

Low back pain in mineral sand mine workers

Incidence and management

OBJECTIVES To establish the prevalence of low back pain suffered by workers in three mineral sand mining companies operating in the south west of Western Australia; to determine what use was made of health care providers by those experiencing low back pain; to derive the perceptions of the value of the treatment for low back pain by health care providers.

METHOD A total of 350 questionnaires were distributed to sand mine workers who were asked to complete the questionnaires which were collected 1 week later.

RESULTS Completed questionnaires were returned by 204 workers giving a 58% response rate. Seventy-seven percent of male workers and 60% of female workers could remember suffering low back pain sometime in their lives. Low back pain was experienced by 61% of male sufferers and 57% of female sufferers at least two to three times a month. A total of 16% of men and 12% of women experienced low back pain on a daily basis while 30% of men and 22% of women reported that the type of work they were doing increased their low back pain. Only 19% of all male workers and 6% of all female workers had ever taken time off work due to low back pain with the average time taken off work for an acute episode, being 14 days. Overall, 47% of respondents indicated that the treatment received from general practitioners was ineffective, and only 16% of respondents assessed GPs as being better than average. Chiropractors were rated higher than physiotherapists or general practitioners in providing the most effective treatment for low back pain. Mobilising exercises were considered to be better treatment than analgesics or anti-inflammatory medication.

CONCLUSION Low back pain is a common problem among mineral sand mine workers who preferred the services of the chiropractor or the physiotherapist to the general practitioner. Physical treatment modalities with stretching and mobilising exercises were preferred to pharmacological treatment.

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Low back pain is defined as a symptom complex which is localised to the lumbar spine, with or without referral to the leg or foot.¹ This broad definition lacks accuracy because in 60–90% of cases of low back pain no definitive diagnosis can be made.^{2–4} Low back pain appears to be an inevitable part of human life with estimates of the incidence of low back pain throughout Australia and the Western world, ranging from 60 to 90% of the adult population, while Waddell found that developing countries have a similar incidence of low back pain to Western countries.^{5,9}

Low back pain is estimated to affect 10% of the adult population at any one time and the importance of low back pain has been recognised as being a priority in the Australian National Occupational Health goals.^{10,11} The costs to industry in New South Wales in 1991–1992 amounted to \$300 million in compensation payments, \$200 million in lost production and \$100 million in hospital costs. Personal costs, medical, paramedical and legal costs, were not estimated in this study.¹²

In Australia, Ganora claimed that workers compensation payments for low

back pain, amounted to at least \$1 billion per year.¹³ Associated with these claims, is lost productivity, estimated to be valued in excess of \$2 billion. In the work place, back claims represent the leading cause of time lost due to injury, accounting for 28% of all claims.

The incidence of acute back injury in Western Australia was found to have decreased by 51% in the period 1991–1992 and 1994–1995.¹⁴ In other studies, although the incidence of low back pain has not increased, the incapacity and costs associated with it, have risen.¹⁰

Table 1. Frequency of low back pain experienced by full time sand mine workers.

Frequency	Males reporting low back pain		% of all males surveyed	Females reporting low back pain		% of all females surveyed
	n	%		n	%	
Daily	19	16	12	4	14	9
2-3 times/week	25	21	16	5	18	11
2-3 times/month	30	25	19	7	25	15
2-3 times/year	30	25	19	7	25	15
once a year or less	17	14	11	5	18	11
Total	121			28		

Total surveyed was 204 (157 men and 47 women)

Table 2. Distribution of low back pain in sand mine workers by 'sex and age'.

Age	Males		Females	
	n	%	n	%
<30	25	21	16	57
31-40	50	41	9	32
41-50	27	22	2	7
51-60	19	16	1	4
>60	1	1	0	0
Total	122		28	

Table 3. The incidence of smokers among sand mine workers with or without low back pain (LBP).

Pain distribute	n	Current smokers		Current non smokers	
		n	%	n	%
Males with LBP	121	42	35	79	65
Males without LBP	36	8	22	28	78
Females with LBP	28	3	11	25	89
Females without LBP	19	2	11	17	89

In view of the interests of the Western Australia Government in the problems of back pain in the work force, as well as the established criteria of risk factors, the authors decided to determine the incidence of low back pain and effectiveness of certain treatments in a rural area in

south west of Western Australia. All full time workers in the sand mining industry were surveyed in order to isolate any issues that could be addressed further to improve the management of low back pain. In particular, the objectives of the study were:

- to establish the prevalence and age distribution of unreported low back pain suffered by workers in three mineral sand mining companies operating in the south west of Western Australia.
- to establish which groups of health care providers were chosen for low back pain consultation.
- to derive the opinion of patients with low back pain as to which providers and which treatments were considered to be the most effective.

Methodology

A questionnaire was constructed after consultation with Occupational Health and Safety Officers (OHSO), WorkCover case managers and general practitioners, all of whom were familiar with the industry. Before being given to the workers, the questionnaire was assessed by consultants in the Southern Public Health Unit of the WA Government to ensure clarity and check for ambiguities. Piloting the questionnaire was not pursued because pre-exposure might have biased the results and there was no similar group of workers that could have been used as a pilot population.

The questionnaires were distributed by the OHSOs to full time workers of three sand mining companies irrespective of the worker's job description. The workers were asked to fill in the questionnaire in their own time and to return the completed questionnaire at the time of the next pay period. A total of 350 questionnaires were delivered, which was an estimated 80% of full time workers. The remaining 20% were unable to be contacted due to leave of various types, work rosters or refusal to participate. Apart from encouragement by the OHSOs to participate, no additional effort was made to increase the response rate.

As this was primarily a descriptive survey to determine the presence of low back pain in workers, further study would be undertaken if any group of

workers could be identified as having more pain than others. In this instance no attempt was made at either qualitative or quantitative analysis of the patients' perceptions of their low back pain treatment modalities or outcomes.

The questionnaire also addressed personal characteristics of the patient such as gender, age, height, weight, presence of low back pain, treatments chosen and employer response.

Results

Two hundred and four questionnaires were returned giving a 58% response rate. There were 157 male respondents with an average age of 38 (range 21–62) while the 47 women had an average age of 38 (range of 19–50). Of the 157 men who completed the questionnaire, 121 (77%) indicated that they had experienced some low back pain sometime in their life compared to 28 (60%) of the 47 women. The frequency of low back pain in these workers, is shown in *Table 1*.

Pain and work

When asked whether the work affected their pain, 47 men (30%) considered that their work increased their low back pain as compared to 10 women (22%). Of those workers who worked with pain, 95% considered that the level of pain was of the order of 1 or 2 on a visual analogue scale of 0–5 with 0 being no pain, and 5 being severe pain and unable to work. Unless time was taken off work due to acute back pain, workers did not report any incidence of low back pain incurred while working.

Age

Of the 41 men who made their employer aware of their low back pain, only 22 (53%) felt that they gained some support from the employer in order to maintain a better working environment. The support offered by the employers included a range of duties in addition to supportive measures such as adequate seating, lumbar support and lifting assis-

tance. Seventy-five (62%) male respondents were 40 or younger, while 25 (89%) of female respondents were 40 or younger. This supports the impression that a significant proportion of the work force suffering low back pain were in the younger age group (*Table 2*).

Lost work days

During the previous 12 months, 31 (20%) male workers and three (6%) female workers had taken time off work because of their low back pain. Time off for males ranged from 1 day to 5 months before returning to their normal employment. The average time off work was 14 days. The three women averaged 3 days off work. Unfortunately no provision was made in the questionnaire for graded return to work programs, hence the actual time off full productive work may have been greater than indicated.

Treatment

Forty-seven men (30%) and 12 women (25%) chose not to seek any professional treatment for their low back pain presumably because such pain is considered inevitable and usually improves with time, rest and pain relief.

A major question centred around which health professionals were consulted and the workers' opinion of the quality of the treatment. Professional treatment was sought by 105 workers over a period of 12 months, with some visiting more than one type of provider. *Figure 1* gives a graphical perception of the efficacy of treatment received from GPs, chiropractors and physiotherapists. Of particular interest is the poor rating of the management of low back pain by GPs.

Medication was considered to be about 50% effective, compared with stretching and mobilising which rated as approximately 90% effective (*Figure 2*).

In relation to lifestyle questions, smoking rates were higher in men with low back pain, compared to men without low back pain while for women it was almost

equal (*Table 3*). These figures approximate published Australian statistics.¹⁵

The body mass index (BMI) figures are shown in *Table 4* and indicate that 4% of female workers were considered to be obese (BMI greater than 30), whereas 14% of men working in the same industry were considered obese. Further study of the data revealed that 20 (65%) of the male workers who had time off work from acute injury, had a BMI of more than 25 while six (11%) were considered obese.

Discussion

This survey was designed to determine the incidence of low back pain suffered by workers while at work so that such problems could be identified and treated appropriately with a view to improving work practice and subsequent productivity.

The fact that in this survey one in three men and about one in four women did not seek professional help could mean that their level of pain was such that it did not interfere with their quality of life.

The average time off work for those who had time away because of acute injury was 14 days. The cost of low back injury in terms of lost productivity is difficult to estimate.

From the point of view of the medical profession, the poor esteem in which the GP is held by the sand mine workers must be cause for concern. With chiropractors accepted as primary care physicians for musculoskeletal work related injuries and physiotherapists performing more diagnostic roles in musculoskeletal medicine, it is worrying to learn that the skills of the GP in the management of low back pain have a low rating, making the issue of musculoskeletal education, both at the medical undergraduate and postgraduate level, an increasingly important one.


This survey reveals that physiotherapists and chiropractors are perceived to be a more effective option for the management of low back pain even

though their services do not attract any Medicare benefit, although some workers were likely to be on a compensation benefit. Hence, patients are prepared to pay for these services even though the rebate may be small or non-existent.

Swezey suggests that patients respond to hands-on services because something is being done,¹⁶ rather than the injured worker being told to take it easy or take pills which is a common directive from GPs. It therefore becomes important for GPs to be aware of appropriate exercise prescriptions for low back pain. In order for this to be achieved, further musculoskeletal education needs to be undertaken, both at the undergraduate and postgraduate level. If the general practitioner is to remain the primary care provider in all aspects of health care, impetus and remuneration need to be given for upskilling in this area of general practice.

Fortunately, the number of smokers in society is gradually decreasing and this survey indicates that the level of smokers in the sand mine industry is no different from the general population.¹⁵

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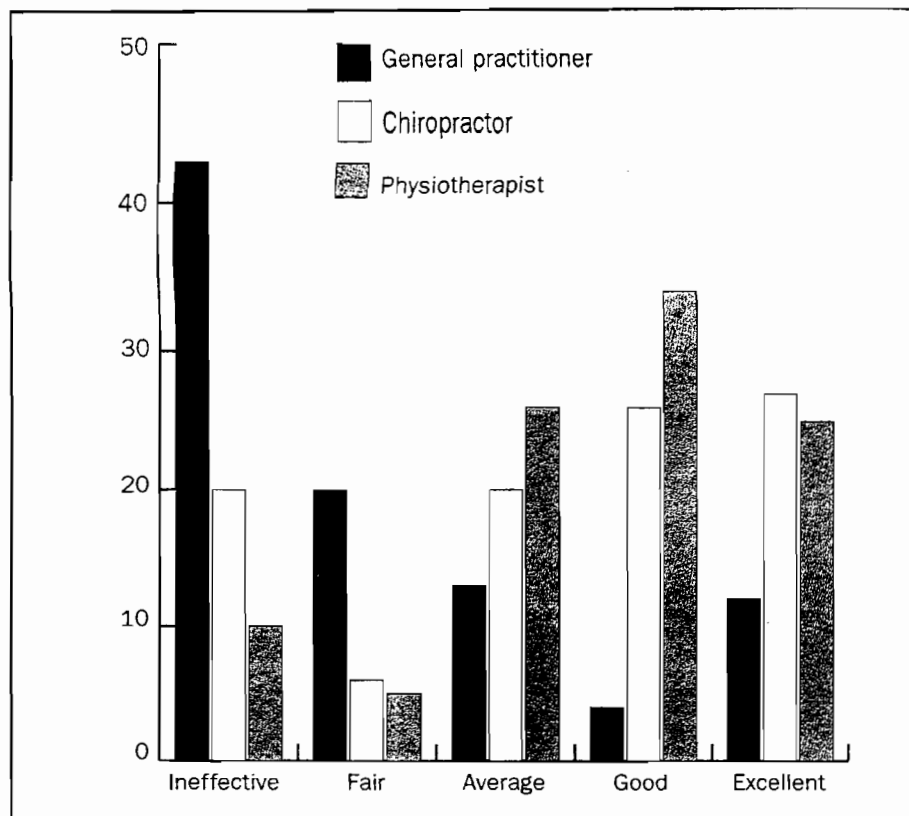


Figure 1. Worker's assessment of treatment by health professional for low back pain.

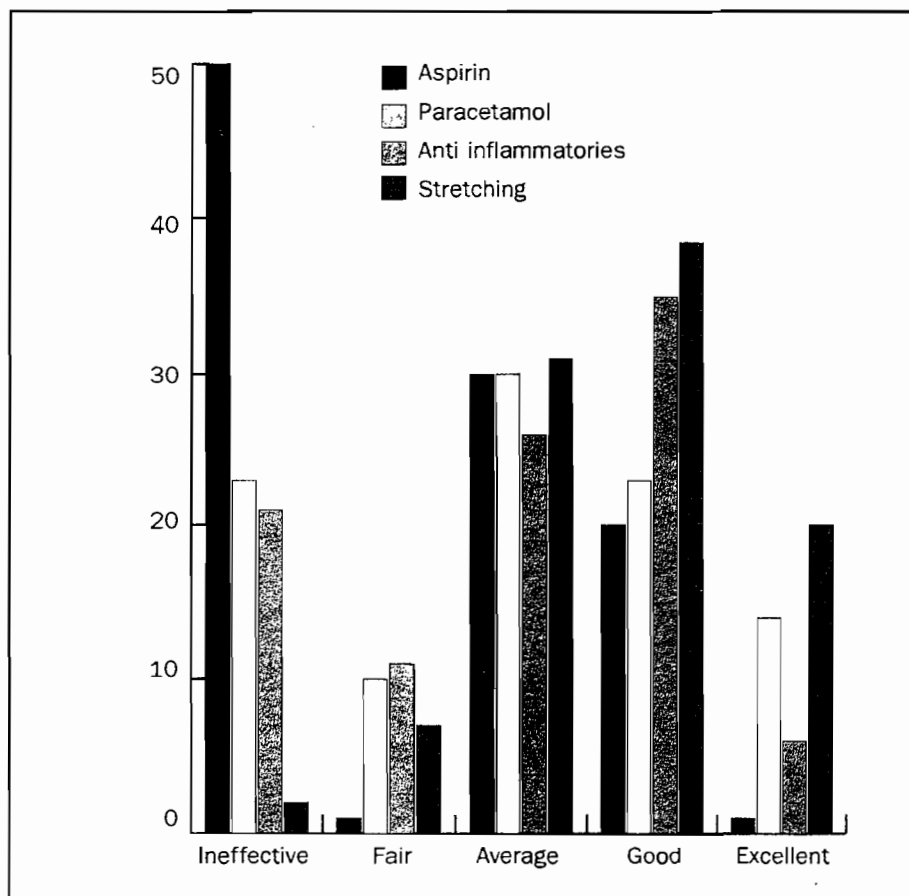


Figure 2. Worker's assessment of selected treatments for low back pain.

Table 4. The relationship of BMI to workers with or without low back pain (LBP).

Pain distribution	n	BMI<25		BMI>25		BMI>30	
		n	%	n	%	n	%
Males with LBP	121	51	42	54	45	16	13
Males without LBP	36	13	36	15	42	8	22
Females with LBP	28	21	75	6	21	1	4
Females without LBP	19	13	68	5	26	1	6

However, there is some indication that low back pain is experienced in men who smoke more so than in men who do not smoke. There did not appear to be any perceivable difference for women, bearing in mind the number of smokers in this group was quite small.

The lack of correlation between BMI and low back pain is similar to Jensen's study which found that 'obesity is another factor that has long been linked to low back pain'. However, it appears that it is only those in the highest 20% of BMI that seem to be at increased risk.¹⁰ It is noteworthy that nearly two-thirds of male workers were overweight while 18% of female workers were overweight (ie. a BMI of greater than 25).

Low back pain in this study was experienced more commonly in workers under the age of 40 than over, which means that these people have several decades of working life that is being hampered from time to time by low back pain. Future Occupational Health and Safety programs need to continue to ensure that all workers have a safe and comfortable working environment that will minimise suffering from low back dysfunction.

Conclusion

The two major outcomes from this study are:

- General practitioners are the least preferred options for effective management of lower back pain among injured sand mine workers who prefer the services of chiroprac-

tors and physiotherapists.

- Low back pain sufferers indicated that stretching and mobilising exercises were more efficacious than analgesics and anti-inflammatory medications for the management of their low back pain.

Other outcomes from this study have revealed:

- An average of 14 days off work for low back pain in 34 of 149 workers suffering low back pain.
- 63% of men and 89% of women with low back pain were less than 40 years old.
- 35% of men with low back pain were smokers while only 22% of male non smokers experienced low back pain.
- 41% of all male workers and 72% of all female workers had a normal BMI.

References

1. Frank A. Low back pain. *Br Med J* 1993; 306:901-909.
2. Twomey L T. A rationale for the treatment of back pain and joint pain by manual therapy. *Phys Ther* 1992; 72: 53-60.
3. Helwaara M, Makela M, Knekt P, et al. Determinants of sciatica and low back pain. *Spine* 1991; 16: 608-614.
4. Laslett M, Crothers C, Beattie P, et al. The frequency of and incidence of low back pain in an urban population. *NZ Med J* 1991; 104: 424-426.
5. Bigos S J, Andary M T. Practitioners guide to industrial back problems. *Neurosurg Clin N Am* 1991; 2: 863-875.
6. Borenstein D. Epidemiology, etiology, diagnosis, evaluation and treatment of low back pain. *Curr Opin Rheumatol* 1995; 7: 141-146.
7. Wheeler A H, Hanley E M. Spine update: non-operative treatment for low back pain. *Spine* 1995; 20: 375-378.
8. Wiff J, Deyo R A. Low back pain. *Med Clin N Am* 1995; 79 (2): 231-247.
9. Waddell G, McCulloch J A, Kummel E, Venner R M. Non-organic physical signs in low back pain. *Spine* 1980; 5: 117-125.
10. Jensen S. Risk factors for low back pain. *Australas Musculoskeletal Med* 1995; March: 12-29.
11. Nutbeam D ed. Goals and targets for Australia's health in the year 2000 and beyond. Report for Commonwealth Department of Health, Housing and Community Services by Department of Public Health, University of Sydney. Canberra: Australian Government Publishing Services; 1993; 209-219.
12. Ganora A. The effect of legislation on the incidence and management of low back pain. Mt. Wilgah Private Hospital Annual Medical Conference Proceedings; 1993: 9-16.
13. Ganora A. How to treat back pain in the work force. *Australian Doctor*. 1996 June 7th.
14. Brown H J. Occurrence of back injuries in Western Australian mining industry. Department of Minerals and Energy 1995;1.
15. Winstanley M, Woodward S, Walker N. Tobacco in Australia - Facts and issues, 2nd ed. Victorian Smoking and Health Program, Melbourne; 1995:11-21.
16. Swezey R I. Pathophysiology and treatment of intervertebral disc disease. *Rheum Dis Clin N Am* 1993; 19 (3): 741-759.

IMPLICATIONS OF THIS STUDY FOR THE GP

The preparation of GPs to manage musculoskeletal problems is perceived as being inadequate. There is a need for readily accessible up-skilling programs to correct this deficit.