

Physiotherapy management of low back pain in Thailand: a study of practice

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ABSTRACT Background and Purpose. *Low back pain (LBP) is one of the most common musculoskeletal disorders in both developed and developing countries. Whilst there have been a number of studies investigating the current physiotherapy management of LBP in the former, little is known about such management in developing countries. The objectives of the present study were to investigate the physiotherapy management of LBP in Thailand and to compare the results with those of developed countries where applicable. Method.* *A cross-sectional survey was undertaken to collect information on physiotherapists, LBP patients and treatment interventions used, using a Thai version of an available (English) questionnaire. Subsequent to a pilot study with 32 Thai therapists, minor revisions were made and the final questionnaires were mailed to all 776 physiotherapists currently working throughout Thailand. Results.* *Responses were received from 559 therapists (a 77.2% response rate), and 502 of these were currently involved in LBP management. Results indicated that LBP patients made up, on average, 37.5% of their patient caseloads. Electrophysical modalities, especially hot packs (64%), ultrasound (61%) and mechanical traction (61%), were reported to be the most commonly used treatments, particularly by hospital-based therapists, whereas those working in university-based hospitals and private clinics were more likely to use manual therapy. Conclusions.* *This study provides descriptive data from the therapists' perspective about LBP management and shows that the treatments most commonly used are different from those treatments commonly used in developed countries. The potential reasons for this are explored in this paper and recommendations are made for further research. Copyright © 2005 John Wiley & Sons, Ltd.*

Key words: developing country, low back pain (LBP), physiotherapy

INTRODUCTION

Low back pain (LBP) is one of the most common musculoskeletal ailments in the

general population, causing significant disability and loss of time from work (Hildebrandt, 1995); it has been estimated that approximately 60–80% of the general

population will suffer from LBP at one point or another in their lives (CSAG, 1994; Leboeuf-Yde et al., 1996). The increasing burden of musculoskeletal conditions in both developed (Darmawan et al., 1992; Chaiamnuay et al., 1998; Muirden, 1998) and developing countries (Walsh et al., 1992; Guo et al., 1995; Linton, 1998; Picavet et al., 1999), shown by national and community-based surveys, demonstrates that LBP constitutes a large proportion of public health problems. Indeed, previous studies have shown that the general populations of both industrialized societies and non-industrialized societies can suffer from LBP (Frymoyer and Cats-Baril, 1991).

Physiotherapy is considered to play an important role in the management of patients with LBP (Cherkin et al., 1995; van de Valk et al., 1995). However, despite this, the effectiveness of physiotherapeutic interventions used for LBP continues to be a matter of much debate (Deyo et al., 1991; Waddell et al., 1999), with many currently used interventions not having been substantiated by research evidence (Deyo, 1983; Foster et al., 1999). Recently, various studies of current clinical practice in the UK and Ireland (Foster et al., 1999; Gracey et al., 2002), the USA (Battie et al., 1994; Jette and Delitto, 1997; Mielenz et al., 1997), Canada (Ehrmann-Feldman et al., 1996; Li and Bombardier, 2001) and The Netherlands (van Baar et al., 1998) have revealed that the most common LBP treatment approaches include Maitland mobilization, the McKenzie approach, exercises, advice and electrotherapeutic modalities. Nevertheless, the focus of attention of those studies was restricted to developed countries which comprise less than 15% of the world's population (Volinn, 1997). Meanwhile, little is known about LBP management in developing countries.

A study investigating the supply of physiotherapists in the 28 member countries of the World Confederation for Physical Therapy, published in 1997, estimated that the median number of physiotherapists ranged from high in Europe (for example, 1124 per million) to low in Asia (for example, 16 per million) (Liao et al., 1997). This study showed that the ratio of physiotherapists per million population in the UK was 427, whereas that in Thailand was 14. These considerable differences raise a number of questions regarding the effectiveness and management strategies of physiotherapy services in developing countries.

Although Thailand is a developing, low-income country, with a high prevalence of LBP (Chaiamnuay et al., 1998), no previous investigations have explored the current management of LBP in Thai physiotherapy practices. In addition, studies reporting physiotherapeutic management of LBP in other developing countries were not found in MEDLINE, BIDS and CINAHL searches during 1980–2002 (key words: *back pain, developing country, low-income country and physiotherapy*). Therefore, it was decided to conduct a survey investigating physiotherapy management of LBP in Thailand. The present study may, in part, provide a picture of practice in developing countries against which comparison can be made to developed countries. Moreover, baseline information on physiotherapy practice will allow therapists to plan to evaluate the effectiveness of the interventions used (Battie et al., 1994). Accordingly, the present study was undertaken with the following aims:

- to describe the characteristics (professional profiles) of Thai physiotherapists currently treating LBP patients
- to identify the profile of LBP patients in Thailand

- to investigate the treatment interventions
- to identify implications for current practice and plan future research.

METHOD

This was a cross-sectional descriptive survey of the entire population of currently practising Thai physiotherapists.

Subjects

Since the population of physiotherapists currently working in clinical settings throughout Thailand was less than 1000, it was considered appropriate to administer mailed questionnaires to the whole population. Lists of names and addresses of Thai physiotherapists were obtained from two sources: the Physical Therapy Association of Thailand and the academic institutes running undergraduate physiotherapy courses. The former provided a list of currently subscribing members of the Physical Therapy Association of Thailand. Meanwhile, information on all Thai physiotherapists who graduated since 1965 was obtained from both public and private universities throughout Thailand. Using both these sources ensured that a census sample of all physiotherapists in Thailand was identified. By excluding the non-practising therapists and those therapists whose addresses were incomplete a total of 776 therapists were included in the survey distribution.

Materials

A self-administered postal questionnaire survey was used. This format has proved successful in a previous study of physiotherapeutic management of LBP by our research group (Foster et al., 1999); a Thai version of the questionnaire used in that study was translated and reformulated for the current survey.

Before distribution, an initial Thai version of the questionnaire was piloted with a convenience sample of 32 volunteers (teachers of physiotherapy and practising physiotherapists). The volunteers were asked to comment on the items with respect to content, use of wording, instruction and ease of completion. Appropriate revisions were subsequently made and the questionnaire instrument finalized.

The questionnaire content was divided into three sections, as summarized in Table 1. The first section included background information about respondents. The second part of the questionnaire asked respondents to provide information about their LBP patients. The final section required respondents to provide details about treatment methods and outcome measures they currently used in the management of LBP. The majority of items in the final section required respondents to report the popularity of treatment methods and outcome measures by using ranking methods. Where ranking methods were used, 1 was referred to the 'most frequent', 2 referred to the 'second most frequent' and so on. At the end of the questionnaire, respondents had an opportunity to comment on or describe their experiences concerning the management of LBP.

Procedure

The present study was undertaken in Thailand from June 1999 to February 2000. In the first mailing, the self-administered questionnaires with accompanying letters and stamped addressed envelopes were distributed to the 776 physiotherapists. Each questionnaire was coded to facilitate follow-up of those who did not respond to the first mailing. A reminder postcard was sent out 10 days later to maximize the response rate (Hicks, 1997). A second mailing of the

TABLE 1: Summary of the content of the questionnaire sent to the physiotherapists

Section 1
Background information on physiotherapists
Clinical setting
Number of years qualified
Postgraduate training course(s) attended
Current LBP caseload
Availability of treatment modalities and methods
Section 2
Information on LBP patients
Percentages of male and female patients
Age groups
Social status
Source of referrals
Diagnoses
Initial causes of onset
Degree of LBP chronicity
Previous treatment(s)
Section 3
Information on treatment interventions and outcome measures used
Treatment goals
Number of treatment sessions
Actual treatment methods used
Actual electrotherapeutic modalities used
Ideal treatment methods or modalities
Advice
Outcome measures
Factors inhibiting or promoting recovery

LBP = low back pain.

questionnaire was distributed four weeks after the reminder postcard to all non-responders.

Data analysis

The study was primarily descriptive. Frequencies, percentages, and means and standard deviations were computed to profile the responses relative to the variables of interest using the Statistical Package for the Social Sciences (SPSS for Windows, Version 9.0; SPSS Inc., Chicago, USA) software system. Cross-tabulations and χ^2 analyses were used to examine the relationships between variables of interest. When testing the differences between groups, a

significance level of $p < 0.05$ was used. Responses to the open-ended questions were coded and entered into Microsoft Word, and frequency tables subsequently prepared.

RESULTS

Response rate

A total of 776 questionnaires were distributed, and the response rate to the first mailing was 67.2% ($n = 521$). The second mailing increased the response rate by 10%, to 77.2% ($n = 599$). Of the 599 returned questionnaires, 502 (64.7%) were completed replies, 97 (12.5%) were returned unanswered. The reasons for non-comple-

tion varied: 37 recipients (38.1%) indicated that they were no longer in practice; 52 (53.6%) reported that they were not currently involved in LBP treatment; while a further eight did not provide reasons. Compared with response rates of similar postal questionnaire studies (Battie et al., 1994; Foster et al., 1999), the high response rate in the current survey indicated a representative sample return of the study (De Vaus, 1990).

In the interest of clarity, the main results are presented under the headings of 'Physiotherapist information', 'Patient information' and 'Treatment details'. All frequencies are represented by valid percentages, in which missing values are not included. It should be noted that the nature of the questionnaire format meant that responses frequently were not mutually exclusive; thus, not all frequency data necessarily aggregated to 100%.

Physiotherapist information

The largest number of physiotherapists (54.8%) who took part in the survey and were currently involved in LBP management were public hospital-based physiotherapists. A total of 30.1% of all respondents worked in private hospital-operated clinics, whereas only 4.8% were private practitioners working as private home-visiting therapists or had their own private clinics. The remaining group of respondents (10.4%) comprised either teachers of physiotherapy in university departments or physiotherapists in university-based hospitals.

In total, 31.3% had completed their basic physiotherapy education more than 10 years previously, 29.5% had completed their basic education between six and 10 years previously, whilst those therapists who had been qualified for between three and five years, or who had been qualified for less than three

years, accounted for 20.7% and 18.7% of the respondents, respectively. A total of 435 of the 502 therapists estimated the percentage of LBP patients in their caseload at the time of the survey; on average, LBP accounted for 37.5% of the respondents' caseloads.

With regard to postgraduate training relevant to LBP management, 43.2% had completed postgraduate training: the most common courses completed were short courses in the Maitland approach (18.5%), McKenzie part A (The Lumbar Spine) (13.7%), therapeutic exercises for LBP (2.6%) and spinal manipulation (2.2%). Respondents working in university-based hospitals completed postgraduate training courses more often than their colleagues in other settings, either McKenzie Part A (χ^2 test = 10.89, $df = 3$, $p = 0.012$) or a Maitland vertebral mobilization course (χ^2 test = 10.42, $df = 3$, $p = 0.015$).

Patient information

Patient characteristics and onset classification of LBP

The most common reasons for the initial onset of LBP was 'injury at work' (56.4%), followed by 'injury at home' (25.2%) and 'no apparent reason' (10.2%). The majority of therapists (33.5%) estimated that the most common age group of LBP patients was 46–55 years, whilst a further 26.2% and 24.6% (respectively) reported that the patients in the age groups of 36–45 years and >56 years were their major patient groups (Table 2). With regard to the social status of LBP patients, therapists working in both public and in private settings reported that the majority of their LBP patients were apparently in the non-skilled group. The patients had received a variety of previous treatments for LBP, with medication (88%)

and advice from the doctor (47%) as the most commonly cited treatments (Table 2). Therapists were asked to diagnose the underlying causes for LBP in their patients: the most common diagnoses were disc herniation (94.4%), followed by degenerative changes (90.8%), LBP associated with posture (90.4%), sciatica (89.2%) and muscle strain (84.3%).

With regard to the duration of LBP, respondents were asked to define what they understood, in an opened-end manner, by the terms 'acute', 'chronic' or 'recurrent' LBP. The rationale for this question was to establish how much discrepancy existed amongst therapists in Thailand. However, these data were difficult to analyse as there was little agreement on the definition of these terms in relation to timescale. According to clinical guidelines (Koes et al., 2001), acute patients are those with LBP for

12 weeks or less; however, in the present survey 27.2% of therapists defined patients with chronic LBP as having had pain for more than one month and 49.3% classified acute as pain for only 48–72 hours.

Treatment details

The results showed that 96.4% of therapists perceived that pain reduction was the most important treatment goal. Patient education and prevention of further episodes were rated as most meaningful goals by 31.3% and 20.9% of therapists, respectively. Moreover, pain distribution (81.9%) and range of movement (77.7%) were used as major outcome measures to assess patient symptoms and record progression.

In total, 38% of therapists reported that patients received between six and 10 physiotherapy treatment sessions (29.8%: 11–15

TABLE 2: Demographic variables and previous treatment for low back pain patients as identified by physiotherapists in the survey ($n = 502$)

Variable	Characteristics	Percentage of therapists	n
Source of referral	Orthopaedic specialists	67.7	335
	Rehabilitation medicine specialists	20.6	102
	Primary care physicians	6.3	31
	Self-referral	3.6	18
Age group (years)	18–25	2.9	14
	26–35	14.2	69
	36–45	26.2	128
	46–55	33.5	163
	56+	24.6	119
Social status	Professional	8.9	44
	Skilled	16.0	80
	Non-skilled	54.5	273
	Armed Forces	4.8	24
	Not working or unemployed	19.4	97
Previous treatment for LBP	Prescription medication	88.0	438
	Advice from doctor	47.0	234
	Counter-bought medication	23.9	119
	Thai traditional medication	12.4	62
	Previous physiotherapy	9.2	46

Percentages do not add up to 100 since therapists were permitted to use equal ranking.
LBP = low back pain.

sessions; 22.6%: >15 sessions; 9.5%: 1–5 sessions). Interestingly, the number of treatment sessions varied according to the physiotherapy practice setting. Physiotherapists in university-based practices (52%: 26/50) or private practices (66%: 16/24) tended to give fewer treatments (6–10 sessions) than therapists in public practices (66%: 180/273; using >10 sessions) (χ^2 test = 70.49, *df* = 9, *p* < 0.0001). Additionally, therapists also reported situations in which they would see patients for fewer or more than their average number of sessions. Therapists tended to treat LBP patients with fewer sessions if the patient had acute LBP, mild or moderate symptoms and good compliance with the treatment programme. In contrast, therapists tended to use more treatment sessions if the patient had chronic LBP, showed poor compliance, had a heavy physical workload or a recurrent condition.

Therapists used a quite limited range of treatment methods and modalities (Table 3). Of the modalities, heat (64.1%), ultrasound (61.2%) and shortwave diathermy (28.5%)

were the most popular treatment modalities, whereas mechanical traction (61%), stretching (32.1%) and active exercise (27.5%) were the most common treatment methods. The type of treatment used was associated with clinical setting, years since qualification and number of treatment sessions. Therapists working in public and private hospitals applied mechanical traction more frequently for LBP patients (χ^2 test = 48.64, *df* = 3, *p* < 0.0001), whereas therapists working in university-based hospitals and private clinics more often used Maitland mobilization for their LBP patients (χ^2 test = 37.17, *df* = 3, *p* < 0.0001). Interestingly, there was a significant association between the use of mechanical traction and a high number of treatment sessions, such as >10 treatment sessions (χ^2 test = 17.40, *df* = 3, *p* = 0.013).

It was of note that when asked what treatments they would prefer to use if they had time, training and manpower, the physiotherapists reported Maitland mobilization (60.4%), stretching (38.8%), the McKenzie

TABLE 3: Physiotherapy treatments and modalities used for the management of low back pain, as reported by physiotherapists

Electrophysical modalities	Valid per cent* (%)	N
Superficial heat (Hydrocollator)	64.1	322
Ultrasound	61.2	307
Shortwave diathermy	28.5	143
Interferential	5.0	25
TENS	3.2	16
Treatment methods	Valid per cent** (%)	N
Mechanical traction	61.0	306
Stretching	32.1	161
Active exercise	27.5	138
Maitland mobilization	24.7	124
McKenzie approach	15.7	79
Massage	10.4	52
Hydrotherapy	10.0	50

*/**The sum of these percentages exceeds 100 because therapists were permitted to use equal ranking. TENS = transcutaneous electrical nerve stimulation.

approach (38.2%), active exercise (35.3%) and Maitland manipulation (22.7%). Various potential advantages of these preferred treatments, perceived by the therapists, were: better treatment outcome (17.6%); localized treatment or specific to lesion (16.2); more effective than modalities (14.4%); and patients responded more quickly (13.2%). Moreover, the therapists indicated that important factors inhibited them from using the treatments they preferred to use, including: lack of training skill on the specific treatment methods such as manual therapy (26.1%); patient caseload (18.3%); time constraints (14%); lack of access to existing scientific or research evidence (14%); and lack of confidence (3.2%).

DISCUSSION

The present study is the first descriptive survey on the physiotherapy management of patients with LBP in Thailand; it aimed to investigate the profiles of physiotherapists and LBP patients, and to describe the treatment techniques commonly used for this patient group, based on therapists' perceptions and opinions. The survey was prompted by the lack of published information about LBP management in developing countries, specifically Thailand.

Based on the current survey, most Thai therapists (more than 50%) appeared to lack adequate training in specific techniques that were previously reported to be the most common techniques used for LBP management in developed countries (for example, mobilization, manipulation and McKenzie approaches) (Battie et al., 1994; Foster et al., 1999; Gracey et al., 2002). This may be because regular, comprehensive mobilization modules at undergraduate level in Thai universities only started in 1988. Moreover, few validated courses of spinal manipula-

tion and the McKenzie approach have been run in Thailand. In addition, only a small proportion of Thai therapists have access to formal postgraduate training courses and the utilization of scientific material.

The percentage of LBP patients in Thai therapists' caseload (37.5%) was similar to a previous study of 4080 patients in Bangkok, where 33.8% of those patients suffered from LBP (Khamdej et al., 1993). These findings were also similar to figures for current patient caseloads in the UK and Ireland (32%) (Foster et al., 1999) and the USA (45%) (Battie et al., 1994). These comparable findings would suggest that LBP is a common problem treated by the physiotherapy profession in both developed and developing countries.

The profile of LBP patients, in terms of age group of patients commonly treated by Thai therapists, seemed to differ from that of patients in developed countries. The majority of Thai LBP patients referred to physiotherapy were aged between 46 and 55 years. By comparison, the most common age group of LBP patients in the UK and Ireland survey was that of 36–45 years (Foster et al., 1999) or <45 years (Gracey et al., 2002), whereas other comparable studies found LBP patients to have a mean age of 40.8 years in the USA (Jette and Delitto, 1997) and 43.5 years in The Netherlands (van Baar et al., 1998). Moreover, the current study revealed that Thai therapists (24.6%) were more likely to see LBP patients aged >56 years than were British and Irish therapists (12.5%). These findings may be attributed to hard physical labour being unavoidable for older workers in low-income countries (Volinn, 1997) and therefore it may add to the likelihood of seeking care because of LBP.

In relation to LBP chronicity, both the Thai and the UK and Ireland studies (Foster, 1998) showed considerable confusion and

discrepancies amongst the therapists in perception and understanding of definitions of LBP chronicity: 'acute', 'sub-acute', 'chronic' and 'recurrent'. The substantial inconsistency in the definition of the terms of duration of onset meant that it was impractical to compare the profile of LBP patients in the present study with other studies in terms of duration of LBP. This lack of clarity among therapists suggests a need for further efforts to ensure more agreement in the area of terminology (Foster, 1998). Indeed, most current clinical guidelines for the management of acute LBP have defined an acute LBP as activity intolerance caused by lower back or back and leg symptoms lasting less than 12 weeks (Koes et al., 2001). The current findings suggest that the profession needs to strategically review undergraduate teaching in relation to LBP, and further study is needed to provide more definite information on the profile of LBP patients treated by Thai therapists.

There appear to be some differences in physiotherapy practices in Thailand compared to developed countries in terms of the number of treatment sessions used. In the current study, the modal number of treatment sessions used by therapists was between six and 10 (followed by 11–15 sessions), whereas the modal number of treatment sessions used by the British and Irish therapists was between four and six (followed by 7–10 sessions) (Foster et al., 1999). In addition, the mean numbers of treatments were five in the USA (Jette and Dellitto, 1997) and seven in The Netherlands (van Baar et al., 1998). These differences may be because of differences in patient characteristics (for example, age group), type of treatment interventions (passive or active modalities) and treatment strategy used (such as traditional physiotherapy or evidence-based treatments) between Thai

practice and physiotherapy practices in developed countries. However, the current study showed the use of fewer sessions in private practice. This suggested that the number of treatment sessions may be determined by several factors, such as type of patients seen by therapists, outcome or response to treatment, and resources (Battie et al., 1994; Gracey et al., 2002).

The current results serve to highlight the differences between physiotherapy treatments commonly used for LBP management in developed and developing countries. Although there is a plethora of different LBP treatment approaches used by therapists in developed countries (Battie et al., 1994; van der Valk et al., 1995; Jette and Dellitto, 1997; Mielenz et al., 1997; Foster et al., 1999; Gracey et al., 2002), the treatment interventions used by those in developing countries seems to be more limited. Hot packs, ultrasound and mechanical traction were reported to be the most common treatments used by Thai therapists. In contrast to the current study, current clinical guidelines used in many developed countries have recommended the use of advice on staying active, manipulation and back exercises for LBP management (Koes et al., 2001). Furthermore, recent studies in developed countries have shown that Maitland mobilization, McKenzie approaches and therapeutic exercises were the most commonly used treatment methods for LBP (Battie et al., 1994; Mielenz et al., 1997; Foster et al., 1999; Gracey et al., 2002); techniques which arguably have a better evidence base of effectiveness (Manniche et al., 1988; Donelson et al., 1990; Risch et al., 1993; Blomberg et al., 1994; Twomey and Taylor, 1995; Mohseni-Bandpei et al., 1998). Although these studies also demonstrated the widespread use of electrotherapy and heat (Jette et al., 1994; Ehrmann-Feldman et al., 1996; Jette and Dellitto, 1997; Mielenz et

al., 1997; Li and Bombardier, 2001), they appear to be used more often in combination with either manual therapy, exercises, or both (Jette and Delitto, 1997; Mielenz et al., 1997).

From the current study, it appears that Thai therapists are currently using treatments that have not yet been shown to be effective in controlled clinical trials. For example, several previous reviews of the treatment of LBP have consistently shown that no evidence was found for the effectiveness of traction (Bigos et al., 1994; van der Heijden et al., 1995; Smith et al., 2002). However, other authors argued that clear conclusions about the effectiveness of traction cannot be drawn from the existing trials because of methodological flaws in study designs and the limited application of clinical parameters as used in clinical practice (Krause et al., 2000; Harte et al., 2003). As traction is a widely used treatment for LBP, and it is often provided in combination with other treatment modalities (Mielenz et al., 1997; Li and Bombardier, 2001), further randomized controlled trials with high methodological quality would appear to be indicated (van der Heijden et al., 1995, Harte et al., 2003).

The present study highlighted that Thai therapists were more likely to use electro-physical modalities for LBP patients, even though the efficacy of these modalities has not been clearly established (van Tulder and Koes, 2000). The rationale and reasons for the popular use of electrophysical modalities is unclear. Perhaps it may result from the influence of therapists' clinical experience and undergraduate training (Foster, 1998), the lack of availability of postgraduate training courses, as well as high patient caseloads and the lack of access to existing scientific evidence by some therapists. Despite this, it is of particular interest to find that most Thai therapists would prefer

to use mobilisation, manipulation and exercises more often if they could, as these treatments are advocated by the current clinical guidelines in acute LBP patients.

The limitation of the present study includes the fact that the current data were based on physiotherapists' opinion and relied on their memory, as opposed to actual management of patients; therefore the profiles of LBP patients and treatments used must be interpreted with some caution. Further research that defines actual management, such as treatment outcome and treatment approaches used by therapists for individual patients, is needed to reflect the current practice for this patient group. Another limitation of this study is the degree of generalizability of these findings to other developing countries, since different countries may have different cultures, physiotherapy education, resources and treatment philosophies in dealing with LBP problems.

IMPLICATIONS

Despite the limitations, the current study has important implications for the physiotherapy profession, especially therapists in Thailand. The findings serve as a database to guide future research, clinical practice and education in this area. Evidently, profiles of LBP patients in Thailand should be clearly established to help increased understanding of LBP management. In addition, research trials focusing on the specific use and application of treatments used by Thai therapists are needed to provide insight into the outcome of LBP management in Thailand. Moreover, there is the need for the profession to rationalize practice based on scientific evidence to improve standards of care and clinical effectiveness. Improved standards of undergraduate and postgraduate training and enhanced dissemination of

guidelines are also suggested.

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REFERENCES

- Battie MC, Cherkin DC, Dunn R, Ciol MA, Wheeler K. Managing low back pain: attitudes and treatment preferences of physical therapists. *Physical Therapy*, 1994; 74: 219–226. Bigos SJ, Bowyer OR, Braen GR, Brown K, Deyo R et al. Acute Low Back Problems in Adults. Clinical Practice Guidelines, Quick Reference Guide Number 14. Rockville: Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research, AHCPR Pub. No. 95-0642, 1994.
- Blomberg S, Hallin G, Grann K, Berg E, Sennerby U. Manual therapy with steroid injections – a new approach to treatment of low back pain. *Spine* 1994; 19: 569–577.
- Chaiamnuay P, Darmawan J, Muirden KD, Assawatanaabodee P. Epidemiology of rheumatic disease in rural Thailand: a WHO-ILAR COPCORD study. *Journal of Rheumatology* 1998; 25: 1382–1387.
- Cherkin DC, Deyo RA, Wheeler K, Ciol MA. Physician views about treating low back pain: the results of a national survey. *Spine* 1995; 20: 1–10.
- Clinical Standards Advisory Group (CSAG). Report on Back Pain. London: HSMO, 1994; 1–89. Darmawan J, Valkenburg HA, Muirden KD, Wigley RD. Epidemiology of rheumatic disease in rural and urban populations in Indonesia: a World Health Organization International League against Rheumatism COPCORD study, stage I, phase 2. *Annals of the Rheumatic Diseases* 1992; 51: 525–528.
- De Vaus DA. *Surveys in Social Research* (second edition). London: Unwin Hyman, 1990.
- Deyo RA. Conservative therapy for low back pain: distinguishing useful from useless therapy. *Journal of the American Medical Association* 1983; 250: 1057–1062.
- Deyo RA, Cherkin DC, Conrad D, Volinn E. Cost, controversy, crisis: low back pain and the public health. *Annual Review of Public Health* 1991; 12: 141–156.
- Donelson R. The McKenzie approach to evaluating and treating low back pain. *Orthopaedic Review* 1990; 19: 681–686.
- Ehrmann-Feldman D, Rossignol M, Abenham L, Gobeille D. Physician referral to physical therapy in a cohort of workers compensated for low back pain. *Physical Therapy* 1996; 76: 150–157.
- Foster NE. Current clinical management of low back pain and hypoalgesic effects of transcutaneous electrical nerve stimulation. DPhil Thesis. Northern Ireland: University of Ulster, 1998.
- Foster NE, Thompson KA, Baxter GD, Allen JM. Management of nonspecific low back pain by physiotherapists in Britain and Ireland, a descriptive questionnaire of current clinical practice. *Spine* 1999; 24: 1332–1342.
- Frymoyer JW, Cats-Baril WL. An overview of the incidences and costs of low back pain. *Orthopedic Clinics of North America* 1991; 22: 263–271.
- Gracey JH, McDonough SM, Baxter GD. Physiotherapy management of low back pain: a survey of current practice in Northern Ireland. *Spine* 2002; 27: 406–411.
- Guo HR, Tanaka S, Cameron LL, Seligman PJ, Behrens VJ, Ger J et al. Back pain among workers in the United States: national estimates and workers at high risk. *American Journal of Industrial Medicine* 1995; 28: 591–602.
- Harte A, Baxter GD, Gracey JH. The efficacy of traction for back pain: a systematic review of randomized controlled trials. *Archives of Physical Medicine and Rehabilitation* 2003; 84: 1542–1553.
- Hicks CM. *Research for Physiotherapists: Project Design and Analysis* (second edition). New York, NY: Churchill Livingstone, 1997; 17–24.
- Hildebrandt VH. Back pain in the working population: prevalence rates in Dutch trades and professions. *Ergonomics* 1995; 38: 1283–1298.
- Jette AM, Delitto A. Physical therapy treatment choices for musculoskeletal impairments. *Physical Therapy* 1997; 77: 145–154.
- Jette AM, Smith K, Haley SM, Davis KD. Physical therapy episodes of care for patients with low back pain. *Physical Therapy* 1994; 74: 101–115.

- Khamdej V, Kanchanapach C, Pornchaipimolpan P, Kadklao K. The study of the patients attended at physiotherapy unit, Siriraj Hospital in the year B.E. 2534. *Thai Journal of Physical Therapy* 1993; 15: 50–76.
- Koes BW, van Tulder MW, Ostelo R, Burton AK, Waddell G. Clinical guidelines for the management of LBP in primary care: an international comparison. *Spine* 2001; 26: 2504–2514.
- Krause M, Refshauge KM, Dessen M, Boland R. Lumbar spine traction: evaluation of effects and recommended application for treatment. *Manual Therapy* 2000; 5: 72–81.
- Leboeuf-Yde C, Klougart N, Lauritzen T. How common is low back pain in the Nordic population? *Spine* 1996; 21: 1518–1526.
- Li LC, Bombardier C. Physical therapy management of low back pain: an exploratory survey of therapist approaches. *Physical Therapy* 2001; 81: 1018–1028.
- Liao HF, Lai JS, Chai HM, Yaung CL, Liao WS. Supply of physical therapists in member countries of the World Confederation for Physical Therapy. *Physiotherapy Theory and Practice* 1997; 13: 227–234.
- Linton SJ. The socioeconomic impact of chronic back pain: is anyone benefiting? *Pain* 1998; 75: 163–168.
- Manniche C, Bentzen L, Hesselsoe G, Christensen I, Lundberg E. Clinical trial of intensive muscle training for chronic low back pain. *Lancet* 1988; 2: 1473–1476.
- Mielenz TJ, Carey TS, Dyrek DA, Harris BA, Garrett JM, Darter JD. Physical therapy utilization by patients with acute low back pain. *Physical Therapy* 1997; 77: 1040–1051.
- Mohseni-Bandpei MA, Stephenson R, Richardson B. Spinal manipulation in the treatment of low back pain: a review of the literature with particular emphasis on randomized controlled clinical trials. *Physical Therapy Reviews* 1998; 3: 185–194.
- Muirden KD. Education in rheumatology. *Annals of the Academy of Medicine Singapore* (53F), 1998; 27: 24–28.
- Picavet HSJ, Schouten JSAG, Smit HA. Prevalence and consequences of low back problems in the Netherlands, working vs non-working population, the MORGEN-study. *Public Health* 1999; 113: 73–77.
- Risch SV, Norvell NK, Pollock ML, Risch ED, Langer H, Fulton M et al. Lumbar strengthening in chronic low back pain patients. Physiologic and psychological benefits. *Spine* 1993; 18: 232–238.
- Smith D, McMurray N, Disler P. Early intervention for acute back injury: can we finally develop an evidence-based approach? *Clinical Rehabilitation* 2002; 16: 1–11.
- Twomey LT, Taylor J. Spine update: exercise and spinal manipulation in the treatment of low back pain. *Spine* 1995; 20: 615–619.
- van Baar M, Dekker J, Bosveld W. A survey of physical therapy goals and interventions for patients with back and knee pain. *Physical Therapy* 1998; 78: 33–42.
- van der Heijden GJMG, Beurskens AJHM, Kose BW, Assendlft WJJ, de Vet HCW, Bouter LM. The efficacy of traction for back and neck pain: a systematic, blinded review of randomized clinical trial methods. *Physical Therapy* 1995; 75: 93–104.
- van der Valk RWA, Dekker J, van Baar ME. Physical therapy for patients with back pain. *Physiotherapy* 1995; 81: 345–351.
- van Tulder MW, Koes BW. Low back pain and sciatica. In: F Godlee (Ed.), *Clinical Evidence*. London: BMJ Publishing Group, 2000; 614–631.
- 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: 1747–1754.
- Waddell G, Feder G, McIntosh A, Lewis M, Hutchinson A. *Low Back Pain Evidence Review*. London: Royal College of General Practitioners, 1999.
- Walsh K, Cruddes M, Coggan D. Low back pain in eight areas of Britain. *Journal of Epidemiology and Community Health* 1992; 46: 227–230.

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