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Quality of Life and Cost of Care of Back Pain Patients in Finnish General Practice

Heikki M. Hemmilä, MD

Study Design. A cohort of 114 primary care patients were studied for 1 year before and 1 year after a randomized clinical trial.

Objectives. To explore the therapy use, societal costs, and quality of life of patients with prolonged back pain. To compare the effects of physiotherapy, bone setting, and light exercise therapy on these measures.

Summary of Background Data. Analyses of back pain have mostly focused on the minority of patients who cause high costs and a heavy burden on national economies. The majority with low costs have aroused less interest. The patient's choice of therapy, especially alternative medicine, has seldom been evaluated despite the increasing popularity of alternative therapies.

Methods. Data were collected from the Social Insurance Institution files, patient records, and questionnaires: the Nottingham Health Profile (NHP).

Results. One year before enrollment a third of the patients had consulted primary care. Half of them had had some therapy: mainly massage, physiotherapy, naprapathy, or bone setting. One third of the direct costs were spent on complementary therapies and another third on rehabilitation. Sick leaves accounted for 55% of the total costs (US$ 1029). The mean total costs slightly increased after the randomized therapies (US$ 1306). The costs of ambulatory care, with the study therapies included, were similar, whereas physiotherapy seemed the cheapest (US$ 621) and bone setting the most expensive (US$ 2072) alternative in view of the total costs. More NHP subscales were improved by physiotherapy and bone setting than by exercise.

Conclusions. A third of the direct back pain costs were spent on complementary therapies. The use of health care services and absenteeism tended to decrease after a course of physiotherapy. Physiotherapy and bone setting seemed able to improve the quality of life of patients with prolonged back pain. [Key words: back pain, cost of care, quality of life, randomized controlled study, physiotherapy, exercise therapy, complementary medicine] **Spine 2002;27:647–653**

Back pain is a heavy burden on the national economies of industrialized countries. In Finland the direct costs of the medical examinations and therapies for back pain were at least FIM (Finnish markka) 1.1 billion (US$ 251.9 million) in 1995, and the indirect costs due to sick leaves and early retirement amounted to FIM 3.2 billion (US$ 732.9 million),[24] which accounted for about 0.8% of the Finnish Gross Domestic Product (GDP). In the Netherlands, the direct and indirect costs were US$ 0.37 and 4.6 billion, respectively, accounting for 1.7% of the Dutch GDP in 1991.[28] The corresponding Swedish estimates in 1990 were US$ 0.24 billion for direct and US$ 3.8 billion for total costs,[17] which corresponded to 1.7% of the Swedish GDP. Frymoyer and Cats-Baril[9] calculated in 1990 that back pain caused direct costs of US$ 24.3 billion and indirect costs of US$ 75–100 billion in the United States, which corresponded to 1.7–2.1% of the U.S. GDP.

The societal costs of back pain have also been assessed in cohort studies as costs per episode of care[2,5,22,25,30] or in clinical trials as costs per year,[3,15,16,21,23] but there is so far no consensus as to how to collect and analyze costs data.[20] Most economic studies have been based on the viewpoint of the payer, *i.e.*, the insurance company, the employer, or society. The losses to the patient and family have been assessed less often.[15]

How individual patients treat their back pain is not well known. Especially the use of unconventional therapies is unknown, although the rate of use is generally high, ranging from 10% to 49% in different countries,[6] with a rising trend during the past few decades.[6,8] This study attempted to list all the diagnostic and therapeutic procedures used by the patients enrolled in a clinical trial,[12] both before and after the interventions.

Materials and Methods

Patients. Ambulatory, nonretired patients with back pain for at least 7 weeks from Kaustinen and its neighboring municipalities were studied. They were recruited by general practitioners from nearby health centers or, for the most part, directly by newspaper articles about the study, during a 6-month enrollment period. All patients signed informed consent, including a permission to review their records in the local health centers and hospitals and their data on the files of the Social Insurance Institution (SII) and the Farmers' Social Insurance Institution. The Ethics Committee of the Oulu University Hospital approved the study plan.

Interventions. The patients were randomized into three therapy groups to receive up to ten sessions of physiotherapy, bone setting, or guidance for exercise therapy during a 6-week treatment period. Physiotherapy consisted of individual thermal, electric, and manual treatments plus autostretching exercises but no manipulations with an impulse. Bone setting consisted of traditional soft tissue, spinal, and joint manipulations, void of the chiropractic-type adjustments, however. The exercise patients were taught to interrupt static postures by repeatedly moving their backs in three planes every 15 minutes, when not otherwise moving. A fee of FIM 150 was collected for participation.

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Table 1. Unit Costs of Different Procedures (in 1994 Currency)

	FIM	US$
Visits to a doctor		
GP in health center	193	37
Private practitioner	237	46
Surgical polyclinic	500	96
Physiatric polyclinic	600	115
Diagnostic procedures		
Native roentgen	100	19
Lumbar myelography	500	96
Lumbar CT	700	134
Lumbar NMR	2975	571
ENMG	900	173
Blood tests each	30	6
Medical therapies		
Back operation	3780	726
Inpatient/day	1350	259
Physiotherapy	170	33
Corset	200	38
Complementary therapies		
Naprapathy	170	33
Massage	120	23
Bone setting	120	23
Others	170	33
Indirect costs		
Sick leave day	580	111

1 FIM = Finnish markka = US$ 0.192 (mean exchange rate 1994[27]).

Main Outcome Measures. The official medical care and complementary therapies attributable to back pain, including the randomized therapies, visits to health centers and hospitals, institutional rehabilitation, drug use, and sick leaves with associated costs, were assessed 1 year in retrospect and 1 year after the randomization. Quality of life was assessed by the Finnish version of the Nottingham Health Profile (NHP).[13,14]

Data Collection. Previous use of conventional and unconventional therapies was inquired and recorded on the first questionnaires at recruitment. Further therapies were recorded during the follow-up visits 6 weeks and 6 months later and on questionnaires mailed 3 and 12 months after start. The use of official health care services and the prescription of sick leaves were checked from the patient records and from the files of the SII and the Farmers' Social Insurance Institution. Official information was favored over self-reported data whenever there were discrepancies. The visits to the research physician, the travel costs, the time lost during therapies, and the loss of productivity at home were not included in the analysis.

The prices of drugs were obtained from *Pharmaca Fennica 1994*[18] according to brand name and package size. The costs of visits to general and specialist health care, with the associated diagnostic and therapeutic procedures, were obtained from the annual reports of the local health center and central hospital (Table 1). The prices of the reimbursable private physiotherapy and private practitioner consultation were obtained from the SII.[26] The cost of naprapathy, a manipulative therapy resembling chiropractic, was obtained from the patients' reports. The price of massage was obtained from the Finnish Masseurs' Union, and the price of bone setting was obtained from the Folk Medicine Center. The cost of a sick leave day was the Finnish employees' average monthly income in 1994[25] plus the nonwage costs divided by 21.5. The costs of institutional rehabilitation courses (about FIM 22,000) were obtained individually from the SII files.

The NHP form was presented before the randomization and 6 weeks and 12 months later, and the scores were analyzed according to the Finnish NHP manual.[14]

Statistical Analyses. An intent-to-treat analysis was performed, with official information available for all the patients. The statistical analyses were performed on a microcomputer with the SPSS for Windows version 8.0. Means and standard deviations were calculated for all baseline variables and mean change values with 95% confidence intervals for the outcome variables. The between-group differences were analyzed with the nonparametric Kruskal-Wallis one-way analysis of variance and compared pairwise with the Mann-Whitney U test if significant differences were found. The changes within groups were analyzed with the Wilcoxon signed rank sum test. The χ^2 test was used for categorical variables.

■ Results

Of the original sample of 147 patients, 15 did not meet the inclusion criteria (12 with VAS <25 mm, 1 mental, 1 cancer, 1 retired). An additional 18 subjects, randomized as a subgroup of acute patients, were not included in the analysis because of their small number and uneven distribution (10 physiotherapy, 3 bone setting, 5 exercise). Of the remaining 114 patients, 112 (98%) completed all the questionnaires at the baseline, 106 (93%) after 6 weeks, and 108 (95%) after 1 year. Two patients (exercise) did not attend any therapies, but they returned the questionnaires. The baseline characteristics are summarized in Table 2.

Retrospective Analysis

During the latest episode of back pain, 56% of the patients recalled having visited a general practitioner, 25% a specialist, 15% a nurse, and 4% a psychologist or a psychiatrist. Fifty-seven percent had had plain lumbar radiographs, 12% lumbar CT, and 4% nuclear magnetic resonance. Electroneuromyography had been done on

Table 2. Baseline Characteristics of Study Subjects

	Physiotherapy	Bone Setting	Exercise	Total	*P*
No. (males)	34 (19)	45 (25)	35 (21)	114 (65)	0.9*
Age [yr, mean (SD)]	42 (12)	42 (8.9)	41 (9.9)	42 (10)	0.9†
Back pain [yr, mean (SD)]	7.0 (8.9)	8.5 (10.5)	6.8 (7.2)	7.5 (9.1)	0.6†
Visual Analog Scale [mean (SD)]	42.6 (16.6)	46.4 (17.0)	40.7 (14.9)	43.5 (16.3)	0.5†

* χ^2 test.
† Kruskall–Wallis test.

Table 3. Direct and Indirect Costs of Back Pain 1 Year Before Study

Direct Costs	Units	%	Cost (FIM) [mean (SD)]
Visits to general practitioners			
For back pain	0.6	35	118 (197)
For all reasons	2.4	75	465 (446)
Specialist consultations	0.09	9	45 (145)
Laboratory tests	0.03	3	3 (17)
X-ray	0.4	25	146 (565)
Medication		18	21 (63)
Physiotherapy	1.9	18	319 (803)
Inpatient treatment	0.05	2	71 (534)
Operation	0.009	1	33 (354)
Rehabilitation	0.04	5	811 (3631)
Massage	4.1	32	493 (913)
Naprapathy	0.2	11	40 (151)
Bone setting	1.9	11	232 (1389)
Miscellaneous	0.5	6	89 (420)
Direct costs			
For back pain		75	2420 (4455)
Including all visits to GP		89	2768 (4425)
Indirect costs			
Sick leaves for back pain	5.1	22	2941 (10,998)
Sick leaves for all reasons	12.2	70	7082 (16,345)
Total costs			
For back pain		75	5361 (13,091)
For all reasons		95	9850 (18,371)

Units = number of treatments, or visits, or days (*e.g.*, in hospital) per patient per year; % = percentage of patients having the cost in question; 1 FIM = Finnish markka = 0.192 US$ (mean exchange rate in 1994[27]); SD = standard deviation.

4% and blood tests on 13%. The doctors had prescribed pain medication to 53%, gymnastics to 41%, and physiotherapy to 31%. Corsets had been prescribed to 8% and hot or cold packs to 7%. Seven percent had been referred to rehabilitation, 2% to hospital, and 1% to surgery. Steroid injections had been tried on six percent and sedatives on four.

In addition, bone setting had been tried by 68%, naprapathy by 42%, massage by 32%, and chiropractic by 10% of the patients. Three percent had consulted a cupper and three a nerve tract masseur. Spiritual healing, zone therapy, shiatsu massage, osteopathy, podiatrics, and acupuncture had been tried by 1% each.

During the first year of economic analysis, the most expensive single therapy was institutional rehabilitation (five patients), accounting for 33% of the direct costs, followed by massage (20%), physiotherapy (13%), and bone setting (10%) (Table 3). All diagnostic procedures, including 45 native lumbar films, 4 CT scans, 2 nuclear magnetic resonance scans, 6 myelograms, 2 electroneuromyographics, and 10 specialist consultations, amounted to 8%. The visits to general practitioners accounted for only 5% of the direct costs. Nonmedical therapies accounted for 35% of the total direct costs of FIM 2420 per year.

Twenty-two percent of the patients were sick-listed for back pain during the prerandomization year, which made up 55% of the total costs of back pain. The sick leaves were quite randomly distributed along the 2-year period of research (Figure 1).

The quality of life of the study patients differed substantially from the average Finnish normal values[14] (Figure 2), mostly on the subscales of pain ($P < 0.001$, Mann–Whitney U test) and physical mobility ($P < 0.001$). The patients also had somewhat less energy and significantly more sleeping problems ($P < 0.05$) than the average citizen, whereas the scores on emotional reactions and social isolation ranked better than "normal" ($P < 0.01$).

Prospective Analysis

The use of health care remained remarkably unchanged after the randomized interventions (Figure 3). The patients annually visited health centers 0.4 times for back pain (2.5 for all causes). Physiotherapy and bone setting were used 1.7 times and massage 2.5 times per patient per year. The mean annual cost of back pain therapy, with the study therapies excluded, was FIM 2644. The indirect costs did not change much either (FIM 3032). Fifteen percent were sick-listed. All costs were highly skewed: one tenth of the patients spent 60% of both the direct and indirect costs, and half of them spent 93% of the direct and 89% of the total costs.

There were major differences in the mean costs between the therapy groups, but they were seldom statistically significant (Table 4). The exercise patients visited physicians more often than the physiotherapy patients ($P = 0.05$, Kruskal–Wallis test; $P = 0.02$, Mann–Whitney U test). The total costs of back pain therapy (including operations and rehabilitation) were higher for the bone setting than the physiotherapy group ($P = 0.05$, Kruskal–Wallis test; $P = 0.02$, Mann–Whitney U test). The almost 10-fold difference in sick leave days between bone setting and physiotherapy (8 *vs.* 3 patients, respectively) remained nonsignificant. A few patients with high costs clearly distorted the results. The medians of the direct costs were FIM 2341 for physiotherapy, 1880 for bone setting, and 2033 for exercise, and the medians of the total costs were FIM 2341, 2275, and 2388, respectively.

Most NHP subscales were significantly improved 1 year after the therapies (Figure 2). Physiotherapy significantly improved energy and pain, whereas bone setting improved energy, sleep, pain, physical mobility, and emotional reactions, but exercise made no significant changes (Table 5). Only the emotional reactions subscale differed significantly between the groups ($P = 0.05$, Kruskal–Wallis test; $P = 0.008$, Mann–Whitney U test, bone setting better than exercise).

■ Discussion

One third of the total direct costs of back pain were incurred within the official health care system, one third were spent by the SII on the rehabilitation of a few patients, and one third were paid to complementary therapists. The costs remained remarkably similar between the years before and after the randomized therapies. The indirect costs were about half of the total societal costs.

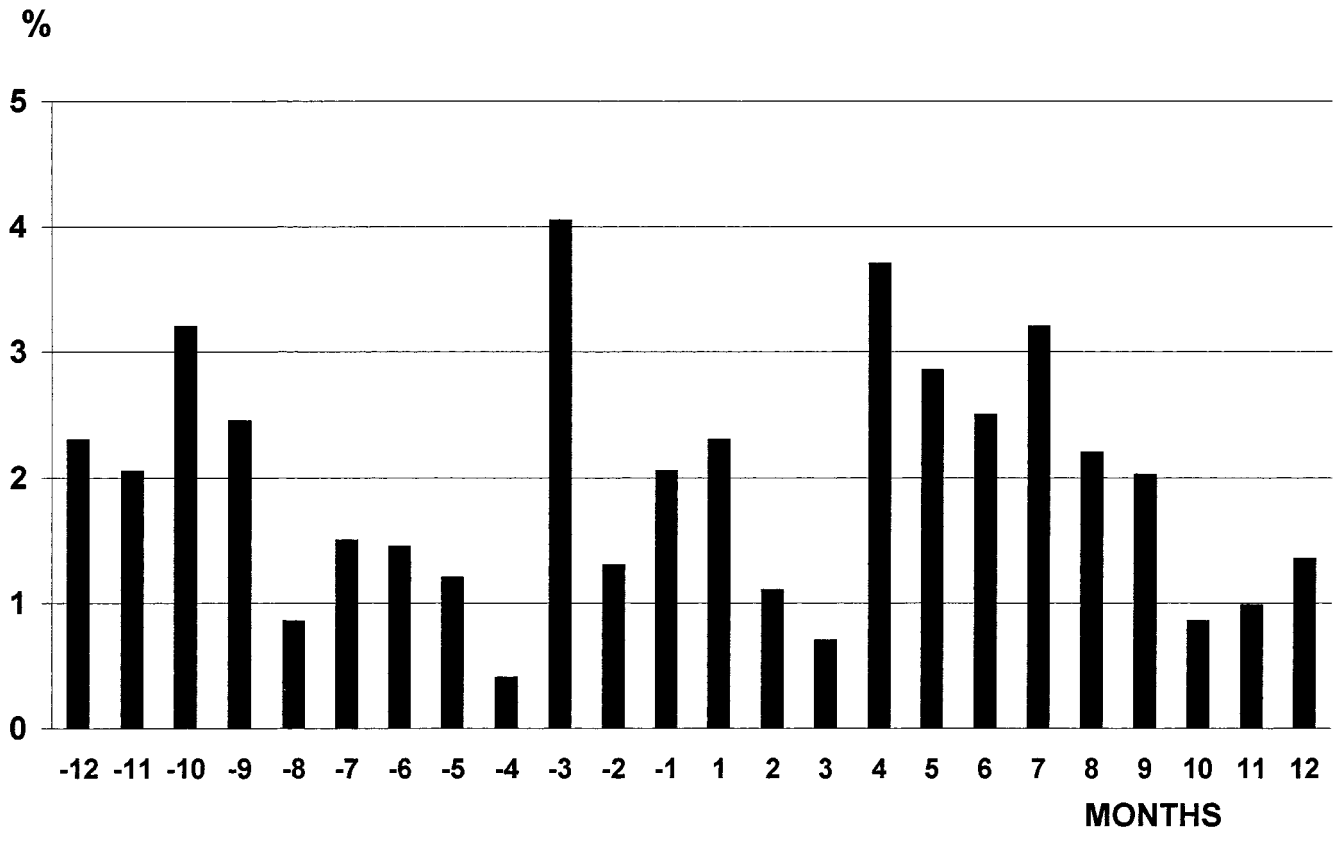

Figure 1. The monthly distribution of sick leaves during the 2-year research period. % = mean percentage of absenteeism.

All costs tended to be highest after bone setting and lowest after physiotherapy.

The quality of life of back pain patients was significantly worse than that of average Finns. Physiotherapy and bone setting significantly improved most subscales, whereas exercise had less effect.

The recruitment of patients into this study was not designed so as to obtain a representative sample of the prevailing back pain patient population. However, the sociodemographic features[26] and the patterns of health care use[11] resembled those of earlier population-based studies. Recent studies that emphasize the poor natural prognosis of back pain[4] further support the belief that this sample represents reasonably well the back pain sufferers in Finnish primary health care.

The collection of cost data entails several sources of error. The questionnaires may be unreliable, especially as regards the past history. The patient records, although contemporaneous and stable, are not ideal for collecting cost data either. The SII currently compensates for sick leaves exceeding the 9-day deductible, leaving the patient records as the only source for data on shorter periods. The fixed prices used for bone setting and massage probably exaggerated their share, as serial discounts, bartering, or neighborly help are regular customs.

The average direct cost of back pain was at the same level (about US$ 500 per year) as that of the physical or chiropractic therapy patients of Skargren et al from Linköping, Sweden[23] (about US$ 590 per year). The patients of Moffett et al[16] had lower costs: US$ 144 for an exercise group and US$ 184 for a control group during 1 year after randomization. The patients of Cherkin et al[3] from Washington, DC, also had lower costs than ours: US$ 373 for physical therapy, US$ 340 for chiropractic, and US$ 88 for a booklet group during the first follow-up year.

The indirect costs (US$ 564 and 581, before and after the therapies, respectively) accounted for 55–45% of the total societal costs. This proportion has varied from 70% to 93% in most other studies.[9,17,28] The chiropractic and physiotherapy patients in the study by Skargren et al[23] had an average of 34.2 and 39.3 days off work, with indirect costs of US$ 2667 and 2577, respectively. Moffet et al[16] probably had patients with disabilities comparable with those in this study, as they had 5.4 (exercise) and 8.2 (control) days off work per year with average costs of US$ 597 and 842, respectively.

Both direct and indirect costs differed markedly between the therapy groups, being in favor of physiotherapy over bone setting and exercise. The marked individual variation and the small sample size made statistical comparisons difficult, however, common to other studies, as well.[16,22,23] The medians of either the direct or indirect costs hardly differed between the therapy groups.

The low indirect costs after physiotherapy in this study may reflect a true effect, albeit a surprise in light of

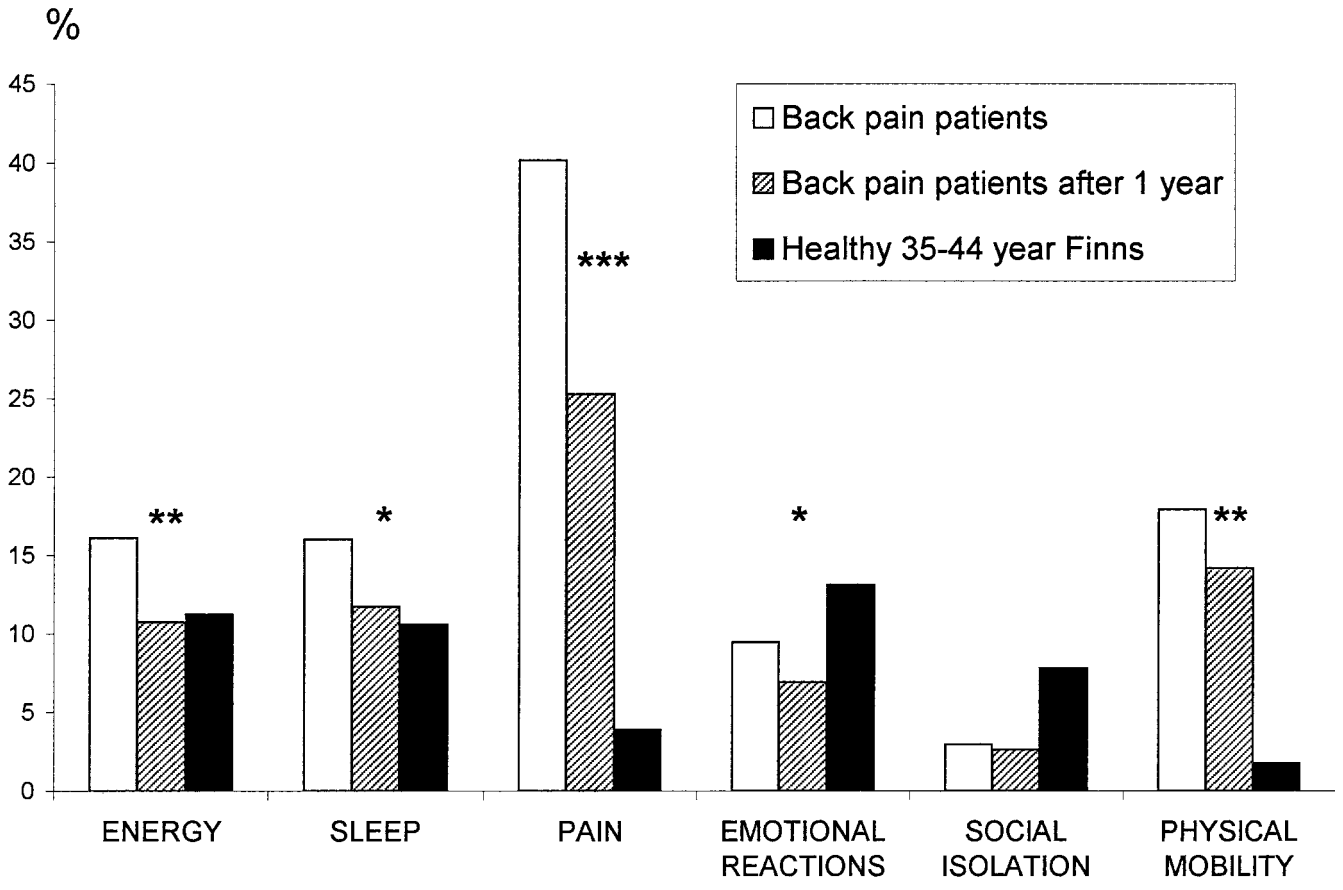

Figure 2. Mean scores of the Nottingham Health Profile subscales of back pain patients in comparison with Finnish normal values. Statistically significant differences between baseline and follow-up values of back pain patients: $*P < 0.05$, $**P < 0.01$, $***P < 0.001$ (Kruskal–Wallis test).

the previous studies.[1,17] Finnish back pain patients usually consult a general practitioner for pain medication, sick leave, and physiotherapy. Our physiotherapy patients may thus have had one reason less for consultation and less opportunity to ask for sick leaves. Most sick-listed patients had had sick leaves before their enrollment already. Changing their sickness behavior might have required some other measures.[1]

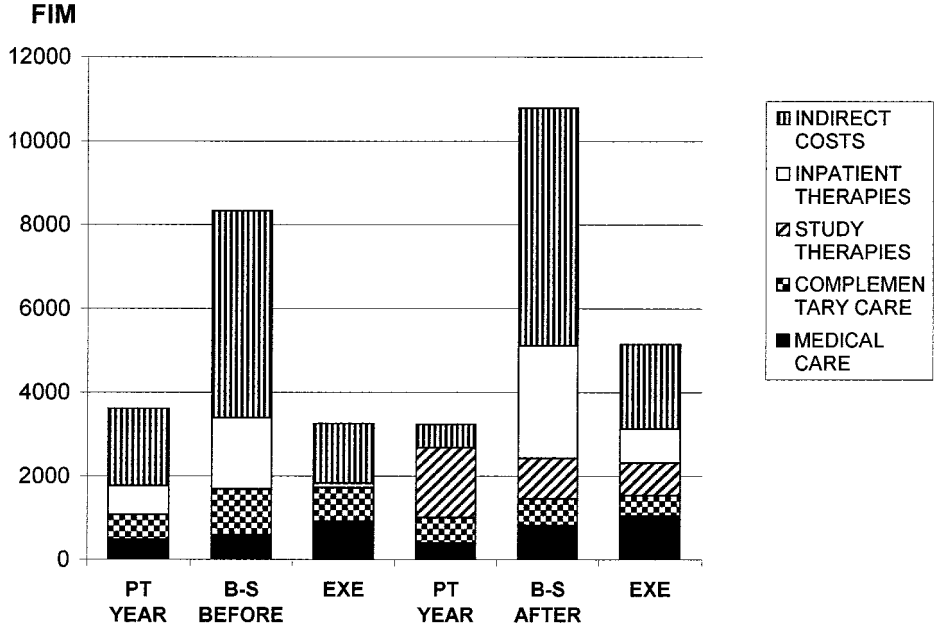

Figure 3. Costs of back pain 1 year before and after the randomized therapies. PT, physiotherapy; B-S, bone setting; EXE, exercise therapy. Medical care includes outpatient consultations, medical examinations, drugs, and physiotherapy. Complementary care includes manipulative therapies, bone setting, and massage. Inpatient therapies include hospital care, operations, and institutional rehabilitation. Indirect costs = sick leaves.

Table 4. Costs of Back Pain in Different Therapy Groups at the 1-year Follow-up

	Physiotherapy		Bone Setting		Exercise	
Direct Costs	%	FIM [mean (SD)]	%	FIM [mean (SD)]	%	FIM [mean (SD)]
General practitioner	18	40 (93)	31	86 (152)	26	99 (212)
Specialist consultation	15	88 (229)	20	211 (494)	14	129 (371)
Private practitioner	12	42 (123)	4	21 (111)	14	135 (481)
Laboratory tests	9	7 (25)				
Diagnostic radiology	12	12 (33)	29	155 (576)	23	66 (171)
Medication	62	89 (137)	73	108 (194)	66	50 (95)
Physiotherapy	9	110 (408)	16	230 (681)	29	559 (980)
Back operation			2	168 (1127)	3	108 (639)
Inpatient treatment			4	960 (4538)	3	270 (1597)
Rehabilitation centres			13	1562 (4346)	6	439 (1923)
Naprapathy	12	30 (88)	11	30 (98)	17	102 (238)
Massage	38	311 (944)	42	344 (561)	31	257 (504)
Bone setting	38	254 (532)	42	229 (435)	37	130 (215)
Miscellaneous	6	15 (64)	7	26 (114)		
Study therapies	100	1675 (119)	100	976 (319)	94	777 (381)
All direct costs		2683 (1131)		5108 (8210)		3121 (3415)
Indirect costs						
Sick leaves	9	563 (1971)	18	5684 (20,249)	17	2021 (6926)
Total costs		3236 (2623)		10,792 (23,317)		5143 (9665)

% = percentage of patients having the cost in question; SD = standard deviation; 1 FIM = Finnish markka = US$ 0.192 (mean exchange rate 1994[27]).

The quality of life of back pain patients was distinctly worse than that of healthy 34- to 45-year-old Finns,[14] but it was better than that of fibromyalgia patients[10] or patients with arthrosis of the hip joint before surgery.[19,29] The acute back pain patients described by Faas et al[7] had similar deviations from the norm as our patients: more pain, fatigue, sleeping problems, and physical handicap, but less social isolation and distress. The better scores on social isolation and emotional reactions may be explained by the social and psychological aspects of the numerous therapy sessions these patients had. The observed effect of bone setting on emotional reactions may support this idea.

This study revealed a population of back pain patients with higher direct costs, fewer sick leaves, and a lower proportion of indirect costs than the earlier studies.[17,28] Back pain may be more common than it appears on patient records or indemnity claims. A considerable part of the costs may be missed if studied from official records only. Could self-paid therapies, such as massage and manipulations, have a role in coping with the relapsing back pain and explain the declining consultations in spite of persistent back pain, as observed by Croft et al[4]?

■ Conclusions

Back pain is a chronic and relapsing disease detrimental to the perceived quality of life. It causes high costs to both the patient and society. A sample of patients with prolonged back pain were studied, with a relatively frequent use of complementary therapies, but with a low level of absenteeism. Traditional bone setting seemed to have a similar effect on the quality of life as physiother-

Table 5. Changes in the Nottingham Health Profile (NHP) Quality-of-Life Measures

Subscale	n	Energy	Sleep	Pain	Emotional Reactions	Social Isolation	Physical Mobility
Baseline values (SD)							
Physiotherapy	34	16.5 (28.2)	16.9 (26.6)	42.4 (29.6)	11.4 (15.2)	4.3 (12.1)	16.9 (13.9)
Bone setting	43	16.3 (26.3)	18.5 (25.8)	40.4 (26.2)	9.4 (13.5)	2.1 (6.8)	20.1 (16.1)
Exercise	35	15.5 (29.7)	12.2 (18.6)	37.7 (25.8)	7.7 (18.1)	2.7 (6.8)	16.3 (13.5)
All	112	16.1 (27.7)	16.0 (24.0)	40.2 (27.0)	9.5 (15.5)	2.9 (8.8)	17.9 (14.7)
Changes after 6 weeks (95% CI)							
Physiotherapy	34	10.4 (2.3–18.4)	5.6 (0.8–10.4)	14.8 (7.1–22.4)	5.5 (0.6–10.3)	2.7 (−0.1–5.4)	5.7 (2.2–9.3)
Bone setting	40	9.7 (1.0–18.4)	7.6 (2.6–12.6)	14.5 (7.2–20.9)	1.9 (−2.1–5.9)	−0.4 (−2.0–1.2)	5.6 (0.9–10.3)
Exercise	32	8.1 (2.1–14.2)	3.6 (−0.2–7.4)	10.2 (3.8–16.6)	1.6 (−0.5–3.7)	−0.9 (−6.4–2.6)	2.2 (−1.2–5.6)
All	106	9.5 (5.0–14.0)	5.7 (3.0–8.4)	13.1 (9.1–17.1)	3.0 (0.8–5.2)	0.1 (−1.7–1.9)	4.5 (2.2–6.9)
Changes after 12 months (95% CI)							
Physiotherapy	32	12.0 (2.2–21.9)	−0.5 (−6.7–5.7)	20.2 (10.3–30.0)	2.4 (−3.1–7.9)	1.5 (−3.2–6.2)	4.4 (−2.0–10.8)
Bone setting	44	7.4 (0.1–14.7)	12.3 (5.1–19.6)	14.1 (6.6–21.7)	4.9 (2.12–7.6)*	0.3 (−1.3–1.9)	6.0 (1.6–10.3)
Exercise	32	3.2 (−4.3–10.7)	−0.5 (−6.7–5.7)	9.1 (−0.1–18.3)	0.1 (−3.2–3.5)	−0.5 (−4.1–3.0)	0.0 (−4.1–4.2)
All	108	7.5 (2.8–12.2)	4.6 (0.5–8.6)	14.4 (9.3–19.5)	2.7 (0.4–5.0)	0.4 (−1.5–2.3)	3.6 (0.7–6.5)

Baseline values are mean scores. SD = standard deviation; Change = mean decrease (improvement) from baseline; CI = confidence interval.
* $P < 0.05$, Kruskall–Wallis one-way analysis of variance.

apy but better than that of light exercise. A considerably larger study would be needed to test the cost-effectiveness of these therapies. The mechanisms of adaptation to chronic back pain are suggested to warrant further study.

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■ Key Points

- Back pain patients from primary care may show different patterns of health care use from what is previously known.
- A substantial part of the direct back pain costs may be spent on complementary therapies.
- Both physiotherapy and traditional bone setting seemed better able than exercise to improve the quality of life.
- Physiotherapy seemed the cheapest alternative in view of all direct costs and absenteeism.

References

1. Alaranta H, Rytökoski U, Rissanen A, et al. Intensive physical and psychosocial training program for patients with chronic low back pain: a controlled clinical trial. AKSELI. Spine 1994;19:1339–49.
2. Carey TS, Garrett J, Jackman A, et al. North Carolina Back Pain Project: the outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. N Engl J Med 1995;333:913–7.
3. Cherkin DC, Deyo RA, Battie M, et al. A comparison of physical therapy, chiropractic manipulation, and provision of a booklet for the treatment of patients with low back pain. N Engl J Med 1998;339:1021–9.
4. Croft PR, Macfarlane GJ, Papageorgiou AC, et al. Outcome of low back pain in general practice: a prospective study. Br Med J 1998;316:1356–9.
5. Deyo RA, Tsui-Wu Y-J. Descriptive epidemiology of low back pain and its related medical care in the United States. Spine 1987;12:264–8.
6. Eisenberg DM, Davis RB, Ettner SL, et al. Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey. JAMA 1998;280:1569–75.
7. Faas A, Chavannes AW, van Eijk JT, et al. A randomized, placebo-controlled trial of exercise therapy in patients with acute low back pain. Spine 1993; 18:1388–95.
8. Fisher P, Ward A. Complementary medicine in Europe. Br Med J 1994;309: 107–10.
9. Frymoyer JW, Cats-Baril WL. An overview of the incidences and costs of low back pain. Orthop Clin N Am 1991;22:263–71.
10. Hannonen P, Malminiemi K, Yli-Kerttula U, et al. A randomized, double-blind, placebo-controlled study of moclobemide and amitriptyline in the treatment of fibromyalgia in females without psychiatric disorder. Br J Rheumatol 1998;37:1279–86.
11. Heliövaara M, Sievers K, Impivaara O, et al. Descriptive epidemiology and public health aspects of low back pain. Ann Med 1989;21:327–33.
12. Hemmilä H, Levoska S, Keinänen-Kiukaaniemi SM, et al. Does folk medicine work? A randomized controlled trial on patients with prolonged back pain. Arch Phys Med Rehabil 1997;78:571–7.
13. Hunt SM, McKenna SP, McEwen J, et al. A quantitative approach to perceived health status: a validation study. J Epidemiol Community Health 1980;34:281–6.
14. Koivukangas P, Ohinmaa A, Koivukangas J. The Finnish Version of the Nottingham Health Profile (NHP): STAKES report 187. Saarijärvi, Finland: Gummerus Ltd, 1995.
15. Malmivaara A, Häkkinen U, Aro T, et al. The treatment of acute low back pain: bed rest, exercises, or ordinary activity? N Engl J Med 1995;332: 351–5.
16. Moffett JAK, Torgerson D, Bell-Syer S, et al. Randomized controlled trial of exercise for low back pain: clinical outcomes, costs and preferences. Br Med J 1999;319:279–83.
17. Nachemson A. Back pain, etiology, diagnostics, and treatment (in Swedish). Stockholm, Sweden: Swedish Council on Technology Assessment in Health Care, 1991.
18. Pharmaca Fennica 1994. Rauma, Finland: The Farmaceutical Information Centre, Ltd., 1993.
19. Rissanen A, Aro S, Sintonen H, et al. Costs and cost-effectiveness in hip and knee replacements: a prospective study. Int J Technol Assess Health Care 1997;13:575–88.
20. Ruof J, Hulsemann JL, Stucki G. Evaluation of costs in rheumatic diseases: a literature review. Curr Opin Rheumatol 1999;11:104–9.
21. Seferlis T, Lindholm L, Németh G. Cost-minimisation analysis of three conservative treatment programmes in 180 patients sick-listed for acute low-back pain. Scand J Prim Health Care 2000;18:53–7.
22. Shekelle PG, Markovich M, Louie R. Comparing the costs between provider types of episodes of back pain care. Spine 1995;20:221–7.
23. Skargren EI, Carlsson PG, Oberg BE. One year follow-up comparison of the cost and effectiveness of chiropractic and physiotherapy as primary management for back pain: subgroup analysis, recurrence, and additional health care utilization. Spine 1998;23:1875–83.
24. Slätis P, Hjelt A, Hämäläinen M, et al. Consensus statement: diseases of the back (in Finnish). Duodecim 1996;112:2049–58.
25. Smith M, Stano M. Costs and recurrences of chiropractic and medical episodes of low-back care. J Manipulative Physiol Ther 1997;20:5–12.
26. Statistical Yearbook of Finland. Hämeenlinna, Finland: Statistics Finland, 1999.
27. Statistical Yearbook of the Social Insurance Institution, Finland, 1994. A Publication by the Social Insurance Institution T1: 30. Vammala, Finland: Social Insurance Institution, 1995.
28. van Tulder MW, Koes BW, Bouter LM. A cost-of-illness study of back pain in The Netherlands. Pain 1995;62:233–40.
29. Wiklund I, Romanus B. A comparison of quality of life before and after arthroplasty in patients who had arthrosis of the hip joint. J Bone Joint Surg Am 1991;73:765–9.
30. Williams DA, Feuerstein M, Durbin D, et al. Health care and indemnity costs across the natural history of disability in occupational low back pain. Spine 1998;23:2329–36.

Address correspondence to

Heikki Hemmilä, MD
Folk Medicine Centre
Pajalantie 24
69600 Kaustinen, Finland
E-mail: heikki.hemmila@pp.fimnet.fi