

Abstract:

Introduction: As a part of a 2002 public awareness campaign on low back pain conducted by the Workers' Compensation Board of British Columbia (WCBC), the Clinical Services Department analysed the administrative data available at the WCBC. Methods: Data was extracted from the WCBC administrative data warehouse. The extraction was based on broad criteria using a combination of various codes from ICD 9, nature of injury and body part in order to identify low back pain related claims. Analysis was limited to data from the period 1987 - 2001.

Results: In the period 1987-2001, 261,762 new claims were filed for low back related pain (LBP). These claims represented 6% to 11% of all claims filed in those years. The average incidence of LBP was 24% (range 22% to 25%), \pm 75% of LBP claimants were males. The trend remained the same across time. The mean (\pm SD) and median age of LBP claimants were 36.9 (\pm 10.9) years and 36.0 years, respectively. 64% of the claimants were 40 years old or younger. There was a significant trend toward females being older than males at the time the claim was initiated. 97.5%, 2.3% and 0.3% of LBP claims were awarded short term disability benefits (STD), long term disability benefits (LTD) and health care cost only (HCO), respectively. There was a significant trend across time that more claimants were awarded STD instead of LTD or HCO. Overall, the median days of STD was 12 days. Longer days of STD were observed with increasing age of workers. The total number of STD days among LBP claimants represented 19% to 43% of the total STD days awarded at the WCBC in the period 1987 - 2001. The median LBP claim cost varied between \$ 838 Can to \$ 1483 Can. Overall, total claim costs related to LBP paid by the WCBC ranged from \$ 63 million to \$ 165 million Can, annually. An increase in the median claim cost and a decrease in the total amount of claims paid were observed over time.

Conclusions: LBP represents a significant medical and financial burden on the workers and employers of British Columbia.

Background:

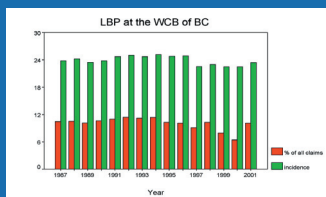
- Low back pain (LBP) is considered to be one of the most common causes of chronic sickness and disability in many populations
- International large population surveys report:
 - point prevalence of between 16% - 30%
 - 1 month prevalence of between 19% - 43%
 - life time prevalence of between 60% - 70%
- These population surveys suggest that the age of onset of back pain is spread evenly from the teen years to the early 40s
 - Cassidy et al (Canada):
 - point prevalence 28.4%; life time prevalence 84.9%
 - Nuprin Pain Report (USA):
 - 56% of adults had at least 1 day of back pain in last year
 - 14% had back pain > 30 days in the year
 - Mason et al (UK):
 - point prevalence 15%; life time prevalence 60%
 - Lebeouf et al (Nordic countries):
 - age 30-50, 1 year prevalence 44 - 54%; life time 66%
 - Skovron et al (Belgium):
 - point prevalence 33%; life time prevalence 59%
- Early 2003, the WCB of BC ran a short, television advertisement designed to raise awareness regarding occupational related low back pain in BC.

Materials and methods:

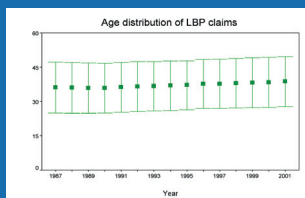
- The purpose of this exercise was to provide background information for monitoring future effectiveness of the media campaign mounted by the WCB of BC
- The media campaign:
 - Began November 2001
 - Frequency:
 - 2001 : 12 weeks starting November
 - 2002 : 10 weeks starting June
 - 2003 : 15 weeks starting March
 - Majority were 30 second spot TV advertisements
 - Gross rating points for these advertisements were between 100 - 150 per week
 - Target audience in general was adults aged 25 -54 years old with specific focus among BC workers, employers and interest groups such as unions, government and news media
 - 30 television stations were involved
 - Mainly late afternoon or evening runs
 - The message supplied was that no one wanted to move their back after back injury, however, the sooner an individual returned to normal activity the sooner they felt better
 - Data source:
 - Compensation data was extracted from the WCB of BC Data Warehouse by employing a combination of ICD-9 coding, body part and nature of injury
 - The combinations included:
 - ICD-9 coding for spinal stenosis (07240), lumbago (07242), sciatica (07243), lumbosacral neuritis or radiculitis (07244), unspecified backache (07245) and other symptoms referable to back (07248)
 - Body part coding for unspecified trunk (00400), unspecified back (00420), lumbar spine (00425), sacral spine (00426), lumbo-sacral spine (00427), multiple parts of back (00428), back not classified elsewhere (00429), back and other trunk but not shoulder (00496), lumbar region (23100), lumbo-sacral region (23301), unspecified location lower back (23901)
 - Nature of injury coding for sprains, strains, tears (00310, 02100), back pain, hurt back (09720), sciatica (17210), lumbago (17220), disc disorders (17239, 17290), facet syndrome (17292), radiculitis (17293)
 - Body Part and Nature of Injury coding are based on the Canadian Work Injuries Standard (CWIS) and the Canadian Standard Association (CSA)
 - Data were extracted from the period 1987 - 2001 by employing Crystal Report® 7.0. Data was then translated and analyzed further by employing SPSS for Windows ver. 12.0
 - Appropriate parametric and non-parametric statistical procedures were employed in the univariate analyses
 - Multivariate analysis was conducted in order to explore the independent contribution of various factors, such as age, sex, claim year, in selected outcome criteria, including claim costs and workloss days
 - Multiple linear regression was employed for these outcome analyses
 - Dummy variables were created whenever appropriate

Results:

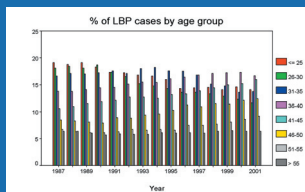
- There were 261,762 new LBP claims filed at the WCB of BC in the period 1987 - 2001.
- Annually, the number of new claims ranged between 11,032 - 20,713 claims
- LBP represented between 6.42% - 11.45% of all claims registered during the period
- In this period, the overall incidence of LBP was 23.97 / 100 claims/year. The incidence was relatively stable, between 22.44 - 25.18 / 100 claims/year



- Overall, the mean age (\pm 1 SD) of LBP claimants was 36.9 \pm 10.9 years.
- However, there was a significant trend over time that the mean age of LBP claimants were getting older. Claimants' mean age increased from 35 to 38 years



- The distribution of LBP cases over this period:
 - Remained stable among those age > 55 year old
 - Increased among those aged 35 - 45 year old
 - Decreased among those aged 25 - 30 year old



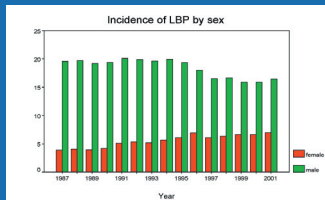
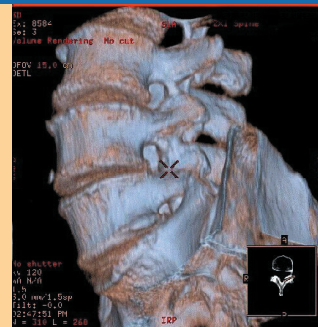
- In this period, the incidence of LBP was lowest among the extreme age groups (data not shown).
- In the period 1987 - 2001, there was a trend towards increasing proportion of LBP claims among females and decreasing LBP claims among males (data not shown).
- There was an increase in the incidence of LBP among females

Low Back Pain

at the Workers' Compensation Board of British Columbia, Canada, 1987 - 2001

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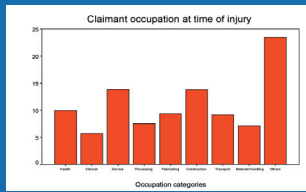


- There was a significant trend that females were older than males at the time the claims were initiated
- Overall, the major types of injury related to LBP claims were found to be:
 - 'Overexertion' (\pm 68%), due to pulling, lifting, turning, pushing, carrying, welding, throwing or repetitive motion
 - 'Other bodily motion' (\pm 11%), such as bending, climbing, crawling, reaching, twisting, sitting, slipping with or without loss of balance, stepping in hole and standing
 - 'Fall from elevation' (\pm 8%), such as fall from roof, ladder, scaffold, stack of materials and roof opening
 - 'Fall on the same level' (\pm 7%), such as fall to floor or walkway

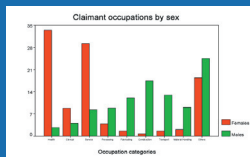
- Across times, a trend emerged, suggesting the proportion of LBP claims due to 'fall from elevation' decreased, while the proportion due to 'other bodily motion' increased (data not shown)
- Overall, females were more likely to suffer from 'fall from the same levels' than males. Males were 2-3 x more likely to suffer 'fall from elevation' than females (data not shown). This pattern was also observed across different claim years (data not shown)

- There was a trend across times that injury due to 'other bodily motion' increased with age while injury due to 'overexertion' decreased with age (data not shown). This pattern was also observed across different claim years (data not shown)

- Overall, the type of occupations of LBP claimants at the time of injury included:
 - Service jobs (13.7%), such as housekeepers, room maids, chefs, short order cooks, building maintenance supervisors, custodians, janitors, home support workers, fire fighters
 - Construction trades (13.7%), such as carpenters, carpet layers, construction helpers/ labourers, electrician, drywall applicators, heavy equipment operators, gas fitters, painters, roofers, plumbers
 - Medicine - health care (9.8%), such as ambulance attendants, any category of nurses, nurse aides
 - Fabricating (9.3%), such as car, bus and heavy duty mechanics, assemblymen, AC mechanics, cabinet makers, millwright, treamen, woodworkers
 - Transport operators (9.1%), such as delivery drivers, airport attendants, bus drivers, truck drivers
 - Processing jobs (7.5%), such as bakers, butchers, labourers, mill hands, meat packers, veneer cutters
 - Material handling jobs (7.1%), such as dock men, forklift drivers, longshoremen, warehouse persons
 - Clerical jobs (5.6%), such as cashiers, counters, shippers, storemen, office clerks
 - Other jobs (23.3%) including in the area of arts, sciences, farming (esp. gardeners), forestry (esp. buckers, fallers & tree planters), mining, teaching (esp. at kindergarten & elementary levels), sales (esp. retail clerks, store managers, drivers) and others (esp. yardmen & grocery clerks)

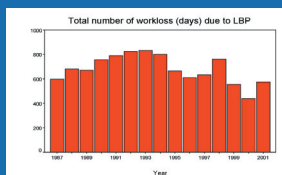


- In the period 1987 - 2001, a declining trend was observed in the proportion of LBP claimants working in the processing, fabricating and construction area. On the other hand an increasing trend was observed among those working in the clerical and services area (data not shown)
- As was expected, overall, there was a significant difference in the distribution of occupations among males and females
 - More female LBP claimants were working in healthcare (33%), clerical and services area
 - Similar trend was observed across different years (data not shown)

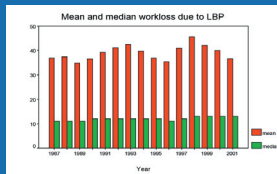


- Age provides a significant contribution across different occupation categories in LBP claimants (data not shown)
 - In the 'healthcare' field the highest proportion of claims was observed among those aged 41-55 years
 - Young workers (aged \leq 25 years) had the highest proportion of LBP claims among those working in the 'clerical' area
 - With the exception of young workers (\leq 25 years), the proportion of LBP claimants increased with increasing age among those working in the 'services' area
 - Among those working in the 'processing', 'material handling' (except > 55 years) and 'others', it seems that the proportion of claimants decreased with increasing age
 - The same patterns were observed across different years

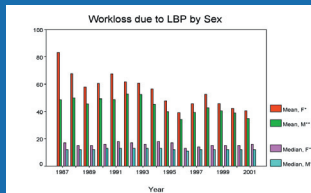
- From 1987 - 2001, on average, British Columbia workers lost 680,000 days annually due to low back pain at the workplace. The annual workloss due to LBP varied from 440,000 - 830,000 days



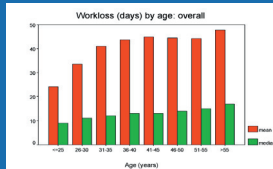
- The mean and median workloss days due to LBP across time is shown below:
 - The mean workloss days varies across time
 - The median remain relatively steady between 11 - 13 days



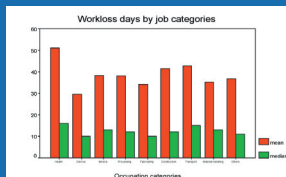
- Females had significantly longer (mean or median) workloss days compared to males
 - Overall, the mean workloss days for females was 51 days (median 15 days) and 43 days for males (median 12 days)



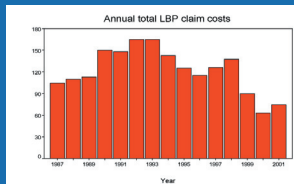
- Number of workloss day was significantly increased with an increase in age
 - Similar patterns were observed when the data were analyzed separately for each year



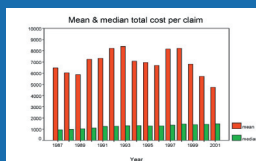
- Workers in the 'Healthcare' area had the highest (mean or median) workloss days compared to other occupations
 - A similar pattern was observed when the data were analyzed separately for each year



- From 1987 - 2001, total costs for LBP related claims ranged from \$ 63 million - \$ 165 million Can, per year. The average total claims costs was \$ 122 million, annually

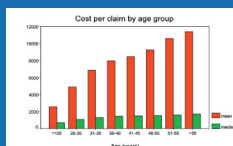


- There was a large discrepancy between the mean and median individual claim costs
 - The mean claim costs ranged from \$ 4,750 Can - \$ 8,400 Can with an overall mean of \$ 6,991 Can
 - The median claim costs ranged from \$ 940 Can - \$ 1,480 Can with an overall median costs of \$ 1,230 Can

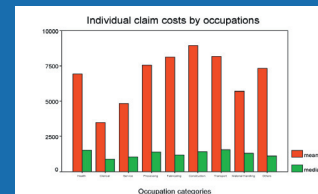


- LBP claims cost more among males than females (mean and median total individual claim costs) (data not shown)
 - With the exception of the year 1987, mean and median LBP claim costs were higher among males than females

- There was a significant trend that the cost of LBP claims increased with increasing age. The trend remained statistically significant ($p < 0.000$) when the data was analyzed per year (data not shown)



- There was a significant difference with regard to claim costs among different occupational categories:
 - Claimants in the construction and transportation industries had the highest, mean and median claim costs. While those in clerical occupations had the lowest costs
 - Similar patterns were observed across different years (data not shown)
 - Interestingly, median, claim costs related to medicine-healthcare occupations increased sharply from 1987 - 2001 (data not shown)



- Overall, 97.5% of LBP claims were awarded short term disability (STD), 0.3% were for Health Care Only (HCO) costs and 2.3% were for Long Term Disability (LTD) (data not shown)
 - Across time less LBP claims were awarded LTD and more claims were awarded STD
 - The proportion of LBP claimants awarded with LTD increased with increasing age. The proportion increased from 0.7% among claimants aged \leq 25 year to 4.8% among claimants > 55 year (data not shown)
 - Males were 1.4 x more likely to be on LTD than females (data not shown)
 - The highest proportion of LTD claims were awarded to claimants in construction trades (data not shown)
 - Among those awarded HCO, the median claim costs were \$ 132 Can (with, by definition, no workloss)
 - Among those awarded STD, the median claim costs were \$ 1,190, with 12 median workloss days
 - Among those awarded LTD, the median claim costs were \$ 88,350, with 297 median workloss days
- Multivariate analysis:
 - Several different models, for total claim costs and number of workloss days as independent variables, were fitted.
 - The best fitted model for predicting total claim costs is presented in Table 1 and Table 2
 - Increased age significantly increased the total claim costs. Largest claim costs increase was predicted among claimants > 50 years. One year incremental increase in age was predicted to raise the claim costs by \$ 148.60 Can
 - Workloss days was the largest contributor in predicting total claim costs
 - The R² for model 1 and model 2 was 0.40
 - Models to predict number of workloss days, with variables/dummy variables of sex, claim year, age or age groups and/or occupation categories, is not presented in here due to poor model fit (as measured by R² or adjusted R² of 0.01)

Table 1.

Independent variable	B	SE B	p-value
-constant ()	-2873.1	238.9	0.000
-Workloss days	274.9	0.8	0.000
-Females vs males	-5367.3	207.5	0.000
-Age 26-30 vs age \leq 25	-22.4	329.2	0.95
-Age 31-35 vs age \leq 25	70.3	318.3	0.83
-Age 36-40 vs age \leq 25	897.9	320.1	0.029
-Age 41-45 vs age \leq 25	1343.6	333.9	0.000
-Age 46-50 vs age \leq 25	2688.6	369.5	0.000
-Age 51-55 vs age \leq 25	5073.5	405.9	0.000
-Age > 55 vs age \leq 25	5756.3	450.3	0.000

Table 2.

Independent variable	B	SE B	p-value
-constant ()	-7134.7	327.6	0.000
-Workloss days	274.7	0.8	0.000
-Females vs males	-5369.7	207.2	0.000
-Age (years)	148.6	8.5	0.000

Conclusions:

- LBP is one of the most common causes of chronic illness and disability
- At the WCB of BC, the incidence of LBP claims was 23.97/100 new claims/year
- LBP represented about 6% - 11% of all claims registered between 1987 - 2001
- The mean age of LBP claimants was 37 years. Over time, there was a significant trend that the mean age of LBP claimants was increasing
- There was a significant trend, over time, of increased LBP claims among females and a decreasing number of claims among males
- Major causes of injury related to LBP claims were overexertion, other bodily motion, fall from elevation and fall on the same level
- Those working in 'Service' jobs, 'Construction' trades, 'Health Care' area, 'Fabricating', 'Transport' operators, 'Processing' jobs, 'Material Handling' and 'Clerical' jobs constituted 77% of LBP claimants
- Annual workloss due to LBP in BC was estimated at 680,000 days
- Females had longer workloss days than males
- The number of workloss days increased with increasing age
- The average total claim costs for LBP was \$ 122 million Can, annually. The median claim costs were \$ 1,230 Can.
- LBP claims cost were higher among males than females.
- There was a significant trend that LBP claim costs increased with increasing age
- 97.5% of LBP claims were awarded short term disability. 2.3% of LBP claims were awarded long term disability
- Age, sex and number of workloss days were identified as important variables in predicting total claim costs
- Number of workloss days was the single most predictor of total claim costs

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