# Advising people with back pain to take time off work: A survey examining the role of private musculoskeletal practitioners in the UK

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Tables: 4Abstract

Research has demonstrated that health care practitioners’ adherence to guidelines for managing Low Back Pain (LBP) remain suboptimal in recommending work absence, but specific beliefs about their role in maintaining patients at work have not been adequately researched. We examined private Musculoskeletal Practitioners (MPs: chiropractors, osteopaths and physiotherapists) beliefs and reported clinical behaviours in reference to patients’ work. A cross- sectional postal questionnaire of 900 MPs included the Attitudes to Back pain in musculoskeletal practitioners questionnaires (ABS- mp); reported frequency of four work-related behaviours, and a new measure of practitioners’ work-related beliefs. Data from 337 respondents (37%) were analysed. Eighty percent of respondents reported recommending work absence to patients with LBP sometimes, and 14% recommended a work absence often or always. Seventy percent of practitioners never visit the patients’ workplace. Most practitioners report that they prescribe exercises that can be carried out at work. Physiotherapists visited the work place more frequently, and gave less sick-leave certification than either of the other groups. They also regarded work as more beneficial and less of a threat to patients LBP. There were small, but significant correlations between work-related beliefs and reported behaviours. Our study confirms that, in contrast to current guidelines, many practitioners believe that LBP necessitates work absence. Overall, practitioners perceived their role in returning patients to work as limited, and believed that direct contact with employers was beyond their remit. In the UK, physiotherapists appear to be better placed to liaise with work in terms of both their beliefs and activities.

1. INTRODUCTION

Low back pain (LBP) is consistently among the top six most costly health problems [13]. The economic burden due to work days lost, unemployment and treatment costs is considerable. Musculoskeletal disorders account for around 23% of sick certification and 21% of long term incapacity of work in the UK [31]. Back pain has been identified by employers in the UK as the second main cause of absenteeism from work [4]. In the USA, the annual productivity losses resulting from lost work days are estimated to be $28 billion [15]. Although guidelines for clinical management of patients with LBP encourage health care practitioners to advise staying active and returning to work [17], many clinicians hold a range of beliefs and attitudes about back pain which may contradict this advice, and these beliefs have been linked to practitioners clinical decisions and behaviours [1,8,12,23,24].

After general practitioners, the three professional groups who most commonly treat LBP are chiropractors, osteopaths and physiotherapists (musculoskeletal practitioners) [16]. However, research of practitioners’ beliefs and clinical behaviours has focused on general practitioners and physiotherapists. Far less is known about beliefs and behaviours in other groups of musculoskeletal practitioners, and almost no research exist in those practicing in the private sector. There is some evidence that long term treatment is common in these groups [20] and that such practitioners feel less able and willing to refer to other practitioners [21]. In reference to work, a qualitative study of 42 private musculoskeletal practitioners [22] found that return to work was often a primary goal of treatment and that practitioners regarded work to be beneficial to health. However, many practitioners expressed a belief that work specific duties are often causal, or exacerbate the onset and persistence of back pain. A recommendation of work absence, commonly described as ‘a short break from work’ to allow healing was common.

The link between practitioners’ beliefs and their clinical decisions in LBP have been increasingly studied in recent years [1,8,10] but measurement of beliefs has been restricted to general approaches, such as psychosocial versus biomedical. This study aimed to measure self-reported work-related behaviours and beliefs. Based on previous qualitative research in this group [22], we hypothesized that active involvement with patients’ work (visiting the work place) would be rare and that prescribing exercises to fit the work routine would be common; These behaviours have not been investigated quantitavely in this group. Based on previous work in other groups [1,12,23] we predicted that advising work absence would be common, but sick leave certification would not be common practice. We hypothesized that practitioners who believed work to be a threat to LBP would be more likely to recommend work absence. In addition, the study aimed to improve measurement of practitioner’s beliefs about back pain by developing a comprehensive questionnaire dedicated to work-related beliefs based on qualitative data, and by linking work-related beliefs to general beliefs about back pain and to self-reported work-related behaviours. Finally, we planned to explore differences between the professional groups.

1. METHOD

*2.1) Design and setting*

A cross sectional postal survey was carried out between January and June 2010. Ethical approval was obtained from the University Ethics Committee, and practitioner’s consent was assumed if the questionnaires were returned.

*2.2 Sample and recruitment*

A postal questionnaire was sent to 300 osteopaths, 300 physiotherapists and 300 chiropractors in Scotland, Wales and England, (900 in total). The sampling frame used was based on geographic distribution; 11% in Scotland, 11% in Wales, 26% in the South East of England, 26% in the North of England and the Midlands and 26% in the West of England. Addresses of clinicians were extracted from professional registers. While the majority of osteopaths and chiropractors in the UK work in the private sector, most physiotherapists are employed by the National Health Service. We therefore used a register for physiotherapists advertising private treatment. A postal reminder was sent out 6 weeks later to non-responders. A sample size calculation was based on the recommendation of a sample of 300 as ‘good’ for the purposes of factor analysis [29]. We conservatively estimated a response rate of around 30%, resulting in a sample of 300 responders, which would allow for multivariate analysis.

*2.3) Measurement*

The survey contained four sections:

2.3.1) A section measuring age, gender, years in practice, whether they worked for the NHS, private, or both, and the average number of low back patients seen per week. The information sheet and instructions specified that low back pain in this context referred to musculoskeletal low back pain, sometimes described as ‘non-specific’.

2.3.2) A section measuring work-related behaviour. Four behaviours, representing the most salient work-related themes were selected from previous research in these groups [20]. These included visiting the patients’ workplace, giving sick leave certificates; recommending work absence, described as ‘a short break from work’, and prescribing exercises that could be incorporated into the patients’ work routine. We chose the wording for each behavior that most closely corresponded to verbatim quotes in previous work [22]. The frequency of carrying out each behaviour was assessed, with possible responses to each item ranging on a four point scale between Never to Always.

2.3.3) The Attitudes to Back pain Scale-musculoskeletal practitioners (ABS-mp, [21]) was included to explore the relationship between general beliefs about back pain and work-related behaviours. The ABS-mp contains two sections, labelled personal interaction and treatment orientation. Personal interaction contains four factors; limitations on sessions, items about practitioners limiting the number of sessions offered (4 items); psychological, items measuring practitioners willingness to engage with psychological issues with their patients (4 items); connection to healthcare system, items measuring practitioners perception of their links within the health-care system and provision of available services (3 items); confidence and concern, items measuring practitioners perceptions of their own and others’ clinical limitations (2 items). Treatment orientation consists of two factors; re-activation, items concerning return to work, daily activity and increasing mobility as a primary goal of treatment, (3 items) and biomedical, items concerning the belief that there is an underlying structural cause to the pain (3 items). The internal structure of the questionnaire has been shown to have good psychometric properties in confirmatory factor analysis [21].

2.3.4) Work-related beliefs: Items were developed from themes and verbatim quotes in semi-structured interviews with 42 musculoskeletal practitioners [22]. The global themes included beliefs about: 1) the benefit versus threat of work to health in general and to back pain specifically (e.g., ‘in almost cases of LBP, factors associated with work contribute to the problem’); 2) work- related roles of musculoskeletal practitioners, including contact with employers, targeting return to work as a primary goal (e.g., ‘Returning my patients to work is not my main priority as a clinician’); 3) the need for patients to take a short break from work to allow the body to heal (e.g., ‘A short break from work can often prevent further problems’); 4) employers willingness to help patients with LBP (e.g. ‘Few employers are sympathetic to the needs of my patients’). The questionnaire contained twenty eight items worded according to best practice in questionnaire development, with a seven point response ranging from completely disagree to completely agree [18].

2.4) Planned analyses:

We planned to use descriptive statistics to summarise data for the entire sample, and by professional group. Group comparisons were planned using parametric and non-parametric statistics, depending on violation of assumptions for parametric statistics. Spearman correlations were planned to explore the relationship between general beliefs about back pain and work-related beliefs, and between beliefs about work and reported behaviours. Exploratory factor analysis was planned for the new work-related beliefs questionnaire, based on the following criteria: We planned to use direct oblimin rotation and principal components extraction methods. The selection of the number of components to be rotated was based on the Kaiser criterion and examination of the scree test of eigenvalues plotted against factors [3]. In addition, items which loaded less than .4 on any factor would be excluded, as were those which loaded greater than .3 on more than one factor.

1. RESULTS

3.1) In total 352 out of 900 (39%) practitioners responded; 126 osteopaths (42%); 112 chiropractors (37%) and 113 physiotherapists (37%). Questionnaires were excluded if at least 2 items were missing from any of sections 2, 3 or 4 (n=15). Analysis was therefore carried out on 337 questionnaires. Information for the sample is presented in table 1. Practitioners across the professional groups were mostly between ages 30-50. The gender distribution in osteopaths and chiropractors was equal, but physiotherapists were 75% female. While almost all the osteopaths and the chiropractors worked privately only, 20% of the physiotherapists also practiced in the National Health Service.

Table 1 around here

3.2) Reported behaviours:

The frequency of reported work-related behaviours is presented in table 2. The majority of practitioners (70%) never visited the workplace to advise and prescribe ergonomic changes. A common reported practice was the prescription of exercises that could be incorporated in the work routine (83% report often or always). Prescribing sick leave certification for low back pain was carried out occasionally by practitioners (around half the sample reported never), but was not common (less than 2% reported this to happen often or always). Advising patients to take work absence, described as a short break from work was extremely common (80% reported sometimes, with an extra 13% reporting doing so often and always). The differences in return to work behaviours amongst the three types of practitioners was tested with Kruskal-Wallis tests and paired comparisons: Results indicated that physiotherapists visited the work place more frequently than either of the other groups *(H* (2) =22.31, *p<*0.001). Osteopaths were more likely to give out sick leave certificates than chiropractors, who in turn were more likely to give out sick leave certificates than physiotherapists (*H* (2) =97.85, *p<*0.001). Ninety-five percent of physiotherapists either always or often incorporated exercise regimes within the patients work routine compared to 70% of osteopaths and 81% of chiropractors (*H* (2) =45.31, *p* < .001). There were no differences between the three groups in reporting recommending a short break from work.

Table 2 around here

3.3) Factor analysis of work-related beliefs questionnaire:

We carried out the exploratory factor analysis as specified in the analysis plan (see table 3). This resulted in a 14 item scale, with four subscales accounting for 60% of the total variance. The four subscales were named as: The benefit of work in low back pain patients (possible scores between 7-28, the higher scores indicating a belief that continuing to work with LBP is beneficial), Employers attitudes, measuring a perception of whether employers were helpful in returning patients to work (possible scores 7-28, higher scores indicating a belief that employers generally want to help and are happy to co-operate), Direct communication, measuring whether practitioners believed that direct communication with the employer was central to their role (possible scores 7-21, higher scores indicating that direct communication is perceived as outside of their role and remit), and finally, Work threat, measuring whether work was perceived as an exacerbating factor in LBP (possible scores 7-21, higher scores indicating a belief that work is harmful to patients).

Table 3 around here

A total score for each of these four subscales was calculated and the three practice types were compared (see table 4).

Table 4 around here

3.4) Comparison of work-related beliefs between professional groups

On the perceived benefit of work, a one-way analysis of variance revealed a significant difference between the professional groups (F(2, 336) = 9.88, p<0.001, two tailed). Post-hoc analyses indicated that physiotherapists endorsed significantly more strongly the benefits of work than either the osteopaths (p<0.001) or the chiropractors (p<0.05). There was also a significant difference between the groups in the perception of work as a threat to back health. Due a violation of homogeneity of variance, a Kruskal-Wallis test was used, and revealed a significant difference between practice type (χ2(2, N = 346) = 25.97, p<0.001, two tailed). Mann-Whitney comparisons of the groups using Bonferroni corrections indicated that physiotherapists agreed significantly less than either osteopaths (U = 4716.5, N1 = 125, N2 = 113, p<0.001) or chiropractors (U = 4031, N1 = 108, N2 = 113, p<0.001) with the notion that work can either cause or exacerbate back pain. There was no significant difference between osteopaths and chiropractors (U = 6722, N1 = 125, N2 = 108, p>0.05).

There was no significant difference between practice type for either the helpfulness of employers subscale (F(2, 343) = 1.937, p>0.05, two tailed) or the importance of direct communication between practitioner and employers scale (F(2, 340) = 0.416, p>0.05, two tailed).

3.5 Relationship between beliefs and reported behaviours

We carried out Spearman correlations between reported behaviours and the belief sub-scales from the ABS-mp and the new work-related questionnaire. We report only correlations that were significant at p<0.01. Cohen gives the following guidelines for the social sciences: small effect size, *r* = 0.1 − 0.23; medium, *r* = 0.24 − 0.36; large, *r* = 0.37 or larger [5]. The relationships reported below represent mostly small effect size, indicating that beliefs measured account for only a small amount of the variance in practitioners reported behaviour. Practitioners who recommended work absence were less likely to believe in the benefits of work (r= -0.16), and held more biomedical beliefs about LBP (r=0.15). Practitioners who tended to prescribe more sick leave certification were more likely to see work as a threat to back pain (r=0.19), saw work as less beneficial (r=-0.14), tended not to limit the number of sessions for LBP (r= 0.23), and felt less connected to a health care network (r=0.16). Practitioners who tended to prescribe exercises that could be carried out within work believed more strongly in the general benefits of work (r=0.23), saw work as less of a threat to LBP (r=-0.16), felt more connected to a health care network (r=0.18) and saw the main goal of treatment in reactivating patients (r=0.16). Practitioners who visited the work place more often were more likely to limit the number of sessions offered to patients (r=0.17).

1. DISCUSSION

4.1) Main findings

The findings from this and previous studies suggest that many practitioners do not endorse direct work related activity as part of their remit. Many practitioners do not regard establishing contact with work as part of their role, and view at least some aspects of work as detrimental to patients’ recovery. The majority of practitioners recommend work absence to at least some patients with LBP. The findings also suggest that physiotherapists in the UK have higher levels of belief in the benefits of work, and lower beliefs in work as a threat to LBP than either osteopaths or chiropractors. In addition, physiotherapists tended to endorse limiting the number of treatment sessions, were inclined to engage in psychological approaches, and felt better connected to a network of health care than osteopaths and chiropractors.

4.2) Comparison to other studies

These findings complement evidence from other practitioner groups: A survey of general practitioners (n=442) and physiotherapists (n=580) responses to a vignette depicting a patient with LBP found that 28% reported that they would advise the patient to take work absence [1]. A survey of general practitioners in the UK found that over 70% of the respondents regarded patients’ work-related factors as outside of their remit [6]. In line with previous work [22] the findings from this study suggest that the practice of recommending work absence is still very common. Previous research suggests that the recommendation is not for bed rest, but rather for active rehabilitation away from work [22]. A large survey in musculoskeletal practitioners found that almost none endorsed bed rest for a LBP patient vignette [10] suggesting that the recommendations about bed rest have been accepted and implemented. In previous qualitative research [22] practitioners stated that work absence (described as ‘a short break’) is needed (even when patients are resistant) to allow healing and time for rehabilitation activities. They viewed the continuation of full work duties in the presence of back pain as detrimental, and some argued that there is no evidence to support or refute the efficacy of taking a short break from work and engaging instead in active rehabilitation in preventing further problems.

4.3) Implications for clinical practice and future research

If return to (adjusted) work is beneficial to patients, and is a primary goal for cost-savings, bringing these practitioners on-board and altering their perceptions of the individual-employer-clinician triad is important. This is important because it has been suggested that cooperation, communication and agreed goals between workers, employers and practitioners reduces disability and related absence from work [31]. Work-related recommendations now exist for physical therapy practitioners [28]. It is reasonable to assume that musculoskeletal practitioners would be well placed to advise employers about adjusting duties to maintain employees at work during back pain episodes, but the advantage of such co-operation has not been investigated. Indeed, practitioners interviewed about such contact [22] have reported that some patients explicitly request that practitioners do not contact their work-place due to fear of stigmatization. The effect of short, but active work absence merits further attention: Advising work absence may increase catastrophic thinking in patients and result in avoidant behaviours [20,30]. To our knowledge, there are no trials directly testing the long-term effect of taking a short active absence from work for LBP. Trials of modifying work duties have not been promising: for example, a cluster RCT of Norwegian employees on sick leave for LBP examined the effects of interventions aimed to increase the use of returning to modified work duties against full sick leave, and found no differences across the groups on days on sick leave, return to work, quality of life and patient satisfaction [27]. The effects of physical conditioning programs in reducing sick leave for workers with back pain remains uncertain [25,26], but there is evidence to support specifically tailored return-to-work interventions over usual care [11].

Recommending work absence may be linked to patient expectations: A qualitative study with general practitioners reported that practitioners struggled to implement guidelines about recommending staying active because they perceived that patients expected to receive advice to rest [7]. Educating patients is therefore also an important priority: Media campaigns have been successful in some instances in changing patients’ perceptions and behaviours [2,32] but this has not consistently extended to reducing work absenteeism.

Reports of visiting the work place directly, and contacting employers to allow for coordinated action to support people staying at work during LBP were extremely low in this study. This identifies an important gap, because integrated care at work has shown promising results: A randomised controlled trial aiming to reduce time off work has demonstrated that an integrated approach between physiotherapists and occupational health services that used ergonomic interventions coupled with graded activity based on cognitive-behavioural principles can significantly reduce work absenteeism [14].

Finally, the relationship between beliefs and behaviours in practitioners warrants further investigation: Previous research using self-report measures either in the form of questionnaire or response to patient vignettes [8,12] has not always demonstrated a correlation between beliefs and behavior [33]. A current systematic review of the relationship between practitioners’ beliefs and behaviours concluded that there is moderate evidence that practitioners’ fear avoidance beliefs are associated with reported sick leave prescription, but a biomedical orientation is not associated with the number of sickness certificates issued for LBP [9].

4.4) Strengths and limitations

We recognise that the study has several limitations. The response rate across the three professions was 37%, and though this is in line with similar research with practitioner groups [1], it is possible that practitioners who were more interested in work-aspects were more likely to respond. We note that this potential bias would most likely result in an under-estimation of the advice for work absence.

In addition, the factor structure of the Work-related Beliefs questionnaire will need to be confirmed in a new sample, using confirmatory factor analysis. We also note that our findings may not represent musculoskeletal practitioner populations outside the UK, and within the National Health Service (NHS) in the UK. Most importantly, we note that self reported behaviours may not represent actual behaviours, and that the impact of practitioner advice on patients in reference to absenteeism from work is not known.

Previous research has examined practitioners behaviours and beliefs in reference to sick leave certification [34] but beliefs have been measured either in broad terms, in relation to having a psychosocial or a biomedical approach, or in reference to specific beliefs about LBP, such as fear avoidance beliefs [8]. We developed a new questionnaire, exploring specifically the attitudes and beliefs of osteopaths, chiropractors and physiotherapists about their role in returning low back pain patients to work. The questionnaire was based on qualitative data extracted from interviews with samples of each of the professional groups [22], and thus has the advantage of good face validity. In addition, beliefs about the benefits and threat of working while having LBP correlated (albeit with small effects) with reported behaviours about recommending work absence and prescribing sick leave. A direct measure of sick leave certification, which has the advantage of objectivity, would enhance the study, but this was not appropriate to our population of private practitioners, amongst whom certification was generally low. Previous research suggested that this population of practitioners saw certification as the remit of general practitioners, rather than themselves [22]. However, the low levels of prescribing sick certification may reflect the perceived role and legal standing of certification from this population, and may not generalize to musculoskeletal practitioners outside of the UK.

Other researchers have selected to present a vignette of a typical LBP patient and measure reported behaviour in response [1,10]. The assumption is that the response to the vignette represents typical behaviour, but quantification of how common this behaviour is cannot be assessed. The measurement used in the current study captures not only the work-behaviours that are most salient to this population [22] but provides a self-reported estimate of the frequency of this behaviour. The behaviours selected could impact considerably on work absenteeism: Visiting patients’ workplace allows provision of more accurate ergonomic advise and liaison with employers about maintaining patients at work; recommending exercises that can be carried out at work will enhance adherence from patients who do not wish to take time off work; giving sick leave certification and recommending ‘a break’ from work will increase absenteeism.

Finally, we did not directly ask practitioners about their role in advising about modifying work duties, rather than advising work absence. Previous research [22] suggests that some practitioners write a letter of advice about work modification, and this practice and its impact on patients’ outcomes warrants further investigation.

4.5) Conclusion

Many private musculoskeletal practitioners in the UK do not see their role as directly intervening to reduce work absenteeism due to LBP. Many practitioners believe that work duties cause and exacerbate LBP, and it is common for practitioners to recommend a short absence from work. Direct contact with employers and visits to the work setting are extremely rare, thus reducing the potential for holistic integrated management of the problem.

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REFERENCES

[1] Bishop A, Foster NE, Thomas E, Hay EM. 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. Pain 2008;135(1-2):187-195.

[2] Buchbinder R, Jolley D, Wyatt M. 2001 Volvo Award Winner in Clinical Studies: Effects of a media campaign on back pain beliefs and its potential influence on management of low back pain in general practice. Spine (Phila Pa 1976) 2001;26(23):2535-2542.

[3] Cattell RB. The scree test for the number of factors. Multivariate Behavioural Research 1966;1:245-276.

[4] CBI. On the path to recovery: Absence and workplace health survey 2010

[5] Cohen J. Statistical Power Analysis for the Behavioural Sciences. New Jersey: Lawrence Erlbaum Associates, 1988.

[6] Coole C, Watson PJ, Drummond A. Work problems due to low back pain: what do GPs do? A questionnaire survey. Fam Pract 2010;27(1):31-37.

[7] Corbett M, Foster N, Ong BN. GP attitudes and self-reported behaviour in primary care consultations for low back pain. Fam Pract 2009;26(5):359-364.

[8] Coudeyre E, Rannou F, Tubach F, Baron G, Coriat F, Brin S, Revel M, Poiraudeau S. General practitioners' fear-avoidance beliefs influence their management of patients with low back pain. Pain 2006;124(3):330-337.

[9] Darlow B, Fullen B, Dean S, Hurley D, David Baxter G, Dowell A. The association between health care professional attitudes and beliefs and the attitudes and beliefs, clinical management, and outcomes of patients with low back pain: A systematic review. Eur J Pain 2011;Epub ahead of print.

[10] Evans DW, Breen AC, Pincus T, Sim J, Underwood M, Vogel S, Foster NE. The effectiveness of a posted information package on the beliefs and behavior of musculoskeletal practitioners: the UK Chiropractors, Osteopaths, and Musculoskeletal Physiotherapists Low Back Pain ManagemENT (COMPLeMENT) randomized trial. Spine (Phila Pa 1976) 2010;35(8):858-866.

[11] Hlobil H, Staal J, Spoelstra M, GA A, Smid T, Van Mechelen W. Effectiveness of a return-to-work intervention for subacute low-back pain. Scand J Work Environ Health 2005;31(4):249-257.

[12] Houben RM, Ostelo RW, Vlaeyen JW, Wolters PM, Peters M, Stomp-van den Berg SG. Health care providers' orientations towards common low back pain predict perceived harmfulness of physical activities and recommendations regarding return to normal activity. Eur J Pain 2005;9(2):173-183.

[13] Lamb SE, Hansen Z, Lall R, Castelnuovo E, Withers EJ, Nichols V, Potter R, Underwood MR. Group cognitive behavioural treatment for low-back pain in primary care: a randomised controlled trial and cost-effectiveness analysis. Lancet 2010;375(9718):916-923.

[14] Lambeek LC, Bosmans JE, Van Royen BJ, Van Tulder MW, Van Mechelen W, Anema JR. Effect of integrated care for sick listed patients with chronic low back pain: economic evaluation alongside a randomised controlled trial. BMJ 2010;341:c6414.

[15] Maetzel A, Li L. The economic burden of low back pain: a review of studies published between 1996 and 2001. Best Pract Res Clin Rheumatol 2002;16(1):23-30.

[16] Maniadakis N, Gray A. Health economics and orthopaedics. J Bone Joint Surg Br 2000;82(1):2-8.

[17] National Institute for Health and Clinical Excellence. The Guidelines Manual. London: National Institute for Health and Clinical Excellence, 2009.

[18] Nunnally JC, Bernstein LH. Psychometric Theory. New York: McGraw-Hill, 1994.

[19] Ostelo RW, Stomp-van den Berg SG, Vlaeyen JW, Wolters PM, de Vet HC. Health care provider's attitudes and beliefs towards chronic low back pain: the development of a questionnaire. Man Ther 2003;8(4):214-222.

[20] Pincus T, Vogel S, Breen A, Foster N, Underwood M. Persistent back pain - why do physical therapy clinicians continue treatment? A mixed methods study of chiropractors, osteopaths and physiotherapists. Eur J Pain 2006;10:67-76.

[21] Pincus T, Vogel S, Santos R, Breen A, Foster N, Underwood M. The attitudes to back pain scale in musculoskeletal practitioners (ABS-mp): the development and testing of a new questionnaire. Clin J Pain 2006;22(4):378-386.

[22] Pincus T, Woodcock A, Vogel S. Returning Back Pain Patients to Work: How Private Musculoskeletal Practitioners Outside the National Health Service Perceive Their Role (an Interview Study). Journal of Occupational Rehabilitation 2010;20(3):322-330.

[23] Poiraudeau S, Rannou F, Baron G, Le Henanff A, Coudeyre E, Rozenberg S, Huas D, Martineau C, Jolivet-Landreau I, Garcia-Mace J, Revel M, Ravaud P. Fear-avoidance beliefs about back pain in patients with subacute low back pain. Pain 2006;124(3):305-311.

[24] Rainville J, Carlson N, Polatin P, Gatchel RJ, Indahl A. Exploration of physicians' recommendations for activities in chronic low back pain. Spine (Phila Pa 1976) 2000;25(17):2210-2220.

[25] Schaafsma F, Schonstein E, Ojajarvi A, Verbeek J. Physical conditioning programs for improving work outcomes among workers with back pain. Scand J of Work Environ Health 2011;37(1):1-5.

[26] Schaafsma F, Schonstein E, Whelan K, Ulvestad F, Kenny D, Verbeek J. Physical conditioning programs for improving work outcomes in workers with back pain. Cochrane Database Syst Rev 2010;20(1):CD001822.

[27] Scheel IB, Hagen KB, Oxman AD. Active sick leave for patients with back pain: all the players onside, but still no action. Spine (Phila Pa 1976) 2002;27(6):654-659.

[28] Shaw W, Main C, Johnston V. Addressing occupational factors in the management of low back pain: Implications for physical therapist practice. Phys Ther 2011;95(5):777-789.

[29] Tabachnick BG, Fidell LS. Using Multivariate Statistics. Boston: Allyn and Bacon, 2001.

[30] Vlaeyen JWS, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain 2000;85(3):317-332.

[31] Waddell G. Preventing incapacity in people with musculoskeletal disorders. BMJ 2006;77-78(1):55-69.

[32] Waddell G, O'Connor M, Boorman S, Torsney B. Working Backs Scotland: a public and professional health education campaign for back pain. Spine (Phila Pa 1976) 2007;32(19):2139-2143.

[33] Watson PJ, Bowey J, Purcell-Jones G, Gales T. General practitioner sickness absence certification for low back pain is not directly associated with beliefs about back pain. Eur J Pain 2008;12(3):314-320.

[34] Werner EL, Cote P. Low back pain and determinants of sickness absence. Eur J Gen Pract 2009;15(2):74-79.