Fear-avoidance beliefs about back pain in patients with acute LBP.

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Title page

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Abstract

Objective: We aimed to assess fear-avoidance beliefs in patients with acute low back pain (LBP) and to identify features of patients and general practitioners (GPs) associated with patients' fear-avoidance beliefs.

Methods: A cross-sectional study conducted in primary care practice in France. A total of 709 GPs fulfilled a self-administered questionnaire assessing fear-avoidance beliefs (the Fear-Avoidance Beliefs Questionnaire [FABQ]) and 2727 patients with acute LBP a self-administered questionnaire assessing pain, perceived handicap and disability (on the Quebec scale) and fear-avoidance beliefs (on the FABQ).

Results: Patients' FABQ mean scores were 16.8 ± 5.0 for physical activities (FABQ Phys) and 19.5 ± 10.9 for occupational activities (FABQ Work). From multivariate analysis, the following factors were associated with patients' FABQ Phys and Work scores: having a GP with a high rating on the FABQ Phys (p=0.0001 and 0.02 for FABQ Phys and Work, respectively), no sport practice (versus occasional: p=0.0003 and 0.03; versus usual/competition: p=0.0001 and 0.004), disability score (Quebec) (p=0.0001 for both FABQ scores), and pain intensity (p=0.0012 and 0.0013).

Conclusion: High levels of fear-avoidance beliefs occur early in LBP patients, and key messages on this topic should probably be delivered at a very early stage of the disease.

Key Indexing Terms : Low back pain, Acute, Survey, Fear-avoidance beliefs, Primary care

Introduction

Low back pain (LBP) affects approximately 60% of the population in Western industrialized countries (1). Chronic LBP has become a major medical, social and economic problem (2). Chronic LBP costs are comparable to those incurred by coronary heart disease, diabetes, or depression (3), and reducing these costs is a major public health issue. An approach to achieving this goal is to determine subgroups of patients with high risk for chronic disabling pain. Among factors related to the onset and persistence of chronic LBP, psychosocial factors may play a pivotal role in the development of disability (4), especially pain behaviors, which may weigh more than socio-demographic features (5). Several authors have supported the theory that fear-avoidance beliefs may be the most important cognitive factor in the development of chronic disability in patients with LBP (6, 7, 8).

The fear-avoidance beliefs model proposes an explanation of why some patients with LBP develop chronic disability. The high levels of pain-related fears are associated with a particular cognitive state (pain catastrophizing) which leads to a negative interpretation that activity will cause injury and exacerbate the pain (9-12). 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 (13, 14). Investigations, mainly with chronic LBP patients, have shown that fear-avoidance beliefs were related to back pain severity, chronic disease, and disability (10, 11, 13, 15-17) and that information provided to patients could modify their fear-avoidance beliefs (17, 18-20). Because health care providers play a central role in patients' information and education in primary care practice, general practitioners (GPs) could greatly influence patients' fears, avoidance attitudes and beliefs and therefore the evolution and costs of LBP (21 Linton 2002). Several studies have suggested that the fear-avoidance beliefs of health care providers' could influence how they manage

patients (22, 23, 24), and an information package containing the usual guidelines on LBP has been developed to modify therapists' behaviors and beliefs (25). However, 2 recent studies, one cross-sectional (26) and one longitudinal (27), have reported a lack of association between disability and fear-avoidance beliefs in the same sample of acute LBP patients, and the authors questioned the validity of the fear-avoidance model in early stages of LBP, despite substantial levels of fear-avoidance beliefs in these patients.

A goal of this study was to assess fear-avoidance beliefs in a large sample of patients with acute low back pain and to identify features of patients and GPs associated with patients' fear-avoidance beliefs.

Methods:

Design: We conducted a cross-sectional study of a large sample of GPs and patients in France.

Recruitment of GPs: GPs were selected at random from a national database (Logimed) with geographic stratification (France was divided in 30 areas; 60 GPs per area were asked to participate).

Patients: Each GP was to enroll 1 to 4 consecutive patients with acute LBP. Patients were excluded if they (a) were less than 18 years old; (b) had pain for more than 4 weeks; (c) had sciatica; (d) had another episode of acute LBP during the previous 12 months; (e) had no occupational activities; (f) had consulted another spine specialist for the same episode of back pain; (g) were pregnant; or (h) had back pain related to infection, tumor, or inflammatory disease.

Questionnaires:

Physicians' questionnaire: Data were collected by mailed interviews before including patients. GPs completed a 5-part self-administered questionnaire. Parts 1, 2, and 3 concerned demographic data (age and gender), professional data (years of and exclusive private or public/private practice), and personal history of back pain (acute, recurrent, chronic) and self-limitation of physical activities for back pain (never, sometimes, often, always), respectively. Part 4 dealt with GPs' formation of practice and practice in the field of LBP: participation in an educational session on back pain in the last 3 years (yes/no); ever referred patients to functional restoration programs for chronic back pain (yes/no); main objective of physical therapy for back pain (reduce pain, increase mobility, increase muscle strength); ever referred patients to other spine specialists and back schools (yes/no); mean length of sick leave prescription for acute LBP if needed (≤ 3 days, > 3 and ≤ 8 days, > 8 days and ≤ 15 days, > 15

days), advice about physical activities during sick leave for acute back pain (bed rest, rest at home, keep maximum bearable activities), and attitude about chronic back pain patients concerning job adaptation, sick leave prescription for increased pain, and advice to keep maximum bearable occupational activities (always, often, sometimes, never). Part 5 assessed GPs' own fear-avoidance beliefs on the Fear-Avoidance Beliefs Questionnaire (FABQ) (13).

The FABQ consists of 2 independent subscales: the FABQ Phys and FABQ Work. The FABQ Phys assesses fears, avoidance attitudes and beliefs related to general physical activities (4 items, range 0–24), and the FABQ Work assesses fears, avoidance attitudes and beliefs related to occupational activities (7 items, range 0–42). Each item is scored from 0, "do not agree at all," to 6, "completely agree." For both subscales, a low score indicates low fears, avoidance attitudes and beliefs. This questionnaire has been validated in French (28).

The FABQ was originally developed to assess patients' fears, avoidance attitudes and beliefs. To evaluate GPs' fears, avoidance attitudes and beliefs, we did not modify the phrasing of items but, rather, slightly adapted the first sentence of the instructions to patients. For this sentence "these are statements that other patients have expressed about their low back pain…", we just deleted the word "other".

Patients' questionnaire:

Data were collected during the visit to the GP. Patients were interviewed about the physical demand of occupational activities (11-point numeric scale, from 0, no physical demand, to 10, extremely hard physical demand), education level (no full-time education, primary school, high school, post-graduate education), LBP in parents (yes/no), length of back pain (days), work-related back pain (yes/no), sport activities (none, occasional, regular, competition), medication intake for the last week (analgesics, nonsteroidal anti-inflammatory drugs, muscle relaxants), pain intensity for the last 48 hours (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 by the Quebec questionnaire (20 items, scored from 0, no disability, to 5, impossible to do; range 0-100) (29). Back pain beliefs were recorded on the FABQ (see GPs' questionnaire).

Ethical approval

The study protocol was approved by the Commission Nationale Informatique et Liberté and the French National Medical Council (Conseil National de l'Ordre des Médecins). This study was conducted in compliance with the protocol, the Good Clinical Practices and the Declaration of Helsinki principles. In accordance with the French national law, GPs and patients gave their written agreement to participate after being informed about the study protocol.

Statistical analysis

Data analysis involved the use of SAS 8.2. Continuous variables were described with means ± standard deviations (SD). Categorical variables were described with raw data and percentages. Generalized estimating equation [GEE] analysis analysis was used to take into account the cluster effect of more than one patient visiting a given physician. When FABQ was treated as a continuous variable, factors associated with patient FABQ Phys and Work were determined by univariate analysis (pearson correlation coefficient if continuous predictors or one way anova if qualitative predictors). Potential predictors were demographic and clinical characteristics of patients and GP fear avoidance beliefs. Variables that were related to patient FABQ Phys an Work in univariate analyses were kept in the multivariate analysis. Multivariate analysis (linear multiple regression with a backward selection and a significance level of 0.05) was used to examine the relationships between the FABQ phys and Work

scores and potential predictors. A cluster effect was introduced into the model to take into account the fact that a GP was visited by more than one patient.

Results

GPs: Between September 2003 and February 2004, 1800 GPs were randomly selected and asked to participate in the study. A total of 709 completed the questionnaire and included at least 1 patient (Figure 1). Data and analysis on GPs have been published elsewhere (24). The sample differed only slightly from the general population of French GPs (national register), with more men (79.5% vs. 71.3% in the national register), who were older (48.2 years vs. 46.7 years in the national register), and more likely to work in a rural environment (30.5% vs. 23.6% in the national register).

Mean FABQ Phys and Work scores were 9.6 and 17.5, respectively.

Patients: A total of 2727 patients were enrolled in the study. Demographic and clinical data at baseline are summarized in Table 1. The mean age was 44 years, and 57% of patients were male. The mean pain duration at baseline was 5.5 days and mean pain level 6.8 (range 0-10). Before seeing their GP, 81% of patients had taken analgesics, 26% nonsteroidal anti-inflamatory drugs, and 19% muscle relaxants. The Quebec disability scale mean score was 55 (range 0-100), and fear-avoidance beliefs were high, with mean FABQ Phys and Work scores of 16.8 and 19.5, respectively.

Factors associated with patients' FABQ Phys and Work scores treated as continuous variables:

We analyzed FABQ scores as continuous variable. Comparison of patients' FABQ phys score according to qualitative and quantitative demographic and clinical characteristics of patients are presented in Tables 2 and 3. There was a weak but statistically significant correlation between GPs' and patients' FABQ Phys scores ($r=0.10$; $p<0.0001$). Linear multivariate

analysis on patients' FABQ phys scores according to quantitative demographic and clinical characteristics of patients and beliefs of GP's are provided in Table 4. This multivariate analysis provided 7 factors. Six of the 7 factors that we found were already associated with FABQ phys scores when this variable was treated as dichotomous. Work related back pain disappeared from the linear final model and was replaced by pain intensity.

Comparison of patients' FABQ Work scores according to qualitative and quantitative demographic and clinical characteristics of patients are provided In Tables 2 and 3. There was a weak but statistically significant correlation between GPs' and patients' FABQ Work scores ($r=0.10$; $p<0.0001$). Linear multivariate analysis on patients' FABQ Work scores according to quantitative demographic and clinical characteristics of patients and beliefs of GP's are provided in Table 5. This multivariate analysis provided 10 factors. Five of the 10 factors that we found were already associated with FABQ phys scores when this variable was treated as linear.

The FABQ Phys and Work scores norms by level of disability:

The FABQ Phys and Work scores norms by level of disability are presented in Table 6. Fears avoidance and beliefs increased with disability levels.

Discussion

Main findings

Fear-avoidance beliefs seem to be present early in the process of back pain (patients in this study had a mean duration of pain of 5 days). The FABQ mean scores of patients with acute LBP are similar to those from a national sample of patients with subacute LBP (30). The way LBP occurs may have more influence on fear-avoidance beliefs, since the mean FABQ scores for patients with chronic LBP who had occupational back injury and were included in a functional restoration program (28) were lower than we observed for FABQ Phys and higher for FABQ Work.

Perceived disability and handicap could play a role in fear-avoidance beliefs. The association strengths reported in this study are somewhat small, but disability and handicap were treated as continuous variables in the multivariate regression analysis. Even though the level of disability as assessed by the Quebec questionnaire and fear-avoidance beliefs by the FABQ, the Tampa scale of kinesiophobia (TKS), or the physical activity rating scale (PARS) were poorly related in previous studies (26-28), disability and fear-avoidance beliefs seem to be associated, since level of fear-avoidance beliefs has been shown to be a predictor of disability in daily and occupational activities in a previous study (13), and since we show an increase of fears avoidance and beliefs with increased disability levels. It is also not surprising that fear-avoidance beliefs about occupational activities and occupational back injury, which in general are associated with a high mean FABQ Work score (28), are associated with fears about physical activities. Scores of the FABQ Work and Phys have been shown to be fairly well correlated (28). The association of no or few sport activities with high rating on the FABQ Phys seems logical: patients with more fears about physical activities are more likely to have no or few sport activities, which suggests that those fears might have been present before the occurrence of the acute (mean duration of 5 days) back pain episode. Another explanation

may be that social and educational factors may lead to this behavior and to more negative affective state. Finally, as already reported (31, 32), FABQ Phys and Work scores were weakly but significantly correlated with level of pain.

Finally, an interesting and original result is that a physician feature, GPs' high rating on the FABQ Phys, is associated with patients' high rating on the FABQ Phys and Work. This finding might be a function of the patients' history with their GPs, which was not recorded in this survey. A patient having the same GP for many years may have inculcated some of that GP's fear-avoidance beliefs regarding back problems. Levels of fear-avoidance beliefs about LBP in our sample of GPs are higher that they should be. Their mean score, 9.6 on a scale of 0 to 24, indicates some degree of fear-avoidance beliefs about back pain. This observation must be placed in perspective with the campaigns and recommendations of the last decade, which highlight the harms and benefits of physical activity for LBP. Moreover, the FABQ Work scores of patients and physicians are of the same magnitude. Similar results were observed from results of a survey assessing fear-avoidance beliefs of patients with subacute LBP and their rheumatologists (30).

Taken together, our results shed light on the need to develop and diffuse more effective education programs aimed at altering physicians' fear-avoidance beliefs, which in turn will reassure their patients with LBP about the harmlessness of physical and occupational activities and the need to stay active for their back problem.

Limitations

Although we tried to ensure a national representation of GPs, our sample differed slightly from the French GP population. One explanation could be that older men working in a rural environment are more likely to participate in this type of study. Another explanation could be that GPs more interested in LBP participated to the survey. The response rate observed in this

survey is low (39.4%) but of the same magnitude as that usually reported in this kind of study (30). We cannot exclude the possibility that this response rate might bias the generalizability of our results.

This is a cross-sectional study, so we do not have any chronology information for the occurrence of the 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?). We did not use the HC-PAIRS (33) to record GPs' fear-avoidance beliefs about LBP but a slightly modified version of the FABQ. However, the HC-PAIRS was not validated, even in English (34), when we started the survey; the FABQ is the only instrument assessing fear-avoidance beliefs validated in French (28), and we wanted to use the same instrument to compare patients' and physicians' fear-avoidance beliefs. Moreover, we used the same turn of phrase as Rainville et al. (33) who adapted the PAIRS for physicians.

Conclusion

This survey suggests that fear-avoidance beliefs are present early in the process of back pain and are substantial among patients with acute LBP and among GPs 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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Table 1: Demographic and clinical characteristics of patients.

	N=2727
Age	44.3±11.7
Gender (M)	1545(56.9%)
Back pain duration (m ± SD) **(days)**	5.5±6.1
Work physical demand (0-10) (m ± SD)	5.7±2.5
Education level	
No full-time education or primary school	821(30.1%)
High school	1271(46.7%)
Post graduate	631(23.2%)
Back pain in parents	1424(52.8%)
Work-related back pain	227(8.3%)
Sports activities	
None	1250(46.1%)
Occasional	954(35.2%)
Usual or competition	509(18.7%)
Medications	
Analgesics (yes)	2204(80.8%)
NSAIDs (yes)	707(25.9%)
Muscle relaxants (yes)	517(18.9%)

	N=2727
Pain level	6.8±1.5
Pain intensity	
None or weak	68(2.5%)
Moderate	565(21.0%)
Severe	1858(69.0%)
Extremely severe	203(7.5%)
Handicap level	
None or weak	90(3.3%)
Moderate	830(30.8%)
Severe	1574(58.4%)
Extremely severe	199(7.4%)
Patients' beliefs: FABQ Phys (0-24)	16.8±5.0
Patients' beliefs: FABQ Work (0-42)	19.5±10.9
Disability: Quebec (0-100)	54.9±17.3
GPs' FABQ Phys score	9.6±4.9
GPs' FABQ Work score	17.4±6.7

Values are numbers (percentages) or m ± SD; NSAIDs, nonsteroidal anti-inflammatory drugs

Table 2. Comparison of patients' FABQ phys and Work according to qualitative demographic and clinical characteristics of patients

	Response modality	Patients' FABQ phys score Mean ± SD	P value	Patients' FABQ work score Mean ± SD	P value
Gender	Male	16.9±4.9	0.43	20.0±10.7	0.0068
	Female	16.7±5.1		18.9±11.0	
Education level	No full time education or primary school	18.0±4.3	<0.0001	24.0±10.0	<0.0001
	High school	16.9±4.9		19.9±10.3	
	Post graduate	15.1±5.5		13.0±9.9	
Back pain in parents	No	16.4±4.8	<0.0001	18.7±11.0	0.0001
	Yes	17.2±5.1		20.3±10.7	
Work related back pain	No	16.6±5.0	<0.0001	18.5±10.6	<0.0001
	Yes	18.6±4.6		31.0±6.5	
Sport activities	None	17.7±4.6	<0.0001	21.5±10.8	<0.0001
	Occasional	16.5±4.8		18.9±10.5	
	Usual or competition	15.2±5.5		16.0±10.2	
Analgesics	No	16.0±5.5	0.0002	19.3±11.4	0.5941
	Yes	17.0±4.8		19.6±10.7	
NSAIDs	No	16.7±5.0	0.28	19.1±10.9	0.0003
	Yes	17.0±4.9		20.8±10.7	
Muscle relaxants	No	16.8±5.0	0.89	19.4±10.8	0.15
	Yes	16.8±4.9		20.2±10.9	
Handicap level	None or weak	13.0±6.4	<0.0001	11.3±10.9	<0.0001
	Moderate	14.6±4.9		15.6±10.1	
	Severe	17.8±4.3		21.3±10.2	
	Extremely severe	20.0±4.6		25.8±11.6	

NSAIDs, nonsteroidal anti-inflammatory drugs

Table 3. Correlation of patients' FABQ phys and Work scores according to quantitative demographic and clinical characteristics of patients and beliefs of GP's

	FABQ Phys Score Pearson correlation coefficient	p value	FABQ Work score Pearson correlation coefficient	p value
Age	0.02	0.32	-0.03	0.07
Back pain duration (days)	-0.04	0.03	-0.00	0.99
Work physical demand (0-10)	0.32	<0.0001	0.64	<0.0001
Pain intensity	0.31	<0.0001	0.25	<0.0001
FABQ work (0-42)	0.43	<0.0001	0.43	<0.0001
Disability: Quebec (0-100)	0.42	<0.0001	0.30	<0.0001
GP's FABQ phys score	0.10	<0.0001	0.04	0.0331
GP's FABQ work score	0.05	0.01	0.10	<0.0001

Table 4. Linear multivariate analysis. Patients' FABQ phys according to quantitative demographic and clinical characteristics of patients and beliefs of GP's

		Estimate	Standard error	p
Sport activities	Occasional versus None	-0.66	0.18	0.0003
	Usual/competition versus none	-1.30	0.23	<.0001
Analgesics	Yes versus No	0.69	0.21	0.0009
Handicap level	Moderate versus None/Weak	0.43	0.47	0.3595
	Severe versus None/Weak	1.53	0.48	0.0016
	Extremely severe versus None/Weak	2.10	0.59	0.0004
Pain intensity		0.21	0.066	0.0012
FABQ work (0-42)		0.13	0.0081	<.0001
Disability: Quebec (0-100)		0.068	0.0057	<.0001
GP's FABQ phys score		0.088	0.017	<.0001

Table 5. Linear multivariate analysis. Patients' FABQ Work scores according to quantitative demographic and clinical characteristics of patients and beliefs of GP's

		Estimate	Standard error	p
Education level	High school versus No full time education or primary school	-2.10	0.36	<0.0001
	Post graduate versus No full time education or primary school	-4.74	0.45	<0.0001
Work related back pain	Yes versus No	6.93	0.54	<0.0001
Sport activities	Occasional versus None	-0.74	0.34	0.03
	Usual/competition versus none	-1.24	0.43	0.004
Age		-0.03	0.01	0.0126
Work physical demand (0-10)		2.11	0.07	<0.0001
Pain intensity		0.38	0.12	0.0013
FABQ phys (0-24)		0.44	0.03	<0.0001
Disability: Quebec (0-100)		0.05	0.01	<0.0001
GP's FABQ phys score		-0.08	0.03	0.0204
GP's FABQ work score		0.09	0.02	0.0003

Table 6. The FABQ Phys and Work scores norms by level of disability presented in percentiles ranks corresponding to the lowest one fourth of the scores, median values and the highest one fourth of the score.

	Quebec Questionnaire			
	<25	25-49	50-74	>=75
FABQ Phys				
25th	8	12	15	18
50th	12	16	18	20
75th	16	18	21	23
FABQ Work				
25th	2	8	13	16
50th	11	17	22	25.5
75th	21	24	29	33

Figure1: Flow chart of general practitioners and patients through trial