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# How does the self-reported clinical management of patients with low back pain relate to the attitudes and beliefs of health care practitioners? A survey of UK general practitioners and physiotherapists

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## Abstract

Guidelines for the management of low back pain (LBP) have existed for many years, but adherence to these by health care practitioners (HCPs) remains suboptimal. The aim of this study was to measure the attitudes, beliefs and reported clinical behaviour of UK physiotherapists (PTs) and general practitioners (GPs) about LBP and to explore the associations between these. A cross-sectional postal survey of GPs ( $n = 2000$ ) and PTs ( $n = 2000$ ) was conducted that included the Pain Attitudes and Beliefs Scale (PABT.PT), and a vignette of a patient with non-specific LBP (NSLBP) with questions asking about recommendations for work, activity and bedrest. Data from 1022 respondents (442 GPs and 580 PTs) who had recently treated patients with LBP were analysed. Although the majority of HCPs reported providing advice for the vignette patient that was broadly in line with guideline recommendations, 28% reported they would advise this patient to remain off work. Work advice was significantly related to the PABT.PT scores with higher biomedical ( $F_{1,986} = 77.5, p < 0.0001$ ) and lower behavioural ( $F_{1,981} = 31.9, p < 0.001$ ) scores associated with advice to remain off work. We have demonstrated that the attitudes and reported practice behaviour of UK GPs and PTs for patients with NSLBP are diverse. Many HCPs held the belief that LBP necessitates some avoidance of activities and work. The attitudes and beliefs of these HCPs were associated with their self-reported clinical behaviour regarding advice about work. Future studies need to investigate whether approaches aimed at modifying these HCP factors can lead to improved patient outcomes.

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**Keywords:** Attitudes and beliefs; Health care practitioners; Practice behaviour; Low back pain; Survey

## 1. Introduction

Low back pain (LBP) is common, affecting 38% of adults in any one year, of whom 1 in 4 experience significant disability [37]. Only 25% of patients consulting in primary care will be symptom free 12 months later [18]. The last two decades have also seen dramatic rises

in work loss and sickness benefit payments, attributed to recurrent and persistent LBP [16,36].

Guidelines for the clinical management of patients with LBP encourage health care practitioners (HCPs) to advise patients to stay active, avoid bed rest, stay at or return to work, and stress simple messages about self-management [3,31,45,47,49,50]. Previous studies have identified that HCPs do not always follow guideline recommendations for LBP [10,20,24,26] and so despite the abundance of guidelines for practice, the management of LBP poses considerable challenges and frustrations for both patients and practitioners

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[14] and it is increasingly clear that it is insufficient to study patient factors alone [25,48].

A potentially important but relatively unexplored influence on patients' pain experiences is the attitudes and beliefs of the HCPs with whom they come into contact. HCPs are frequently asked to provide advice and recommendations about physical activities, work, and rest and HCPs' attitudes and beliefs may be an integral part of the health care process, influencing the success or failure of treatment. HCPs hold a range of attitudes and beliefs about back pain [17,19,28,32,39,42–44], and these attitudes appear to be associated with the work and activity recommendations that HCPs give to patients [17,28,42,44].

In the UK, approximately 98% of the population is registered with a National Health Service general practitioner (GP) [13]. GPs serve as gatekeepers to secondary care, selecting and referring patients for specialist investigations and treatment services. Physiotherapy is one of the most common services to which patients are referred, or which patients seek out privately [36], and LBP accounts for more than half of physiotherapists' workload in the UK [24].

Few studies have explored HCP factors in the UK, but it has been shown that many physiotherapists (PTs) continue to advise limitations of work and activity levels, despite identifying when patients with LBP are at risk of chronicity [11] and an important proportion of therapists continue treating patients with LBP even when they fail to improve [41]. The aim of this study was to measure, in national random samples, the attitudes, beliefs and reported clinical behaviour of GPs and PTs about LBP, explore their associations and evaluate the implications for both clinical practice and future research.

## 2. Methods

### 2.1. Design and setting

We conducted a cross-sectional, nationwide postal survey of UK GPs and PTs, involved in the management of patients with LBP, between April and November 2005. Ethical approval for the study was obtained from the West Midlands Multi-centre Research Ethics Committee (MREC). Written consent was not sought from each participant for use of survey data, but consent of respondents was assumed if they completed and returned the questionnaire.

### 2.2. Questionnaire sample and mailing process

We used simple random sampling to obtain details of GPs ( $n = 2000$ ) and PTs ( $n = 2000$ ) from national databases (Binleys database for GPs,  $n = 46,000$  GPs on the list; Chartered Society of Physiotherapy membership database,  $n = 32,000$  PTs on the list). In the UK, all GPs working in the National Health Service are included on the Binleys database [7],

which is produced in conjunction with the Royal College of General Practitioners. The Chartered Society of Physiotherapy (CSP) is the professional, educational and trade union body representing the UK's chartered physiotherapists and 98% of all PTs are members of the CSP.

A sample size calculation indicated that a sample of 900 responders (450 GPs and 450 PTs) was required to allow us to find a minimum difference of 10% in the proportion of respondents with 'helpful' to 'unhelpful' beliefs by important practitioner characteristics at a significance level of 0.05 and a power of 90% [2]. A questionnaire package containing the questionnaire, a cover letter, an information sheet and a pre-paid envelope was mailed to each HCP. A single reminder was sent to all non-responders four weeks after the first mailing. In order to allow assessment of non-response bias within the survey estimates, a brief questionnaire was mailed to a random sample of non-responders. No incentives for completing the questionnaire were offered.

### 2.3. Questionnaire

A filter question was used to identify those HCPs who had treated at least one patient with non-specific LBP (NSLBP) in the previous six months, so that only respondents with recent experience of managing patients with LBP were included in the analysis.

#### 2.3.1. Demographics and practice information

A number of demographic and practice questions, relevant to each profession, were included. Some items were pertinent to both professions: gender; years since qualification; postgraduate training in LBP; clinical interests/speciality and personal experience of back pain. Data gathered exclusively from GPs included whether they worked only in general practice and whether the practice was a single-handed or a group practice. Data gathered exclusively from PTs included how much of their clinical practice was based in the NHS, what proportion of their caseload was primary care patients, whether they worked alone or in a team, and grade of current job.

#### 2.3.2. Attitudes and beliefs measure

The Pain Attitudes and Beliefs Scale (PABS.PT [28,39]) was included as a measure of HCPs' attitudes about LBP. This was selected following a systematic review of available tools for assessing the attitudes and beliefs of HCPs about LBP [12], in which the PABS.PT fared well on pre-defined quality criteria [34]. This tool was originally developed for use in physiotherapists, but more recently has been applied to a cohort of Dutch general practitioners [30]. In addition, the members of a multi-disciplinary clinical advisory group confirmed face and content validity of the PABS.PT for both GPs and PTs after recommending that the term 'therapy' was changed to 'treatment' in two of the items of the PABS.PT. The resulting minimally amended PABS.PT was used for both GPs and PTs.

The PABS.PT assesses the strength of treatment orientation on two subscales, 'biomedical' and 'behavioural'. The biomedical orientation is described as one in which the HCP believes in a biomechanical model of disease, where disability and pain are a consequence of a specific pathology

within the spinal tissues and treatment is aimed at treating the pathology and alleviating the pain. The behavioural orientation is where the HCP believes in a biopsychosocial model of disease in which pain does not have to be a consequence of tissue damage, and can be influenced by social and psychological factors. We used the amended PABS.PT [28], which consists of 19 items, each rated on a six point Likert scale ('Totally disagree' = 1 to 'Totally agree' = 6), with ten items on the biomedical subscale (score range: 10–60) and nine on the behavioural subscale (score range: 9–54). Higher scores on each subscale indicate a stronger biomedical or behavioural treatment orientation, respectively.

### 2.3.3. Clinical behaviour measures

Clinical behaviour was elicited by asking the HCPs about diagnostic investigations and for their recommendations about work, activity levels, and bedrest, for a patient with NSLBP described in a vignette. The vignette described a patient with uncomplicated NSLBP who was not at work as a result of their symptoms (Appendix A). Vignettes have been shown to be a useful measure of clinicians' practice behaviour and a more accurate assessment of clinical behaviour than data extracted from case notes when measured against the gold standard of standardised patients [40].

The clinical behaviour question regarding work was as follows:

"The patient described in the vignette asks what your advice would be about her work. I would recommend this patient to: (*Please tick the one response that best describes what you would recommend this patient to do*)

- a. Be off work until pain has completely disappeared
- b. Return to part time or light duties
- c. Be off work for a further... weeks (*please state number of weeks*)
- d. Return to normal work
- e. Be off work until pain has improved"

Responses for each of the work, activity and bedrest questions were subsequently classified by the authors as being 'strictly in line with guideline recommendations', 'broadly in line with guideline recommendations' and 'not in line with guidelines'. For the work question given above, we considered option 'd' to be strictly in line with guideline recommendations, option 'b' to be broadly in line with guideline recommendations and options 'a', 'c' and 'e' to be not in line with guideline recommendations. This classification was based on a previously published expert consensus carried out on similar practice recommendations in a postal survey of physiotherapists, osteopaths and chiropractors in the UK [22].

### 2.4. Brief questionnaire

The brief questionnaire sent to a sample of non-responders contained the filter question to ensure that respondents recently involved in the management of patients with LBP could be identified. Alongside key demographic questions, we included four items from the PABS.PT (two from each sub-

scale chosen on the basis of factor loadings described by the tool's developers and data from a pilot study), the vignette patient and the clinical behaviour questions related to work, activity and bedrest.

### 2.5. Statistical analysis

Scores for the PABS.PT were calculated according to methods specified by the questionnaire developers, i.e. a simple summation of the items in each subscale [39]. No method for dealing with missing data on this measure has been published so a pragmatic decision was made that if one value was missing from a subscale, a mean score based on the remaining values was substituted. If more than one value was missing the score for the whole subscale was classed as missing. A Pearson's correlation coefficient was calculated between the scores on the two subscales of the PABS.PT as previous work has shown that they are not totally independent [28,39]. We used descriptive statistics to summarise, by professional group, demographic, and practice data for both subscales of the PABS.PT. In addition, in response to the reviewer's suggestions, we conducted a subgroup analysis of work, activity and bedrest recommendations for those respondents who had high biomedical scores and low behavioural scores and vice versa. Unless differences occurred by profession, analyses were performed on the combined GP and PT dataset.

The relationship between attitudes and beliefs and clinical behaviour was examined using ANOVA to test for an overall relationship with clinical behaviour and, when appropriate, for a linear trend across clinical behaviour groups (strictly in line, broadly in line and not in line with guidelines). The effect of non-response was examined by comparing responses from all responders to the full questionnaire to those completing the brief questionnaire. All analyses were carried out using the Statistical Package for Social Scientists for Windows (SPSS Inc., Chicago, IL, version 13).

## 3. Results

The overall response rate was 38% ( $n = 1534$ ), 22% ( $n = 443$ ) for GPs and 55% ( $n = 1091$ ) for PTs. Of the respondents, 580 PTs and 442 GPs reported treating at least one patient with LBP in the previous six months and were included in the analysis.

### 3.1. Characteristics of respondents

The demographic and professional characteristics of the respondents are summarised in Table 1. The majority of GPs worked exclusively in general practice, within group practices and had at least one specialist clinical interest. The majority of PTs worked within the NHS, with other HCPs, were of senior clinical grade or above, and had a patient caseload of more than 50% primary care patients. The PTs were qualified for a shorter length of time than GPs, were more likely to be female and to have postgraduate training in LBP.

Table 1  
Characteristics of responding health care practitioners

	General practitioners ( <i>n</i> = 443)	Physiotherapists ( <i>n</i> = 580)
Years since qualification: mean (SD)	18.7 (9.1)	15.2 (11.6)
Gender (% female)	41.5	80.8
Working exclusively in general practice (% yes)	72.3	N/A <sup>a</sup>
Practice type (%)		N/A <sup>a</sup>
Single-handed	4.6	
Group practice	95.4	
Postgraduate training in back pain (% yes)	22.5	69.8
Any specialist clinical interests (% yes)	54.3	62.6
Personal experience of LBP (% yes)	69.9	73.4
Practice setting (%)	N/A <sup>a</sup>	
Exclusively NHS		52.2
Combination of NHS and non-NHS		19.1
Exclusively non-NHS		28.8
Proportion of primary care patients in caseload (%)	N/A <sup>a</sup>	
None		10.6
<50%		18.1
>50%		37.9
All		33.4
Work environment (%)	N/A <sup>a</sup>	
Mostly alone		29.0
Mostly with other PTs		47.4
Mostly in a multi-disciplinary environment		23.6
Grade <sup>b</sup> (when applicable – does not add to 100%) (%)	N/A <sup>a</sup>	
Staff (junior)		9.7
Senior II		19.6
Senior I		35.5
Extended scope practitioner/clinical specialist		9.5
Superintendent/manager		7.1
Consultant therapist		1.0

SD – standard deviation, NHS – National Health Service.

<sup>a</sup> Not applicable. This question was not included for this professional group.

<sup>b</sup> Staff grade is newly qualified, typically up to two years experience. Further grades are graded according to clinical, managerial and supervisory responsibilities ranging from Senior II to consultant therapist. Grades have been changed recently to bands within the Agenda for Change framework [1].

### 3.2. Attitudes and beliefs

Scores for both of the PABS.PT subscales could be calculated for the majority of the 1022 responders (biomedical *n* = 1010, behavioural *n* = 1004). Mean (standard deviation, range) score for the biomedical subscale was 31.0 (6.4, 12–50) overall: GPs 30.9 (5.3); PTs 31.1 (7.2), and for the behavioural subscale was 33.0 (4.6, 15–48) overall: GPs 33.7 (4.2); PTs 32.5 (4.8). For both subscales and both professional groups, the mean observed scores were in the middle of the possible ranges. The Pearson's correlation coefficient ( $r = -0.38$ ;  $p < 0.0001$ ) showed a statistically significant level of dependence between the two subscales, suggesting that respondents who score higher on one subscale tend to score lower on the other subscale.

### 3.3. Diagnostic investigations

In response to the vignette patient, most HCPs reported that they would not want the patient described to have any diagnostic investigations. Of the GPs 33% (*n* = 142) reported that they would request at least one investigation, compared with 24% (*n* = 134) of PTs (Table 2). GPs were more likely to want laboratory tests and PTs were more likely to want an X-ray or special imaging procedure such as an MRI.

### 3.4. Clinical behaviour

The responses to the clinical behaviour questions were classified according to whether these were 'strictly in line', 'broadly in line' or 'not in line' with guideline recommendations and the responses and the classifications are sum-

Table 2  
Investigations that GPs and PTs would choose for the patient described in the vignette

	General practitioners % Yes (n)	Physiotherapists % Yes (n)
Any investigation	33.0 (142)	24.0 (134)
Electromyography or nerve conduction	1.3 (2)	0.7 (1)
Laboratory tests	85.3 (128)	25.9 (35)
X-ray lumbar spine or sacro-iliac joints	37.3 (56)	62.2 (84)
Special imaging e.g. MRI, CT	15.3 (23)	43.0 (58)
Other	2.0 (3)	7.4 (10)

marised in Table 3. The majority of respondents reported advice that was either ‘strictly in line’ or ‘broadly in line’ with guideline recommendations’. Very small proportions of respondents reported they would provide advice that was ‘not in line’ with guideline recommendations for activity and bedrest, however, this figure was considerably higher for recommendations regarding work, with 28% of respondents reporting that they would recommend the patient in the vignette to remain off work.

The summary of responses of the two subgroups of high biomedical and low behavioural scores ( $n = 187$ ) and low biomedical and high behavioural scores ( $n = 137$ ), compared to the total sample, is also presented in Table 3. The proportion of practitioners recommending that the patient in the vignette remain off work, i.e. not in line with guideline recommendations, was substantially higher in those with high biomedical and low behavioural scores (44.9%) than those with high behavioural and low biomedical scores (11.9%). Similar differences were also seen for recommendations regarding activity and bedrest.

### 3.5. Relationship between attitudes and beliefs and clinical behaviour

Given the very small proportion of respondents whose advice was ‘not in line with guidelines’ for both activity and bedrest, associations with the PABS.PT scores were not examined. Fig. 1 shows the distributions of the PABS.PT biomedical and behavioural subscale scores for each of the reported work recommendation groups. With increasing disparity with guidelines, biomedical scores increased (mean scores: 28.3, 30.6, 33.5) and behavioural scores decreased (mean scores: 34.1, 33.3, 31.8). These associations were shown to have a significant linear trend for both the biomedical ( $F_{1,986} = 77.5, p < 0.001$ ) and behavioural ( $F_{1,981} = 31.9, p < 0.001$ ) subscale scores.

### 3.6. Effect of non-response

In order to assess the impact of non-response bias within the survey estimates, a brief questionnaire

Table 3

Question	Response option on questionnaire	Authors classification of response		% (n) of total respondents	% (n) of respondents in high biomedical, low behavioural subgroup		% (n) of respondents in low biomedical, high behavioural subgroup	
		Strictly in line with guideline recommendations	Broadly in line with guideline recommendations		Not in line with guideline recommendations	Strictly in line with guideline recommendations	Broadly in line with guideline recommendations	Not in line with guideline recommendations
Work	Return to normal work	} (stating number of weeks)	Strictly in line with guideline recommendations	17.4 (173)	8.6 (16)	35.1 (47)		
	Return to part time or light duties		Broadly in line with guideline recommendations	54.5 (542)	46.5 (86)	53.0 (71)		
	Be off work for a further... weeks		Not in line with guideline recommendations	28.1 (279)	44.9 (83)	11.9 (16)		
	Be off work until pain has completely disappeared							
Activity	Perform usual activities	} (stating number of weeks)	Strictly in line with guideline recommendations	13.1 (132)	3.3 (6)	28.5 (39)		
	Perform activities within the patient's tolerance		Broadly in line with guideline recommendations	80.3 (810)	84.2 (155)	70.8 (97)		
	Perform only pain free activities		Not in line with guideline recommendations	6.6 (67)	12.5 (23)	0.7 (1)		
	Limit all physical activities until pain disappears							
Bedrest	Avoid resting in bed entirely	} (stating number of weeks)	Strictly in line with guideline recommendations	29.0 (291)	19.1 (35)	48.9 (67)		
	Avoid resting in bed as much as possible		Broadly in line with guideline recommendations	70.1 (704)	79.0 (145)	51.1 (70)		
	Rest in bed only when pain is severe		Not in line with guideline recommendations	0.9 (9)	1.6 (3)	0 (0)		
	Rest in bed until pain improves substantially							
	Rest in bed until pain disappears							

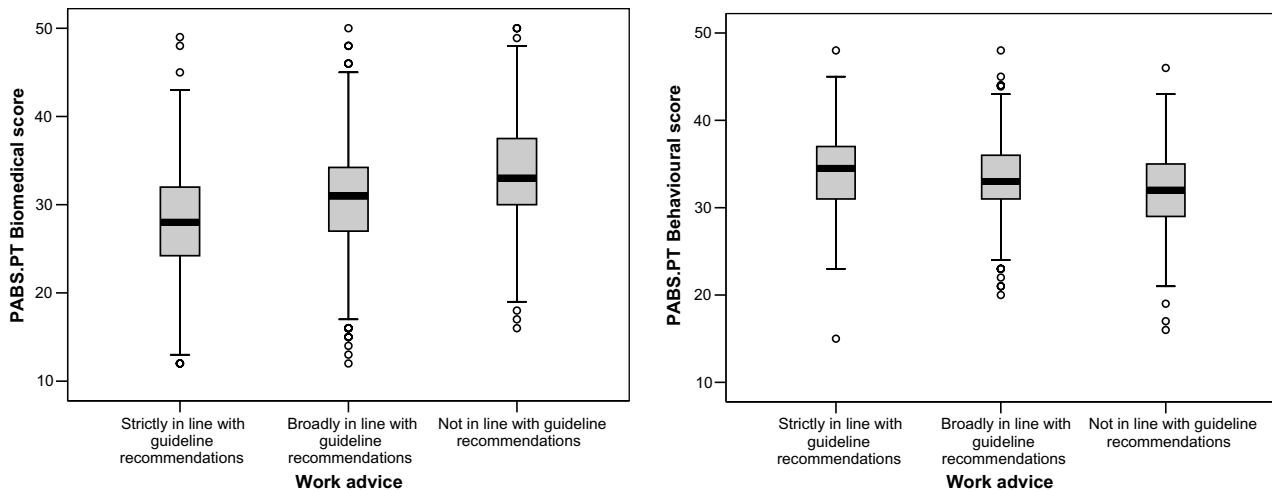


Fig. 1. Box-plots of PABS.PT subscale (biomedical and behavioural) scores for categories of work advice.

was mailed to a random sample of non-responders (GPs  $n = 414$ , PTs  $n = 243$ ), and responses were received from 14% of GPs ( $n = 59$ ) and 17% PTs ( $n = 40$ ).

For the GPs, gender mix and years in practice were similar for those completing the full and brief questionnaire. For the PTs, those completing the brief questionnaire were slightly less experienced (mean of 12 years experience versus 15 years) and more likely to be male compared to the full questionnaire responders (25% vs. 19% male). Responses to both behavioural subscale PABS.PT items and one of the two items from the biomedical subscale were similar to those for the full questionnaire. Responders to the brief questionnaire, from both professions, were more likely to agree with the statement that 'patients with back pain should preferably practice only pain free movements', indicating a more biomedical orientation. The responses to the items regarding work and activity advice were similar for responders to the full and brief questionnaires. GPs responding to the brief questionnaire reported bedrest advice that was less in line with guideline recommendations than the responders to the full questionnaire (19.3% strictly in line with guidelines compared to 38.4%, respectively), whereas the PTs completing the brief questionnaire reported bedrest advice that was more in line with guideline recommendations than the initial responders (35.0% strictly in line with guidelines compared to 21.8%, respectively).

#### 4. Discussion

##### 4.1. Main findings

This is the first national UK survey of LBP related attitudes, beliefs and reported clinical behaviour of

GPs and PTs and results show that responses are diverse. The majority of respondents reported advice that was strictly or broadly in line with guideline recommendations about activity and bedrest, however, over a quarter of HCPs recommended that the vignette patient with NSLBP should remain off work. Reasons why adherence to guideline recommendations for work is lower than for activity and bedrest are unclear, but may be due to the complex nature of the clinical consultation, and previous studies have shown that GPs see sickness certification as a potential threat to the doctor–patient relationship [15,29]. The attitudes and beliefs of HCPs were significantly associated with reported work advice for the patient described, i.e. HCPs with stronger biomedical and weaker behavioural treatment orientations were more likely to report advice, regarding work, which was 'not in line with clinical guidelines'. The subgroup analysis supports this, although only a third of respondents could be categorized into these subgroups i.e. high biomedical and low behavioural scores on the PABS.PT or vice versa. The differences in the PABS.PT scores were small, and although statistically significant, no guidance is currently available to suggest whether these represent a clinically relevant difference.

A considerable proportion of HCPs in the UK continue to provide advice to patients about work that is not in line with guideline recommendations. The associations between attitudes, beliefs and reported clinical behaviour suggest that some HCPs continue to practice predominantly within a biomedical model, placing most importance on the severity of tissue damage when determining a patient's level of pain and functional disability. Others have adopted a more behavioural approach to management, embracing the notion that the level of pain and functional loss may be influenced by psychological and social factors in addition to biomechanical factors.

#### 4.2. Comparison to other studies

HCPs in this study had similar attitudes and beliefs to therapists in the Netherlands [28], with Dutch therapists having similar mean biomedical scores (29.5 vs. 31.0), but slightly higher behavioural scores (35.6 vs. 33.0) on the PABS.PT. Direct comparison of subscale scores with studies using the original PABS.PT is not possible due to a different number of items [30,39].

The attitudes and beliefs of HCPs were significantly associated with reported work advice for the vignette patient. Respondents reporting advice 'strictly in line with guidelines' demonstrated stronger behavioural and weaker biomedical orientations than those reporting advice 'not in line with guideline recommendations'. Using a variety of measures, previous studies have demonstrated that advice to restrict work or activities is also associated with a biomedical treatment orientation [28], patho-anatomical focus of training courses [39], higher fear avoidance beliefs of HCPs [17,32,42] and a strong belief that pain and impairment are invariably linked [28,44]. Our study adds to this body of literature by showing a significant association between attitudes and beliefs and reported work advice in HCPs in the UK.

#### 4.3. Implications for clinical practice and future research

The results suggest that the attitudes and beliefs of HCPs are linked to clinical practice and the recommendations provided to patients. These practitioner factors are thus part of the dynamic interaction within LBP care episodes, along with the LBP problem itself and the patient's own perceptions about their problem. This may help explain patient outcomes, although the mechanisms behind this are likely to be complex. It is probable that HCPs' attitudes and beliefs are expressed to patients in a variety of ways, with a range of possible consequences. By restricting activities and work, HCPs may reinforce patient's unhelpful illness perceptions and increase spinal vigilance. Alternatively, they may over-direct the patient by providing strict advice to perform only specific activities and exclude others, encouraging an over-reliance on the HCP [35], which may make it difficult to foster the patients' self-management skills, something recommended as part of best practice for patients with LBP.

The reported clinical behaviour of HCPs illustrates that the majority would provide advice that is strictly or broadly in line with guideline recommendations, however, nearly 30% reported they would advise the described patient to remain off work. Staying at work or an early return to work with NSLBP is recommended [50], as the longer someone is off work the likelihood of them returning steadily diminishes, with a 20% risk of long term disability for those off work for four to six

weeks [51]. Although the management of LBP, in terms of advice about activity and bedrest, seems to be broadly in line with guideline recommendations, our results show that adherence about advising early return to work is suboptimal.

Attitudes and beliefs held by HCPs may help explain why implementation of current LBP guidelines has been slow and difficult [6,8,20,23,33]. Changing clinical behaviour is recognised to be a challenge [27]. Evidence from recent clinical trials suggests that although modest intervention strategies can result in moderate changes in reported adherence to guideline recommendations [8], this does not lead to a corresponding improvement in patient outcomes [9,21,30]. A better understanding of the attitudes and beliefs of HCPs, what influences these and how these relate to outcomes of patients with LBP is needed to inform development of future implementation strategies.

Future work should further test the psychometric properties of the PABS.PT to assess responsiveness and determine appropriate cut offs for 'high' and 'low' scores on the subscales and what constitutes a clinically relevant change. Methods to assess HCP attitudes, beliefs and behaviours warrant further study. For example, the validity of using methods to measure implicit attitudes about LBP, such as those employing automatic responses, could be explored in an attempt to overcome potential social desirability bias in survey responses as HCPs become more aware of clinical guidelines.

#### 4.4. Strengths and limitations

The strengths of this study include the large sample sizes, simple random sampling of UK GPs and PTs, use of a validated beliefs measure, and investigation of potential non-response bias. The response rate of GPs was low, but comparable to other postal surveys of GPs in the UK [4,5,38]. The sample size calculation took this into account and yielded the required sample size for the planned analyses. The response rate of PTs was in keeping with other studies [11,39,41]. Responses to the brief questionnaire were broadly similar to those completing the full questionnaire in terms of attitudes, and recommendations for work and activity. However, some differences in the advice for bedrest suggest that we cannot rule out non-response bias in our survey. Responses to one PABS.PT item showed a stronger biomedical treatment orientation for responders to the brief questionnaire. Also, GPs responding to the brief questionnaire reported advice for bedrest that was less in line with guideline recommendations than responders to the full questionnaire, so for GPs, where the potential for non-response bias is greatest, our survey may underestimate the strength of a biomedical treatment orientation and the numbers providing advice not in line with guideline recommendations.

This study captured self-reported behaviour rather than real clinical practice, which is very difficult to measure. To provide a context for the clinical behaviour questions we used a vignette of a patient with NSLBP, an approach shown previously to have acceptable validity [40,46]. Although we used established tools to assess attitudes, beliefs and clinical behaviours, there may be some overlap in the constructs they measure. We attempted to address this by the wording of instructions and the order of the tools within the questionnaire. The PABS.PT attitudes measure came first with instructions to respond to the *general* attitudinal type statements. The vignette and the behaviour questions came later with the instruction to consider the *specific* management of the patient described.

## 5. Conclusion

This study shows the diversity of the attitudes and self-reported practice behaviour of UK GPs and PTs for patients with NSLBP. Many HCPs believed LBP necessitates some avoidance of activities and the need to be off work. For a patient with a history of being off work since onset of LBP four weeks previously, over a quarter of HCPs recommended further time off work. The attitudes and beliefs of HCPs were associated with their advice about return to work. Future studies need to investigate the associations between HCP factors and patient outcomes, and test if approaches aimed at modifying attitudes, beliefs and clinical behaviours of HCPs can be successful.

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## Appendix A. The vignette used in the questionnaire

A 50-year-old office worker presents with a four-week history of low back pain with referral to the right buttock. The pain initially came on gradually over 24 h. Since the onset of the pain she has been unable to work and has been taking Diclofenac regularly. She also has had moderate to high levels of disability and particularly has difficulty bending and rising from a chair and can stand and walk only for short periods. There is no history of trauma.

Her work consists mainly of computer work with some standing. She feels she has to move slowly and needs to lie down to rest more often than usual. She demonstrates some anxiety and has felt tired and worn out most of the time since the pain started. Her average pain over the last two weeks has been 4 out of a maximum of 10. Her general health is good. On physical examination, there is marked limitation of forward flexion and right paraspinal tenderness. Neurological examination is normal. All other case history, past medical history and physical examination findings are unremarkable, except that she has had two previous episodes of LBP.

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