

Do illness perceptions of people with chronic low back pain differ from people without chronic low back pain?

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Abstract

Objectives To determine why some people develop chronic low back pain, and whether illness perceptions are an important risk factor in the transition from acute to chronic low back pain.

Design Cross-sectional study.

Participants Four hundred and two members of the general Dutch population, with and without chronic low back pain.

Main outcome measures Sociodemographics and the translated version of the Illness Perception Questionnaire-Revised, adapted for back pain.

Results Of the sample, 115 (29%) individuals had chronic low back pain (>6 months) and 287 (71%) did not have chronic low back pain. Many of the participants with chronic low back pain believed that one ‘wrong’ movement can potentially lead to more severe problems, and that X-rays or computer tomography scans can determine the cause of the pain. Many of the participants with chronic low back pain did not perceive a relationship between psychosocial factors and low back pain.

Conclusions Illness perceptions differed between individuals with and without chronic low back pain. In the subacute phase, healthcare professionals could assess illness perceptions and, if necessary, incorporate them into the management of patients with low back pain.

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Keywords: Illness perceptions; General population; Chronic low back pain; Risk factors

Introduction

Low back pain is extremely common, experienced by most people at one time or another. The point prevalence is between 12% and 33% of the adult population, and estimates for 1-year prevalence range from 22% to 65% [1]. Patients with chronic low back pain represent a major health problem and an economic burden for society. It is not fully understood why low back pain leads to chronic low back pain in some patients. Over the last few decades, it has become clear that the underlying factors for this phenomenon are not

merely medicosomatic. Epidemiological studies have identified several psychosocial and work-related risk factors that may explain how low back pain becomes a chronic condition [1,2]. The illness perceptions of a patient about his/her low back pain is one such risk factor [2]. Illness perceptions are cognitive responses to an illness or injury that, together with the emotional response to the illness or injury, lead to a specific coping behaviour. Illness perceptions are the product of an interaction of the interpretation of a bodily sensation (i.e. pain or stiffness related to an experience from the past) and general information from previous social communication (e.g. others who suffered from comparable illnesses, cultural knowledge and information from the external environment) [3]. Foster *et al.* described the relationship between illness perceptions and chronic low back pain in a group of 810 patients visiting their general practitioner [4]. Patients with

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a higher risk for chronic low back pain had the following illness perceptions: they believed that their complaints would last longer; they did not feel that they had much control over their complaints; and they did not have high expectations of treatment success. In addition, they listed numerous negative consequences associated with their injury. Patients who recovered from back pain did not associate severe consequences with their injury, suffered fewer emotional effects and had a strong sense of being in control of the healing process. Illness perceptions have a strong relationship with the degree of pain and limitations [5]; in particular, catastrophic illness perceptions are related to pain intensity, increased dysfunction and increased psychological stress [6,7].

Illness perceptions arise as a result of a physical complaint and are influenced by someone's personal knowledge, education, previous experience with the complaint, the social environment of the patient [i.e. parents, caregivers, doctor(s)] and, increasingly, the Internet. Illness perceptions are created by concrete information (i.e. diagnosis by a doctor) as well as abstract information (bodily sensations). Abstract information is often a more important source in determining illness perceptions than concrete information. In particular, when there is no clear diagnosis (e.g. no bodily cause of pain or medically unexplained symptoms), abstract information (i.e. bodily symptoms) determines the illness perceptions and coping strategies [8].

Research to improve understanding of the content of illness perceptions has been undertaken into the different dimensions of this phenomenon using Leventhal *et al.*'s Self Regulation Model [9]. This clarifies how illness perceptions (or illness representations), together with emotional representations of an illness or threat of illness, determine illness behaviour and, therefore, the course of complaints. The Illness Perception Questionnaire-Revised (IPQ-R) was developed to examine illness perceptions [10]. Illness perceptions have been examined previously in several disorders such as fibromyalgia [7], head and neck cancer [11], sports injuries [12,13] and low back pain [4]. However, the IPQ-R is a generic questionnaire whereas illness-specific perceptions are needed for clinical practice [10]. Although much research has been undertaken into low back pain, the following issues remain unclear: the specific illness perceptions of patients, the relevance of these perceptions for clinical practice, and whether these perceptions differ between people with low back pain and people without low back pain. If differences are present, the illness perceptions may be potential risk factors for the transition from acute to chronic low back pain. The objective of this study was to determine whether illness perceptions of patients with chronic low back pain differ from those without chronic low back pain.

Methods

A sample of Dutch patients was studied to assess the illness perceptions of patients with and without chronic low

back pain. Students of the Graduate School for Physiotherapy, Hanze University recruited a group of volunteers from their own social networks and families, and in public areas such as shopping centres, office cafeterias, on the street, etc. Participants were informed about the study and asked to complete a questionnaire.

The following sociodemographic data were assessed: age, gender, educational level, work status, marital status, whether or not they had experienced back pain in the last 5 years, if they currently suffered from back pain, and if so, whether they had suffered from back pain for >6 months. Low back pain lasting >6 months was considered chronic, as described in the criteria of the Association for the Study of Pain [14]. The IPQ-R was used to measure illness perceptions of low back pain. Studies have shown that both the English and Dutch versions of the IPQ-R have excellent validity and reliability [10,15]. However, the IPQ-R is a generic questionnaire used to measure perceptions in numerous illnesses, and its authors encourage researchers to adjust the questionnaire to their specific study population [10]. Figueiras and Alves adapted the IPQ-R for healthy individuals to assess illness perceptions of several diseases [16]. As such, in the current study, the original IPQ-R was converted into the IPQ-R-back pain (IPQ-R-BP) for completion by individuals from the general population with and without chronic low back pain.

The first domain of the IPQ-R-BP is illness identity, containing 12 symptoms. Participants can indicate whether or not they believe a specific symptom is related to low back pain. Questions were included on the following symptoms: sore throat, nausea, breathlessness, weight loss, fatigue, stiff joints, wheeziness, headache, dizziness, loss of strength, upset stomach and sleeping difficulties. The symptoms 'pain' and 'sensitive eyes' were deleted from the original IPQ-R. Pain was omitted because asking if pain is a symptom related to low back pain is meaningless, and sensitive eyes does not seem to be related to back pain. The wording of the questions of the original IPQ-R was changed; for example, 'fatigue, this symptom is related to my back pain' in the original version was changed to 'fatigue is related to low back pain' in the adapted version. Participants could answer with 'yes' or 'no'.

The second part of the IPQ-R contains 38 statements about an illness. The statements can be adapted for specific illnesses by changing the name of the illness; in this case, low back pain (Table 2). This part was adjusted extensively for this study, and the IPQ-R-BP consisted of 24 statements that focus on how to deal with low back pain.

The third part of the original IPQ-R consists of 18 possible causes for a disease. Thirteen of these statements were adopted (stress or worries, bacteria or virus, chance or bad luck, ageing, environmental pollution, someone's own behaviour, accident or injury, mental attitude, family problems, hereditary, overwork, emotional problems, smoking) and five were omitted in the IPQ-R-BP; four because of an expected low relationship with low back pain (i.e. eating habits, alcohol, personality, altered immunity) and one

(poor medical care in the past) because this is difficult for participants without low back pain to answer. In addition, 12 causes for back pain were added to make the questionnaire more specific and more clinically relevant: poor posture while lifting heavy objects, having a serious disease, poor working conditions, spinal disease, leg length discrepancy, poor posture, sleeping on a bad mattress, not wearing good shoes, overweight, sitting in the same posture for a long period of time, physical activities, and having caught a cold. These causes were added and agreed upon during a consensus meeting of physical therapists working with patients with low back pain.

The second and third parts of the IPQ-R-BP used the original five-point Likert scale of the IPQ-R (1 = completely disagree, 5 = completely agree). Since the original IPQ-R model was modified for this study, the original domain structure was not used. Instead, the data were analysed at item level. This study was conducted according to the medical ethical rules of the University Medical Centre of Groningen. All participants were informed about the purpose of the study.

Statistical analysis

For illness identity, the symptoms related to low back pain were calculated and presented as percentages. The responses of participants with and without chronic low back pain (defined as low back pain lasting >6 months) were compared using Chi-squared analysis.

The means and standard deviations of the statements about low back pain and the causes were calculated, and checked for normal distribution. Outcomes were compared between participants with and without chronic low back pain using Student's *t*-test; 95% confidence intervals are presented if significant ($P < 0.05$).

Results

In total, 478 questionnaires were distributed, 54 were not returned and 20 were not suitable for analysis, mainly due to missing data. As such, 402 questionnaires were available for analysis (response rate 84%). The sociodemographic data of the respondents are shown in Table 1. In this sample, 115/402 (29%) participants had chronic low back pain and 287/402 (71%) did not have chronic low back pain. Sleep difficulties (68%), fatigue (67%) and loss of strength (54%) were the main symptoms associated with low back pain in both groups. Loss of strength was related to low back pain significantly more often in the participants without chronic low back pain ($P < 0.01$). Items in the second and third parts of the questionnaire were normally distributed. Differences in illness perceptions are listed in Table 2. Participants with chronic low back pain were more often of the opinion that patients do not recover from back pain, and were aware that staying active is important. On the other hand, participants without chronic low back pain were of the opinion that one

Table 1
Sociodemographic data of the study population and prevalence of back pain ($n = 402$).

Age	Mean (SD)	40 (17)
	Range	16 to 87
Gender	Male	179 (44)
	Female	223 (55)
Education (missing data, $n = 9$)	None	2 (1)
	Elementary school	14 (4)
	Secondary school	154 (39)
	College	124 (32)
	University	99 (25)
Socio-economic status (more answers possible)	Working	212 (50)
	Housewife	60 (14)
	Unemployed	8 (2)
	Disability pension/sick leave	12 (3)
	Pension	32 (8)
Marital status	Student	97 (23)
	Married	195 (48)
	Single	128 (32)
	Widow(er)	13 (3)
	Cohabiting	57 (14)
Low back pain in last 5 years	Other/missing	9 (2)
	No	141 (35)
Chronic low back pain (>6 months)	Yes	262 (65)
	Yes	115 (29)

SD, standard deviation. Data are presented as n (%) unless otherwise stated.

should 'take it easy' while suffering from low back pain. A notable difference between the groups was that participants with chronic low back pain believed that everyone should have an X-ray or a computed tomography (CT) scan as 'this will determine the cause of the symptoms'. They also believed that one wrong movement could lead to more severe problems. Participants without chronic low back pain were more often aware that psychological factors may have an impact on low back pain, that it will last for about 6 weeks (or less) and that the symptoms will subside naturally over time. There were no significant differences between the two groups in terms of determining the cause of the low back pain (Table 3). Notably, in both samples, physical causes (e.g. poor posture while lifting heavy objects, poor working conditions) were mentioned more often than psychological causes (e.g. being overworked, stress).

Discussion

Participants with chronic low back pain had different illness perceptions compared with those without chronic low back pain; the former group believed that an X-ray or CT scan is necessary to determine the cause of the symptoms, and that one 'wrong' movement could lead to more severe problems. Participants with chronic low back pain did not believe that psychological factors have a direct influence on their complaints.

Table 2

Differences in illness perceptions for participants with chronic low back pain ($n = 115/402$, 29%) and without chronic low back pain ($n = 287/402$, 71%), results of independent sample t -test and 95% confidence intervals when significant.

Items: scores 1 (completely disagree) to 5 (completely agree)	CLBP (>6 months)	Mean (SD)	t -value	95% CI
1. People do not recover from low back pain	Without CLBP	2.2 (0.9)	−6.7	−0.91 to −0.50
	With CLBP	2.9 (1.1)		
2. Staying active is important for low back pain	Without CLBP	4.2 (0.8)	−2.5	−0.40 to −0.05
	With CLBP	4.4 (0.8)		
3. When someone has low back pain, he/she should see a manual therapist	Without CLBP	2.5 (0.8)	2.0	0.01 to 0.49
	With CLBP	2.6 (1.0)		
4. Bed rest is needed with low back pain	Without CLBP	2.1 (0.9)		
	With CLBP	2.0 (1.0)		
5. With low back pain, the patient should 'take it easy' until all complaints have subsided	Without CLBP	3.3 (1.0)		
	With CLBP	3.1 (1.0)		
6. When someone has low back pain, he/she should not work	Without CLBP	2.1 (0.8)		
	With CLBP	2.1 (1.0)		
7. With low back pain, activities should be adapted to someone's abilities at that time	Without CLBP	4.1 (0.7)		
	With CLBP	4.2 (0.7)		
8. With complete bed rest, a patient will recover from low back pain	Without CLBP	2.2 (0.9)		
	With CLBP	2.2 (1.0)		
9. Physical activities will increase low back pain	Without CLBP	2.4 (0.9)		
	With CLBP	2.5 (0.9)		
10. With low back pain, you should stay active at all times	Without CLBP	3.3 (1.0)		
	With CLBP	3.4 (1.0)		
11. Low back pain is a sign that something is damaged in the spine	Without CLBP	2.1 (0.9)		
	With CLBP	2.2 (0.9)		
12. With low back pain, one wrong movement can lead to serious complaints	Without CLBP	3.0 (1.0)	−3.4	−0.60 to −0.16
	With CLBP	3.4 (1.0)		
13. Sport is not possible for someone with low back pain	Without CLBP	2.3 (0.8)		
	With CLBP	2.2 (0.9)		
14. With low back pain, the advice of a physical therapist is necessary	Without CLBP	3.1 (1.0)		
	With CLBP	3.1 (0.9)		
15. With low back pain, an operation is necessary	Without CLBP	1.8 (0.8)		
	With CLBP	1.9 (0.9)		
16. X-rays or a CT scan will determine the cause of low back pain	Without CLBP	2.1 (0.9)	−2.7	−0.49 to −0.08
	With CLBP	2.4 (1.1)		
17. Everyone with low back pain should have an X-ray or a CT scan	Without CLBP	2.3 (1.0)	−3.6	−0.67 to −0.20
	With CLBP	2.8 (1.2)		
18. The best advice for people with low back pain is: be careful and do not make any unnecessary movements	Without CLBP	3.0 (1.0)		
	With CLBP	3.0 (1.1)		
19. Psychological factors such as personal beliefs and emotions can interfere with low back pain	Without CLBP	3.7 (1.0)	2.0	0.01 to 0.44
	With CLBP	3.4 (1.0)		
20. It is necessary to take medication with low back pain	Without CLBP	2.2 (0.8)		
	With CLBP	2.1 (0.9)		
21. Low back pain can be controlled by the patient	Without CLBP	3.5 (0.9)		
	With CLBP	3.6 (0.9)		
22. Low back pain has financial consequences	Without CLBP	2.7 (0.9)		
	With CLBP	2.8 (0.9)		
23. Low back pain usually takes 6 weeks	Without CLBP	2.2 (0.9)	2.6	0.06 to 0.44
	With CLBP	2.0 (0.9)		
24. Low back pain always resolves naturally over time	Without CLBP	2.1 (0.8)	2.5	0.05 to 0.40
	With CLBP	1.9 (0.8)		

CLBP, chronic low back pain; CT, computed tomography; CI, confidence interval; SD, standard deviation.

The outcome of this study is in accordance with the often-described fear-avoidance model for chronic pain [17]. The mainstay of this model is the assumption that patients with low back pain show avoidance behaviour for specific movements, as they perceive that these movements can make the condition or the pain worse. Fear of movement is a risk factor leading to inactivity, psychosocial dysfunction and chronic low back pain, and is therefore related to disability [18].

It is noteworthy that participants with chronic low back pain were more aware of the importance of staying active compared with those without chronic low back pain. It is likely that patients with low back pain who have visited a healthcare professional will have been advised to stay active [19]. Over the last decade, the need to stay active with chronic low back pain has become widely accepted. This study found that many participants with chronic low back pain believed that their back pain was caused by an anatomical deficit,

Table 3

Causes of low back pain for the study population ($n = 402$).^a

Causes of low back pain: scores 1 (completely disagree) to 5 (completely agree)	Mean (SD)
1. Poor posture while lifting heavy objects	4.4 (0.6)
2. Poor working conditions	4.2 (0.7)
3. Spinal disease	4.3 (0.7)
4. Leg length discrepancy	4.2 (0.7)
5. Poor posture	4.2 (0.7)
6. Accident or injury	4.1 (0.8)
7. Sleeping on a bad mattress	4.1 (0.7)
8. Not wearing good shoes	4.1 (0.7)
9. Overweight	4.0 (0.7)
10. Sitting in the same posture for a long period of time	4.0 (0.7)
11. Having a serious disease	3.8 (1.0)
12. Physical activities	3.6 (1.0)
13. Ageing	3.6 (0.9)
14. Chance or bad luck	3.5 (0.9)
15. Overworked	3.5 (0.9)
16. Own behaviour	3.5 (0.9)
17. Hereditary	3.5 (0.9)
18. Stress or worries	3.4 (1.0)
19. Having caught a cold	3.3 (1.0)
20. Bacteria or virus	3.2 (0.9)
21. Emotional problems	3.0 (1.0)
22. Mental attitude	3.0 (1.0)
23. Family problems	3.0 (1.0)
24. Smoking	2.2 (0.9)
25. Environmental pollution	2.2 (0.9)

SD, standard deviation.

^a No significant differences found between participants with and without chronic low back pain.

and that X-rays or CT scans were necessary to determine the cause of the symptoms. Although international guidelines indicate that chronic low back pain is not related to anatomical deficits, there is a clear need for more efforts to alter the beliefs and attitudes of patients as well as healthcare professionals. Recently, a study describing the attitudes and beliefs of physical therapists about exercises in patients with osteoarthritis reported similar results; although new knowledge may be available, it takes time to incorporate this into clinical practice [20].

Illness identity is determined by the number of symptoms that are associated with an illness. Patients with fibromyalgia have a high illness identity and perceive many physical symptoms [15], whereas, for instance, injured athletes have a low illness identity [12]. In the present study, there was little difference between the illness identity of the participants with and without chronic low back pain. Before conducting this study, it was hypothesised that the patients with chronic low back pain would have a higher illness identity (i.e. would report more physical symptoms related to the illness).

The recognition of psychosocial factors as risk factors for chronic low back pain is described in international low back pain guidelines [21] and reviews [22]. It is noteworthy that psychosocial factors were more often related to low back pain in participants without chronic low back pain than in those with chronic low back pain. It is known that patients with

somatoform disturbances or pain disorders present their complaints as a 'physical problem' while psychosocial factors are denied. It is often difficult to discuss psychosocial problems in relation to back pain when these are not recognised by the patients themselves. Therefore, healthcare professionals should educate patients about the relationship between psychosocial factors and low back pain [23] even in the acute phase; in patients scheduled for lumbar fusion, psychosocial factors are strongly related to pain, disability and quality of life [24].

The causes of low back pain mentioned were generally external (e.g. working conditions, accident) or related to physical factors (e.g. poor posture, spinal disease, leg length discrepancy). Over recent decades, the focus of risk factors for back pain has been on ergonomics, especially work-related causes and the importance of posture during physical activities. Several causes such as 'sleeping on a bad mattress' or 'not wearing good shoes' were also mentioned frequently. The influence of advertisements may play a role here. It is important to keep these causes in perspective and discuss them with patients.

This study included a large group with a high response rate. The number of participants with chronic low back pain (29%) was relatively high, although this is in accordance with the point prevalence (12% to 33%) described in other studies [1]. Since the lifetime prevalence of low back pain is high, most people will experience it at least once. The control group of participants without chronic low back pain can be considered as people coping adequately with back pain, possibly facilitated by adequate perceptions.

A limitation of this study was that the construct of the IPQ-R was altered; although the literature supports the psychometric properties of the IPQ-R, one cannot assume that the psychometric properties of the adjusted IPQ-R-BP are of the same standard. Further research is needed to investigate the psychometric properties of the IPQ-R-BP. Another limitation of this study was the use of multiple testing, which increases the risk of a type I error. On the other hand, a strength of this study was that the specific thoughts of participants about back pain were investigated. For clinical practice, these low-back-pain-specific perceptions are more useful than the general perceptions normally gained from the IPQ-R. Another strength of this study was that participants from the general population were included, and the perceptions of participants with and without chronic low back pain were assessed, whereas most other studies have investigated clinical patients without healthy control groups.

Conclusion

Healthcare professionals should acknowledge the importance of illness perceptions [23]. Based on the results of this study, clinicians should ask patients with low back pain if they or of the opinion that specific movements can lead to

more serious complaints, patient's thoughts about additional X-rays or CT scans, and the role of psychological factors. An 'incorrect' patient view is entirely reasonable and comprehensible. Therefore, when inadequate illness perceptions are present, specific patient education is indicated [25,26].

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