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General practitioners' treatment orientations towards low back pain: Influence on treatment behaviour and patient outcome

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ABSTRACT

Background: In low back pain (LBP) treatment and research attention has shifted from a biomedical towards a biopsychosocial approach. Patients' LBP beliefs and attitudes were found to predict long-term outcome, and recently it has been suggested that the health care providers' ideas about LBP are also important predictors of treatment behaviour and outcome.

Aims: In the present study we examined whether (1) differences in General Practitioners' (GP) LBP treatment orientation are associated with differences in actual treatment behaviour and (2) whether treatment orientation is related to LBP outcome in patients.

Methods: Two hundred twenty two patients consulting their GP with a new episode of LBP were recruited and completed questionnaires on (among others) LBP outcome (graded chronic pain scale) at baseline, during 12 months of follow-up and at the end of the study. Data on treatment were collected from the GPs. The GPs also completed a set of questionnaires on LBP treatment orientation. Associations between measures of treatment orientation, treatment recommendations, treatment behaviour and LBP outcome were analysed.

Results: A biomedical treatment orientation was found to be associated with more concern about tissue damage and the effect of physical activity on pain and recovery in vignettes. No associations were found between treatment orientation measures, actual treatment behaviour and LBP outcome.

Conclusions: Associations were not found as expected. Still these findings are relevant and may feed a clinically important debate on widely accepted assumptions about the role and influence of health care providers in changing patients' pain behaviours.

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1. Introduction

Current guidelines on non-specific low back pain (LBP) do not only address diagnosis and treatment of physical "red flags" (AHCPR, 1994; Waddell, 1998), they also acknowledge the influence of psychological factors (Faas et al., 1996; Kendall et al.,

1997; Waddell et al., 1999). Negative affect, low self-efficacy, catastrophizing and fear-avoidance beliefs are predictors of chronic disability (Al-Obaidi et al., 2000; van den Hout et al., 2001; Fritz and George, 2002; Janssen, 2002; Picavet et al., 2002; Denison et al., 2004) and interventions aimed at adjusting cognitive and behavioural factors were found effective in improving long-term outcome (Moore et al., 2000; Buchbinder et al., 2001; Linton and Ryberg, 2001; Pincus et al., 2002).

This psychosocial approach to LBP has its implications for clinical practice. If we assume that a patient's behaviour and the way he/she deals with LBP is guided by his/her beliefs about pain, and that these beliefs are possibly shaped by the health care provider (HCP), then the HCP's own ideas become important, too. The advice

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given and actions undertaken as part of treatment will (explicitly or implicitly) reflect the HCP's own ideas and treatment orientation. Two treatment orientations regarding LBP are common. One orientation is based upon the biomedical model of disease, in which pain and functional limitations are explained by physical pathology. A second orientation considers pain problems a result of biomedical, psychological and social factors.

Previous research by [Cherkin et al. \(1995\)](#) demonstrated within a sample of US physicians a wide variety of views on how LBP should be treated. A study done by [Rainville et al. \(2000\)](#) confirmed that physicians' recommendations are highly variable and often restrictive. [Linton et al. \(2002\)](#) examined the fear-avoidance beliefs of general practitioners (GPs) and physical therapists (PTs) and concluded that some of them held beliefs reflecting pain-related fear, which influenced advice concerning sick leave and avoidance of activities. Similar results were found by [Houben et al. \(2005\)](#), who showed among PTs that a biomedical factor and a biopsychosocial factor on a treatment orientation questionnaire were associated with perceived harmfulness of physical activities and recommendations for return to work. Almost all of these previous studies only investigated HCP self-report measures on treatment of hypothetical patients (case presentations); to our knowledge, only one study ([Von Korff et al., 1994](#)) also involved actual patient outcome.

The setting of the present study, which is performed within a sample of Dutch GPs who participated in a longitudinal study on acute LBP in primary care patients ([Sieben et al., 2005](#)), offers a unique opportunity to study associations between GP orientation and patient data. We examined whether differences in LBP treatment orientation are associated with differences in actual treatment behaviour and whether GP treatment orientation is related to LBP outcome in patients. Based on theory and previous findings, we hypothesize that the GPs' treatment orientations will influence their treatment choices and thereby influence their patients' LBP careers.

2. Methods

2.1. Study design

The research presented in this paper is embedded within a longitudinal cohort study on the role of pain-related fear in the development of chronic LBP ([Sieben et al., 2005](#)). Details on patient selection criteria etc. are reported elsewhere ([Sieben et al., 2005](#)). In summary, patients consulting their GP with a new episode of non-specific LBP (within 3 weeks of pain onset) were invited to participate in the study and completed postal questionnaires at baseline, 3 months, 6 months and 12 months follow-up and at the end of the study. Data on treatment during the follow-up period were collected from the GPs. The GPs involved in the recruitment of acute LBP patients for this study also participated in a survey on GP treatment orientation. The study protocol was approved by the medical ethics review committees of Maastricht University Hospital and Maastricht University (Maastricht, The Netherlands) and the Institute for Rehabilitation Research (Hoensbroek, The Netherlands).

2.2. Subjects

Within the nested design described above, 42 GPs completed the questionnaire on treatment orientation. From the practices of these GPs 222 patients were included, of whom questionnaires on LBP outcome and treatment data were gathered. More information about the GP and patient samples can be found in the results section.

2.3. GP measures

2.3.1. Descriptive characteristics

Information was gathered about the GP's age, gender and years of working experience, together with details on practice situation like (a) group or solo practice (b) full-time or part-time assignment and (c) estimated frequency of LBP in own practice. Additionally, fields of special interest and interest in LBP as a primary care problem were explored. Also the level of physical activity and back pain history of the GP were measured.

2.3.2. LBP orientation

The health care providers' pain and impairment relationship scale (HC-PAIRS) ([Rainville et al., 1995](#)) was designed to assess the orientation and beliefs of health care providers about functional expectations for chronic LBP patients. The questionnaire consists of 15 statements with a 6-point Likert scale ("totally disagree" to "totally agree"). A high score on the HC-PAIRS reflects a more biomedical treatment orientation. Reliability and validity of the Dutch version of the HC-PAIRS have been shown good ([Houben et al., 2004](#)).

2.3.3. Fear of movement/(re)injury

The Tampa scale for kinesiophobia (TSK) was originally designed to measure fear of movement and/or (re)injury in LBP patients ([Miller et al., 1991](#); [Vlaeyen et al., 1995](#)). An adaptation of this scale (TSK-HC) was developed by [Houben et al. \(2004\)](#) to determine to what extent HCPs believe that movement and physical activity are harmful for their LBP patients. The TSK-HC consists of 17 statements, which have to be rated on a 6-point Likert scale ranging from "totally agree" to "totally disagree". As an example, the original TSK-item "If I were to try to overcome it, my pain would increase" was converted to "If a low back pain patient was to try to overcome his or her pain, it would increase" (TSK-HC).

2.3.4. Threat value of physical activity

The photograph series of daily activities (PHODA) ([Kugler et al., 1999](#)) was initially developed to obtain hierarchies of specific fear-eliciting movements for treatment purposes in patients with high levels of fear of movement. The PHODA consists of 98 photographs of people carrying out daily activities. For this study, 8 pictures were selected based on high ratings (reflecting fear for and an urge to avoid the specific activity) in patients in a previous study ([Vlaeyen et al., 2001](#)). For each picture the GP is asked to answer two questions: (1) To what extent do you think this activity is harmful for a low back pain patient? (2) To what extent would you advise a low back pain patient to avoid this activity? GPs rate their answers on an 11-point Likert scale, varying from "certainly not harmful" to "certainly harmful" and "no restrictions" to "strongly advised against", respectively. For both sets of 8 items an average score is calculated (representing "perceived harmfulness" and "advise to activity avoidance").

2.3.5. Treatment recommendations

Three patient vignettes (virtual cases) constructed by [Rainville et al. \(2000\)](#) were used to explore physicians' recommendations on activity and work for patients with chronic LBP. The vignettes present virtual patients with different levels of pathology, symptoms and work requirements. In each vignette details of work situation, symptoms, relevant physical findings, diagnostics and previous treatment are described. All vignettes purposely lack diagnostic evidence of compression of neurological structures that would require surgery. For each vignette GPs are asked to rate (a) the severity of symptoms, (b) the severity of pathology, (c) appropriate level of activities and (d) appropriate level of work. Ratings

are made by selecting one of five graded response options for each topic.

2.4. Patient measures

2.4.1. Patient questionnaires

Patients completed questionnaires on LBP outcome, fear-avoidance variables, pain and disability at baseline and at 3 months, 6 months and 12 months follow-up and at the end of the study (LBP outcome only). Key measures were the graded chronic pain scale (GCPS), pain intensity (measured by a visual analogue scale), pain-related fear (measured by Tampa scale of kinesiophobia, TSK) and back pain disability (measured by Quebec back pain disability scale, QBPDS). Details of the questionnaires used are reported elsewhere (Sieben et al., 2005). We used the GCPS (Von Korff et al., 1992) as a primary outcome variable. The GCPS accounts for levels of pain, disability and social interference due to LBP. The patient's LBP situation is graded on a 5-point scale ranging from 0 ("no pain problem") to 4 ("high disability/severely limiting").

2.4.2. Treatment

Twelve months after the initial LBP-consultation GPs completed a report for each patient on treatment, drug prescription, and referrals during the follow-up period.

2.5. Analysis

SPSS 11.5 was used for all statistical analyses (SPSS, Chicago, USA). Unless reported otherwise, all statistical tests are two-sided and p -values ≤ 0.05 are judged significant.

Associations between measures of treatment orientation aspects (HC-PAIRS, TSK-HC) and measures reflecting treatment recommendations (PHODA, vignettes), treatment behaviour (patient follow-up reports) and LBP outcome (chronic pain grade) were analysed using Spearman's rho correlation coefficients.

Regarding the relation between treatment orientation (GP) and LBP outcome (patient), multi-level analysis is indicated if the observations in one level (patient) are dependent upon the other level (GP). We explored the dependency between the levels of measurement using intra-class correlation coefficients (ICC). In case of high ICCs, the next step would be to perform a multi-level analysis. In case of ICCs close to zero, we would instead perform a regression analysis with GCPS as a dependent variable and HC-PAIRS as an independent variable while controlling for known patient variables.

3. Results

3.1. Subject characteristics

Between January 2001 and April 2003, 35 general practices (56 GPs) located in the southern part of the Netherlands were involved in this study.

3.1.1. Response rates

Two hundred twenty two patients were recruited by 36 of the 56 GPs. The cross-sectional survey on treatment orientation was completed by 42 GPs (75%). Both patient data and GP-survey data were available from 27 GPs (48%). In these, the median number of patients per GP was 3 (interquartile range 2–7).

3.1.2. General practitioners

Descriptives of the GPs are presented in Table 1. The majority of participants were male, full-time working and experienced physicians. In comparison to the overall GP-population in the

Netherlands, women seem somewhat underrepresented in the present sample. On a 0–10 scale, mean interest in LBP in general practice was 5.5 (SD = 1.9). One GP reported to have LBP himself at the time he completed the questionnaire.

3.1.3. LBP patients

Extensive details on the LBP patients are described in Sieben et al. (2005). Highlights are briefly summarized in Table 2. There were no significant differences (ages, gender) between participants and non-participants. The patient sample seems similar to that of comparable studies in LBP populations, with the only striking difference that it is a very *acute* sample. During follow-up the majority of patients were categorized as grade 1 (low disability/low pain). About 15% of all patients showed poor outcome (grade 3 or 4: high or severe disability).

3.2. Treatment orientation, treatment recommendations and actual treatment behaviour

Correlations between measures of treatment orientation and self-reported treatment recommendations (Table 3) show a biomedical approach to be associated with a more severe judgement of pathology, more restrictive recommendations about activities, and more harmful appraisals of movements. In general, biomedically oriented GPs seemed to be more concerned about tissue damage and the effects of physical activities on pain and recovery.

Table 3 also shows correlations between treatment orientation and actual treatment behaviour. Data from the patient follow-up reports (12 months) are used in this analysis. All additional diagnostic tests, referrals to therapy and referrals to specialist treatment that were ordered by the GPs were labelled "biomedical" or "psychosocial" interventions (detailed coding list available from corresponding author). For each GP, we calculated the percentage of his/her patients in which each type of intervention was applied. No significant associations were found between treatment orientation scores, numbers of diagnostic tests ordered and referral rates.

As numbers for analyses were limited, additional plot inspections were performed for all correlations presented in Table 3. Although not all variables were normally distributed, no clues for hidden or distorted relationships due to outliers or nonlinearity were discovered.

3.3. Treatment orientation and outcome of LBP

Treatment orientation measures did not seem to be correlated with LBP outcome (graded chronic pain scale) (Table 3). Intra-class correlation coefficients for GCPS-scores by GP were all zero or < 0.10 throughout the study, which implied that multi-level analysis was not indicated. However, the small ICCs might have been due to the small numbers of patients per GP. In order to rule out any masked association between treatment orientation and patient outcome, we performed additional regression and correlation analysis. We assumed that patient outcome can be explained by both patient variables (demographics, episode characteristics and LBP beliefs) and GP variables (treatment orientation). Within the patient cohort study we previously systematically derived an ordinal regression model explaining LBP outcome (GCPS) using patient variables (Sieben et al., 2005). The final model contained age, number of previous episodes, level of education and baseline pain intensity as predictor variables. For the present study, GCPS-scores were predicted for each patient, using this model. Differences between actual GCPS-scores and predicted scores were calculated, representing the residual variance not explained by the patient predictor variables, but instead possibly due to GP-related factors. These residuals were then averaged per GP. No significant associations were found between the GPs' treatment orientation measures

Table 1
Baseline characteristics of the general practitioners sample

	Study sample % (N = 42)	All Dutch GPs (%) ^b (N = 8400)
<i>Gender</i>		
Men	81	64.6
Women	19	35.4
<i>Age (years)</i>		
25–34	5	7.4
35–44	38	28.5
45–54	47	39.2
55–64	10	24.9
<i>Part-time/full-time job</i>		
Full-time (1.0 fte)	66	54.2
Part-time (>0.5 fte)	17	45.8
Part-time (≤0.5 fte)	17	
<i>Working experience as GP (years)</i>		
<5	7	22.1
5–10	26	17.2
11–20	36	26.6
>20	31	34.3
<i>N of LBP patients in own practice</i>		
0–2 Patients/month	9	
2–5 Patients/month	45	
5–10 Patients/month	34	
>10 Patients/month	12	
<i>Treatment orientation measures^a</i>		
HC–PAIRS (scale range 15–90) ^c	45.5 (6.5)	
TSK–HC (scale range 17–102) ^d	35.8 (8.3)	
<i>Treatment intention measures^a: vignettes (virtual patient cases) (scales range 3–15)</i>		
Severity of symptoms rating ^e	11.9 (1.4)	
Severity of pathology rating ^f	6.3 (1.3)	
Recommended level of activities ^g	5.4 (1.3)	
Recommended level of work ^h	8.4 (2.2)	
<i>PHODA (scale range 0–10)</i>		
Perceived harmfulness ⁱ	3.0 (2.1)	
Advise to activity avoidance ^j	3.9 (1.4)	

^a Mean scores (SD) are presented.

^b Data from NIVEL (Netherlands Institute for Health Services Research) on all Dutch GPs (Verheij et al., 2008, on www.nivel.nl).

^c Higher values of this variable represent a more biomedical treatment orientation.

^d Higher values of this variable represent more fear of movement/(re)injury.

^e Higher values of this variable represent greater severity/impact of symptoms (very low severity/impact to very high severity/impact).

^f Higher values of this variable represent greater severity of spinal pathology (no spinal pathology to very severe spinal pathology).

^g Higher values of this variable represent recommendations to reduce physical activity (no activity limitations recommended to limitation of all physical activity recommended).

^h Higher values of this variable represent recommendations to not resume work (full-time return to work recommended to full absence from work recommended).

ⁱ Higher values of this variable represent greater perceived harmfulness of physical activity (certainly not harmful to certainly harmful).

^j Higher values of this variable represent advise to avoid physical activity (no restrictions to strongly advised against).

and residual variance in their patients (Table 4), which suggests that the variance not explained by patient predictors could not be explained by GP orientation either.

4. Discussion

Within the context of a cohort study on fear-avoidance beliefs in primary care LBP patients, we explored the role of GP orientation on treatment behaviour and LBP outcome. As in previous studies, treatment orientation was found to be associated with “virtual” treatment recommendations as reported by the GPs using vignettes on hypothetical patients. However, we could not demonstrate any significant association between treatment orientation and actual treatment behaviour in the study’s patient population. Also no association was found between treatment orientation and LBP outcome in patients as measured by the graded chronic pain scale.

4.1. Explanation 1: existing association was not detected

We may well have overlooked an association between GP treatment orientation and patient LBP outcome for several reasons. The

self-report instruments we used to measure treatment orientation (HC–PAIRS, TSK–HC) reflect explicit (conscious) aspects of treatment attitude, which are vulnerable to biases like social desirability and the influence of acquired knowledge, for example from clinical guidelines. In contrast, the underlying implicit (automatic) attitudes are not consciously controlled and may better predict treatment behaviour, because they are less vulnerable for strategy and demand influences. Future research should focus on developing methods to properly measure these implicit attitudes with respect to medical treatment (Houben et al., 2004).

Second, the answers to written vignettes on hypothetical patients suggest that GPs intend to act in line with their biomedical or biopsychosocial treatment orientation. On the other hand, no association was found between treatment orientation and actual treatment of patients. This apparent discrepancy may be explained by arguing that actual treatment behaviour, more than treatment intention as measured by the vignettes, is typically influenced by case-related specific factors (e.g. the patient’s particular symptoms and treatment preferences, pressure of time, insurance issues), which are likely to mask the effect of treatment orientation.

Furthermore, although our sample of GPs seems largely comparable to the overall Dutch GP-population on general characteristics,

Table 2
Characteristics of LBP patient^a

		N
<i>Gender</i>		
Men (%)	56.3	222
Women (%)	43.7	222
<i>Baseline</i>		
Age (years)	44 (34–50)	222
Duration of complaints (days)	5 (2–10)	222
Pain intensity (0–100) ^b	48 (27–64)	222
LBP disability (0–100) ^c	41 (28–54)	222
<i>LBP outcome^d</i>		
GCPS baseline	3 (2–3)	217
GCPS 3 months	1 (0–1)	175
GCPS 6 months	1 (0–1)	165
GCPS 12 months	1 (0–2)	169
GCPS end of study	1 (1–2)	167

^a Median scores with interquartile ranges are presented unless otherwise stated.

^b Measured by 10 cm. Visual analogue scale with anchors representing “no pain” (0) and “unbearable pain” (100).

^c Measured by Quebec back pain disability scale (QBPDS).

^d Scale categories of GCPS: 0 = no back pain problem; 1 = low disability/low pain; 2 = low disability/high pain; 3 = high disability; 4 = severe disability.

the variance in treatment orientation and treatment behaviour was small in the present sample of GPs. As they voluntary participated

in this study this may well have been a too homogenous group regarding e.g. education, LBP beliefs and interest in behavioural interventions and research.

Also, the reports we used for data collection on actual treatments did include referrals, therapies and drug prescriptions during the follow-up period, but it did not explore any further advices given after the first consultation and combinations of treatments including advice. For example, it is possible that the GPs in some cases did prescribe drug treatment for pain relief, while at the same time encouraging their patients to resume normal activities as soon as possible. The latter recommendation, though it may have been effective, was not recorded. Therefore we may have missed some plausible relationships between treatment options and outcome.

Finally, the numbers of patients recruited per GP were much lower than we had expected based on incidence rates. Data could not be aggregated for those GPs without any accompanying patients, resulting in a significant loss of statistical power. Acute patients appeared more difficult to motivate to participate in research than chronic patients. Their primary interest is getting a cure for their pain, and they do not see any benefit in completing questionnaires. And even if they agree to participate in the acute stage, once the pain episode has resolved, the issue of research often seems no longer relevant to them. Furthermore, collecting data from GPs as subjects appeared to highly interfere with daily practice routine. However, refusal and loss to follow-up rates were low

Table 3
Associations of treatment orientation measures with treatment intentions, treatment behaviour and low back pain outcome

	Treatment orientation (GP)		N in analysis
	HC-PAIRS	TSK-HC	
<i>Treatment intentions (GP)</i>			
Vignettes (virtual patient cases)			
Severity of symptoms rating ^d	−0.05	−0.18	42 ^a
Severity of pathology rating ^d	0.43**	0.59**	42 ^a
Recommended level of activities ^d	0.28	0.37*	42 ^a
Recommended level of work ^d	0.34*	0.23	42 ^a
<i>PHODA</i>			
Perceived harmfulness ^e	0.36*	0.45**	42 ^a
Advise to activity avoidance ^e	0.13	0.22	42 ^a
<i>Actual treatment behaviour (GP)</i>			
N follow-up consultations	−0.26	−0.06	27 ^b
% of patients with medication prescribed	0.02	0.16	27 ^b
% of patients with additional diagnostics ordered			
Biomedical diagnostics	−0.13	−0.24	27 ^b
Psychosocial diagnostics	−0.10	−0.26	27 ^b
% of patients referred to therapists			
biomedical therapist	−0.24	0.01	27 ^b
Psychosocial therapist	0.28	0.19	27 ^b
% of patients referred to specialists			
Biomedical specialist	−0.02	0.14	27 ^b
Psychosocial specialist	−0.28	−0.29	27 ^b
% of patients with specific stressors diagnosed			
Biomedical stressors	−0.13	−0.26	27 ^b
Psychosocial stressors	−0.20	0.06	27 ^b
<i>Low back pain outcome (patients)</i>			
Chronic pain grade (GCPS)			
Baseline	−0.06	−0.04	179 ^c
3 Months	−0.03	0.07	144 ^c
6 Months	0.07	0.01	135 ^c
12 Months	−0.02	0.01	138 ^c
End of study	0.02	0.00	138 ^c

Spearman's rho correlation coefficients are presented; correlations with p -values ≤ 0.05 are marked. *Correlations with p -values ≤ 0.01 are marked. ** Percentage of patients per GP.

^a All GP data; cases in analysis representing GPs.

^b Patient data aggregated per GP; cases in analysis representing GPs.

^c GP data aggregated per patient; cases in analysis representing patients.

^d See Table 1 footnotes 5–8, for interpretation of scores.

^e See Table 1, footnotes 9 and 10, for interpretation of scores.

Table 4

Associations between measures of treatment orientation and outcome of low back pain

	Treatment orientation		N in analysis ^f
	HC-PAIRS	TSK-HC	
<i>Immediate outcome^a</i>			
Mean GCPS ^d	0.03	−0.06	27
Mean residual ^e	0.07	0.28	27
<i>Short-term outcome^b</i>			
Mean GCPS ^d	0.05	0.02	25
Mean residual ^e	−0.11	−0.08	25
<i>Long-term outcome^c</i>			
Mean GCPS ^d	−0.04	0.05	23
Mean residual ^e	0.14	0.03	23

Spearman's rho correlation coefficients are presented.

^a Immediate outcome: GCPS score baseline questionnaire (after GP consultation).^b Short-term outcome: GCPS score at 3 months.^c Long-term outcome: GCPS at end of study (median follow-up = 1.9 years).^d Mean GCPS score for all patients (per GP).^e Mean residual not explained by patient predictor variables (per GP).^f Patient data aggregated per GP: cases in analysis representing GPs.

to average compared to similar research. It is unlikely that our study was hampered by selection bias more than other studies.

In summary, we cannot exclude any of these explanations for not detecting an existing association and together they may well explain our data.

4.2. Explanation 2: associations do not exist as hypothesised

Current biopsychosocial approaches to LBP and other pain problems presume an important influence of HCPs in changing patients' attitudes and beliefs about health. In our present study we could not confirm this role. If the GP treatment orientation indeed does not influence LBP outcome in patients, the implications may be serious. These findings may indicate that GPs treat their patients exactly according to protocols and guidelines, apart from their own private ideas about LBP. This conclusion would be hard to believe, as it contradicts research findings on guideline adherence (Lipman, 2004; Overmeer et al., 2005). On the other hand, however many patients will value their GP's opinion, its influence will probably hardly exceed the much more frequent impact of ideas ventilated by relevant others (family, relatives, friends) and media.

It is also possible that most commonly used interventions aimed at changing the prognosis of LBP are hardly effective in daily practice, so differences in treatment orientation do not matter. As Von Korff et al. (1994) demonstrated, even clear differences in actual treatment behaviour may not influence long-term pain and functional outcome. Regarding LBP, indeed only few strategies are conclusively supported by evidence (Cochrane Library).

These explanations are disturbing and deserve much more attention in the debate than they have received until now. For it is unlikely that the influence of the GP (even if future research would show a weak association after all) is much stronger in other diagnoses than LBP, and regarding many aspects of health (smoking, exercise, dietary habits), improvement of prognosis largely depends on changing cognitions and behaviour (instead of technical/somatic interventions).

5. Conclusions

Despite some methodological shortcomings, to our knowledge this study is unique for its combination of information on both GP treatment orientation and patient outcome. Unfortunately

(and remarkably) we found no literature reporting on analogous studies in other disorders to compare with. Therefore our findings raise questions concerning widely accepted and clinically applied assumptions on behavioural medicine and the role of the HCP in influencing patients' health attitudes and behaviour in general. Future studies should employ experimental designs if possible, and provide evidence on the role of treatment orientation to a broader spectrum of diseases.

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