

Characteristics of Patients With Acute Low Back Pain Presenting to Primary Care in Australia

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Objectives: This study aimed to provide a comprehensive profile of a representative sample of patients with acute low back pain drawn from the primary care setting. A secondary aim was to determine whether patient characteristics are associated with pain intensity or disability at the initial consultation.

Methods: A total of 1172 consecutive patients with acute low back pain presenting to clinics of primary care practitioners (general practitioners, physiotherapists, and chiropractors) in Australia were recruited. Pain intensity and level of disability were measured at the first consultation, and a range of other variables were measured to describe the patient's characteristics. The characteristics were then grouped into 7 distinct factors: demographic, social, cultural, general health, psychologic, past low back pain history, and current low back pain history. Hierarchical linear regression models were used to determine each factor's independent relationship with pain intensity and disability.

Results: The majority of patients reported having had a previous episode of low back pain (75.7%), and that the current episode was of sudden onset (76.7%). Only a small proportion (14.3%) had compensable back pain. Pain intensity and disability were associated with each other ($P < 0.01$), current low back pain history ($P < 0.01$), and psychologic ($P < 0.01$) characteristics.

Discussion: In a representative sample of acute low back pain patients in primary care, we found that the profile included only a small proportion of patients with compensable low back pain. Those without compensation were more likely to remain at work despite low back pain. Psychologic and other patient characteristics were associated with pain intensity and level of disability at the initial consultation.

Key Words: back pain, primary care, patient characteristics

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Low back pain is common, can be seriously disabling, and imposes an enormous social and economic burden on communities around the world.¹ In Australia, for example, it is estimated that approximately 20% of the population, or 3.9 million people, have low back pain at any one time.² Back complaints are the third most common condition in patients consulting general practitioners in Australia, and the most common musculoskeletal condition.³ It is also the most common health problem for which an imaging test is ordered by a general practitioner.³

Despite the considerable burden associated with low back pain, relatively little is known about the characteristics of patients with acute low back pain. To improve the understanding and management of a health condition, accurate information is needed regarding the patients' characteristics and their clinical presentation in a relevant setting.⁴ Previous Australian studies reporting the characteristics of low back pain patients have either been population-based surveys,^{2,5,6} surveys of patients presenting to specialists,⁷ or reports on the whole spectrum of general practitioner activity.³ There are some data on low back pain patients attending primary care from North America and Europe,^{8–14} but few of these studies have been conducted on a well defined consecutive cohort of patients with acute low back pain.

It is important that information on the characteristics of low back pain patients are made available to primary care clinicians, researchers, and other stakeholders to identify those patients at risk of a poor outcome. For example, increasing importance is being placed on the need for clinicians to be able to identify adverse psychologic factors in acute low back pain patients as they have been implicated in the transition to chronic low back pain.¹⁵ As the main aims of primary care management for acute low back pain are relief of pain and improvement of functional ability,¹⁶ understanding which patient characteristics are associated with higher pain and greater interference with function may also improve management.¹⁷ This information can become the basis for the development of more effective interventions that can lead to improved outcomes from acute low back pain.¹⁸

This study aimed to provide a comprehensive profile of a representative sample of patients with acute low back pain who present to primary care. A secondary aim was to determine whether patient characteristics are associated with low back pain intensity and level of interference with function at the initial consultation with a primary care clinician.

MATERIALS AND METHODS

Study Population

An inception cohort of consecutive patients with acute low back pain was recruited between November 2003 and

October 2005 from the 3 main primary care professions who manage low back pain in Australia¹⁸: general medical practitioners, physiotherapists, and chiropractors. In Australia, these professions are considered primary care clinicians as they provide health services to the community without the need for prior referral. Access to primary care clinicians is unrestricted to the public, and these clinicians serve as gatekeepers to specialist care.¹⁹ For this study, clinicians from the 3 professions were recruited from the Sydney metropolitan area. Names and practice addresses were extracted from telephone directories, professional registry listings, and through contact with professional associations of the 3 groups. Clinicians were excluded if they were not current primary care providers (eg, specialists or retired), were not practising within the study area, or if there were insufficient contact details available. Ethical approval for this study was granted by the University of Sydney Human Research Ethics Committee.

Inclusion and Exclusion Criteria

Participating clinicians were asked to screen all patients with the primary symptom of low back pain who presented to their clinics within the study period. To be eligible for inclusion, patients consulted one of the clinicians for management of an episode of acute low back pain (pain < 6-wk duration), without having seen another primary care clinician for the current episode. This ensured that all data were collected at the initial consultation in primary care. We used de Vet and colleagues'²⁰ definition of an episode of low back pain and adapted it to reflect our interest in acute episodes. An episode was defined as pain in the area bounded superiorly by T12 and inferiorly by the buttock crease, lasting for more than 24 hours but < 6 weeks,²¹ and preceded by a period of at least 1 month without back pain. Patients remained eligible if they had pain referred beyond this region. Also, patients had to be aged 14 years and older, provide written consent to participate in the study, and be able to speak and read English. Adolescents were included in the cohort because low back pain is common in this age group²² and to ensure that a broad spectrum of low back pain patients was described. Potential participants were excluded if a serious pathology (eg, cancer, spinal fracture, or inflammatory disorder) had already been established as the cause of this episode of low back pain.

Descriptive Measures

After being screened for eligibility, all patients completed a questionnaire during the initial consultation that measured level of pain and interference with function and a range of variables to describe the patient's characteristics. These variables were then grouped into 7 distinct factors: demographic, social, cultural, general health, psychologic, past history, and current low back pain history (Appendix 1). These represent some of the factors that have been proposed to influence the experience of low back pain²³ and the recovery process.^{15,24}

Pain intensity and interference with function were assessed using adaptations of items 7 and 8 of the SF-36²⁵: "How much low back pain have you had in the past week?" and "During the past week, how much did low back pain interfere with your normal work (including both work outside the home and housework?)" The original wording was changed from "bodily pain" to "low back pain" to reflect our specific interest in low back pain.

Demographic, social, and cultural characteristics were measured using questions taken from the 2001 Australian Census. Data from the 2001 Australian Census was also used to determine the socioeconomic level of the postcode area in which a patient lived.²⁶ Psychologic characteristics were assessed using questions from the Acute Low Back Pain Screening Questionnaire,²⁷ including items on anxiety, depression, and coping. Past and current low back pain history characteristics included questions regarding the onset of low back pain and previous episodes.

Data Analysis

Descriptive statistics were used to describe the baseline characteristics of the patients. Separate hierarchical linear regression models were used to determine the independent relationship between pain intensity and level of interference with function measured at baseline, and each of the 7 factors. Each factor, consisting of a number of variables, was first entered as a block into the regression analysis with either pain or interference with function as the dependent variable. The factors that had a statistically significant ($P < 0.1$) relationship with the dependent variable were retained for further analysis. Hierarchical regression analyses were then performed for all retained factors. First, all factors except the one being tested were entered as covariates. Then, the factor being evaluated was entered to determine the individual contribution of that factor to the model. When interference with function was the dependent variable, pain intensity was also included as a covariate.

For all regression models, highest education level was dichotomized into participants with a trade certificate qualification or lower and a diploma qualification or higher. The former is likely to represent a group performing more manual tasks.²⁸ Work status was considered in 2 ways, whether the patient was working or not before the onset of low back pain and whether the patient changed work status as a result of low back pain or not. All statistical analyses were conducted using SPSS for Windows v 14.0.1.

RESULTS

A total of 1254 primary care clinicians (993 general practitioners, 170 physiotherapists, and 91 chiropractors) were identified, of whom 170 agreed to participate and were trained. Of these, 73 were general practitioners, 77 were physiotherapists, and 20 were chiropractors. The clinicians screened a total of 3184 consecutive patients with low back pain of which 1172 had acute low back pain and were eligible for this study. Reasons for ineligibility are shown in Table 1. Participants who were found to have missing data on the baseline questionnaire were contacted as soon as possible to provide a response to all variables. This ensured that there were no missing data and, therefore, a complete data set for the entire cohort.

The sociodemographic and general health characteristics of the eligible participants are presented in Table 2. The majority of patients were male (53.6%), born in Australia (68.8%), did not smoke (83.5%), reported that they exercised regularly (56.6%), and rated their health as either very good or excellent (56.9%).

Most patients reported having a trade certificate qualification or lower (57.4%), and working (76.1%) before their low back pain episode. About 24% of the patients working at the time of their episode of low back pain

TABLE 1. Number of Ineligible Patients and Reasons for Ineligibility

Reason for Ineligibility	No. Patients (%)
Not screened (practitioner forgot/too busy)	181 (9.0)
Aged < 14 y	43 (2.1)
Back pain not in region T12 to buttock crease	41 (2.0)
Back pain duration < 24 h	117 (5.8)
Back pain duration > 6 wk	805 (40.0)
This episode not preceded by 1 mo without LBP	320 (15.9)
Refused to participate	174 (8.6)
Serious spinal pathology already diagnosed as cause of LBP	11 (0.5)
Not first contact for this episode	320 (15.9)
Total	2012 (100)

LBP indicates low back pain.

reported that they changed their work status after injury, most commonly to either selected duties or sick leave.

The low back pain history, clinical features, and psychologic characteristics of the patients are displayed in Table 3. The large majority of patients reported having had a previous episode of low back pain (75.7%) and that the current episode was of sudden onset (76.7%). The patients typically presented to primary care within 2 weeks of the onset of low back pain (71.8%), reported that their pain was moderate to severe in intensity (80.5%), and that this caused considerable interference with daily function. A third of the patients reported taking medication before seeking care. Analysis of the psychologic variables showed that patients were typically very dissatisfied with their current symptoms (72.9%). When scored on a 10-point scale (mean ± SD), patients were moderately concerned that their pain could become persistent (4.6 ± 2.9), were moderately tense and anxious (5.4 ± 2.6), were only slightly bothered by feelings of depression (3.3 ± 3.1), and were only moderately able to cope with their pain (4.7 ± 2.5).

The associations between pain intensity and each of the 7 descriptive factors are shown in Table 4. General health variables were not associated with pain intensity. After controlling for the other factors, demographic (R^2 change = 0.02), current history (R^2 change = 0.05), and psychologic (R^2 change = 0.08) characteristics were independently associated with pain intensity. The total model accounted for 20% of the variance in pain intensity. Examination of the β weights (the change in the dependent variable, expressed in terms of numbers of SDs, for every SD of change in the predictor) revealed that female sex ($\beta = -0.06$; $P < 0.01$), older age ($\beta = 0.14$; $P < 0.01$), taking medication ($\beta = 0.12$, $P < 0.01$), and a shorter duration of back pain ($\beta = -0.18$, $P < 0.01$) were each independently related to pain intensity. Of the psychologic characteristics, being less satisfied with symptoms ($\beta = -0.13$, $P < 0.01$), less able to cope with pain ($\beta = -0.12$, $P < 0.01$), feeling more tense or anxious ($\beta = 0.12$, $P < 0.01$), and having a higher perceived risk of persistent pain ($\beta = 0.13$, $P < 0.01$) were each independently related to pain intensity.

The results of the regression analyses with level of interference with function as the dependent variable are

TABLE 2. Demographic, Social, Cultural, and General Health Characteristics of a Primary Care Acute LBP Population

Variable	Total n = 1172
Age (mean ± SD)	43.97 ± 15.1
Sex (male %)	626 (53.4%)
Socioeconomic index quartile*	
1	21 (1.8%)
2	186 (15.9%)
3	298 (25.4%)
4	667 (56.9%)
Born in Australia	807 (68.9%)
Aboriginal/Torres Strait Islander	11 (0.9%)
Smoker	194 (16.6%)
Exercising regularly	664 (56.7%)
Highest level of education is trade certificate or lower	673 (57.4%)
Self-rated health	
Poor	8 (0.7%)
Fair	85 (7.3%)
Good	414 (35.3%)
Very good	476 (40.6%)
Excellent	189 (16.1%)
Working before onset of LBP	892 (76.1%)
Changed work status as a result of LBP	280 (23.9%)
Days away from work or school before initial consultation (mean ± SD) (n = 950)	1.51 ± 3.1

*Quartile of relative socioeconomic advantage and disadvantage. Lower quartile (ie, 1) is more disadvantaged, whereas higher quartile (ie, 4) is more advantaged.²⁶

LBP indicates low back pain.

shown in Table 5. Cultural factors were not associated with level of interference with function and were discarded from further analysis. After controlling for the other factors, pain intensity (R^2 change = 0.17), general health (R^2 change = 0.01), social (R^2 change = 0.01), current history (R^2 change = 0.01), and psychologic (R^2 change = 0.04) characteristics were independently associated with level of interference with function. The total model accounted for 44% of the variance. According to the β weights, smoking ($\beta = 0.08$, $P < 0.01$), changing work status owing to low back pain ($\beta = 0.13$, $P < 0.01$), taking medication ($\beta = 0.09$, $P < 0.01$), and a shorter duration of back pain before consultation ($\beta = -0.06$, $P < 0.01$) were each independently associated with level of interference with function. Of the psychologic characteristics, being less satisfied with symptoms ($\beta = -0.11$, $P < 0.01$), feeling more tense or anxious ($\beta = 0.11$, $P < 0.01$), and being bothered by feelings of depression ($\beta = 0.09$, $P < 0.01$) were each independently related to the level of interference with function.

DISCUSSION

This study provides the first description of the clinical presentation of acute low back pain patients in a representative sample from the primary care setting in Australia. In the primary care setting, patients report that their acute low back pain is severe, disabling, and causes a

TABLE 3. Clinical and Psychologic Characteristics of a Primary Care Acute LBP Population

Variable	Total n = 1172
Primary care clinician	
General practitioner	267 (22.8%)
Physiotherapist	851 (72.6%)
Chiropractor	54 (4.6%)
Previous episode of LBP	888 (75.8%)
Previous sick leave owing to LBP	435 (37.1%)
Previous back surgery	29 (2.5%)
Sudden onset of LBP	899 (76.7%)
Compensable LBP	168 (14.3%)
Other pain sites	
Neck	160 (13.7%)
Shoulders	108 (9.2%)
Upper Back	99 (8.4%)
Leg	295 (25.2%)
Significant trauma (minor in old, major in young)	31 (2.6%)
Currently taking medication for LBP	424 (36.2%)
Duration of LBP	
< 1 wk	696 (59.4%)
1 to 2 wk	145 (12.4%)
2 to 3 wk	174 (14.8%)
3 to 4 wk	73 (6.2%)
4 to 5 wk	30 (2.6%)
5 to 6 wk	54 (4.6%)
Days forced to cut down on activities before initial consultation (mean ± SD)	3.59 ± 4.7
Pain intensity	
Very mild	35 (3.0%)
Mild	108 (9.3%)
Moderate	462 (39.4%)
Severe	482 (41.1%)
Very severe	84 (7.2%)
Interference with function	
Not at all	76 (6.5%)
A little bit	208 (17.7%)
Moderately	298 (25.4%)
Quite a bit	415 (35.4%)
Extremely	175 (14.9%)
If you had to spend the rest of your life with the symptoms you have right now, how would you feel about it?	
Very dissatisfied	855 (73.0%)
Somewhat dissatisfied	245 (20.9%)
Neither satisfied/dissatisfied	35 (3.0%)
Somewhat satisfied	15 (1.3%)
Very satisfied	22 (1.9%)
Able to cope or deal with pain*(mean ± SD)	4.7 ± 2.5
Feeling tense or anxious*(mean ± SD)	5.4 ± 2.6
Bothered by feelings of depression*(mean ± SD)	3.3 ± 3.1
Risk of persistent pain*(mean ± SD)	4.6 ± 2.9

*Measured on a scale from 0 to 10, with 0 indicating none and 10 indicating more able to deal with pain, feeling more tense or anxious, more bothered by depression, and larger perceived risk of having persistent pain.

LBP indicates low back pain.

TABLE 4. Hierarchical Regression Analyses With Pain Intensity as the Dependent Variable

Factor Being Evaluated	Variables Included in Each Group†	R ² Change	F Change	β‡	t
Demographic		0.02	14.09**		
	Sex—male			−0.06	−2.09*
	Age			0.14	4.89**
Cultural		0.03	2.01		
Social		0.04	1.15		
Past history		0.03	1.25		
Current history		0.05	9.13**		
	Clinician—consulted GP			0.00	−0.02
	Clinician—consulted physiotherapist			0.05	0.89
	Sudden onset			0.03	1.00
	Leg pain			0.02	0.52
	No. pain sites			0.00	−0.04
	Significant trauma			0.01	0.42
	Taking medication			0.12	4.40**
	Duration (wk)			−0.18	−6.39**
Psychologic		0.08	24.03**		
	Satisfaction with symptoms			−0.13	−4.81**
	Ability to cope			−0.12	−4.20**
	Feeling tense or anxious			0.12	3.58**
	Bothered by feelings of depression			0.01	0.27
	Risk of persistent pain			0.13	4.22**

Change statistics represent the independent contribution of the factor after controlling for all other factors. Total R² = 0.20.

*P < 0.05.

**P < 0.01.

†Individual regression coefficients are only shown for factors that are significantly associated with the dependent variable.

‡Standardized regression coefficient.

GP indicates general practitioner.

significant loss of work days and reduced ability to work. The severity of pain and level of interference with function upon presentation is associated with a number of factors, most notably psychologic factors.

A number of methodologic factors were incorporated in this study to ensure a representative sample of acute low back pain patients and to allow generalizability of the study findings to other primary care settings. First, the study area was specifically chosen to cover a range of socioeconomic values. As differences in the characteristics of low back pain patients consulting different professions have been proposed,^{18,29} and the purpose of this study was to provide a representative primary care profile, patients were recruited from general medical practitioners, physiotherapists, and chiropractors. These are the most common primary care

TABLE 5. Hierarchical Regression Analyses With Interference With Function as the Dependent Variable

Factor Being Evaluated	Variables Included in Each Group†	R ² Change	F Change	β‡	t
Pain intensity		0.17	357.86**	0.46	18.92**
Demographic		0.00	0.55		
Social		0.01	5.13**		
	Low socioeconomic index			0.00	−0.07
	Lower level of education			0.00	−0.03
	Compensable LBP			−0.02	−0.62
	Working preinjury			−0.04	−1.41
	Changed work status			0.13	4.96**
General health		0.01	4.92**		
	Smoker			0.08	3.26**
	Exercising regularly			−0.02	−0.89
	Self-rated health			0.03	1.35
Past history		0.00	1.42		
Current history		0.01	3.78**		
	Clinician—consulted GP			0.05	0.97
	Clinician—consulted physiotherapist			0.05	1.04
	Sudden onset			0.03	1.21
	Leg pain			0.04	1.35
	No. pain sites			−0.04	−1.30
	Significant trauma			−0.01	−0.39
	Taking medication			0.09	3.89**
	Duration (wk)			−0.06	−2.49*
Psychologic		0.04	18.03**		
	Satisfaction with symptoms			−0.11	−4.94**
	Ability to cope			−0.03	−1.28
	Feeling tense or anxious			0.11	3.89**
	Bothered by feelings of depression			0.09	3.06**
	Risk of persistent pain			0.00	−0.03

Change statistics represent the contribution of the factor after controlling for all other factors. Total R² = 0.44.

*P < 0.05.

**P < 0.01.

†Only factors with a significant association with the dependent variable are shown in detail.

‡Standardized regression coefficient.

GP indicates general practitioner; LBP, low back pain.

professions managing low back pain in Australia.¹⁸ The patients were also a consecutive cohort presenting for their first consultation for this episode of acute low back pain.

Although the impact of low back pain in the occupational setting is well known,³⁰ it is often considered that compensable patients are responsible for much of the economic burden and reduced productivity.^{6,28} This study found that in a consecutive cohort of patients presenting to primary care, only 14.3% had compensable back pain. This represented <20% of the patients who were working before their episode of back pain. Although a mean of 1.5 work days was lost per person before consultation, only 30% of those working changed their work status owing to low back pain. This shows that many workers continue to work despite low back pain.

A number of studies have reported that the initial intensity of pain and interference with function in acute low back pain patients are predictors of long-term outcome.^{8,24,31,32} The results of this study have shown that a number of factors have independent associations with pain

intensity and interference with function of patients seeking primary care. Although the overall variance accounted for was small, this may have been limited by the fact that the individual variables included in each group were not exhaustive or were inadequate measures of complex constructs, such as psychologic or cultural factors. Pain intensity accounted for the largest proportion of the variance in level of interference with function, which was still only modest indicating that interference with function is influenced by other factors. In support of this, after controlling for pain intensity and other factors, psychologic factors, such as feelings of depression or being tense or anxious, were still associated with interference with function. As psychologic factors were also independently associated with pain intensity, further evaluation of treatments aimed at normalizing these features in acute low back pain patients is warranted.¹⁵

The primary care management of acute low back pain involves consideration of the many factors that may influence a patient's low back pain experience. This study provides detailed information regarding these factors in a representative

sample of patients. To provide effective management aimed at reduction of pain and restoration of function, clinicians need to be aware of the influence of psychological and other factors on pain and interference with function.

APPENDIX 1

Variables Included in Each Factor Evaluated for Their Association With Pain Intensity and Level of Interference With Function

Factor	Variables Included in the Factor
Demographic	Age Gender
Cultural	Born in Australia Aboriginal/Torres Strait Islander
Social	Low socioeconomic index* Lower level of education† Compensable LBP Working pre-injury Changed work status due to LBP
General Health	Smoker Exercising regularly Self rated health‡
Past History	Previous episode of LBP Previous surgery for LBP Previous sick leave due to LBP
Current History	Clinician—consulted GP Clinician—consulted physiotherapist Sudden onset Leg pain Number of pain sites§ Significant trauma Taking medication Duration (weeks)
Psychological	Satisfaction with symptoms Ability to cope¶ Feeling tense or anxious¶ Bothered by feelings of depression¶ Risk of persistent pain¶

*In lowest quartile of relative socioeconomic advantage and disadvantage (ie, more disadvantaged).

†Highest level of education was trade certificate or below.

‡Rated on a scale of poor, fair, good, very good, and excellent.

§Scored as 1 point each for pain in neck, shoulders, upper back, lower back, and leg.

||Scale from 1 = very dissatisfied to 5 = very satisfied.

¶Measured on a scale from 0 to 10, with 0 indicating none and 10 indicating more able to deal with pain, feeling more tense or anxious, more bothered by depression, and larger risk of having persistent pain.

GP indicates general practitioner; LBP, low back pain.

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