FACTORS ASSOCIATED WITH THE TRANSITION FROM ACUTE TO CHRONIC LOW BACK PAIN: A COMPARISON OF THE BELIEFS AND PERCEPTIONS OF THREE PROFESSIONAL GROUPS

Frank Donnoli, BAppSc(chiro), GradDipArts, GradDipPsych, GradCertTert Ed, MEd[1]

[1] *Chiropractor and Psychologist Lecturer*
BP280 Year 2 & 3 coordinator
RMIT University

FACTORS ASSOCIATED WITH THE TRANSITION FROM ACUTE TO CHRONIC LOW BACK PAIN: A COMPARISON OF THE BELIEFS AND PERCEPTIONS OF THREE PROFESSIONAL GROUPS

ABSTRACT

Low back pain (LBP) disability is the most expensive benign condition in industrialized countries and is the leading cause of disability in persons under the age of 45. The great cost and the poor outcomes among chronic LBP patients has led to treatment providers attempting to find a solution to the problem. Chiropractors, psychologists and medical practitioners are part of that group. This study examined the relationship between these groups as to their beliefs, and perceptions of the current literature as to the causes for the transition from acute to chronic LBP. Practitioners were chosen at random from either lists of registered members or the yellow pages. Results indicate that there was general agreement amongst the three groups however the significant differences between the groups; job and medical factors, and within the groups, diagnostic, psychosocial and health behaviour factors proved to be counter-intuitive. (Chiropr J Australia 2016;44:188-202)

Key Indexing Terms: Low Back Pain; Chiropractic; Perceptions

INTRODUCTION

Despite technological advances in medicine, the incidence of low back disability is increasing at an alarming rate in Western society. Low back pain disability is the most expensive benign condition in industrialised countries and is the number one cause of disability in persons aged under 45 (1-3). It has been estimated that in any given year about 3% - 4% of the population in all industrialised countries has temporarily disabling low back pain (LBP) episode and that more than 1% of the working age population is permanently disabled by this problem (3). Only about 5% seek medical advice. Most of these respond to conservative treatment; however, approximately 10% of those who experience an acute episode of LBP go on to become chronic pain patients. The International Association for the Study of Pain (IASP) has defined chronic pain as pain that persists beyond the normal time for healing. In practice this may be less than 1 month, or more often, more than 6 months. However it is generally accepted to be 3 month(4). Acute pain is pain that persists up to 6 months. Health expenditure in the United States for LBP is similar to that used for cancer and grew 65% between 1997 and 2005 (5). However the data does not indicate that the increase in expenditure is leading to any improvement in result (6). In America it is estimated that low back pain accounts for 11 billion dollars in lost wages every year. Simulation models suggest that the total cost of this problem in America may be greater than 20 billion dollars per year (7). In Australia the estimated cost is thought to be in the vicinity of 10 billion Aus dollars per annum.

The great cost and the poor outcomes among chronic LBP patients has given rise to a number of treatment providers attempting to find a solution for this problem. Chiropractors, medical practitioners and psychologists are part of the group that deal with the assessment and treatment of different aspects of LBP. Each profession brings with it its own knowledge and beliefs, based on philosophy and training, as to the causes of chronic LBP. It would be plausible therefore to infer that beliefs and perceptions would have a direct bearing on the ultimate outcome of the effectiveness of the treatment and have an influence on the transition from the acute to chronic stage.

The way practitioners approach their clinical work will depend on beliefs, perceptions and influences that have taken, in many cases, years to establish. The transition from acute LBP to chronic LBP is a problem that may be approached from a number of perspectives, e.g. physical, psychosocial, work-related. The decision that each profession has to make is dependent upon 2 factors: their beliefs in the factors associated in the transition from acute to chronic pain, and their perceptions of current research findings about the factors associated with the transition from acute to chronic pain. Their beliefs are drawn from training, experience, figures of authority, personal philosophy, and current research. However, these beliefs may vary considerably from their perceptions of the current research. For example, someone that has been working in the field of chronic pain for many years may believe that the only way to treat chronic pain is through medication but his perception of the literature tells him that medication only serves to make the individual in pain become dependent on the medication then develop a tolerance so that the medication then becomes ineffective. In this case the beliefs are subjective, based on experience, the research findings however, are objective in the sense that they are available, in theory, to all professionals involved in pain, regardless of their beliefs. If all the treating practitioners are being exposed to the same objective information then the end result should be all of them coming to the same conclusions.

Thirty years of decision-making literature states that there are many factors that may bias a decision, as in the case of an accommodation bias where information that is supportive to ones beliefs is utilised, the remaining information being discarded. The decision as to which perspective to use in the treatment of LBP is similarly wrought with many biases and therefore subject to many influences. However, in all cases the major influence should be the current state of knowledge in the relevant areas (8).

There is an abundance of literature dealing with acute and chronic LBP. However there is very little work about factors that may have an influence in the transition from acute to chronic pain. Cats-Baril and Frymoyer (7), produced a predictive-risk model of LBP, which was developed by a panel of 6 experts in the fields of chronic pain and disability. It is comprised of 28 factors organised into 8 categories. These 8 categories- job, psychosocial, injury, diagnostic, demographic, medical history, health behaviours and anthropometric- cover all the possible areas, according to the panel, that may have value in predicting the transition from acute to chronic pain. Current research in the area of pain prediction implicates the psychosocial category

as being 1 of the more likely categories to have high predictive value in determining which factors are likely to be involved in the transition from an acute to a chronic LBP. Gatchel et al (3) evaluated the predictive power of a comprehensive assessment of psychosocial and personality factors in identifying acute LBP patients who subsequently developed chronic LBP. Their results revealed the importance of 3 psychosocial measures: Self-reported pain and disability, scores on scale three of the Minnesota Multiphasic Personality Inventory (MMPI) and workers compensation and personal injury insurance status. Barnes et al (9), looked at a variety of psychological, socioeconomic and demographic data, analysed to determine if there were differences among groups. Several factors were found to distinguish among the groups, including MMPI and Million Behavioural Health Inventory (MBHI) scale scores, prior surgical history, level of workers compensation and pain intensity ratings. The results confirm the presence of psychosocioeconomic differences among chronic LBP patients. Klenerman et al (10) found evidence of psychological morbidity, particularly fear avoidance behaviour would be manifest from the onset of the presenting attack in susceptible subjects. Results suggest that at the earliest stage of LBP, fear should be identified and where this is severe, pain confrontation should arguably form part of the approach treatment. Burton (11) suggests in his work that early identification of psychosocial problems is important in understanding, and hopefully preventing, the progression to chronicity in low back trouble. Valat (12) states that the involvement of psychological factors is controversial, however progression to a chronic pattern of pain is more closely dependent on demographic, psychosocial and occupational factors than on the medical characteristics of the spinal condition itself.

Practitioners involved in the assessment and management of LBP are regularly faced with the challenge to make important decisions about which method to use in the treatment of LBP. These decisions are based on several factors including their training and, one would hope, current clinical literature. The beliefs of the therapists and their perceptions of the current literature are the two factors that are going to be instrumental in this decision making. There is currently very little known about the understanding professional groups have about the transition from acute to chronic pain. Each professional group being examined in this study, has developed, throughout the term of their study, different theoretical and perhaps philosophical beliefs as to the reasons for the transition from acute to chronic pain. It is these factors, and other biases that may be used as a basis for the decisions they will make in regards to the appropriate treatment regime. It is possible therefore that if the information used to make decisions in regards to which treatment to use in the initial stages of a LBP is not in keeping with developing trends in current literature, then practitioners may inadvertently influence longer term outcomes in an adverse manner. This study is based on these premises and intends to compare three types of therapists who deal with LBP, namely health psychologists, chiropractors and medical practitioners, and who have received training based on different theoretical and clinical principles, with the following aims:

1. To compare the 3 groups with regard to their beliefs in the importance of various factors associated with transition from acute to chronic LBP
2. To compare the 3 groups with regard to their perceptions of current research findings regarding the relative importance of various factors associated with the transition from acute to chronic pain
3. To examine the relationship between beliefs and perceptions of current research literature among the groups

Based on research on decision-making biases (8), I hypothesise that there will be differences among these 3 groups in both their beliefs and perceptions of current literature regarding the factors associated with the transition from acute to chronic pain.

METHODS

Subjects

The subjects for this study were recruited from a random sample of registered chiropractors, medical practitioners and health and clinical psychologists. Initially 71 chiropractors, 60 psychologists and 60 medical practitioners were chosen, but due to the low return rate from the GP's, a further 60 questionnaires were sent to this group. In all a total of 251 questionnaires were mailed.

As it is a regular occurrence for chiropractors and medical practitioners to see patients with LBP, the Chiropractors Association of Australia (CAA) was contacted and asked for a mailing list of a random sample of chiropractors registered in Victoria. The medical association was also contacted and they recommended that a random sample be obtained from the yellow pages telephone directory. Finally the Australian psychological society (APS) were contacted and asked for a random sample of members of members of the colleges of health and clinical psychologists, psychologists more likely to see people with chronic LBP, and after fulfilling some requirements such as sending a proposal and proof of ethical approval, the APS supplied a list of 60 members of the colleges of health and clinical psychologists. The return rate for the three groups was poor. Of the 71 questionnaires mailed to chiropractors, 23 were returned, a return rate of 32% of the 60 sent to the psychologists, 12 were returned, a return rate of 20% and of the 120 mailed to the medical practitioners, and 18 were returned, a return rate of only 15%.

Data Acquisition

\Each practitioner received by mail a covering letter explaining the study and a 3-page questionnaire that consisted of a page defining terms, 2 pages that required rank ordering of 8 factors thought to be involved in the transition from acute to chronic pain and a final page listing demographic information. A copy of the questionnaire can be found in appendix 1.

RESULTS

Return rates can be seen in table 1. All data were coded into a single data spreadsheet for analysis using SPSS (Chicago, IL). The variable representing the professional groups was coded 1 for the chiropractors, 2 for the psychologists and 3 for the medical practitioners. The next 8 variables represented beliefs and were scored 1 to 8, with 8 being the least important and 1 being the most important, followed by 8 variables representing perceptions once again scored 1 to 8, with 8 being the least important and 1 the most important. The final 4 variables represented the number of hours spent treating LBP patients, the number of years of experience treating LBP patients, qualifications and what the practitioners thought was important in the prevention of chronicity. The last 4 variables however were not utilized in this study. The mean rankings, standard deviations (SD), *F* scores, indicating whether there is statistical significance amongst the groups and *p* values indicating homogeneity of variance for the factors that the practitioners believed to be important in the transition from acute to chronic LBP are displayed in table 2. The results for their perceptions of the current literature are displayed in table 3.

A 2-way mixed factorial analysis was performed for the beliefs and perceptions for each of the 8 factors. The between subjects factor was group (chiropractor, psychologist and medical practitioner), and the within subjects factor was the belief-perception difference. No significant interaction was found between the professional group and the belief-perception difference for any of the 8 factors. Regarding the group main effect, significant differences amongst the 3 professional groups were found for the following factors: Job factors ($p = .002$) and medical factors ($p = .010$). Regarding the difference between the beliefs and the perceptions, significant results were obtained for the factors: diagnostic factors ($p = .001$), psychological factors ($p = .001$), and health behavior factors ($p = .036$).

Figures 1 and 2 show the difference between the 3 groups in regard to their ranking of the factors job and medical. In both cases the scoring of the medical practitioners accounted for the significant differences between the three groups. Figure 3 indicates that the 3 groups beliefs about the importance of psychological factors in the transition from acute to chronic LBP, rate higher than their perceptions of the literature, as is indicated by the smaller numbers which signify higher ranking. Figure 4 indicates a reversal of the findings in graph 3, here the 3 groups rank perceptions of the literature higher than their own beliefs in regards to the value of diagnostic factors in the transition from acute to chronic LBP. Figure 5 indicates that the groups ranked their beliefs that health behaviours were more important, higher than their perceptions of the literature.

Table 1. Return Rate of Questionnaires

Profession	Number Sent	Number Returned	Percent Returned
Chiropractors	71	23	32
Psychologists	60	12	20
Medical Practitioners	120	18	15

Table 2. Ranked Mean scores, standard deviations, *f* and *p* values for the beliefs of the importance of the eight factors in the transition from acute to chronic LBP.

Factor	**Chiropractors**		**Psychologists**		**Medical Practitioners**			
	M	**SD**	**M**	**SD**	**M**	**SD**	***f***	***p***
Injury	3.65	1.79	3.58	2.23	4.10	2.49	0.3024	0.7404
Job	4.82	2.37	5.83	1.95	3.28	1.13	6.7833	0.0025
Demographics	6.30	1.98	6.33	1.72	5.83	1.72	0.4152	0.6690
Medical	4.00	2.29	4.00	1.90	5.89	1.28	5.7963	0.0056
Health Behaviour	3.57	2.01	4.42	1.83	4.39	2.20	1.0867	0.3452
Anthropometric	4.43	2.23	3.91	1.50	4.07	2.20	0.2574	0.7741
Psychosocial	3.52	2.23	3.25	2.70	2.17	1.72	2.0282	0.1423
Diagnostic	5.78	2.02	4.66	2.93	2.30	2.30	1.5275	0.2270

Table 3. Ranked Mean scores, Standard Deviations, *F* and *p* scores for perceptions of the current literature of the importance of the eight factors in the transition from acute to chronic LBP

.

Factor	**Chiropractors**		**Psychologists**		**Medical Practitioners**			
	M	**SD**	**M**	**SD**	**M**	**SD**	***f***	***p***
Injury	3.74	2.00	3.08	1.93	4.06	2.71	0.6758	0.5133
Job	4.87	2.16	5.75	2.01	3.67	2.03	3.8076	0.0289
Demographics	5.08	2.52	6.33	1.57	5.61	2.25	1.2226	0.3031
Medical	4.48	2.73	3.50	1.88	5.44	1.76	2.7112	0.0762
Health Behaviour	4.74	1.98	5.00	2.09	4.61	1.91	0.1396	0.8700
Anthropometric	4.70	2.05	4.42	2.54	3.94	2.13	0.5942	0.5558
Psychosocial	4.39	2.37	4.50	2.20	3.50	2.46	0.9268	0.4025
Diagnostic	4.00	2.49	3.83	2.98	5.17	2.36	1.3729	0.2627

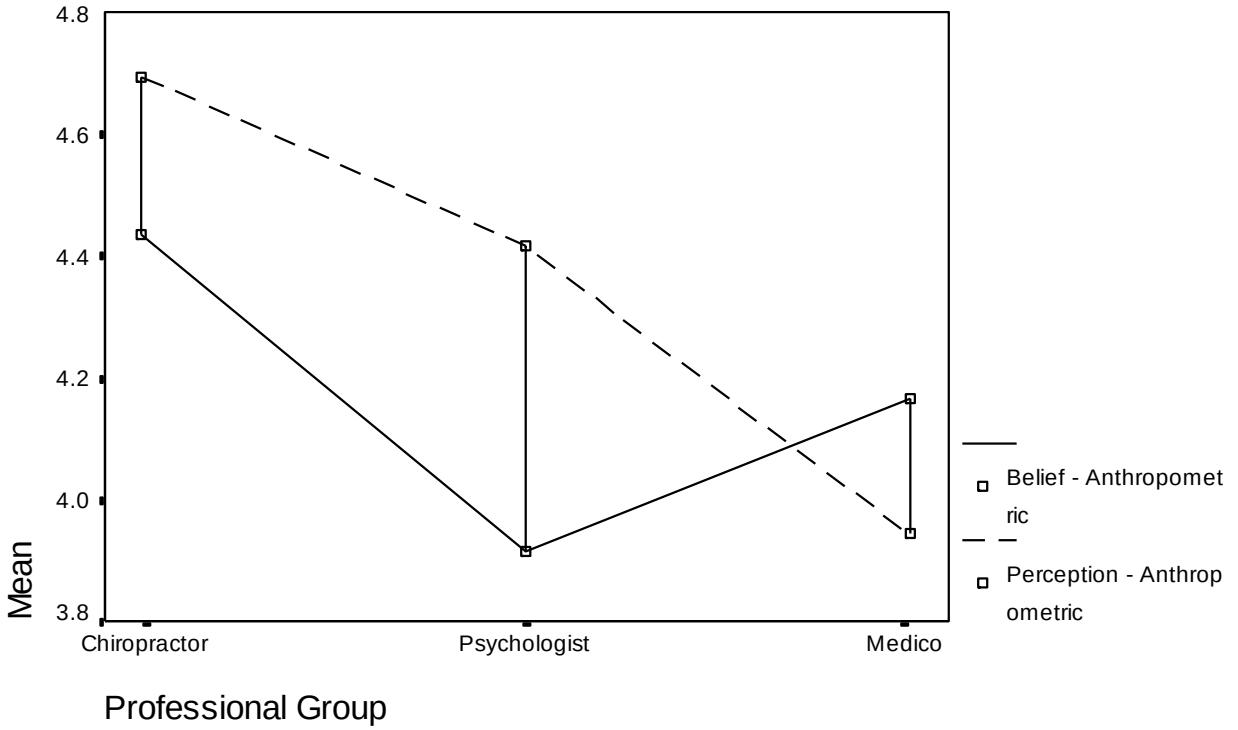

Figure 1. Difference in groups related to job factors.

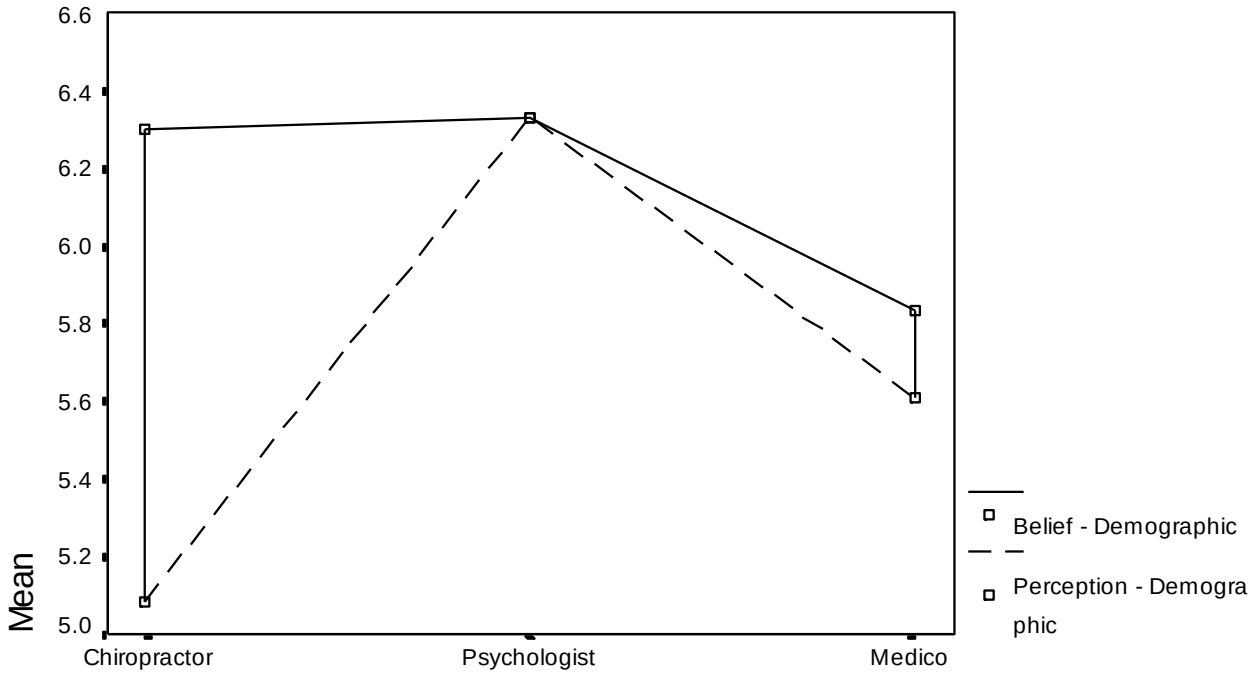

Figure 2. Difference in groups related to medical.

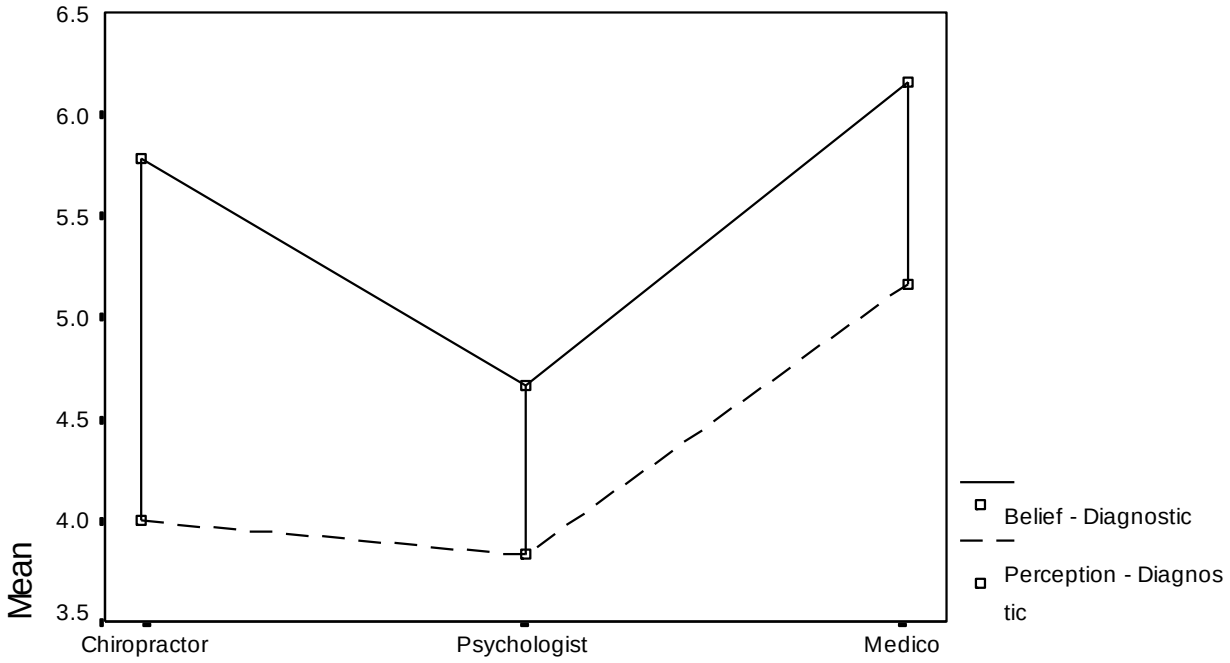

Figure 3. Difference in groups related to psychological factors.

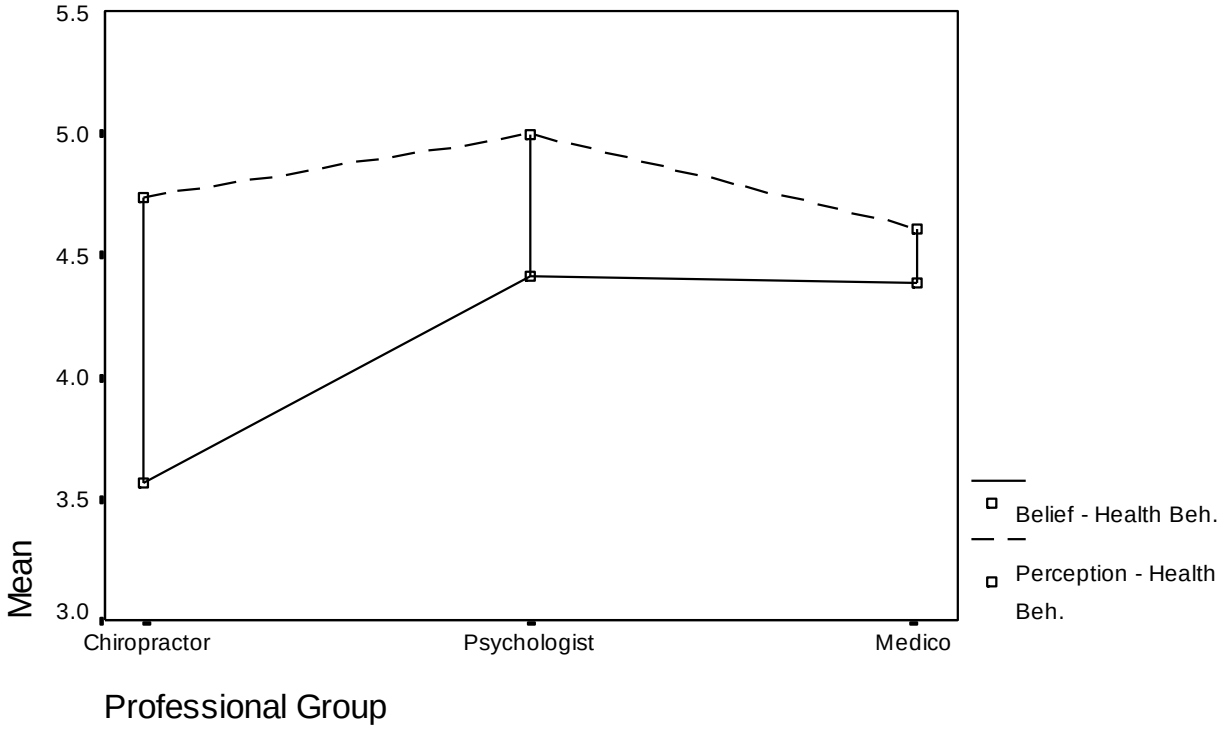

Figure 4. Reversal of differences seen in Figure 3.

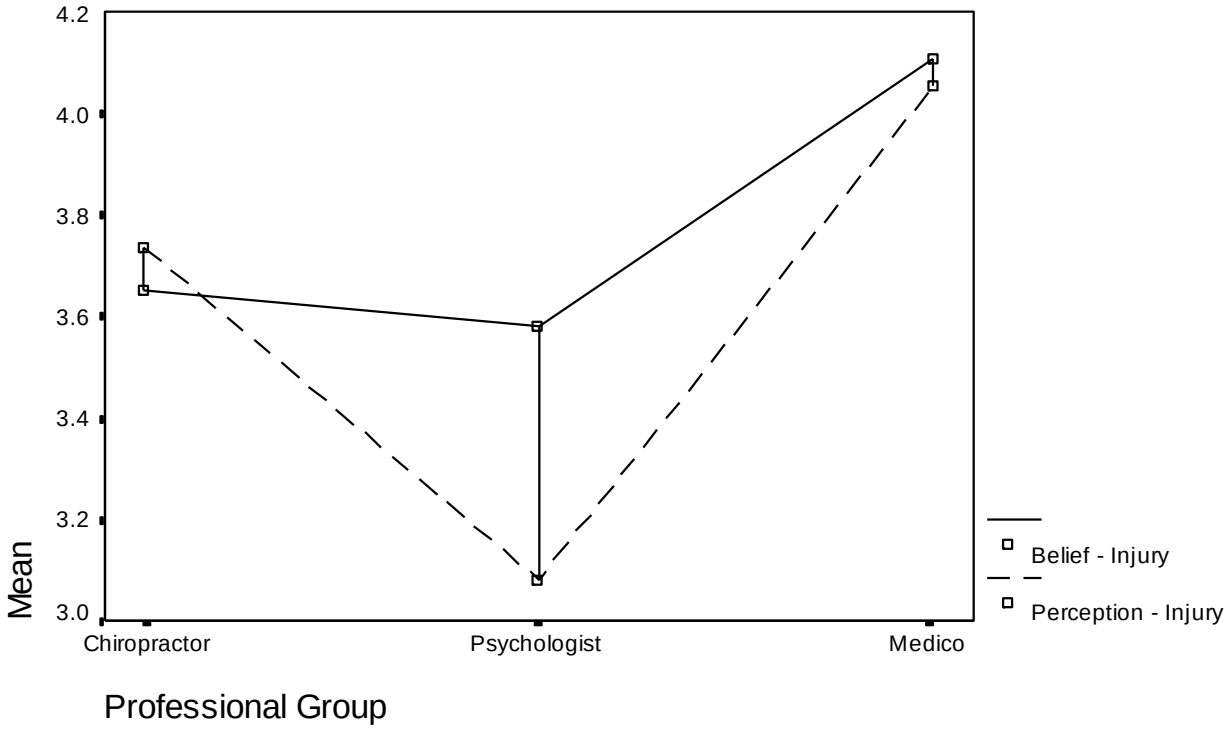

Figure 5. Groups ranked their beliefs that health behaviours were more important, higher than their perceptions of the literature.

DISCUSSION

Examination of the results for job and medical factors, as indicated by figures 1 and 2, show that in both cases the significant differences are due to the scoring by medical practitioners. In both these cases, the medical practitioners had a pattern that was counter intuitive to our expectations, that is they had a pattern of results that we would have expected from the psychologists rather than the medical practitioners. In examining the factors implicated in the transition from acute to chronic pain, a number of the factors would suggest an involvement with a particular profession. For example, psychosocial and job factors are 2 factors that one would associate with psychologists, it would therefore be expected that psychologists' would rate these as being more important in the transition from acute to chronic LBP than medical practitioners. In the same way we would associate medical and diagnostic factors with the medical profession rather than the psychological profession and expected the medical profession to rate these 2 factors higher than the psychologists. Based on this rationale, however, the pattern of results was counter intuitive to our expectations. This counterintuitive shift could have been due to the fact that the group numbers for the medical practitioners were small making the sample biased, perhaps indicating that only those interested in the area of chronic LBP and more familiar with the number of possible treatment options, returned the questionnaire, or that perhaps our expectations of how these practitioners work may be wrong.

Examination of the results for the difference between beliefs and perceptions of current research for the three groups, showed significant differences for diagnostic, psychological, and health behaviour factors as indicated by figures 3-5. The 3 groups rate the importance of their perception of current research about the diagnostic factors, higher than their own beliefs about the importance of diagnostic factors. Once again, however, some interesting trends have emerged. The psychologists placed the importance of diagnostic factors above both the medical practitioners and chiropractors, two groups that utilize diagnostic factors in their clinical routines. Once again a pattern that is counter-intuitive to our expectations. The 3 groups' perceptions of the current research were ranked higher in importance than their beliefs for diagnostic factors but the reverse was true for psychosocial and health behaviour factors as indicated in figures 4 and 5. Here their beliefs were rated higher in importance. The significance of these findings could be further explored once a comprehensive analysis of the sources of their information is completed, however a possible explanation could be that the information sourced by the three professional groups may vary, due to different training and philosophical paradigms particular to each group.

The results obtained indicated that in general, the 3 groups ranked the importance of the majority of the factors in regard to both their beliefs and perceptions of the literature, at a similar level. However the factors that the 3 groups did not rank similarly and which showed significant differences, certainly did not match our expectations of how the different groups would rank them.

There are factors that would need to be addressed in further studies of this type. Greater sample sizes would be required to eliminate sample bias, as was the case with the medical practitioner group. There are problems inherent in using questionnaires and different data collection method would need to be investigated. One possible method would be to present questionnaires at conferences were large numbers of practitioners would be expected and offer prizes. Other areas that may need to be investigated are the types of literature being utilized by the different groups and how it may relate to the belief and perceptions of treating practitioners, also a comprehsive list of the literature available on predictors of chronicity needs to gathered.

CONCLUSION

Chronic low back pain is for those that suffer from it, a burden that is often difficult to bear. The importance in this work lies in being able to provide current information about the transition from acute to chronic pain to those practitioners involved in the assessment and management of LBP in order to eliminate unnecessary suffering of those with chronic LBP and prevent the slide for those in the acute stage.

REFERENCES

1. Andersson GBJ., Epidemiological features of chronic low-back pain. Lancet 1999;354:581-585
2. Heneweer H, Aufdemkampe G, van Tulder MW, Kiers H, Stappaerts KH, Vanhees L., Psychosocial variables in patients with (sub)acute low back pain: an inception cohort in primary care physical therapy in the Netherlands. Spine 2007;32(5):586-592 10.1097/01.brs.0000256447.72623.56
3. Gatchel RJ, Polatin PB, Mayer TG, The dominant role of psychosocial risk factors in the development of chronic low back pain disability. Spine 1995; 20(24):2702-2709
4. Merskey H. Bogduk N. Classification of chronic pain, IASP Task Force on Taxonomy. Seattle, WA: International Association for the Study of Pain Press.(Also available online at www. iasp-pain. org), 1994
5. Kovacs FM, Seco J, Royuelo A, Corcolli Reixach J, Abaira V., Predicting the evolution of low back pain patients in routine clinical practice: results from a registry within the Spanish National Health Service. Spine J 2012;12(11)::1008-1020
6. Martin BI, Deyo R, Mirza SK et al., Expenditures and health status among adults with back and neck problems. JAMA 2008;299(6):656-664
7. Cats-BariL WL, Frymoyer J, Identifying patients at risk of becoming disabled because of low-back pain: the Vermont Rehabilitation Engineering Center predictive model. Spine 1991;16(6):605-607
8. Matlin MW., Cognition . Hoboken, NJ; Wiley, 2005
9. Barnes D. Smith D, Gatchel RJ, Mayer TG., Psychosocioeconomic predictors of treatment success/failure in chronic low-back pain patients. Spine 1989; 14(4):427-430
10. Klenerman L, Slade PD, Stanley IM et al., The prediction of chronicity in patients with an acute attack of low back pain in a general practice setting. Spine 1995;20(4):478-484
11. Burton AK, Tillotson KM, Main CJ, Hollis S. Psychosocial predictors of outcome in acute and subchronic low back trouble. Spine 1995;20(6):722-728
12. Valat JP, Goupille P, Védere V. Low back pain: risk factors for chronicity. Revue du Rhumatisme (English ed.) 1997;64(3):189

Appendix 1
Back Pain Questionnaire

For the purpose of this survey, back pain refers to pain perceived as arising from the vertebral column. Acute pain refers to presence of pain for less than six months and chronic pain to pain being present for more than six months. Factors are defined as those conditions that may be responsible for the transition from acute to chronic pain.

There are three parts to this questionnaire. The first part asks you about your BELIEFS about the factors involved in the transition from acute to chronic low back pain.

Part two asks you about your PERCEPTIONS OF THE CURRENT STATE OF RESERARCH KNOWLEDGE on the factors involved in the transition from acute to chronic low back pain.

Part three consists of a number of open-ended questions about these same factors and also asks you to provide some information about yourself.

PART 1: **YOUR BELIEFS**

Please rank order the following eight factors in the order **of your belief** in the importance of each factor in the transition from acute to chronic pain. Indicate the importance of each factor by assigning a rank of between 1-8 to each factor, with 1 being the most important. For example if you **believe** that demographic factors are the most important indicate that by placing 1 in the relevant box. If you **believe** that job factors are the second most important indicate that by placing 2 in the relevant box; and so on, until all eight boxes have numbers in them.

☐ **Injury Factors**
E.g., trauma through an accident, compensation, and litigation

☐ **Job Factors**
E.g., unhappy at work, preexisting conflict with supervisor

☐ **Demographic Factors**
E.g., age, sex manual worker with lower education and socioeconomic status

☐ **Medical Factors**
E.g., surgical intervention (inappropriate), failed back surgery, delayed diagnosis

☐ **Health Behaviour Factors**
E.g., smoking, unwilling to use self care, excessive alcohol

☐ **Anthropometric Factors**
E.g., lack of fitness, obesity, poor muscle posture

☐ **Psychosocial Factors**
E.g., personality, reinforcement by family, stress levels

☐ **Diagnostic Factor**
E.g., clinical signs of nerve root irritation, initial presentation with bilateral pain

PART 2: **PERCEPTIONS OF THE CURRENT STATE OF RESEARCH KNOWLEDGE**

Please rank order the following eight factors in order on the importance of each factor in the transition from acute to chronic LBP, based on your **perception of the current state of research knowledge.** Indicate the importance of each factor by assigning a ranking of between 1 – 8 to each factor, with 1 being the most important. For example if your **perception of the current state of research knowledge** is that demographic factors are the most important indicate that by placing 1 in the relevant box. If your **perception of the current state of research knowledge** is that job factors are the second most important, indicate that by placing 2 in the relevant box; and so on, until all eight boxes have numbers in them.

☐ **Injury Factors**
E.g., trauma through an accident, compensation, and litigation

☐ **Job Factors**
E.g., unhappy at work, preexisting conflict with supervisor

☐ **Demographic Factors**
E.g., age, sex manual worker with lower education and socioeconomic status

☐ **Medical Factors**
E.g., surgical intervention (inappropriate), failed back surgery, delayed diagnosis

☐ **Health Behaviour Factors**
E.g., smoking, unwilling to use self care, excessive alcohol

☐ **Anthropometric Factors**
E.g., lack of fitness, obesity, poor muscle posture

☐ **Psychosocial Factors**
E.g., personality, reinforcement by family, stress levels

☐ **Diagnostic Factor**
E.g., clinical signs of nerve root irritation, initial presentation with bilateral pain

PART 3**: DEMOGRAPHIC INFORMATION**

What do you think is the most important intervention to *prevent* the development of chronicity in low back pain?…….
……..
……..

Approximate number of hours spent per week in assessing, treating or managing back pain patients……

Number of years clinical experience with back pain patients…….

Please write your qualifications……

What is the perceived level of patient confidence?

1. Very confident
2. Moderately confident
3. No confidence