Phys Ther* 2002;82:557-65.
- Dawson R, Spross JA, Jablonski ES, Hoyer DR, Sellers DE, Solomon MZ. Probing the paradox of patients' satisfaction with inadequate pain management. *J Pain Symptom Manage* 2002;23:211-20.
- Krupat E, Fancey M, Cleary PD. Information and its impact on satisfaction among surgical patients. *Soc Sci Med* 2000;51:1817-25.
- Krupat E, Rosenkranz SL, Yeager CM, Barnard K, Putnam SM, Inui TS. The practice orientations of physicians and patients: the effect of doctor-patient congruence on satisfaction. *Patient Educ Couns* 2000;39:49-59.
- Nguyen TD, Attkisson CC, Stegner BL. Assessment of patient satisfaction: development and refinement of a service evaluation questionnaire. *Eval Program Plann* 1983;6:299-313.
- Hall JA, Milburn MA, Epstein AM. A causal model of health status and satisfaction with medical care. *Med Care* 1993;31:84-94.
- Pellino TA, Ward SE. Perceived control mediates the relationship between pain severity and patient satisfaction. *J Pain Symptom Manage* 1998;15:110-6.
- Ward SE, Gordon DB. Patient satisfaction and pain severity as outcomes in pain management: a longitudinal view of one setting's experience. *J Pain Symptom Manage* 1996;11:242-51.
- Carlson J, Youngblood R, Dalton JA, Blau W, Lindley C. Is patient satisfaction a legitimate outcome of pain management? *J Pain Symptom Manage* 2003;25:264-75.
- George SZ, Fritz JM, Bialosky JE, Donald DA. The effect of a fear-avoidance-based physical therapy intervention for patients with acute low back pain: results of a randomized clinical trial. *Spine* 2003;28:2551-60.
- McHorney CA, Ware JE, Lu JF, Sherbourne CD. The MOS 36-item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. *Med Care* 1994;32:40-66.
- McHorney CA, Ware JE, Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med Care* 1993;31:247-63.
- Ware JE, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36). I. Conceptual framework and item selection. *Med Care* 1992;30:473-83.
- Ware JE, Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36 health profile and summary measures: summary of results from the Medical Outcomes Study. *Med Care* 1995;33(4 Suppl):AS264-79.
- Chan CW, Goldman S, Ilstrup DM, Kunselman AR, O'Neill PI. The pain drawing and Waddell's nonorganic physical signs in chronic low-back pain. *Spine* 1993;18:1717-22.
- Roach KE, Brown MD, Dunigan KM, Kusek CL, Walas M. Test-retest reliability of patient reports of low back pain. *J Orthop Sports Phys Ther* 1997;26:253-9.
- Jensen MP, Turner JA, Romano JM. What is the maximum number of levels needed in pain intensity measurement? *Pain* 1994;58:387-92.
- Comley AL, DeMeyer E. Assessing patient satisfaction with pain management through a continuous quality improvement effort. *J Pain Symptom Manage* 2001;21:27-40.

34. McNeill JA, Sherwood GD, Starck PL, Thompson CJ. Assessing clinical outcomes: patient satisfaction with pain management. *J Pain Symptom Manage* 1998;16:29-40.
35. Riley JL III, Myers CD, Robinson ME, Bulcourf B, Gremillion HA. Factors predicting orofacial pain patient satisfaction with improvement. *J Orofac Pain* 2001;15:29-35.
36. Von Korff M. Studying the natural history of back pain. *Spine* 1994;19(18 Suppl):2041S-6S.
37. Von Korff M, Saunders K. The course of back pain in primary care. *Spine* 1996;21:2833-7.
38. Williams B. Patient satisfaction: a valid concept? *Soc Sci Med* 1994;38:509-16.
39. Kravitz RL, Cope DW, Bhrany V, Leake B. Internal medicine patients' expectations for care during office visits. *J Gen Intern Med* 1994;9:75-81.
40. Cordell WH, Keene KK, Giles BK, Jones JB, Jones JH, Brizendine EJ. The high prevalence of pain in emergency medical care. *Am J Emerg Med* 2002;20:165-9.
41. Hasselstrom J, Liu-Palmgren J, Rasjo-Wraak G. Prevalence of pain in general practice. *Eur J Pain* 2002;6:375-85.
42. Price DD. The dimensions of pain experience. In: Fields HL, editor. *Psychological mechanisms of pain and analgesia*. Seattle: IASP Pr; 1999. p 43-70.

**Supplier**

- a. SPSS Inc, 233 S Wacker Dr, 11th Fl, Chicago, IL 60606.