

## Cost-Effectiveness of Chiropractic Care in a Managed Care Setting

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### Abstract

The authors retrospectively evaluated the cost of health care for back or neck pain (ICD-9 codes 720 through 724) for members of a health maintenance organization who sought chiropractic care (n = 121) or other treatment methods (n = 1,838). In addition, differences between the groups in surgical rates, the use of diagnostic imaging (computed tomography and magnetic resonance imaging), and patient satisfaction were compared. The analysis was conducted on claims paid between October 1, 1994 and October 1, 1995. The cost of healthcare for back and neck pain was substantially lower for chiropractic patients than for nonchiropractic patients (\$539 vs \$774). Utilization of prescription drugs and diagnostic imaging were significantly greater in the nonchiropractic group, whereas surgical rates and patient satisfaction were nearly identical. The authors conclude that properly managed chiropractic care can yield outcomes, in terms of surgical requirements and patient satisfaction, that are equal to those of non-chiropractic care, at a substantially lower cost per patient.

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As chiropractic has evolved, scientific studies have been undertaken to evaluate it in comparison with more traditional methods. Recent published articles have indicated that the popularity of chiropractic care is increasing, and that the cost of this care may be less than that of traditional medical care in some settings<sup>1-3</sup> and more than traditional care in others.<sup>4</sup> Several randomized trials from abroad<sup>5,6</sup> have shown chiropractic to be more effective in some instances than traditional methods. Studies<sup>1,7</sup>

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of work-related back injury have shown chiropractic to be more cost-effective than conventional treatment. A recent study<sup>2</sup> comparing costs among primary care providers, orthopedists, chiropractors, and group-model health maintenance organization (HMO) providers found lower costs among patients who saw primary care and HMO providers and higher costs among those who saw orthopedists and chiropractors.

In our evaluation, all patients were HMO members who could access care only through participating physicians or chiropractors. Because access to either a primary care physician or a chiropractor was purely a matter of patient choice, any physician bias against referral to chiropractors was eliminated.

### ... METHODS ...

All patients were members of an independent physician model HMO operating throughout the State of Louisiana. Members were permitted direct access to either a primary care gatekeeper physician or a participating chiropractor. In the event that the primary care physician believed referral to a specialist for physical therapy or for CT or MRI of the spine was warranted, precertification by the HMO was required. Precertification by the HMO also was required if the chiropractor recommended that a patient make more than six chiropractic visits.

A retrospective analysis of claims paid during the period October 1, 1994 through October 1, 1995 was conducted to obtain cost information. Patients first were identified on the basis of paid claims having a diagnosis of back or neck pain; International Classification of Diseases (ICD-9) codes 720.0 through 724.9 were used. The presence of at least one claim for current procedural terminology (CPT) code 97260 (spinal manipulation by physician) identified patients who received chiropractic care as treatment for their back or neck pain.

Reimbursement for all types of care was determined according to a fee schedule, with allowables

based on a percentage of the Medicare resource based relative value system. These allowables varied from 100% to 135% of Medicare allowable reimbursement for the same code.

To determine cost per patient, all paid claims associated with healthcare for the target diagnoses were totaled and divided by the number of individuals submitting the claims. Surgical cases and patients who received CT or MRI were identified through the appropriate CPT code. Neither diagnostic imaging costs nor prescription drug costs were included in the cost of ambulatory care; these costs were analyzed separately. Because the benefit structure requires precertification for more than six visits for chiropractic care, and because physical therapy has a limit of 60 days per condition, we are satisfied that our data represent only single episodes of care.

In addition to the retrospective analysis of claims data, a survey of patient satisfaction with care was administered at the conclusion of treatment. Patients rated their satisfaction on a 6-point rating scale (from 1 = not at all satisfied with improvement to 6 = extremely satisfied with improvement).

Data were analyzed using generally accepted statistical methods for determining mean and standard deviation. Statistical significance at the 95% confidence interval was determined for all variables.

... RESULTS ...

The chiropractic group and the nonchiropractic group contained 121 and 1,838 patients, respectively. There were no significant differences between the groups in mean age, sex distribution, level of satisfaction, or percentage of individuals ultimately requiring

surgery during the study period. We were unable to exclude completely differences in comorbidities, chronic illnesses, or severity between the chiropractic and nonchiropractic groups. However, because the two groups' overall healthcare costs during the study period were nearly identical, we believe that no substantial underlying illnesses in either group may have contributed to a difference in comorbidities, chronic illnesses, and severity of illness.

The rate of diagnostic imaging in the chiropractic group was 4.9%, versus 16.5% in the nonchiropractic group ( $P < 0.001$ ). Patients in the nonchiropractic group received twice as many prescriptions during the study period. Overall costs per patient during the study period were \$539.33 for the chiropractic group versus \$774.06 for the nonchiropractic group ( $P = 0.0002$ ). The Table presents a comparison of all variables analyzed in this study. To make the data on patient satisfaction more easily understood, the results from the six-point rating scale were translated into percentages.

... DISCUSSION ...

Within a well-managed HMO setting, in which specialty care, physical therapy, diagnostic imaging, and extended chiropractic care require precertification and justification of medical necessity, chiropractic care was substantially more cost-effective than conventional care, yet had similar clinical outcomes for back and neck pain. The cost of chiropractic care on an ambulatory basis, excluding higher prescription drug and diagnostic imaging costs, remained significantly lower than the cost of traditional care provided by primary care providers ( $P < 0.01$ ). Moreover, the

number of visits to chiropractors was fewer than previously reported.<sup>2,8</sup> We believe that this result can be explained by our precertification requirements.

We are somewhat puzzled by the relatively low proportion of HMO members who chose chiropractic care for back pain when compared with published figures.<sup>9</sup> This phenomenon merits additional study in our sample. If even half the study patients treated by traditional therapies could have been cared for in the chiropractic setting, the annual savings would have exceeded \$215,000.

**Table.** Comparison of Chiropractic and Nonchiropractic Patients

Variable	Chiropractic Group	Nonchiropractic Group	P Value
Number	121	1,838	NA
Age (yr)	42	45	NS
Female:Male Ratio	1.5:1	1.5:1	NS
Surgery Patients (%)	2.5	2.5	NS
Level of Satisfaction (%)	94	94	NS
Cost of Care for Diagnoses (\$)	505.59	672.59	0.01
Rate of Imaging (CT; MRI) (%)	4.9	16.5	0.001
Imaging Cost per Patient (\$)	30.49	94.27	0.001
Number of Prescriptions (Average Cost)	1.1 (\$3.25)	2.3 (\$7.20)	0.01
Total Cost per Patient	539.33	774.06	0.0002

NA = not applicable; NS = not significant; CT = computed tomography; MRI = magnetic resonance imaging.

One limitation of our study was the 12-month time frame, which may not have been long enough to identify recurring or related episodes of back or neck pain in the target population. We believe all, or almost all, the episodes in this series to have been single occurrences. We are continuing to follow this group for future episodes of spinal-related disease, as well as accumulating data on new patients.

Although a larger sample of patients must be studied in order to definitively show broad-based success, we believe that managed chiropractic is an extremely promising method of treating acute back and neck discomfort. We recommend its wider application by the managed care industry and the physician community.

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#### **... REFERENCES ...**

1. Jarvis KB, Phillips RB, Morris EK. Cost per case comparison of back injury claims of chiropractic versus medical management for conditions with identical diagnostic codes. *J Occup Med* 1991;33:847-851
2. Shekelle PG, Markovich M, Louie R. Comparing the costs between provider types of episodes of back pain. *Spine* 1995;20:221-226.
3. Stano M. A comparison of health care costs for chiropractic and medical patients. *J Manipul Physiol Ther* 1993;16:291-299.
4. Carey TS, Garrett J, Jackman A, et al. 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;333:913-917.
5. Meade TW, Dyer S, Brorona W, et al. Low back pain of mechanical origin: Randomized comparison of chiropractic and hospital outpatient treatment. *BMJ* 1990;300:1431-1437.
6. Koes BW, Bouter LM, van Mameran H, et al. Randomized clinical trial of manipulative therapy and physiotherapy for persistent back and neck complaints: Results of one year follow up. *BMJ* 1992;304:601-605.
7. Johnson MR, Shultz MK, Ferguson AC. A comparison of chiropractic, medical and osteopathic care for work related sprains and strains. *J Manipul Physiol Ther* 1989;12:335-344.
8. Bronfort G. Chiropractic treatment of low back pain: A prospective survey. *J Manipul Physiol Ther* 1986;9:99-113.
9. Shekelle PG, Markovich H, Louie R. Factors associated with choosing a chiropractor for episodes of back pain care. *Med Care* 1995;33:842-850.