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Fear-avoidance beliefs about back pain in patients with subacute low back pain

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Abstract

The fear-avoidance beliefs of patients with subacute low back pain (LBP) considered at risk for chronic disabling LBP are not well known. The objectives of this cross-sectional descriptive survey, conducted in secondary care practice, were to assess fear-avoidance beliefs about back pain in patients with subacute LBP and to seek an association between physician or patient characteristics and level of fear-avoidance beliefs. A total of 286 rheumatologists completed a self-administered questionnaire assessing physicians' demographic, professional data, personal history of back pain, and back pain fear-avoidance beliefs (on the Fear-Avoidance Belief Questionnaire [FABQ]) and 443 patients with sLBP completed one on pain, perceived handicap and disability (Quebec Back Pain Disability Scale), anxiety and depression (Hospital Anxiety Depression questionnaire), and back pain beliefs (FABQ). Mean FABQ scores for rheumatologists for physical activities (FABQ Phys) and occupational activities (FABQ Work) were 9.2 ± 4.4 (range 0–21) and 16.7 ± 6.9 (range 2–37), respectively, and patient scores were 16.7 ± 5.2 and 19.3 ± 12.4, respectively. A total of 68% of patients and 10% of physicians had a high rating on the FABQ Phys (>14). Patients' fear-avoidance beliefs about physical activity were associated with low level of education (odds ratio [OR] 4.19; 95% confidence interval [CI] 1.83–9.57), patients' perceived disability (OR 1.05; CI 1.03–1.07), and physicians' high FABQ Phys score (OR 5.92; CI 1.31–26.32). Here we show that fear-avoidance beliefs about back pain were high in patients with subacute LBP and their rheumatologists.

Keywords: Subacute low back pain; Back beliefs; Outcome measures; Survey

1. Introduction

Low back pain (LBP) affects approximately 60% of the population in Western industrialized countries (Anderson, 1999). Chronic LBP has become a major medical, social and economic problem (Waddell, 1998). Chronic LBP costs are comparable to those

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incurred by coronary heart disease, diabetes, or depression (Druss et al., 2000), and reducing these costs is a major public health issue. One approach to achieving this goal is to determine subgroups of patients at high risk for chronic disabling pain. Working-age adults with subacute LBP (i.e., pain duration of more than 4 and less than 12 weeks) are thought to be at risk for chronic pain (Karjalainen et al., 2001), and therapeutic strategies are needed to decrease the rate at which patients experience chronic disabling LBP.

Among factors related to the onset and persistence of chronic LBP, psychosocial factors may play a pivotal role in the development of disability (Pincus et al., 2002), and especially cognitive behaviors may be more important than sociodemographic features (Smith et al., 2004). Several authors have supported the theory that fear-avoidance beliefs may be the most important cognitive factors in the development of chronic disability in patients with LBP (Troup et al., 1987; Crombez et al., 1999; Fritz et al., 2000).

The fear-avoidance model proposes an explanation of why some patients with back pain develop chronic disability. Patients with a high level of pain-related fears develop a catastrophic interpretation that activity will cause injury and exacerbate the pain (Lethem et al., 1983; Vlaeyen et al., 1995; Vlaeyen and Linton, 2000; Boersma et al., 2004). Fear-avoidance beliefs of LBP patients predicted disability in daily or occupational activity, treatment outcome, and patients' return to work after a functional restoration program (Waddell et al., 1993; Pfingsten et al., 2000).

While patients' beliefs about back pain have been widely investigated during the last two decades, few studies have focused on health-care professionals' beliefs. Recently, it has been suggested that some practitioners hold beliefs reflecting fear-avoidance and that these beliefs may influence treatment practice (Linton et al., 2002). The HC-PAIRS, developed to assess the beliefs and attitudes of health-care providers (Rainville et al., 1995), was shown to be valid and reliable (Houben et al., 2004) and able to predict health-care providers' perceived harmfulness in recommending physical activities and return to normal activities (Houben et al., 2005).

Although patients with subacute LBP are thought to be at risk for chronic disabling pain, fear-avoidance beliefs have not been specifically investigated in this group of patients. In France, general practitioners are involved in acute back pain management and usually refer patients to rheumatologists when pain and disability persist. However, rheumatologists' beliefs about back pain are unknown.

The goals of this survey were to assess patients with subacute LBP and physicians' fear-avoidance beliefs about back pain and to identify factors associated with the fear-avoidance beliefs that these patients have about back pain.

2. Methods

2.1. Design

We conducted a cross-sectional survey among a national sample of rheumatologists in France.

2.2. Recruitment of rheumatologists

Rheumatologists were selected at random from a national database by use of computerized allocation (Breart and Bouyer, 1991; Briançon et al., 2000) with geographic stratification (17 areas, 35 rheumatologists per area).

2.3. Patients

Each rheumatologist was to enroll 1–4 patients with subacute LBP. Patients were excluded if they were younger than 18 years, had pain for less than 4 or more than 12 weeks, had sciatica, had had another episode of subacute LBP during the last 12 months, had no occupational activities, had consulted another spine specialist for the same episode of back pain, were pregnant, or had back pain related to infection, tumor, or inflammatory disease.

2.4. Questionnaires

2.4.1. Physicians' questionnaire

Rheumatologists completed a three-part self-administered questionnaire. Parts 1 and 2 concerned demographic (age and sex) and professional data (years of and exclusive private or public/private practice), respectively. Part 3 assessed rheumatologists' fears, avoidance attitudes and beliefs on the Fear-Avoidance Beliefs Questionnaire (FABQ) (Waddell et al., 1993): the FABQ Phys assesses attitudes and beliefs related to general physical activities (4 items, range 0–24) and the FABQ Work assesses attitudes and beliefs related to occupational activities (7 items, range 0–42). Each item is scored from 0, "do not at all agree", to 6, "completely agree". For both subscales, a low score indicates low fear-avoidance beliefs, and a score of 14 or more on the FABQ Phys indicates strong fear-avoidance beliefs (Waddell et al., 1993; Burton et al., 1999). This questionnaire has been validated in English (Waddell et al., 1993), German (Pfingsten et al., 2000) and, recently, French (Chaory et al., 2004). The FABQ was originally developed to assess patient fear-avoidance beliefs. To evaluate rheumatologists' fear-avoidance beliefs, we adapted the first sentence of the instructions for patients slightly by removing "other" from the sentence "these are statements that other patients have expressed about their low back pain..." as did Rainville et al. (1995) to adapt the PAIRS questionnaire to health-care providers.

2.4.2. Patient questionnaire

Patients were interviewed about the physical demand of occupational activities (11-point numerical scale, from 0, no physical demand, to 10, extremely hard physical demand), educational level [no full-time education (never been to school or did not complete primary school), primary school (completed primary school), high school (completed high school), post-graduate education (completed a post-graduate program)],

LBP in parents (yes/no), length of back pain (weeks), work-related back pain (yes/no), sport activities (none, occasional, regular, competition), medication intake for the last week (analgesics, nonsteroidal anti-inflammatory drugs [NSAIDs], muscle relaxants), pain intensity for the last 48 h (weak, moderate, severe, extremely severe), and handicap level for activities of daily living (no handicap, weak, moderate, severe, very severe). Self-rated disability was assessed with use of the Quebec Back Pain Disability Scale (Quebec; 20 items, scored from 0, no disability, to 5, impossible to do; range 0–100) (Kopec et al., 1996), and anxiety and depression were assessed with use of the Hospital Anxiety Depression (HAD) scale (Zigmond and Snaith, 1983) (7 items scored from 0 to 3 for anxiety [A] and depression [D]; range 0, no anxiety or depression, to 21, maximum anxiety or depression). Back pain beliefs were recorded with use of the FABQ (see rheumatologists' questionnaire).

The study protocol was approved by the Comission Nationale Informatique et Liberté and the French National Medical Council (Conseil National de l'Ordre des Médecins). Rheumatologists and patients gave their written consent to participate after being informed about the study protocol.

2.5. Statistical analysis

Data analysis involved use of SAS 8.2. Quantitative variables were described with means ± standard deviations (SD). Qualitative variables were described with raw data and percentages. In univariate analysis, means were compared with use of the Student's *t*-test (or analysis of variance when appropriate) and percentages were compared with use of the chi-square's test. A p value less than 0.05 was considered statistically significant.

Because promoters of the FABQ proposed a cut-off of 14 on the FABQ Phys scale, a logistic regression analysis was performed to determine whether patients' beliefs about back pain (dichotomized FABQ Phys score >14 versus ⩽14) differed according to patients' and rheumatologists' characteristics selected from univariate analysis. This type of analysis is probably more helpful in clinical practice, since results presented as ORs with 95% confidence intervals are more meaningful to physicians and patients than parameter estimates, standard errors, and standardized estimates obtained after linear multiple analysis. Multicolinearity among the variables can hinder the interpretation of the results. A stepwise selection allowed us to identify the independently associated variables (with levels to enter and to stay in the model of $p < 0.05$). For each of the selected covariates, odds ratios (OR) with 95% confidence intervals (CI) were calculated. The goodness of fit of the selected model was assessed by the generalized coefficient of determination (pseudo-R^2).

Multiple linear regression with stepwise selection was used to examine the relative importance of patients' and rheumatologists' characteristics (selected from an independent univariate analysis) in the FABQ work score (when considered as a continuous measure). For this linear model, *R*-squared, parameter estimates and standardized coefficients were computed.

Because FABQ Phys and Work scores are highly correlated, FABQ Work was not entered in the model for the logistic regression analysis nor was FABQ Phys in the multiple linear regression analysis.

3. Results

3.1. Rheumatologists

In June 2003, 595 rheumatologists were randomly selected and asked to participate in the survey: 386 completed the questionnaire, 286 enrolled at least 1 patient, and 266 completed the questionnaire and enrolled at least 1 patient. Table 1 shows demographic and professional characteristics of the rheumatologists. This sample had characteristics similar to those of rheumatologists enrolled in a large national study conducted in secondary care practice in France (Ravaud et al., 2004).

Mean scores for the FABQ Phys and Work were 9.2 ± 4.4 (min 0, max 21) and 16.7 ± 6.9 (min 2, max 37), respectively. Almost 10% of participants had a high FABQ Phys score (>14).

3.2. Patients

Between July and November 2003, 443 patients were enrolled in the survey. In five patients, data on FABQ were missing. Demographic and clinical data at baseline are summarized in Table 2. Ten percent had work-related back pain, 52% severe or extremely severe pain and 51% severe or extremely severe handicap. The mean self-reported disability score (Quebec scale) was 45.6 ± 17.8 (min 3, max 95; range 0–100). Mean scores for FABQ Phys and Work were 16.7 ± 5.2 (min 0, max 24) and 19.3 ± 12.4 (min 0, max 42), respectively. More than 68% of patients had a high FABQ Phys score (>14).

3.3. Factors associated with high FABQ Phys score

Comparisons of patients' demographic and clinical characteristics at baseline associated with a high FABQ Phys score revealed that patients with high fear-avoidance beliefs were more likely to consider that their job had a high physical demand ($p = 0.0002$); had a low education level ($p = 0.0001$); performed few sport activities ($p = 0.0014$); had high analgesic and NSAID intake ($p = 0.0001$ and $p = 0.024$, respectively); reported high pain and handicap levels ($p = 0.0001$); had high FABQ Work, Quebec, and HAD A and HAD D scores ($p = 0.0001$); and saw rheumatologists with high FABQ Phys scores ($p = 0.0036$). Stepwise regression analysis revealed significant associations with low level of education (OR 4.19; 95% CI 1.83–9.57 when considering no full-time education or primary school versus post-graduate and OR 2.18; 95% CI 1.24–3.84 when considering high school versus post-graduate), patients' perceived disability (OR 1.05; CI 1.03–1.07), and physicians' high fear-avoidance beliefs (>14 versus ⩽14 score) (OR 5.92; CI 1.31–26.32). The pseudo-R^2 of the model was equal to 0.31.

Table 1
Rheumatologists' demographic and professional characteristics, personal history of back pain, formation of knowledge and attitudes about low back pain, and recommendations for chronic low back pain

	Physicians $N = 266$
Age (m ± SD)	47.5 (±7.0)
Sex (M)	209 (76.3%)
Years of practice	
<10	39 (14.3%)
10–20	142 (52.0%)
21–30	87 (31.9%)
>30	5 (1.8%)
Type of practice	
Private	173 (63.1%)
Public and private	101 (36.9%)
Personal history of back pain	
Acute (yes/no)	111 (45.9%)
Recurrent (yes/no)	88 (38.9%)
Subacute (yes/no)	84 (37.5%)
Chronic (yes/no)	29 (13.5%)
Self-limitation of physical activity for back pain	
Never	61 (28.4%)
Rarely	98 (47.1%)
Often	18 (10.5%)
Always	1 (0.6%)
Education session on back pain in the last 3 years (yes/no)	206 (76.9%)
Main objective when referring a patient to a physical therapist	
Decrease pain	49 (18.4%)
Increase mobility	29 (10.9%)
Increase strength	167 (62.7%)
Recommended sick leave duration for subacute back pain	
⩽3 days	20 (7.4%)
4–8 days	165 (61.3%)
9–15 days	81 (30.1%)
>15 days	3 (1.1%)
Physical activities recommended during sick leave	
Bed rest	5 (1.9%)
Rest	166 (61.9%)
Maximum bearable activity	98 (36.6%)
Recommendations for chronic back pain	
Sick leave during pain periods	
Always	3 (1.1%)
Often	35 (13.2%)
Sometimes	177 (66.8%)
Never	50 (18.9%)
Physical and occupational activities maintained despite pain	
Always	56 (20.9%)
Often	107 (39.9%)
Sometimes	64 (23.9%)
Never	41 (15.3%)

Values are numbers (percentages).

3.4. Factors associated with higher FABQ Work score

Factors associated with higher FABQ Work score in univariate analysis were physical demand of work (0–10) ($p < 0.0001$), education level (no full-time education–primary school/high school–post-graduate; $p < 0.001$), work-related back pain (no/yes) ($p < 0.0001$), sports activities (none/occasional–usual–competition) ($p < 0.0001$), analgesics use (no/yes) ($p = 0.0089$), NSAID use (N/Y) ($p = 0.0166$), pain intensity ($p < 0.0001$), handicap level ($p < 0.0001$), Quebec score ($p < 0.0001$), HAD A ($p < 0.0001$), and HAD D ($p < 0.0001$) scores for patients, and FABQ Phys ($p = 0.024$) and Work ($p = 0.0003$) scores for physicians.

Multiple linear regression with stepwise selection (Table 3) revealed several significant associations with physical demand of work, educational level, work-related back pain, and patients' Quebec and HAD D scores. With this model, the R^2 value was 0.65.

4. Discussion

Our results indicate that patients with subacute LBP who have high fear-avoidance beliefs about physical activities and back pain have a low level of education and high perceived disability and see physicians' with high fear-avoidance beliefs about back pain.

The respective importance of these three factors probably differs. Perceived disability seemed to be weakly associated with fear-avoidance beliefs (the OR was low), as was found in a previous study in which level of disability, assessed by the Quebec Back Pain Disability Scale, and fear-avoidance beliefs about back pain, assessed by the FABQ, were poorly correlated (Chaory et al., 2004). However, disability and fear-avoidance beliefs about back pain seem to be interrelated, since such beliefs have been shown to be a predictor of disability in daily and occupational activity (Waddell et al., 1993; Pfingsten et al., 2000).

The two other factors, low level of education and physician beliefs, are more important. Our study is the first to show that physician fear-avoidance beliefs about back pain and physical activity are associated with the beliefs of patients. Back pain fear-avoidance belief scores on the FABQ Work in our sample of rheumatologists were high, and the scores of patients and physicians were of the same magnitude, which indicates that physicians have extensive fear-avoidance beliefs about the relation between work activities and back pain that was not revealed by the current evidence. This observation has been reported in a different setting (Linton et al., 2002). Moreover, mean rheumatologist FABQ scores were comparable to those recorded in a national sample of 864 general practitioners during the same period (unpublished data). This point is worrisome, since rheumatologists are considered to be spine specialists in France and sheds light on the need to develop diffuse interventions aimed at altering physicians' fear-avoidance beliefs about back pain. The type and content of these interventions remain to be defined. Educational programs are simple and inexpensive but seem to be weak interventions for changing attitudes and beliefs, whereas more sophisticated behavioral interventions

Table 2
Comparisons of baseline demographic and clinical characteristics of patients according to beliefs about back pain

	Whole sample $N = 443$	FABQ Phys score $\leqslant 14$ $N = 139$	FABQ Phys score > 14 $N = 299$	p value (Student's t-test or χ^2)
FABQ Phys (range 0–24)	16.7 (±5.2)	10.6 (±3.3)	19.5 (±2.9)	<0.0001
FABQ Work (range 0–42)	19.3 (±12.4)	11.9 (±9.8)	22.8 (±12.0)	<0.0001
Rheumatologists' beliefs				
FABQ Phys	9.0 (±4.1)	8.2 (±3.7)	9.5 (±4.2)	0.0036
FABQ Work	16.6 (±6.6)	15.8 (±6.8)	17.1 (±6.4)	0.0572
Age (m ± SD)	42.8 (±9.5)	43.4 (±9.2)	42.4 (±9.7)	0.3163
Sex (M)	257 (58.4%)	75 (54.0%)	180 (60.6%)	0.1892
Back pain duration (weeks)	6.1 (±1.6)	6.3 (±1.7)	6.1 (±1.5)	0.1858
Work physical demand (range 0–10)				
<3	70 (16.2%)	31 (23.1%)	37 (12.6%)	0.0002
3–4	92 (21.3%)	39 (29.1%)	53 (18.0%)	
5–7	181 (41.8%)	46 (34.3%)	132 (44.9%)	
>7	90 (20.8%)	18 (13.4%)	72 (24.5%)	
Education level				
No full-time education	6 (1.4%)	0 (0.0%)	6 (2.0%)	<0.0001
Primary school	86 (19.5%)	14 (10.1%)	72 (24.3%)	
High school	217 (49.1%)	62 (44.9%)	152 (51.4%)	
Post-graduate	133 (30.1%)	62 (44.9%)	66 (22.3%)	
Back pain in parents	281 (64.5%)	77 (57.0%)	203 (68.4%)	0.0225
Work-related back pain	50 (11.3%)	10 (7.2%)	39 (13.0%)	0.0707
Sports activities				
None	148 (33.4%)	32 (23.0%)	113 (37.8%)	0.0014
Occasional	189 (42.7%)	60 (43.2%)	128 (42.8%)	
Usual	100 (22.6%)	45 (32.4%)	54 (18.1%)	
Competition	6 (1.4%)	2 (1.4%)	4 (1.3%)	
Medications				
Analgesics	366 (83.2%)	101 (73.2%)	261 (87.9%)	0.0001
Nonsteroidal anti-inflammatory drugs	228 (53.4%)	60 (45.1%)	165 (56.9%)	0.0241
Muscle relaxants	165 (38.6%)	45 (33.3%)	117 (40.5%)	0.1580
Pain intensity				
Weak	14 (3.2%)	10 (7.2%)	4 (1.3%)	<0.0001
Moderate	196 (44.2%)	79 (56.8%)	113 (37.8%)	
Severe	213 (48.1%)	46 (33.1%)	166 (55.5%)	
Extremely severe	20 (4.5%)	4 (2.9%)	16 (5.4%)	
Handicap level				
None	1 (0.2%)	1 (0.7%)	0 (0.0%)	<0.0001
Weak	26 (5.9%)	13 (9.4%)	13 (4.4%)	
Moderate	190 (42.9%)	80 (57.6%)	107 (35.8%)	
Severe	210 (47.4%)	43 (30.9%)	166 (55.5%)	
Extremely severe	16 (3.6%)	2 (1.4%)	13 (4.4%)	
Quebec (range 0–100)	45.6 (±17.8)	37.1 (±16.7)	49.5 (±16.8)	<0.0001
HAD A (range 0–21)	8.9 (±4.2)	7.8 (±3.7)	9.4 (±4.3)	<0.0001
HAD D (range 0–21)	5.7 (±3.4)	4.4 (±2.8)	6.3 (±3.4)	<0.0001

Values are numbers (percentages).
FABQ, Fear-Avoidance Beliefs Questionnaire; HAD, Hospital Anxiety Depression A (Anxiety), D (Depression).

Table 3
Multiple linear regression with stepwise selection for FABQ work analyzed as a continuous variable

	Parameter estimate	Standard error	Standardized estimate	p value
Intercept	−1.45	1.71	0	0.3977
Work physical demand (range 0–10)	3.08	0.17	0.61	<.0001
Education level (no full-time education–primary school/high school–post-graduate)	−3.30	1.02	−0.11	0.0013
Work-related back pain (no/yes)	6.34	1.36	0.15	<.0001
Quebec (range 0–100)	0.06	0.02	0.09	0.0139
HAD D (range 0–21)	0.65	0.13	0.18	<.0001
R^2	0.65			

FABQ, Fear-Avoidance Beliefs Questionnaire; HAD, Hospital Anxiety Depression; D (Depression).

may be more effective but are expensive and may be difficult to generalize (Cherkin et al., 1991; Linton and Andersson, 2000; De Jong et al., 2005). Finally, whether these programs should be designed for all patients with LBP following an evidence-based approach or be adapted to different types of patients associating evidence-based and empirical evidence information is not an always-easy question to answer.

Because the third factor, low level of education, is a classical predictor of negative outcome in several chronic diseases, among them LBP (Fayad et al., 2004), it was logical to seek for an association between educational level and fear-avoidance beliefs. The association between back pain fear-avoidance beliefs and level of education but not pain level or physical demand of the job suggests that these beliefs may be popular negative beliefs about the lumbar spine that are in part independent of the experience of back pain. Another observation favors this hypothesis: the mean FABQ scores seemed to be independent of back pain duration. The mean FABQ Phys score was comparable among a sample of 2727 patients with acute LBP with a mean pain duration of 5 days (unpublished data), patients with subacute LBP in our study, and patients with chronic LBP included in a functional restoration program (Chaory et al., 2004). If this finding is confirmed by surveys assessing back pain fear-avoidance beliefs in the general population, primary prevention campaigns may be justified. Of course, we cannot exclude that level of pain and physical demand of work are closely associated with level of education and therefore were not retained in our regression model.

Logistic regression analysis was not possible when seeking associations with the FABQ Work score, as no cut-off is currently available for this scale. Therefore, we used linear multiple analysis for this score. Factors shared in both analyses are low level of education and high perceived disability, which suggests that those two variables may play a major role in patients' fear-avoidance beliefs. It is not surprising that work-related back pain and having a job with a high physical demand are associated with more fear-avoidance beliefs about work because the assumption that some jobs are harmful for the back is very common in the population. The association of high fear-avoidance beliefs about work with higher depression and disability levels has been observed in patients with acute LBP (personal unpublished data). Finally, our hypothesis on the association of physicians' and patients' fear-avoidance beliefs about work was not confirmed in this study.

5. Limitations

We used a slightly modified, unvalidated version of the FABQ to record rheumatologists' fear-avoidance beliefs about back pain. However, the HC PAIRS was not validated, even in English (Houben et al., 2004), when we started the survey; the FABQ is the only instrument assessing patients' fear-avoidance beliefs validated in French (Chaory et al., 2004), and we wanted to use the same instrument to compare patients' and physicians' beliefs. Moreover, we used the same turn of phrase as did Rainville et al. (1995) to adapt the PAIRS for physicians.

Although we tried to ensure a national representation of rheumatologists, our sample may differ slightly from the rheumatologist population in France. No national register of rheumatologists is currently available in France, but our sample of physicians had characteristics similar to those of rheumatologists enrolled in another large study of secondary care practice in France (Ravaud et al., 2004).

This is a cross-sectional study, so we do not have any chronology notion for the occurrence of the different factors investigated (i.e., do patients reduce sport practice because of strong back pain beliefs, or do they have strong pain beliefs because they do not practice any sport?); therefore we can make statements only about associations but cannot assume causation.

6. Conclusion

This survey suggests that fears, avoidance attitudes and beliefs are strong among patients with subacute LBP and among spine specialists, specifically rheumatologists, in France. It sheds light on the need to propose interventions aimed at altering these fear-avoidance beliefs in such patients and their physicians.

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