Toftness system of chiropractic adjusting on pain syndromes: a pilot study in a multicenter setting[☆]

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Abstract

Objective: This pilot project investigates the effectiveness of the Toftness system of chiropractic adjusting on subjects with pain syndromes.

Methods: Patients were recruited from 13 doctors' offices. All subjects received Toftness chiropractic adjustments. The visual analog scale (VAS) and Oswestry low back pain questionnaire were used for all subjects before and after chiropractic adjustments.

Results: A total of 42 patients were recruited. Twenty-eight patients had acute or chronic back pain and 14 experienced other types of pain (eg, neck pain, knee pain, shoulder pain, etc). The average age of the patient population (18 male, 24 female) was 53 ± 16 years. After 6 to 8 weeks of chiropractic adjustments, pain as analyzed using the visual analog scale was reduced significantly from 73.6 ± 12.790 to 17.0 ± 13.363 ($P < .001$). The Oswestry score decreased significantly from 69.3 ± 18.525 to 12.4 ± 10.504 ($P < .001$). There were no adverse treatment effects reported by the participating patients.

Conclusion: The Toftness system of chiropractic adjusting reduced low back and other pain syndromes in the subjects studied. It suggests that the Toftness system of chiropractic adjusting was safe and effective to use in low back pain and other pain-related conditions.

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Introduction

Low back pain (LBP) is an enormous burden on health care systems and on the economics of

developed countries.¹ More than 50% of Americans experience back pain each year for at least a week.² The cost for treating back pain is estimated at \$25 billion annually and another \$50 billion is spent on lost productivity and disability payments.³ Low back pain is the third or fourth most commonly reported symptom in the elderly.⁴ Given the possible consequences of unmanaged LBP, such as depression, functional disability, and compromised quality of life, further research into alternative treatment approaches

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may be warranted.⁵ Despite the high prevalence of back pain, effective treatment that is supported by scientific evidence is still lacking. The limited effectiveness of conventional treatments has contributed to a high level of patient dissatisfaction with medical care for back pain.⁶⁻⁸ Therefore, this study proposed low-force chiropractic adjustment as a potential treatment of LBP.

Low-force adjusting has been used clinically for many years by multiple adjusting techniques. One form of low-force adjustments is the Toftness adjusting method, which primarily uses a handheld instrument to determine where to adjust and uses a pressure applicator to deliver the adjustment of the entire spine. Although there are no randomized controlled trials on the effectiveness of this chiropractic adjustment technique, research studies on Toftness adjusting have demonstrated some positive findings.⁹⁻¹² It has been suspected that the Toftness adjustment might be related to body surface electromagnetic force (EMF). Changes in EMF after adjustments were reported in a recent study.¹³ However, laboratory testing did not confirm that the handheld device was capable of detecting EMF changes within the testing range that was available to the laboratory.¹⁴ Further study and testing on the mechanism of the Toftness system of adjusting are needed.

Low-force chiropractic adjustments may minimize potential risks associated with adjustments, especially as they relate to the osteoporotic patient (ie, fracture). The specific aim of this study is to assess the effectiveness of low-force spinal adjusting, using Toftness methods, for subjects with LBP and other pain syndromes in a multicenter setting.

Methods

Participants

Forty-two subjects who have pain were recruited to receive 2 to 3 adjustments a week for 4 to 6 weeks. Eighteen licensed chiropractors from 13 private clinics provided the low-force Toftness chiropractic adjustments. The conditions included 14 acute LBP conditions, 14 chronic LBP conditions, and 14 other conditions (ie, shoulder pain, knee pain, neck pain, etc).

Inclusion criteria

Adult males or females with any ethnic background were accepted if they had LBP, neck pain, or joint pain in the previous 6 months. All subjects

were in good health, ambulatory, and cognizant. They were fluent and literate in the English language at the fifth grade level and had transportation to the clinic. Those subjects agreeing to participate and meeting all the inclusion criteria were asked to sign an informed consent form. This study was approved by the Logan College of Chiropractic institutional review board.

Exclusion criteria

Subjects were excluded from the study if there was evidence of central nervous system disease or contraindications to spinal manipulative therapy. Subjects with systemic disease potentially affecting the musculoskeletal system such as nonskin malignancy were also excluded. Morbidly obese subjects were excluded. *Morbid obesity* was defined as the subject being more than 40% over the ideal body weight. Ideal body weight for men was defined as 106 lb plus 6 lb for every inch over 5 feet, and for women as 100 lb plus 5 lb for every inch over 5 feet. Subjects were also excluded if they were currently receiving care at any facility for pain, taking prescription narcotics, had a life-threatening coexisting disease, had a severe psychological disorder, or were involved in litigation in regard to a health-related item.

Treatment protocols

Each subject was scheduled for 2 to 3 adjustments per week for 4 to 6 weeks for at least 8 adjustments. The practitioner delivered a low-force (2-32 oz) Toftness chiropractic adjustment by the use of a metered handheld pressure applicator at the cervical, thoracic, lumbar, or sacral contact site.⁹ The applicator is a rubber-tipped, spring-loaded device that indicates the amount of force that is being applied at the contact site. The adjustment contact line of drive, amount of force applied, and duration of the contact are determined by constant monitoring of the adjustment site with the sensometer, which consists of an open cone and a Mylar membrane (Toftness, Amery, MI).⁹

Primary outcome measures

The pain measurements included the patients' perceived level of pain, measured with the visual analog scale (VAS).¹⁵⁻¹⁷ The VAS is a 10-cm line on which the patient places a single vertical line to record the amount of pain perceived. Measuring the distance from the left end of the horizontal line to the vertical line, which the patient has marked, scores the VAS. The score is then totaled out of a possible 100. In the

present study, the VAS was administered at baseline and after each chiropractic adjustment. The Oswestry Disability Questionnaire scores were also obtained on each of the subjects at the beginning and end of delivering low-force Toftness chiropractic adjusting. These scores establish the amount of disability of the subjects as it pertains to the activities of daily living.

Data analysis

Data for each patient were reviewed by the investigators at the conclusion of each patient's participation in the treatment regimen and again upon study completion. Student *t* test was used for comparisons of the VAS and Oswestry scores before

Table 1 Demographics and study data for the participants

Patient No.	Age	Sex	Type	No. of Adjustments	VAS (0-100)		Oswestry Scores	
					Before	After	Before	After
1	35	M	Chronic Back Pain	7	65	0	75	10
2	63	F	Acute Neck Pain	10	70	20	68	8
3	54	F	Chronic Back Pain	20	88	28	92	12
4	22	M	Acute Back Pain	8	78	22	80	10
5	66	F	Chronic Back Pain	28	92	0	88	2
6	72	F	Right Knee Pain	12	68	2	78	6
7	68	M	Chronic Back Pain	32	80	40	82	32
8	45	F	Left Shoulder Pain	15	66	4	78	10
9	32	F	Acute Neck Pain	6	80	4	88	8
10	28	M	Left Knee Pain	14	65	12	78	15
11	48	F	Acute Back Pain	14	78	16	80	12
12	32	M	Chronic Back Pain	26	58	4	60	10
13	23	F	Acute Neck Pain	15	48	2	42	10
14	72	M	Chronic Back Pain	34	78	24	80	26
15	46	F	Chronic Back Pain	28	64	24	80	26
16	57	M	Left Leg Pain	16	78	78	68	10
17	42	F	Acute Back Pain	25	62	24	70	12
18	87	F	Chronic Back Pain	34	80	26	90	36
19	35	F	Right Shoulder Pain	21	56	12	68	14
20	46	M	Acute Neck Pain	14	68	4	78	2
21	26	M	Left Knee Pain	6	68	2	58	4
22	75	F	Acute Back Pain	32	80	24	78	12
23	25	F	Left Elbow Pain	10	62	10	78	2
24	56	F	Right Knee Pain	12	50	10	56	14
25	48	M	Right Shoulder Pain	17	70	20	78	12
26	26	F	Left Leg Pain	6	48	0	56	4
27	70	F	Chronic Back Pain	9	88	0	82	6
28	60	F	Chronic Back Pain	9	78	0	74	2
29	44	F	Acute Back Pain	8	62	28	85	8
30	46	M	Chronic Back Pain	5	92	42	28	4
31	55	F	Acute Back Pain	12	53	12	42	6
32	48	F	Chronic Back Pain	34	72	8	66	30
33	52	F	Chronic Neck Pain	8	58	3	1	14
34	50	F	Right Shoulder Pain	11	78	10	82	16
35	55	F	Acute Back Pain	9	68	0	64	2
36	34	M	Right Leg Pain	8	62	28	85	8
37	44	M	Acute Back Pain	15	92	32	38	4
38	55	F	Acute Back Pain	12	53	12	42	6
39	48	F	Left Knee Pain	34	72	8	76	20
40	52	F	Chronic Neck Pain	8	58	3	26	14
41	32	M	Acute Back Pain	10	68	8	48	4
42	43	M	Right Knee Pain	12	58	4	42	5

and after treatment. A probability of less than .05 was considered significant. SPSS 11.5 (SPSS Inc, Chicago, Ill) was used for all data analysis.

Results

A total of 42 patients were recruited. Acute or chronic back pain was experienced by 28 patients, and 14 had other types of pain (ie, neck pain, knee pain, shoulder pain, etc). The average age of the patient population (18 male, 24 female) was 53 ± 16 years. After 6 to 8 weeks of chiropractic adjustments, pain as analyzed using the VAS was reduced from 73.6 ± 12.79 to 17.0 ± 13.36 ($P < .001$). The Oswestry score decreased from 69.3 ± 18.52 to 12.4 ± 10.50 ($P < .001$). There were no adverse treatment effects reported by the participating patients (Table 1).

Discussion

The intent of this study was to expand on the initial observations of the clinical benefit of the Toftness system of chiropractic for subjects with acute back pain.¹⁰ This study demonstrated that subjects with acute back pain, after receiving a series of Toftness adjustments, had a significant reduction in pain and restoration of activities of daily living. This study was also designed to determine if Toftness practitioners could obtain similar results as stated in the latter study to further evaluate the clinical utility of this adjusting procedure. Despite the unanswered questions of this technique, one of the main components is the adjusting procedure. This procedure is based on the chiropractic principles of the application of force to a specific site on the spine for the purposes of restoring normal spinal alignment and reducing the stress on the nervous system. Furthermore, the Toftness adjustment is quantitative in that it is measurable with respect to the amount of force applied and the amount of time that that force is applied to that contact.

There are a number of limitations in the current study. The first limitation is the small sample size, with only 42 patients who received treatment. The second limitation is lack of a control group due to the clinical observational nature of the study. A third limitation of this study is the possibility that in health and disease the normal course of remission may have caused improvement regardless of the therapy applied. However, with additional effort, it is possible to design a study with a control group similar to other Toftness studies. The positive findings in this pilot study

provided the reason for continued research with a control group. Because of the limitations of the study, no firm conclusion could be drawn regarding the symptomatic reductions observed after the Toftness chiropractic care; however, this study does confirm that it is possible to collect positive data in a multicenter setting.

Conclusion

In conclusion, it was found that Toftness chiropractic system adjusting in a multicenter setting resulted in improvement in LBP and other symptoms in chiropractic patients.

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