Consultations for Work Related Low Back Pain in Argentina

ENRIQUE R. SORIANO, CAROLINA ZINGONI, FLORENCIO LUCCO, and LUIS J. CATOGGIO

ABSTRACT. ***Objective.*** Low back pain (LBP) is a common cause of disability among people of working age. We investigated the incidence of consultation for work related LBP and of work absence, and determined the prevalence of continued work disability due to LBP in Argentina.

Methods. Our study population comprised 139,740 fulltime workers (mean age 34.4 yrs, range 17–79). An episode of work related LBP was defined as patient consulting because of acute LBP while at work or while traveling to/from work.

Results. In a 6 month period 360 episodes of acute LBP were reported in 69,329 worker-years of exposure to risk; thus the episode incidence rate was 5.2/1000 worker-years. This was the third most frequent work related injury. Twenty-one patients (5.8% of episodes) were lost to followup. Those with LBP were significantly older than the population at risk ($p < 0.001$) and were predominantly men ($p < 0.001$). In 244 episodes (72%) pain onset was related to heavy physical work and in 46 (13.6%) it followed trauma to the back. Surgery was performed in 9 (2.7%) cases. In total, 322 (98%) patients were absent beyond the day of the injury (median number of days of work absence, 7 days; range 0–422 days). Surgical patients lost significantly more days of work ($p < 0.01$). Seven patients (2%) remained off work more than 180 days: 2 were declared disabled, 3 moved to lighter jobs, and only 2 (28.5%) returned to their previous job.

Conclusion. The incidence of consultation for work related LBP was 5.2/1000 worker-years. This was the third most frequent work related injury. Most patients had some work absenteeism. Surgery did not shorten recovery times. Only a minority of patients off work for 6 months or more were able to return to their previous job. (J Rheumatol 2002;29:1029–33)

Key Indexing Terms:
LOW BACK PAIN
INCIDENCE
WORK RELATED INJURY
OCCUPATIONAL INJURY

Low back pain (LBP) is one of the most common causes of disability among people of working age. In the United Kingdom it is estimated that 52 million working days are lost per year because of LBP[1]. In the United States and Canada, low back injuries constitute 15 to 25% of the injuries covered by workers' compensation and account for 30 to 40% of workers' compensation payments[2,3]. In 1996 and 1997, back problems were the most common type of time-loss (worker missed at least one day of work) occupational injury across Canada, accounting for over one-quarter of occupational injuries[4]. Back, fingers, legs, and shoulders were the parts of the body most often injured, accounting for more than 50% of all time-loss occupational injuries[4].

From the Unidad Accidentes de Trabajo, Rheumatology Section, Medical Services, Hospital Italiano de Buenos Aires and Fundación Dr. Pedro M. Catoggio para el Progreso de la Reumatologia, Buenos Aires, Argentina.

Supported by the Hospital Italiano de Buenos Aires.

E.R. Soriano, MD, Staff Physician, Rheumatology Section, Medical Services and Unidad Accidentes de Trabajo; C. Zingoni, Medical Student; F. Lucco, Medical Student, Unidad Accidentes de Trabajo; L.J. Catoggio, MD, Head, Rheumatology Section, Medical Services, Hospital Italiano de Buenos Aires.

Address reprint requests to Dr. E.R. Soriano, Sección Reumatología, Servicio de Clinica Médica, Hospital Italiano de Buenos Aires, Gascón 450, Capital Federal, Argentina 1181.

Submitted February 7, 2001; revision accepted November 19, 2001.

Most reports on the epidemiology of LBP have originated in high income countries, with no information arising from developing areas of the world[5]. Further, most epidemiologic studies have been cross sectional or retrospective and related to occupation group or work activities, and many of these are based on self-reported pain on a questionnaire[1,6-11].

Since 1996, the law has required that all full time workers in Argentina be insured to cover all medical costs and compensation payments for days off work related to work injuries. Within this legislation our unit undertook care of work related injuries in around 140,000 fulltime workers under a capitation contract.

We carried out a prospective study within this large cohort: all work related injuries were followed until the patient was back at work or was declared disabled. The objective was (1) to determine the incidence of consultation for work related LBP in a developing country; (2) to examine work absence; and (3) to determine the prevalence of continued work disability from LBP.

MATERIALS AND METHODS

Study cohort. The study population comprised all fulltime workers in more than 400 different occupations that were insured by 2 insurance companies between July 1, 1996, and January 1, 1997. Over 95% of these workers were insured at the beginning of the study (July 1996; a few gradually entered the system later), and by law were not allowed to change insurance

company or medical coverage for 6 months. The Hospital Italiano de Buenos Aires developed a work related injury unit (WRIU) that involved a national network of hospitals and clinics. The WRIU took care of all the medical assistance of their work related injuries throughout the country under a capitation contract. Under this contract the WRIU had to take on all medical costs until the patient returned to work or was declared disabled. The WRIU paid medical services by a fee for service arrangement. In order to obtain payment for working days lost, the employer had to notify the WRIU within 48 hours of the occurrence of an injury, giving the exact date and time the worker stopped work activities to seek medical assistance. The payment for working days lost of the first 10 days were covered by the employer, and by the insurance companies thereafter. To get their fee for service payment, the institution or doctor providing medical assistance had to notify the WRIU, of the diagnosis of the injury (codified by ICD-9) and the relevant clinical information within 48 hours. They also had to notify when the worker was back to work and this had to match the employer's claim for working days lost. All data were entered into a SQL database by final year medical students. ICD-9 codes were checked against clinical information before being entered. All cases with more than 10 working days lost were monitored by WRIU medical staff. All hospital admissions, surgery, and nonroutine studies required authorization by our medical staff.

Episode definition. An episode of work related LBP was defined as patient consulting because of acute LBP while at work or while traveling to/from work. The diagnosis of LBP had to be performed by a physician. Physicians also had to report the mechanism of the injury according to patient's statement as trauma related or related to physical work without previous trauma. Absenteeism was calculated by the number of calendar days between the episode (patient consultation) and the subject's return to work. If the patient returned to work on the same day of the episode an absenteeism of zero days was calculated. Recurrence was defined as an episode after the patient returned to full work activities with no disability.

Cohort followup. As stated, workers were not allowed by law to change insurance company or medical service for 6 months after entering the system (which for most patients coincided with the study period). All clinical information was collected in the WRIU database, including diagnosis (ICD-9 code), dates of injury and return to work, mechanism of injury, interventions, and relevant clinical data. Administrative and payment claims were collected in the same database, and clinical information was checked with the administrative data by medical auditors, before fee for service payment.

Statistical analysis. Episode incidence rates and the 95% confidence intervals were calculated. As data distribution was not normal, medians of number of days of work absence were calculated, and compared with other work related injuries and between patients with and without surgery using Mann-Whitney test. Percentages and 95% CI of patients not returning to work after 6 months were calculated. All analyses were conducted using the statistical Stata package and Epiinfo.

RESULTS

In the 6 month period 5522 work related injuries were reported in 69,329 worker-years of exposure to risk, yielding an incidence rate of 79.6/1000 worker-years (Table 1). Of these, 360 (6.5%) were episodes of acute LBP, for an incidence rate of 5.2/1000 worker-years. This was the third most frequent work related injury reported.

Patients with LBP were significantly older than patients with other work related injuries (t test, $p < 0.001$), and older than the population at risk (t test, $p < 0.001$), and were mostly men (chi-square test, $p < 0.001$) (Table 2).

Twenty-one patients (5.8%) were lost to followup. The remaining 330 patients [9 patients (3%) had more than one episode] were followed until they returned to work or were declared disabled. In 244 episodes (72%) onset of pain was related to physical work without previous trauma, in 46 (13.6%) it was after trauma to the back, and in 71 the mechanism was not reported. In 33 patients (10 %) a computerized tomographic (CT) scan (8 cases) or magnetic resonance imaging (MRI) (18 cases) or both (7 cases) were performed. In 2 patients a vertebral fracture and a spinal stenosis, respectively, were diagnosed. In another 14 (42%) of these 33 patients studied by CT scan or MRI a prolapsed disc was detected. In 9 patients (2.7 %) a discectomy was performed and in all cases this was during the first painful episode within the period of the study. The 330 patients with the 339 episodes lost 7144 days of work. Only 8 episodes (2.4%) had no absenteeism (Figure 1), 67 % had 10 days or less, 92% 60 days or less, and only 7 episodes (2.1%) had more than 180 days of absenteeism. The median episode of work absence was 7 days (range 0–422 days) (Table 3). This was not significantly different from all other work related injuries (Table 3) (Mann-Whitney test, $p = 0.38$). Patients who underwent surgery had a median 164 days of work absence (Table 3). This was significantly longer than the overall patients with LBP without surgery and also more than the 24 patients that were studied by CT scans or MRI, but who did not have surgery. The median time between the episode and surgery was 35 days (range 11–57 days), and only 2 patients received surgery within 2 weeks.

Eight patients had one recurrence and one patient had 2 recurrences within the 6 months. The duration of the initial episode (median 6 days, range 2–172) was not significantly different from the duration of the recurrence (median 12 days, range 2–128 days; Mann-Whitney test, $p = 0.28$).

Of the 7 patients (2.1%) whose absence from work lasted more than 180 days (median 235 days, range 194–422), 2 were declared disabled, 3 were moved to lighter jobs, and only 2 (28%) returned to their previous job.

DISCUSSION

To our knowledge, this is the first report on the epidemiology of work related LBP in Argentina. Most of the studies are restricted to high income countries and little is known about the epidemiology of LBP in the rest of the world[3]. The World Bank classifies economies according to their gross national product (GNP) per capita. They are classified as low income, middle income, or high income. Low and middle income economies are referred to as developing economies. Argentina is classified as a middle income country (GNP per capita of $8030 in 1998).

In our study LBP rated third among work related injuries, after hand and upper limb injuries. Other reports have also rated these locations as the most frequent[4].

In this study we found a lower incidence of LBP than others (annual cumulative episode incidence of 0.52%)[1,6,8,12-21]. Some explanations for this are as follows.

Table 1. Incidence rate of some work related injuries per 1000 worker-years

Work Related Injury	ICD-9 Code	Incidence/1000 Worker-years	95% CI
All		79.6	77.5–81.7
Hand injuries	882, 883, 923.2, 923.3	14.3	13.4–15.2
Upper limb injuries	923, 923.0, 923.1, 923.8, 923.9	11.3	10.5–12.0
Low back pain	724.2, 724.3	5.2	4.7–5.7

Table 2. Characteristics of patients with low back pain (LBP), other work related injuries (WRI), and population at risk.

	LBP, n = 360	Other WRI, n = 5522	Population at Risk, n = 139,740
Mean age (range), yrs	37.5 (18–60)*	35.9 (17–73)*	34.4 (17–79)
Male, n %	332 (92.3)**	4561 (82.6)**	100054 (71.6)**

* $p < 0.001$, t test. ** Chi– square $p < 0.001$.

First, we are reporting the incidence of consultations for work related LBP since LBP had to be defined by a physician, and patients must have consulted to be included. Some studies have used questionnaires to assess the presence of LBP, irrespective of whether patients sought medical attention or not[1,6,8,12-16]. Walsh, *et al*, using a self-reported questionnaire, described an incidence of LBP between 6.5 and 10% in a working population in the UK with wide variations between regions[16], while Papageorgiou, *et al* reported a cumulative incidence of new LBP episodes of 32% in a group of 847 employed people followed for one year using a mailed questionnaire[17]. However, the incidence of patients consulting their general practitioner for LBP in the latter group was only 4.4%, suggesting that many episodes of LBP did not merit consultation according to responders[17]. Other studies have also shown that most people with a new back pain episode do not consult[13,14]. This could explain in part the lower incidence rate in our study. In this regard, as the title states, this study must be seen as showing the incidence of consulting for LBP, rather than overall incidence of LBP in a working population. Consultation for LBP in the workforce may be different according to access to the health and compensation systems, as we will discuss.

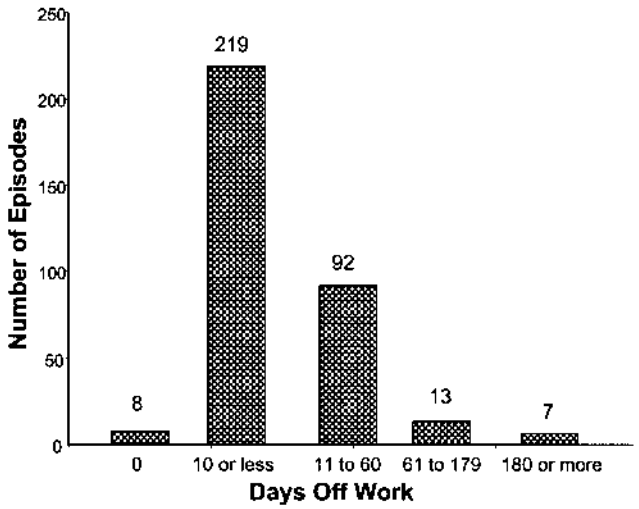

Figure 1. Number of episodes of low back pain according to patients' respective number of days off work.

Another reason for our lower incidence could be that we were only including consultation for LBP appearing while at work or while traveling to/from work, and not LBP that arises out of work (whether related or not). However, since patients knew that medical cost and compensation for lost working days had to be limited to work related injuries (defined as those arising while at work or traveling to/from work), we would expect, if anything, to have overreporting rather than underreporting.

A third reason might be related to the severity of pain: 98% of the episodes in our study were absent after the day of the injury, and only 5% returned to work by Day 2. This low figure contrasts with that of 35–42% of patients returning to work after only one day off reported by others[15,16]. This might indirectly indicate a low rate of reporting of episodes of short duration or milder intensity in our cohort. Since only 2.4% of our patients returned to work on the day of injury, our incidence of LBP might be taken as real incidence of absenteeism or time-loss injuries due to LBP. In that regard the incidence in our study (5.19/1000 worker-years) was close to the time-loss LBP rate reported in Canada (7.16/1000 worker-years)[4], but still lower than the annual incidence of absences for back pain of 5.6% reported by Watson, *et al* with a similar study design[19]. In Argentina

Table 3. Days off work in patients with low back pain (LBP), other work related injuries (WRI), patients with LBP that underwent surgery, and those with LBP that were studied with CT or MRI, but did not receive surgery.

	No. of Episodes	Days off Work				
		Mean	SD	95 % CI	Median	Range
LBP	339	21.07	45.9	16.2–25.9	7	0–422
Other WRI	5183	19.13	42. 4	17.5–20.7	7	0–510
Patients with laminectomy	9	172.5*	114.4	84.6–260.5	164	48–422
Patients with CT or MRI without surgery	24	82.4*	68.4	53.5–111.2	61.5	5–286

* Mann–Whitney: $p < 0.05$.

there is no clear advantage in taking time off work. A significant proportion (30%) of a worker's salary is related to 100% attendance at work, and they lose this if absent for one day, even if this is due to illness. For this reason it is usual for workers to carry on working despite having pain.

There could also be some possibility of under-ascertainment in this study (lower reporting, misdiagnosis, or wrong coding). The law was very new, and some employers were not fully aware of the procedures. Although employers were in charge of paying for the first 10 days of absence, they had to report the injury within 48 hours to receive payment from the insurer if time off work extended beyond that. This might explain to some extent the fewer episodes of short duration, as employers may have refrained from reporting the episode if the patient was back to work within 48 hours. However, the fact that medical costs were covered by the WRIU from the time of the injury, and that physicians and clinics had to report the patients in order to get their fee for service payment, surely compensated at least in part for the possible lack of employers' reports. As for cases being misdiagnosed or wrongly coded, we think this is improbable, because the clinical information and codes were checked by final year medical students specially trained in the ICD-9 coding system before entry into the database. Finally, Daltroy, *et al*, in a controlled trial of an education program to prevent low back injuries, found an incidence rate of 21.2 injuries per 1000 worker-years of risk[20], and Anderson reported an episode rate for lumbago of 9.1/1000 worker-years[21]. These figures, although still larger, are more similar to what we found.

In short, a lower incidence of consultation despite pain (due to lack of advantage of taking time off), the fact that we only considered consultation (and not self-reports) for LBP while at work or while traveling to/from work (and not that arising elsewhere), and some under-ascertainment of episodes of short duration due to lack of employers' reports, might explain in part our lower incidence rate.

Although some recent studies suggest that disabling LBP might persist even if the patient returns to work[18,22], in our group duration of work loss and rate of return to work were similar to those reported in other studies, in spite of higher initial absenteeism[19,20,23-28].

In contrast with other reports[20,23] we did not find an increase in duration of absence on recurrences. However, our number of recurrences was low (3%), probably due to the short duration of the study (6 months).

The number of surgeries and CT scans or MRI studies represent what this cohort of patients received, but not necessarily what they needed. In those patients that received surgery, we did not find that surgery shortened work absence. We cannot exclude a selection bias in which more severe or difficult cases went to surgery. The median time to surgery (35 days) suggests that most of the cases were not urgent. Work absence in patients who received surgery was even significantly longer compared with patients that were studied with CT scans or MRI but did not go to surgery. We decided to compare surgery patients also with this group, since those patients requiring CT or MRI were perhaps clinically more similar to those that underwent surgery than the whole group with LBP.

This is the first report, to our knowledge, of work related LBP from Argentina. We found, in this strictly defined cohort, a lower incidence of consulting for LBP compared with more developed countries. Several reasons, including a strict definition (diagnosed by physician and not by self-report questionnaire), an economic "penalty" for work absence, and some degree of under-ascertainment may in part account for this. In spite of this lower incidence, work absence was still very important, suggesting a strong economic impact. Our findings showed a similar incidence of lost days and time of return to work compared with other reports from well developed countries. They also confirmed that a small percentage of patients are still off work 6 months after the injury. Most of the few patients off work after this period either abandoned their job or had to be relocated. In our experience, surgery did not appear to shorten the time off work. Although Argentina is a developing country by "economic" measures, aside from a lower incidence of consultation for low back pain, the effect of this medical problem is similar to that in more developed countries.

REFERENCES

1. Macfarlane GJ, Thomas E, Papageorgiou AC, Croft PR, Jayson

MIV, Silman AJ. Employment and physical work activities as predictors of future low back pain. Spine 1997;22:1143-9.
2. Deyo RA, Tsui-Wu YJ. Descriptive epidemiology of low-back pain and its related medical care in the United States. Spine 1987;12:264-8.
3. Deyo RA, Cherkin D, Conrad D, Volinn E. Cost controversy crisis: low back pain and the health of the public. Ann Rev Public Health 1991;12:141-56.
4. Association of Workers' Compensation Boards of Canada. Work injuries and diseases, 1995–1997. Revised edition. Ottawa; 1998:18-25.
5. Volinn E. The epidemiology of low back pain in the rest of the world. A review of surveys in low and middle income countries. Spine 1997;22:1747-54.
6. Frymoyer JW, Pope MH, Clements JH, Wilder DG, MacPherson B, Ashikaga T. Risk factors in low back pain: An epidemiological survey. J Bone Joint Surg 1983;65:213-8.
7. Biering-Sorensen F, Thomsen CE, Hilden J. Risk indicators for low back trouble. Scand J Rehabil Med 1989;21:151-7.
8. Riihimaki H, Tola S, Videman T, Hanninen K. Low back pain and occupation — A cross-sectional questionnaire study of men in machine operating, dynamic physical work, and sedentary work. Spine 1989;14:204-9.
9. Kelsey JL, White AA. Epidemiology and impact of low back pain. Spine 1980;5:133-42.
10. Masset D, Malchaire J. Low back pain: Epidemiologic aspects and work-related factors in the steel industry. Spine 1994;19:143-6.
11. Papageorgiou AC, Croft PR, Ferry S, Jayson MIV, Silman AJ. Estimating the prevalence of low back pain in the general population: Evidence from the South Manchester back survey. Spine 1995;20:1889-94.
12. Guo H-R, Tanaka S, Camerson LL, et al. Back pain among workers in the United States: National estimates and workers at high risk. Am J Ind Med 1995;28:591-602.
13. Smedley J, Egger P, Cooper C, Coggon D. Prospective cohort study of predictors of incident low back pain in nurses. BMJ 1997;314:1225-8.
14. Brown JJ, Wells GA, Trottier AJ, Bonneau J, Ferris B. Back pain in a large Canadian police force. Spine 1998;23:821-7.
15. Leboeuf-Yde C, Kyvik KO. At what age does low back pain become a common problem? A study of 29,424 individuals aged 12-41 years. Spine 1998;23:228-34.
16. Walsh K, Cruddas M, Coggon D. Low back pain in eight areas of Britain. J Epidemiol Community Health 1992;46:227-30.
17. Papageorgiou AC, Croft PR, Athomas E, Silman AJ, Macfarlane GJ. Psychosocial risks for low back pain: are these related to work? Ann Rheum Dis 1998;57:500-2.
18. Croft PR, Macfarlane GJ, Papageorgiou AC, Thomas E, Silman AJ. Outcome of low back pain in general practice: a prospective study. BMJ 1998;316:1356-9.
19. Watson PJ, Main CJ, Waddell G, Gales TF, Purcell-Jones G. Medically certified work loss, recurrence and costs of wage compensation for back pain: a follow-up study of the working population of Jersey. Br J Rheumatol 1998;37:82-6.
20. Daltroy LH, Iversen MD, Larson MG, et al. A controlled trial of an educational program to prevent low back injuries. N Engl J Med 1997;337:322-8.
21. Anderson JAD. Occupational aspects of low back pain. Clin Rheum Dis 1980;6:17-35.
22. Van der Weide WE, Verbeek JH, Salle HJ, van Dijk FJ. Prognostic factors for chronic disability from acute low-back pain in occupational health care. Scand J Work Environ Health 1999;25:50-6.
23. Rossignol M, Suissa S, Abenhaim L. The evolution of compensated occupational spinal injuries. A three year follow-up study. Spine 1992;17:1043-7.
24. Schiottz-Christensen B, Nielsen GL, Hansen VK, Schodt T, Sorensen HT, Olesen F. Long-term prognosis of acute low back pain in patients seen in general practice: a 1–year prospective follow up study. Fam Pract 1999;16:223-32.
25. Van den Hoogen HJM, Koes BW, van Eijk JTM, Bouter LM, Devillé W. On the course of low back pain in general practice: a one year followup study. Ann Rheum Dis 1998;57:13-9.
26. Carey TS, Garret J, Jackman A, McLaughlin C, Fryer J, Smucker DR. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. N Engl J Med 1995;333:913-7.
27. Coste J, Delecouillerie G, Cohen de Lara A, Le Parc JM, Paolaggi JB. Clinical course and prognostic factors in acute low back pain: an inception cohort study in primary care practice. BMJ 1994,308:577-80.
28. Deyo RA, Diehl AK. Psychosocial predictors of disability in patients with low back pain. J Rheumatol 1988;15:1557-64.