The frequency and incidence of low back pain/sciatica in an urban population

LSP FP 164

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Abstract

The frequency, incidence and severity of low back pain was assessed by a random telephone survey of 314 urban New Zealanders. Relationships between the severity and frequency of low back pain and referred lower extremity pain and other variables such as occupation, recreation, age, sex and predominant working posture was analysed.

Point incidence was 17.5%, weekly incidence 33.4%, yearly incidence 63.7% and total incidence 79%. Some 28.3% get frequent minor episodes and 6.4% get frequent severe episodes of low back pain. Nearly 50% suffer the initial episode before the age of 30 years.

Of those suffering low back pain within the last seven days, 14.3% experience reference below the knee and the total incidence of below knee pain was 13.7%. Over half (51.6%) have pain that has lasted seven days or less, but a third have had pain for longer than seven weeks. No correlation between the incidence of low back pain and referred pain and occupational posture was found.

In conclusion, this telephone survey established that the incidence of low back pain in New Zealand is similar to that reported in overseas studies. The survey could not establish differences in low back pain characteristics across different social groupings, nor could a relationship between occupational posture and low back pain be established.

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Introduction

Low back pain is a widespread medical disorder which significantly affects from 50 to 80% of the population [2,5,6]. The Quebec Task Force Report on Activity Related Spinal Disorders states that disorders of the spine are an epidemic in the modern world. Furthermore, although mortality from spinal disorders is low, morbidity and health care costs are high and the economic burden on society is significant [4].

In New Zealand, Burry [1] has reported that back pain is the second most common cause for a claim on the Accident Compensation Corporation, and that 5.3% of back patients were off work for more than six months and accounted for over 50% of total compensation payments. This figure compares with the situation in Quebec where 7.4% of all claims for spinal disorders accounted for 75.6% of all compensation costs [3]. It is important that health care providers and administrators have up to date information on the incidence, frequency and impact of disease and disability to enable efficient resource planning and allocation.

This paper presents the results and analysis of the lumbar data gathered by a random telephone survey conducted between July 1987 and December 1988 in metropolitan Auckland. We have endeavoured to establish if New Zealand follows international patterns of incidence, frequency and morbidity of low back pain in the general population. Results and analysis of the cervical data will be presented in a further paper.

The purpose of the study was to assess the frequency and incidence of low back pain and sciatica in the study population; to assess the range of severity and frequency of low back pain and sciatica in the individuals in the study population; to determine age and sex relationships to low back pain and sciatica; to determine any relationships between low back pain and sciatica and occupation or recreational activity; and to assess the impact of low back pain on people's ability to work.

Methods

The use of a telephone sampling procedure was justified on the basis that according to the 1988-9 New Zealand Official Yearbook, there is a telephone in 95.1% of New Zealand dwellings (based on 1986-7 data from the household expenditure and income survey). It was therefore assumed that a telephone survey adequately penetrates the Auckland urban population and derives a satisfactory sampling, although it is recognised that some portions of the population may be underrepresented such as lower socioeconomic groups.

Sample: the target sample of 365 was designed to obtain a reasonably accurate estimate (with a confidence interval of approximately plus/minus 5% at the 95% level of confidence) of population prevalence for a random sample of adults, and also to allow for some testing of hypotheses about differential prevalence amongst appropriate groups within the overall population. The achieved sample of 314 individuals aged 15 and over were randomly selected by the following process: the tenth surname of every third page of the alphabetical listing in the Auckland Telephone Directory 1987 was used, starting from page 1. Business names and addresses were excluded. There are approximately 1000 pages in the Auckland telephone book, and so over 300 names were selected on the first run through the book. The selection of further names as required followed the same format, except that the second run through began at page 2. If a valid response from a number and name was unobtainable, the next name in the selection was tried until a valid response was obtained.

The selection of names from the telephone book was carried out by an individual who had no further involvement in the study.

The ten interviewers were physiotherapists who received a list of names and telephone numbers from the study organiser. The study organiser did not conduct any interviews.

The questions: the questionnaire consisted of two parts; a general profile section to establish age, sex and occupation and a low back section to gather specific information about the incidence, frequency and characteristics of low back pain. The questionnaire is available from the principal author upon request.

Data analysis: the data was analysed by the study statistician (Crothers) utilising the software package SPSS-X release 3.1 for IBM VM/CMS to develop frequency distributions and to test for possible correlations between prevalence and age, sex and occupational posture. The 95% level of confidence was employed in assessing statistical significance of findings. Given the sample size, the maximum error in inferring from proportions in the sample to the proportions in the study population is within +/-5.5%.

The data analysis concentrated on the measures of the incidence, duration and severity of pain. The proportions of the general population suffering pain were estimated. Duration and severity of pain was estimated only from those suffering pain within a week prior to the interview.

In order to ascertain differences between groups in the population, cross tabulations were run for each of the measures against age, sex and posture required at work. A standard test of significance (x2) was used to ascertain if the groups differed (at the 95% level of confidence). The results of the chi-square coefficients are supplemented by appropriate measures of association; especially eta (the correlation ratio).

Results

Incidence of pain: the instantaneous incidence of low back pain: that is those experiencing low back pain on the day that the interview was conducted was 17.8%. The incidence of those stating that they have had pain in the last week (but not that day) was 16.2%. The incidence of low back pain in any one week is thus 34.0%.

Another 30.7% had experienced low back pain within the previous 12 months. The reported yearly incidence of low back pain is therefore 64.7%. Of the study population 78.3% claimed to have had back pain at some time over their lifetime.

Frequency of pain: we attempted to determine the number of episodes of low back pain that a person might experience in a twelve month period. Almost exactly one half of the sample had experienced at least one episode of lower back pain over the previous 12 months. The attempt to measure the frequency of episodes of minor and severe pain resulted in some interesting results. No attempt to quantify the words "minor" and "severe" was made, and the decision on what constituted severe or minor pain was left as an entirely subjective assessment of the individual being interviewed. Frequency was either "occasional" or "frequent". "Occasional" episodes were defined to the interviewee as three or less episodes per year, and "frequent" episodes as more than three episodes each year. The frequency of minor pain is presented in Figure 1, and the frequency of severe pain is presented in Figure 2.

Correlates with pain: the various measures of lower back pain recorded somewhat different patterns of correlation against age, sex and occupational posture. In terms of frequency of suffering lower back pain (period since last had episode) there

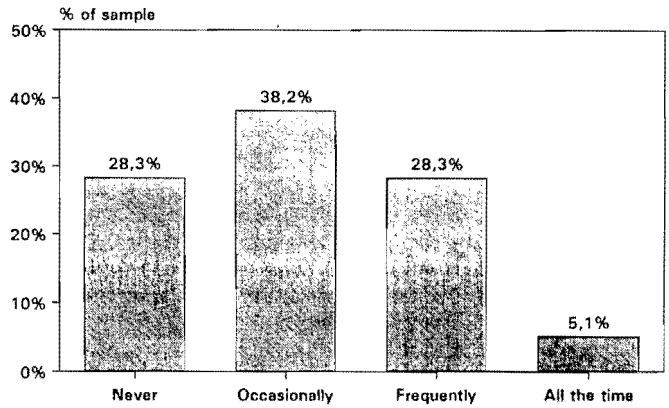


Figure 1.—Frequency of minor low back pain.

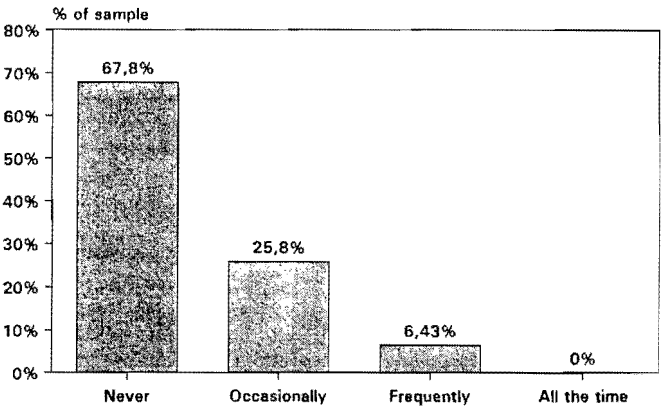
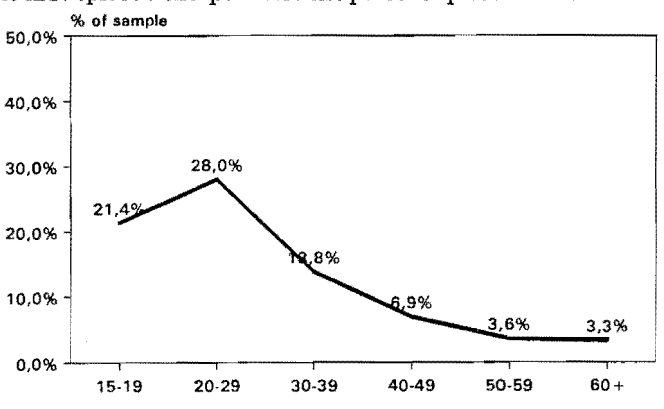


Figure 2.—Frequency of severe low back pain.

is no overall pattern by age group, but there is a strong gender difference. Twice as many women (26%) as men (14%) reported never suffering, while some 50% more men (21%) than women (14%) reported suffering pain at the time of the interview.

Age at first occurrence: our results show that 77% of the sample were able to recall the age at which low back pain was first experienced. For these respondents the mean age of onset was 28 years (median 28, SD 13.1). The distribution of first onset of low back pain is presented in Figure 3. Our results indicate that the majority (63.2%) of low back pain sufferers experience the first episode before the age of 40 years. No attempt was made to measure the severity or distribution of the first episode except where the present episode was the first.



(Note 23.0% missing data)

Figure 3.—Age of first occurrence of low back pain.

Distribution of pain: individuals experiencing pain over the previous seven days were asked to indicate the distribution of their pain. Buttock and thigh pain were most common at 28.6% and 26.7% respectively, followed by below knee pain (14.3%), and below knee pain at some time (13.7%). It was not possible to establish any relationship between the pattern of referred pain, and age, sex or occupational posture.

Duration of pain: the duration of current or recent pain (less than seven days), varies from a few hours to many years. Using the Quebec Task Force Report classifications, "acute pain" was reported by 51.8% of the subjects, while 33.3% have "chronic pain" (Figure 4).

Pain intensity: measurement of pain is always a difficult task, but an attempt to quantify this variable was made with those individuals experiencing pain that day and then those experiencing pain within the last week using a ten point

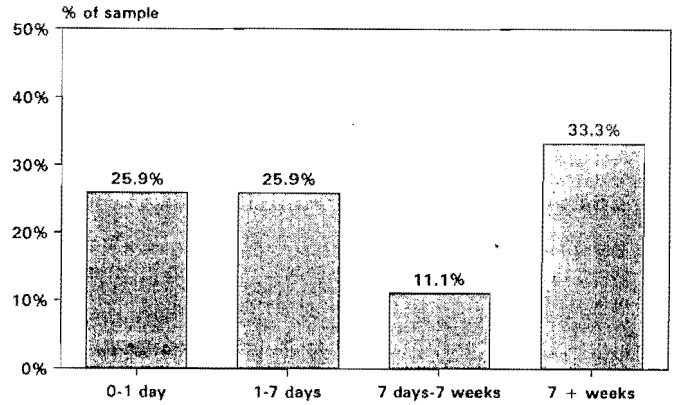


Figure 4.—Duration of present episode of low back pain.

numerical (and by necessity, verbal) scale. The mean score for the former was 5.0 (with a median at 4 and a standard deviation of 2.45). Those responding in relation to the last week reported rather less intense pain (mean 4.4, median 4.0, SD 1.0).

Occupational postures: occupational postures were assessed. Most occupations involve a variety of sitting, standing and walking postures. Analysis of the data from those individuals whose occupations involve a particular posture more than three quarters of the time reveals that sitting is more often a predominant posture (23.9%) than is standing (12.7%), and standing is more often a predominant posture than is walking (9.2%). The remaining 54.2% were not able to identify a predominant occupational posture. No correlation between the incidence of low back or referred pain and the occupational posture was found. Similarly, no correlation existed between the occupational posture and the frequency of "minor" or "severe" pain. The failure to find such correlations may be a consequence of several factors: (1) since nearly 80% of the sample population have experienced pain at some time, and 33.4% have either more than three episodes per year or continuous minor pain, lower back pain is extremely common and this masks any more detailed variation. (2) An individual's occupational position will account for perhaps 7-10 of the 24 hours in any day, and for perhaps five days per week. (3) The common posture at work may be an inadequate indicator of the stresses an occupation places on a person's lower back. (4) There is interaction between the variables which masks a causal pattern: those with severe back problems (possibly caused by jobs which have been stressful on their backs) are likely to have already adapted by switching to less stressful jobs. Similarly, only those with strong backs may attempt jobs requiring severe back stress. Establishing a clear link between occupation and back pain may be very difficult, especially using population survey data.

Discussion

This study has found that, as was expected from overseas studies, there is widespread incidence of lower back pain. The methodology employed seemed adequate for obtaining good information on the distribution of lower back pain and related complaints and also gave important information on number of episodes, duration and intensity of pain. The study was less successful in displaying marked differences in lower back pain across different social groupings, but the lack of strong relationships may itself be an important finding. In particular, the pervasiveness of lower back pain across nearly all age groups is an interesting finding. More detailed research is needed to uncover some of the key factors which shape the incidence of lower back pain.

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